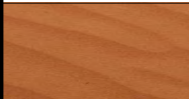


Government Agencies Correspondence



APPENDIX E



Planning

Major Projects Assessment
Mining and Industry Project
Phone: (02) 9228 6283
Fax: (02) 9228 6466
Email: carl_dumpleton@planning.nsw.gov.au
Level 3 Room 306
23-33 Bridge Street
GPO Box 39
SYDNEY NSW 2001

Mr Danny Young
Environmental Manager
Whitehaven Coal mining Pty Limited
PO Box 600
GUNNEDAH NSW 2382

Our ref: S02/01497

Dear Mr Young

**Rocglen Extension Project (10_0015)
Director-General's Requirements**

The Department has received your application for this project.

I have attached a copy of the Director-General's requirements for the project. These requirements have been prepared in consultation with the relevant agencies, based on the information you have provided to date. I have also attached a copy of the agencies' comments for your information.

Please note the Director-General may further alter these requirements at any time.

If your proposal is likely to have a significant impact on matters of National Environmental Significance, it will require an approval under the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to any approvals required under NSW legislation. It is your responsibility to contact the Department of Environment, Water, Heritage and the Arts in Canberra (6274 1111 or <http://www.environment.gov.au>) to determine if the proposal requires an approval under the EPBC Act. If it is subsequently determined that an approval is required under the EPBC Act, please contact the Department of Planning immediately as supplementary Director-General's requirements may need to be issued.

I would appreciate it if you would contact the Department at least two weeks before you intend to submit your Environmental Assessment for the project. This will enable the Department to determine the:

- applicable fee (see Division 1A, Part 15 of the Environmental Planning and Assessment Regulation 2000); and
- number of copies (hard-copy and CD-ROM) of the Environmental Assessment that will be required for exhibition purposes.

Once it receives the Environmental Assessment, the Department will review it in consultation with the relevant agencies to determine if it adequately addresses the Director-General's requirements, and may require you to revise it prior to public exhibition.

The Department is required to make all the relevant information associated with the project publicly available on its website. Consequently, I would appreciate it if you would ensure that all the documents you subsequently submit to the Department are in a suitable format for the web, and arrange for an electronic version of the Environmental Assessment to be hosted on a suitable website.

If you have any enquiries about these requirements, please contact Carl Dumbleton on 9228 6283 or carl.dumbleton@planning.nsw.gov.au.

Yours sincerely



David Kitto
Director
Mining & Industry Projects
As delegate for the Director-General

Director-General's Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Application number	10_0015
Project	The Rocglen Extension Project, which includes: <ul style="list-style-type: none"> • an extension of the approved mining operations at the Rocglen coal mine; • augmenting and upgrading the existing infrastructure on site; and • transporting coal to both the Canyon coal mine and the Whitehaven preparation plant for further processing.
Location	Wean Road, about 25 kilometres north of Gunnedah.
Proponent	Whitehaven Coal Mining Pty Limited.
Date of Issue	March 2010
General Requirements	<p>The Environmental Assessment of the project must include:</p> <ul style="list-style-type: none"> • an executive summary; • a detailed description of: <ul style="list-style-type: none"> - existing and approved development on site; and - the existing environmental management and monitoring regime; • a detailed description of all aspects of the project, including the: <ul style="list-style-type: none"> - need for the project; - alternatives considered; - likely interactions between existing and proposed operations; and - plans of any proposed building works; • a risk assessment of the potential environmental impacts of the project, identifying the key issues for further assessment; • a detailed assessment of the key issues specified below, and any other significant issues identified in the risk assessment (see above), which includes: <ul style="list-style-type: none"> - a description of the existing environment, using sufficient baseline data; - an assessment of the potential impacts of all stages of the project, including any cumulative impacts associated with the concurrent operation of the project with any other existing or approved mining operations in the region, taking into consideration any relevant policies, guidelines, plans and statutory provisions (see below); and - a description of the measures that would be implemented to avoid, minimise, and if necessary offset the potential impacts of the project, including detailed contingency plans for managing any significant risks to the environment; • a statement of commitments, outlining all the proposed environmental management and monitoring measures; • a conclusion justifying the project on economic, social and environmental grounds, taking into consideration whether the project is consistent with the objects of the <i>Environmental Planning & Assessment Act 1979</i>; and • a signed statement from the author of the Environmental Assessment, certifying that the information contained within the document is neither false nor misleading.
Key Issues	<ul style="list-style-type: none"> • Biodiversity – including: <ul style="list-style-type: none"> – an accurate estimate of any vegetation clearing associated with the project; – a detailed assessment of the potential impacts of the project on any terrestrial or aquatic threatened species, populations, ecological communities or their habitats; – a detailed description of the measures that would be implemented to avoid or mitigate impacts on biodiversity; – a detailed assessment of impacts on the existing biodiversity offset

	<p>strategy for the mine;</p> <ul style="list-style-type: none"> - consideration of impacts on lands covered by the <i>Brigalow and Nandewar Community Conservation Area Act 2005</i>; and - an offset strategy to ensure the project maintains or improves the biodiversity values of the region in the medium to long term (in accordance with NSW and Commonwealth policies); <ul style="list-style-type: none"> • Surface and Ground Water – a detailed assessment of surface and groundwater impacts including: <ul style="list-style-type: none"> - a detailed site water balance, including a description of site water demands, water disposal methods, water supply infrastructure and water storage structures; - a detailed assessment of potential impacts on: <ul style="list-style-type: none"> o the quality and quantity of existing surface and ground water resources, over both the short and long-term; and o affected licensed water users and basic landholder rights; and - a detailed description of the proposed water management system and water monitoring program for the project and other measures to mitigate surface and groundwater impacts; • Soil – a detailed assessment of the likely impacts on soil and the proposed management measures to avoid, mitigate or offset those impacts; • Noise & Blasting – including a quantitative assessment of potential: <ul style="list-style-type: none"> - construction, operational and transport noise impacts; - offsite noise impacts; and - blasting impacts on people, livestock and property; • Rehabilitation, Final Landform and Final Void Management – including a justification of the revised final landform and any changes to the land use for the site; how the site would be progressively rehabilitated; or the measures which would be put in place for the long term protection and management of: <ul style="list-style-type: none"> - the site following cessation of mining; and - any biodiversity offset areas; • Air Quality; • Visual; • Traffic and Transport – including a detailed assessment of the potential impacts of the project on the safety and performance of the road network; • Heritage – both Aboriginal and non-Aboriginal; • Greenhouse Gases – a revised greenhouse gas assessment to account for the increased extraction of coal; and • Social and Economic.
References	<p>The Environmental Assessment of the key issues listed above must take into account relevant guidelines, policies, and plans. While not exhaustive, the following attachment contains a list of guidelines, policies and plans that may be relevant to the environmental assessment of this project.</p>
Consultation	<p>During the preparation of the EA, you should consult with the relevant local, State or Commonwealth government authorities, service providers, community groups or affected landowners. The consultation process and the issues raised must be described in the Environmental Assessment.</p> <p>In particular you must consult with:</p> <ul style="list-style-type: none"> • Department of Environment, Climate Change and Water; • Roads and Traffic Authority; • NSW Office of Water; • Industry and Investment NSW; • Country Energy; • Gunnedah Shire Council; and • Namoi Catchment Management Authority.
Deemed refusal period	90 days

Policies, Guidelines & Plans

Aspect	Policy /Methodology
Soil and Water	
	Australian Drinking Water Guidelines 2004 (NWQMS)
	National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ)
	Using the ANZECC Guideline and Water Quality Objectives in NSW (DEC)
<i>Surface Water</i>	Namoi Catchment Action Plan (DPI)
	State Water Management Outcomes Plan
	NSW Government Water Quality and River Flow Environmental Objectives (DECC)
	Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC)
	Managing Urban Stormwater: Soils & Construction (Landcom)
	Managing Urban Stormwater: Treatment Techniques (DECC)
	Managing Urban Stormwater: Source Control (DECC)
	National Water Quality Management Strategy Guidelines for Groundwater Protection in Australia (ARMCANZ/ANZECC)
	NSW State Groundwater Policy Framework Document (DLWC)
	NSW State Groundwater Quality Protection Policy (DLWC)
	NSW State Groundwater Quantity Management Policy (DLWC) Draft
<i>Groundwater</i>	Upper and Lower Namoi Groundwater Water Sharing Plan (DWE)
	Murray-Darling Basin Groundwater Quality. Sampling Guidelines. Technical Report No 3 (MDBC)
	Murray-Darling Basin Commission. Groundwater Flow Modelling Guideline (Aquaterra Consulting Pty Ltd)
	Draft Guidelines for the Assessment & Management of Groundwater Contamination (DECC)
	Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC & NHMRC)
<i>Soil</i>	National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC)
	State Environmental Planning Policy No. 55 – Remediation of Land
	Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (DOP)
Noise	
	NSW Industrial Noise Policy (DECC)
	Environmental Noise Management – Assessing Vibration: a technical guide (DEC)
	Environmental Criteria for Road Traffic Noise (NSW EPA)
	Interim Guidelines for the Assessment of Noise From Rail Infrastructure Projects (DECC)
	Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration (ANZEC)
	Interim Construction Noise Guideline (DECC)
	DIN 4150 Part 3 - Structural Vibration: effects of vibration on structures (ISO, 1999)
Biodiversity	
	Draft Guidelines for Threatened Species Assessment under Part 3A of the <i>Environmental Planning and Assessment Act 1979</i> (DEC)
	NSW Groundwater Dependent Ecosystem Policy (DLWC)
	Policy & Guidelines - Aquatic Habitat Management and Fish Conservation

Rehabilitation	
	Mine Rehabilitation – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth of Australia)
	Mine Closure and Completion – Leading Practice Sustainable Development Program for the Mining Industry (Commonwealth of Australia)
Blasting and Vibration	
	ANZECC Guidelines to Minimise Annoyance Due to Blasting Overpressure & Ground Vibration
	Assessing Vibration – A Technical Guide 2006 (DEC)
Air Quality	
	Protection of the Environment Operations (Clean Air) Regulation 2002
	Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC)
	Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC)
Traffic and Transport	
	Guide to Traffic Generating Development - Section 2 Traffic Impact Studies (RTA)
	Road Design Guide (RTA)
	Road and Related Facilities (Department of Planning EIS Guidelines)
	Relevant Austroad standards
Heritage	
<i>Aboriginal</i>	Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC)
<i>Non-Aboriginal</i>	NSW Heritage Manual (NSW Heritage Office & DUAP)
	The Burra Charter (The Australia ICOMOS charter for places of cultural significance)
Social and Economic	
	Draft Economic Evaluation in Environmental Impact Assessment (DOP)
	Techniques for Effective Social Impact Assessment: A Practical Guide (Office of Social Policy, NSW Government Social Policy Directorate)
Risk Assessment	
	AS/NZS 4360:2004 Risk Management (Standards Australia)
	HB 203: 203:2006 Environmental Risk Management – Principles & Process (Standards Australia)



**Major Projects Assessment
Mining & Industry**

Contact: Colin Phillips

Phone: (02) 9228 6483

Fax: (02) 9228 6466

Email: colin.phillips@planning.nsw.gov.au

Mr Brian Cullen
Technical Services Manager
Whitehaven Coal Limited
PO Box 600
GUNNEDAH NSW 2380

Dear Mr Cullen

Rocglen Coal Extension Project - Supplement to the Director-General's Requirements

I refer to the Director-General's requirements issued for the Rocglen Coal Extension Project on 4 March 2010.

As you are aware, this project has been declared a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Department of Environment, Water, Heritage and the Arts has accredited the NSW Part 3A assessment process for the project. Accordingly, the Department will undertake an environmental impact assessment of the project to satisfy the requirements of both NSW and Commonwealth legislation.

To ensure that sufficient information is provided to enable an appropriate level of assessment of relevant matters of National Environmental Significance, the Director-General has issued supplementary requirements for the Environmental Assessment under section 75F(3) of the *Environmental Planning and Assessment Act 1979*. A copy of the supplementary requirements is attached.

You must ensure that the Environmental Assessment adequately addresses the Director-General's requirements issued on 4 March 2010, and the supplementary requirements attached to this letter.

If you have any enquiries about these requirements, please contact Colin Phillips on 02 9228 6483 or via email (colin.phillips@planning.nsw.gov.au).

Yours sincerely

David Kitto
Director – Mining & Industry Projects
as delegate for the Director-General

Supplementary Director-General's Requirements

Section 75F(3) of the *Environmental Planning and Assessment Act 1979*

The Commonwealth Minister for Environment Protection, Heritage and the Arts has declared the Rocglen Coal Mine Extension project to be a controlled action under section 75 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The controlled action is likely to have a significant impact on the EPBC Act listed Critically Endangered White Box, Yellow Box, Blakely's Red Gum Grassy Woodland and Derived Native Grasslands (Box-Gum Woodland) ecological community. There is also potential for a significant impact on the EPBC Act listed endangered Swift Parrot (*Lathamus discolor*), the endangered Regent Honeyeater (*Anthochaera phrygia*) and the vulnerable Superb Parrot (*Polytelis swainsonii*) through the removal of this community

In accordance with the one-off accredited assessment process for this project, the environmental assessment of the impacts of the controlled action is to be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The assessment should include enough information about the controlled action and its relevant impacts to allow the Commonwealth Minister for Environment Protection, Heritage and the Arts to make an informed decision whether or not to approve the controlled action under the EPBC Act.

The following assessment requirements are to be integrated into the assessment required for Part 3A of the EP&A Act. The following matters in the EPBC Act and schedule 4 of the *Environment Protection and Biodiversity Conservation Regulations 2000* should be considered.

General information

1. The background of the action, including:
 - a. the title of the action;
 - b. the full name and postal address of the designated proponent;
 - c. a clear outline of the objective of the action;
 - d. the location of the action;
 - e. the background to the development of the action;
 - f. how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;
 - g. the current status of the action; and
 - h. the consequences of not proceeding with the action.

Description of the controlled action

2. A description of the action, including:
 - a. all the components of the action;
 - b. the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;
 - c. how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;
 - d. to the extent reasonably practicable, a description of any feasible alternatives to the controlled action that have been identified through the assessment, and their likely impact, including:

- i. if relevant, the alternative of taking no action;
- ii. a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action;
- iii. sufficient detail to clarify why any alternative is preferred to another.

A description of the relevant impacts of the controlled action

3. An assessment of all relevant impacts¹ with reference to the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines Matters of National Environmental Significance (2009)* that the controlled action has, will have or is likely to have on:

- a. relevant threatened species and/or threatened ecological communities listed under sections 18 and 18A of the EPBC Act, including the Box-Gum Woodland ecological community, the Swift Parrot, Regent Honeyeater, and the Superb Parrot.

4. Information must include:

- a. a description of the relevant impacts of the action on matters of national environmental significance;
- b. a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;
- c. a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
- d. analysis of the significance of the relevant impacts;
- e. any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

5. A description of the relevant impacts on the Box-Gum Woodland ecological community, the Swift Parrot, Regent Honeyeater, and the Superb Parrot should include an analysis of the vegetation condition on the site, as well as the methods by which this was determined. It should also include direct, indirect, cumulative and facilitative impacts on the:

- a. extent of the Box-Gum Woodland, including connectivity with other areas of the ecological communities;
- b. quality or integrity of the Box-gum Woodland (including, but not limited to, assisting invasive species, that are harmful to the ecological communities, to become established; or causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the communities which kill or inhibit the growth of species in the ecological community);
- c. EPBC Act listed species in, or in any way dependent upon, the Box-Gum Woodland including, but not limited to the Swift Parrot, Regent Honeyeater, and the Superb Parrot;
- d. composition of the Box-Gum Woodland;
- e. habitat present on site critical to the survival of the Box-Gum Woodland²; and
- f. abiotic (non-living) factors (such as water, nutrients or soil) necessary for the Box-Gum Woodland's survival, for example increasing groundwater levels or

¹ The term "relevant impact" is defined in section 82 of the EPBC Act.

² "habitat critical to the survival of a species or ecological community" refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal;
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators);
- to maintain genetic diversity and long term evolutionary development; or
- for the reintroduction of population or recovery of the species or ecological community.

Such habitat may be, but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the register of Critical Habitat maintained by the Minister under the EPBC Act.

making the site wetter, soil disturbance or substantial alteration of surface water drainage patterns.

These impacts should be described for the construction and operation phases of the controlled action.

6. Where there is a potential habitat for EPBC Act listed species, such as the Swift Parrot, Regent Honeyeater, and the Superb Parrot, surveys must be undertaken. These surveys must be timed appropriately and undertaken for a suitable period of time by a qualified person³. A subsequent description of the relevant impacts on such EPBC Act listed species should include, inter alia, direct, indirect, cumulative and facilitative impacts on the:
 - a. population of the species at the site;
 - b. area of occupancy of the species;
 - c. habitat critical to the survival of the species;
 - d. breeding cycle of the population; and
 - e. availability or quality of habitat for the species.

Proposed safeguards and mitigation measures

7. A description of feasible mitigation measures, changes to the controlled action or procedures, which have been proposed by the proponent or suggested in public submissions, and which are intended to prevent or minimise relevant impacts. Information must include:
 - a. a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;
 - b. any statutory or policy basis for the mitigation measures;
 - c. the cost of the mitigation measures;
 - d. an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;
 - e. the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;
 - f. a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action.

Offsets

8. Should any residual impact exist that cannot be mitigated it may be necessary for offset measures to be considered in order to ensure the protection of matters of national environmental significance in perpetuity.

Other approvals and conditions

9. Any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action. Information must include:
 - a. details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:
 - i. what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy; and

³ Where available, species-specific survey guidelines can be obtained on the department's *Species Profile and Threats Database*: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

- ii. how the scheme provides for the prevention, minimisation and management of any relevant impacts;
- b. a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;
- c. a statement identifying any additional approval that is required;
- d. a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.

Economic and social matters

10. A description of the short-term and long-term social and economic implications and/or impacts of the project.

Environmental record of person proposing to take the action

11. Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

- a. the proponent; and
- b. for an action for which a person has applied for a permit, the person making the application.

12. Details of the proponent's environmental policy and planning framework.

Information sources

13. For information given in an environment assessment, the draft must state:

- a. the source of the information;
- b. how recent the information is;
- c. how the reliability of the information was tested; and
- d. what uncertainties (if any) are in the information.

Consultation

14. Any consultation about the action, including:

- a. any consultation that has already taken place;
- b. proposed consultation about relevant impacts of the action;
- c. if there has been consultation about the proposed action — any documented response to, or result of, the consultation.

15. Identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

Your reference:
Our reference: LIC07/2258-04/ DOC10/4331
Contact: Stephen O'Donoghue, 6773 7000

4 February 2010

Colin Phillips
Manager Mining and Extractive Industries
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Mr Phillips

Rocglen Coal Extension Project – Environmental Assessment Requirements

The Department of Environment, Climate Change and Water (the Department) has received the Department of Planning's (Planning) request for Environmental Assessment (EA) Requirements for the proposed Rocglen Coal Extension Project.

The Department has considered the details of the project as provided in the document "Whitehaven Coal Limited: Rocglen Coal Mine Project – Preliminary Environmental Assessment", noting that this was not provided by the proponent until 27 January 2010. The Department has identified the information it requires to assess the project in **Attachment A**. The proponent should ensure that the EA is sufficiently comprehensive and detailed to allow the Department to determine the extent of the impact(s) of the proposal.

In summary the Department's key information requirements for the project are:

- the impact on air quality, noise amenity, water quality and quantity for all operations proposed for the mine and associated infrastructure;
- the impact on flora and fauna, particularly the encroachment of mining within already approved biodiversity offset areas;
- impact assessment and protection of identified Aboriginal heritage, including blasting and vibration from operations and potential instability as a result of open pit operations and layout;
- the design and layout of facilities to minimise potential impact and achieve ambient goals; and,
- the actions that will be taken to avoid or mitigate environmental impacts, or compensatory measures to minimise unavoidable impacts.

The Department of Environment & Climate Change is now part of the Department of Environment, Climate Change and Water



In carrying out the assessment the applicant should refer to the relevant guidelines in Attachment B and also any industry codes of practice or best environmental management practice guidelines, for example:

- the Department of Environment and Heritage's Best Practice Environmental Management in Mining series; and,
- the Australian Minerals Industry Code for Environmental Management.

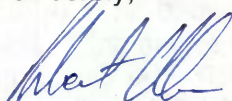
Based on the information provided to the Department, the applicant may require a variation to its existing environment protection licence (EPL) 12870. The applicant will need to make a separate application to the Department to vary this licence once planning consent has been granted by the Minister for Planning.

The proponent should be aware that any commitments made in the EA may be formalised as approval conditions. Consequently pollution control or conservation measures should not be proposed if they are impractical, unrealistic or beyond the financial viability of the development. It is important that all conclusions are supported by adequate data.

The Department requests that 2 hard copies of the EA are provided for assessment and one CD copy. These documents should be lodged with the Department's Armidale Office – postal address PO Box 494, ARMIDALE NSW 2350.

If you have any queries regarding this matter please contact Stephen O'Donoghue on (02) 6773 7000.

Yours sincerely,



Robert O'Hern
Head Regional Operations
Environment Protection and Regulation

Incl: Attachment A - EA Requirements
Attachment B – Guidance Material

Attachment A –Environmental Assessment (EA) Requirements

Environmental impacts of the project

1. The following environmental impacts of the project need to be assessed, quantified and reported on:
 - Air Quality, including Greenhouse Gas Emissions;
 - Noise and vibration;
 - Water quantity and quality (groundwater and surface waters);
 - Mine rehabilitation and assessment of final void water quality and impacts;
 - Threatened Species; and,
 - Aboriginal Cultural Heritage.
2. These should be assessed in accordance with the relevant guidelines listed in Attachment B
3. Describe mitigation and management options that will be used to prevent, control, abate or mitigate identified environmental impacts associated with the project and to reduce risks to human health and prevent the degradation of the environment.

This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.

Impacts on air quality

The goal is to maintain existing rural air quality and protect sensitive receptors, both on and off site, from adverse impacts of dust and odour.

Dust (PM_{2.5}, PM₁₀ and TSP) is the primary concern with potential emissions from construction activity, clearing and open cut mining operations, heavy equipment movement, crushing equipment and conveyors, transfer points, loading facilities and from coal, topsoils and overburden stockpiles.

The air quality impacts from the proposed development will need to be assessed using the methodology detailed in the DEC document "*Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales*". In particular all assumptions used in modelling impacts will need to be clearly identified and justified. In particular, if the modelling and proposed management incorporates dust suppression using water then the volume requirements and source of the water must be identified, particularly for early stages of construction and operations where mining void water and stored water from storm runoff may not be available.

Greenhouse gas emissions

The EA should include a comprehensive assessment of, and report on, the project's predicted greenhouse gas emissions (tCO_{2e}). Emissions should be reported broken down by:

- a) direct emissions (scope 1 as defined by the Greenhouse Gas Protocol – see reference below),
- b) indirect emissions from electricity (scope 2), and
- c) upstream and downstream emissions (scope 3)

before and after implementation of the project, including annual emissions for each year of the project (construction, operation and decommissioning).

If relevant, greenhouse emissions intensity (per unit of production) should be compared before and after the project. Emissions intensity should be compared with best practice if possible.

The emissions should be estimated using an appropriate methodology, in accordance with NSW, Australian and international guidelines (see below).

The EA should identify which emissions would be covered by the Federal Government's proposed Carbon Pollution Reduction Scheme (CPRS) once commenced.

The proponent should also evaluate and report on the feasibility of measures to reduce greenhouse gas emissions associated with the project, concentrating on emissions not covered by the CPRS.

For emissions covered by the CPRS, any evaluation should include a consideration of expected price increases due to CPRS. This could include a consideration of energy efficiency opportunities or undertaking an energy use audit for the site.

The proponent should also identify if there are any cost-effective opportunities to reduce scope 3 emissions (eg by using different methods of supply or distribution).

Impacts of noise and vibration

The development should be designed so that the mine premises and associated activities comply with the NSW Government's *Industrial Noise Policy* (INP) and the Australia and New Zealand Environmental Council's *Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration*. Please note that the recently released publication "*Interim Construction Noise Guideline, DECC 2009*" has advised that construction noise from mining and quarrying needs to be assessed and considered as operational noise under the INP.

Noise impacts associated with road haulage off the defined premises will need to be assessed against the DEC's guidance document '*NSW Environmental Criteria for Road Traffic Noise (EPA, 1999)*'

Sleep disturbance as a result of mine activities, including road haulage on the private premises needs to be fully assessed.

Modifying factor adjustments as outlined in section 4 of the INP need to be fully considered, particularly low frequency noise from locomotive operation, impulsive and tonal noise sources.

A key issue in the Gunnedah Basin is that an adequate assessment of impact of inversions be undertaken, using if available, real temperature lapse rate data as outlined in section E of the INP. Anecdotal evidence from existing mining operations suggests that inversions greater than the default of 3°C/100m are a feature of the area exacerbating noise impacts. This issue needs to be fully evaluated in the EA.

Impacts on water quality and quantity

The Department recommends that a water balance be prepared to model water management through the life cycle of the mine. A detailed water management plan will be required for control of clean water, sediment laden water from disturbed areas and potentially saline/ contaminated water from mining operations and groundwater seepage into the mining void.

Any modifications to existing discharge points will need to be identified with estimates of the frequency and volume of discharges and likely water quality discharges for key pollutants (but not limited to):

- Total dissolved and suspended solids;
- Heavy metals;
- Grease and oil;
- Nutrients;
- pH
- Total organic carbon; and
- Conductivity (salts)

The EA should consider any proposed discharge in terms of NSW Water quality and river flow objectives and utilising the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000). In addition, the Namoi Catchment Action Plan (CAP) objectives should be used to guide discharges including reference to the NSW Salinity Strategy end of catchment salt concentration and load targets. Discharges of salt to the Namoi River, including potential lateral seepage and inputs to deep drainage, from land application, need to consider green offsets with an objective of no net impact from the development.

An assessment of potential water quality impacts on groundwater resources must also be undertaken. An assessment of likely water quality and frequency of discharges from the final mining void following rehabilitation must also be undertaken. The proponent must demonstrate that options for minimising the final mine void have been identified and that discharges from the mining void will meet ambient water quality targets and stored mine void water quality will meet requirements for proposed future land-use on the premises. An objective of no final mine void should also be fully evaluated.

If there is proposed to be beneficial reuse of mine water, assessment should be undertaken against the DECC's "*Environmental Guidelines: Use of Effluent by Irrigation*." The key issue will be management of salt in any effluent reuse areas to ensure long term sustainability of the reuse area. Treatment of water to reduce salt levels may be required and should be evaluated. Management of brine and residual salt would then need to be fully assessed.

Impacts on biodiversity and specifically threatened species and their habitat

The Department notes that the modification to the open cut and norther emplacement area will encroach on already approved biodiversity offset areas. The proponent will need to consider replacement of these offset areas and also directly assessing the additional loss of biodiversity as an offset in it's own right. It is noted that there may be opportunity to utilise the Whitehaven Regional offset area and assess the impacts using the Biobanking Assessment Methodology.

Generally, steps in the assessment in accordance with the Part 3A threatened species guidelines includes:

1. A field survey of the site should be conducted and documented in accordance with the gazetted draft *Guideline for Threatened Species Assessment* and the document "Threatened Biodiversity Assessment – Guidelines for Developments and Activities" (Working Draft) (DEC 2004)
2. Likely impacts on threatened species and their habitat need to be assessed, evaluated and reported on. The assessment should specifically report on the considerations listed in Step 3 of the draft guideline.
3. Describe the actions that will be taken to avoid or mitigate impacts or compensate for unavoidable impacts of the project on threatened species and their habitat. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
4. Describe the extent of loss of any native vegetation and a strategy to offset any losses to ensure maintenance of, or improved outcome for biodiversity.
5. The EA needs to clearly state whether it meets each of the key thresholds set out in Step 5 of the guideline.

The Department also understands that the proponent is using the Biobanking Assessment Methodology (BAM) to assist in assessing the biodiversity values within the project area and potentially to guide and inform appropriate offsets for the development.

The EA must consider the corridor values or connective importance of any vegetation on the subject land. The Department prefers that vegetation on adjoining land that exhibits these corridor values should be retained and, where necessary, rehabilitated. The final rehabilitation objectives, with appropriate performance monitoring against rehabilitation objectives, should be clearly defined in the EA.

Impacts on Aboriginal cultural heritage values

1. The EA should address and document the information requirements set out in the draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* involving surveys and consultation with the Aboriginal community.
2. Identify the nature and extent of impacts on Aboriginal cultural heritage values across the project area.
3. Describe the actions that will be taken to avoid or mitigate impacts or compensate to prevent unavoidable impacts of the project on Aboriginal cultural heritage values. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
4. The EA needs to clearly demonstrate that effective community consultation with Aboriginal communities has been undertaken in determining and assessing impacts, developing options and making final recommendations.

Impacts of the project on Native Vegetation.

The EA needs to address the potential impact on native vegetation, specifically:

1. The hectares of native vegetation that will have to be cleared to accommodate mining for the extension project;
2. The floristics of the botanical communities of native vegetation that will need to be cleared;
3. The extent of native vegetation on the site which may be remnant vegetation, protection regrowth or non-protected regrowth as defined by the Native Vegetation Act 2003;
4. The requirement to develop suitable offset(s) to improve or maintain environmental outcomes for the lawful clearing of native vegetation, in relation to four environmental values: water quality, soils, salinity and biodiversity (including threatened species).

Attachment B - Guidance Material

1. *Assessing Environmental Impacts*

Air quality

- Protection of the Environment Operations (Clean Air) Regulation 2002
- Approved Methods for the Sampling and Analysis of Air Pollutants in NSW
- Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales
- (Technical Framework: Assessment and Management of Odour from Stationery Sources in NSW, November 2006.

Greenhouse gas emissions

- The Greenhouse Gas Protocol: Corporate Standard, World Council for Sustainable Business Development & World Resources Institute
<http://www.ghgprotocol.org/standards/corporate-standard>
- National Greenhouse Accounts (NGA) Factors, Australian Department of Climate Change (Latest release), <http://climatechange.gov.au/workbook/index.html>

Noise and vibration

- NSW Industrial Noise Policy (EPA, 1999)
- NSW Environmental Criteria for Road Traffic Noise (EPA, 1999)
- Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZECC 1990)
- Interim Noise Construction Guidelines (DECC 2009)
- Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects, 2007.
- Assessing Vibration: a Technical Guideline, DECC, 2006.

Water and Soils

Water quality

- National Water Quality Management Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000)
- NWQMS Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC 2000)
- Water Quality and River Flow Objectives for the Namoi River Catchment (DEC, 2006) <http://www.environment.nsw.gov.au/ieo/Namoi/index.htm>
- Namoi River Catchment Action Plan (CAP)

Waste water

- National Water Quality Management Strategy: Guidelines for Sewerage Systems - Effluent Management (ARMCANZ/ANZECC 1997)
- National Water Quality Management Strategy: Guidelines for Sewerage Systems – Use of Reclaimed Water (ARMCANZ/ANZECC 2000)
- Environmental Guidelines for the Utilisation of Treated Effluent by Irrigation (NSW DEC 2004)

Stormwater

(note: some of these documents will be revised in 2006)

- Managing Urban Stormwater: Soils and Construction 4th Edition (Landcom 2004)
- Managing Urban Stormwater: Soils and Construction – Vol 2E Mines and Quarries, 2008.
- Managing Urban Stormwater: Source Control (EPA 1998)
- Managing Urban Stormwater: Treatment Techniques (EPA 1998)

Groundwater

- State Groundwater Policy Framework Document (DLWC 1997)
- The NSW State Groundwater Quality Protection Policy (DLWC 1998)
- (Draft) NSW State Groundwater Quantity Management Policy
- NSW State Groundwater Dependent Ecosystems Policy (DLWC, 2002)
- National Water Quality Management Strategy Guidelines for Groundwater Protection in Australia (ARMCANZ & ANZECC, 1995)

Waste

- Guideline for the Use and Disposal of Biosolids Products (NSW EPA 1997)
- Environmental Guidelines: Solid Waste Landfills (NSW EPA 1996)
- Draft Environmental Guidelines - Industrial Waste Landfilling (April 1998)
- Waste Classification Guidelines Part 1: Classifying Waste, April 2008.

2. Assessing Threatened Species Impacts

Part 3A Draft Guidelines for Threatened Species Assessment - Available from Dept of Planning

Threatened Biodiversity Assessment – Guidelines for Developments and Activities (Working Document) (DEC 2004) – Available from DEC's website at:-

<http://www.environment.nsw.gov.au/surveys/BiodiversitySuveyGuidelinesDraft.htm>

Environmental Assessment Guidelines: Flora and Fauna (Attachment C). Guidelines for the threatened species "Assessment of Significance" (known previously as the "8 part test") are available from DECC at the following web address:

<http://www.environment.nsw.gov.au/threatenedspecies/tsaguide.htm>

Biobanking methodologies and offset principles are available at:

<http://www.environment.nsw.gov.au/biobanking/>

<http://www.environment.nsw.gov.au/biocertification/offsets.htm>

3. Assessing Aboriginal Cultural Heritage Impacts

Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation - Available from Dept of Planning.

Interim Community Consultation Requirements for Applicants

<http://www.environment.nsw.gov.au/conservation/AboriginalConsultationInterimGuidelines.htm>

Aboriginal Cultural Heritage Standards and Guidelines Kit

<http://www.environment.nsw.gov.au/resources/cultureheritage/aboriginalHeritageGuidelinesKitFinal.pdf>



Department of Planning
Colin Phillips
GPO Box 39
Sydney NSW 2001
28 January 2010

Contact: Christie Jackson
Phone: 02 6701 9652
Fax: 02 6701 9682
Email: christie.jackson@dnr.nsw.gov.au

Our ref: ER20915
Your ref: MP09_0215

Dear Mr Phillips,

**Subject: Rocglen Coal Extension Project (MP09_0215)
Request for Director-General's Requirements**

I refer to your letter dated the 23 December 2009 seeking the NSW Office of Water's (NOW) Director-General's Requirements (DGRs) for the proposed extension of Rocglen Coal Mine in the Gunnedah local government area. NOW has reviewed the preliminary environmental assessment report and our requirements for the Environmental Assessment (EA) are outlined as follows:

Key Issues

The NSW Office of Water requires the Environmental Assessment (EA) for the proposal to demonstrate the following:

1. Adequate and secure water supply for the proposal.
2. Identification of site water demands, water sources (surface and groundwater), water disposal methods and water storage structures in the form of a water balance. NOW requests the proponent include methods to maximise water efficiency and hence minimise water loss on site.
3. Proposed water management on the site based on the site water balance with specific reference to the existing and proposed extraction and storage of groundwater either for consumptive or incidental purposes.
4. Existing and proposed water licencing requirements in accordance with the *Water Act 1912*, *Water Management Act 2000* and NSW Inland Groundwater Shortages Zone Order No.2 2008. All proposed groundwater works, including bores for the purpose of investigation, extraction, dewatering, testing or monitoring must be identified in the proposal.
5. An assessment of impact on adjacent licenced water users, basic landholder rights, or groundwater-dependent ecosystems.

Department of
Environment, Climate Change and Water NSW



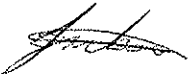
6. Requirements to intercept groundwater and predicted dewatering volumes, water quality and disposal/ retention methods.
7. An assessment of the zone of influence (cone of depression) and associated impacts on the local and regional groundwater system due to the proposed operations.
8. An assessment of the potential impact on groundwater and surface water due to the construction of any proposed water storage facilities.
9. An assessment of the potential impact on groundwater and surface water due to the operation of other infrastructure which stores or produces potential contaminants eg. fuel tanks, processing facilities and wash down areas.
10. Adequate mitigating and monitoring requirements to address surface and groundwater impacts.
11. Identification and assessment of any impacts on watercourses and drainage lines and the future management of these areas.

A search was conducted for water licences on the lots and DP's outlined in the preliminary environmental assessment report. Three bore licences for the purpose of mining and dewatering were found with 2 bore licences having a combined total between them of 120 ML and the other bore licence with a total of 700 ML.

I have attached NOW's general issues and requirements for Environmental Assessments which should be addressed and considered for the proposed development.

If you require clarification for any of the above please don't hesitate to contact me on (02) 6701 9652.

Yours sincerely,



Christie Jackson
Planning and Assessment Coordinator

NSW Office of Water

General Assessment Requirements for Major Project Proposals Under Part 3A of *Environmental Planning & Assessment Act 1979*

The NSW Office of Water (NOW) provides the following advice for consideration:

Relevant Legislation

The assessment is required to take into account the requirements of the following legislation (administered by NOW), as applicable:

- *Water Act 1912*
- *Water Management Act 2000 (WMA)*

In particular, proposals and management plans should be consistent with the Objects (s.3) and Water Management Principles (s.5) of the *WMA*.

Water Sharing Plans

Gazetted Water Sharing Plans (WSPs) prepared under the provisions of the *WMA* establish rules for access to, and the sharing of water between the environmental needs of the surface or groundwater source and water users. If the proposal is within a gazetted WSP area the assessment is required to demonstrate consistency with the rules of the WSP.

Refer to: <http://www.water.nsw.gov.au/Water-Management/Water-sharing/default.aspx>

Relevant Policies

The assessment is required to take into account the following NSW Government policies, as applicable:

- *Policy for Groundwater Transfers in Inland NSW*
- *NSW Groundwater Policy Framework Document - General*
- *NSW Groundwater Quantity Management Policy*
- *NSW Groundwater Quality Protection Policy*
- *NSW State Groundwater Dependent Ecosystem Policy*
- *NSW State Rivers and Estuaries Policy*
- *NSW Sand and Gravel Extraction Policy for Non-Tidal Rivers*
- *NSW Wetlands Management Policy*
- *NSW Farm Dams Policy*
- *NSW Weirs Policy*
- *NSW Coastal Policy*

In addition assessments should consider the following strategies:

- *NSW Salinity Strategy*
- *NSW Water Conservation Strategy*

The majority of these documents can be found at:

<http://www.water.nsw.gov.au/Water-Management/Law-and-Policy/Key-policies/default.aspx>

Guidelines

The assessment is required to take into account the following NOW Guidelines for Controlled

Activities (February 2008), as applicable:

- Riparian corridors (and associated Vegetation Management Plans)
- Watercourse crossings
- Laying pipes and cables in watercourses
- Outlet structures
- In-stream works

Refer to: <http://www.water.nsw.gov.au/Water-Licensing/Approvals/Controlled-activities/default.aspx>

Groundwater

NOW is responsible for the management of groundwater resources so they can sustain environmental, social and economic uses for the people of New South Wales.

Groundwater Source

The assessment is required to identify groundwater issues and potential degradation to the groundwater source and provide the following:

- Details of the predicted highest groundwater table at the development site.
- Details of any works likely to intercept, connect with or infiltrate the groundwater sources.
- Details of any proposed groundwater extraction, including purpose, location and construction details of all proposed bores and expected annual extraction volumes.
- Describe the flow directions and rates and the physical and chemical characteristics of the groundwater source.
- Details of the predicted impacts of any final landform on the groundwater regime.
- Details of the existing groundwater users within the area (including the environment) and include details of any potential impacts on these users.
- Assessment of the quality of the groundwater for the local groundwater catchment.
- Details of how the proposed development will not potentially diminish the current quality of groundwater, both in the short and long term.
- Details on preventing groundwater pollution so that remediation is not required.
- Details on protective measures for any groundwater dependent ecosystems (GDEs).
- Details of proposed methods of the disposal of waste water and approval from the relevant authority.
- Assessment of the need for an Acid Sulfate Management Plan (prepared in accordance with ASSMAC guidelines).
- Assessment of the potential for saline intrusion of the groundwater and measures to prevent such intrusion into the groundwater aquifer.
- Details of the results of any models or predictive tools used.

Where potential impact/s are identified the assessment will need to identify limits to the level of impact and contingency measures that would remediate, reduce or manage potential impacts to the existing groundwater resource and any dependent groundwater environment or water users, including information on:

- Details of any proposed monitoring programs, including water levels and quality data.
- Reporting procedures for any monitoring program including mechanism for transfer of information.
- An assessment of any groundwater source/aquifer that may be sterilised as a consequence of the proposal.
- Identification of any nominal thresholds as to the level of impact beyond which remedial measures or contingency plans would be initiated (this may entail water level triggers or a

- beneficial use category).
- Description of the remedial measures or contingency plans proposed.
- Any funding assurances covering the anticipated post development maintenance cost, for example on-going groundwater monitoring for the nominated period.

Licensing

All proposed groundwater works, including bores for the purpose of investigation, extraction, dewatering, testing or monitoring must be identified in the proposal and an approval obtained from NOW prior to their installation.

Groundwater Dependent Ecosystems (GDEs)

The assessment is required to identify any impacts on GDEs. GDEs are ecosystems which have their species composition and natural ecological processes wholly or partially determined by groundwater. GDEs represent a vital component of the natural environment. GDEs can vary dramatically in how they depend on groundwater from having occasional or no apparent dependence through to being entirely dependent. GDEs occur across both the surface and subsurface landscapes ranging in area from a few metres to many kilometres. Increasingly, it is being recognised that surface and groundwaters are often interlinked and aquatic ecosystems may have a dependence on both.

Ecosystems that can depend on groundwater and that may support threatened or endangered species, communities and populations, include:

- Terrestrial vegetation that show seasonal or episodic reliance on groundwater.
- River base flow systems which are aquatic and riparian ecosystems in or adjacent to streams/rivers dependent on the input of groundwater to base flows.
- Aquifer and cave ecosystems.
- Wetlands.
- Estuarine and near-shore marine discharge ecosystems.
- Fauna which directly depend on groundwater as a source of drinking water or that live within water which provide a source.

The *NSW Groundwater Dependent Ecosystem Policy* provides guidance on the protection and management of GDEs. It sets out management objectives and principles to:

- Ensure the most vulnerable and valuable ecosystems are protected.
- Manage groundwater extraction within defined limits thereby providing flow sufficient to sustain ecological processes and maintain biodiversity.
- Ensure sufficient groundwater of suitable quality is available to ecosystems when needed.
- Ensure the *precautionary principle* is applied to protect GDEs, particularly the dynamics of flow and availability and the species reliant on these attributes.

A number of gazetted WSP list and map priority GDEs and set out the management strategies and actions for sharing and protecting groundwater quality, quantity and dependent ecosystems.

Surface Water

NOW is responsible for the sustainable management of rivers, estuaries, wetlands and adjacent riverine plains.

Watercourse/Riparian

The assessment is required to consider the impact of the proposal on the watercourses and associated riparian vegetation within the site and provide the following:

- Identify the sources of surface water.
- Details of stream order (using the Strahler System).
- Details of any proposed surface water extraction, including purpose, location of existing pumps, dams, diversions, cuttings and levees.
- Detailed description of any proposed development or diversion works including all construction, clearing, draining, excavation and filling.
- An evaluation of the proposed methods of excavation, construction and material placement.
- A detailed description of all potential environmental impacts of any proposed development in terms of vegetation, sediment movement, water quality and hydraulic regime.
- A description of the design features and measures to be incorporated into any proposed development to guard against long term actual and potential environmental disturbances, particularly in respect of maintaining the natural hydrological regime and sediment movement patterns and the identification of riparian buffers. (See note below)
- Details of the impact on water quality and remedial measures proposed to address any possible adverse effects.

The *Rivers and Foreshores Improvement Act 1948 (RFIA)* has now been repealed and the controlled activity provisions in the *WMA* have commenced. The provisions relating to controlled activities replaced the *RFIA* from 4 February 2008. Riparian corridors form a transition zone between terrestrial and aquatic environments and perform a range of important environmental functions. The protection or restoration of vegetated riparian areas is important to maintain or improve the geomorphic form and ecological functions of watercourses through a range of hydrologic conditions in normal seasons and also in extreme events.

Although Part 3A Major Projects are exempt from requiring a controlled activity approval (s91 of *WMA*), the assessment is required to take into account the objectives and provisions of relevant legislation and guidelines.

Note: Recommended Core Riparian Zones (as applicable):

- Minimum of 10m for any intermittently flowing 1st order watercourse;
- 20m for any permanently flowing 1st order watercourse or any 2nd order watercourse;
- 20m – 40m (merit based assessment) for any 3rd order or greater watercourse.

[Refer to NOW Guidelines for Controlled Activities (February 2008) – Riparian Corridors available via: <http://www.water.nsw.gov.au/Water-Licensing/Approvals/Controlled-activities/default.aspx>

Water Management Structures/Dams

NOW is responsible for the management and licensing of these structures under water legislation. If the proposal includes existing or proposed water management structures/dams, the assessment is required to provide information on the following:

- Date of construction (for existing structure/s).
- Details of the legal status/approval for existing structure/s.

- Details of any proposal to change the purpose of existing structure/s.
- Details if any remedial work is required to maintain the integrity of the existing structure/s.
- Clarification if the structure/s is on a watercourse.
- Details of the purpose, location and design specifications for the structure/s.
- Size and storage capacity of the structure/s.
- Calculation of the Maximum Harvestable Right Dam Capacity (MHRDC).
- Details if the structure/s is affected by flood flows.
- Details of any proposal for shared use, rights and entitlement of the structure/s.
- Details if the proposed development/subdivision has the potential to bisect the structure/s.

NOW's Farm Dams Assessment Guide provides details on harvestable rights and the calculation of the MHRDC. Refer to: <http://www.water.nsw.gov.au/Water-Licensing/Basic-water-rights/Harvesting-runoff/Harvesting-runoff/default.aspx>

Basic Landholder Rights

The *WMA* identifies Basic Landholder Rights (BLRs) for access to water whereby landholders over an aquifer or with river or lake frontage can access water for domestic (household) purposes or to water stock without the need for a water licence (although a works approval may still be required). This has the potential to impact inequitably on existing licensed water users (under a WSP) in the case where riparian frontage continues to be subdivided, creating new basic rights for water extraction. If this is an issue for the proposal the assessment should identify any potential for creation of new BLRs along the frontage to major waterways or over any sensitive aquifers. For those subdivisions fronting rivers/lakes, innovative subdivision design which allows the creation of additional lots without direct river/lake frontage or utilises collective or community title to manage the use of any existing BLR could provide a satisfactory way of managing this issue whilst still allowing for subdivision. Subdivisions over a sensitive aquifer however, may be more limited in using this approach.

Sustainable Water Supply

Many gazetted WSPs to-date have identified particular surface and groundwater systems that are currently over-allocated (that is, water licence volumes issued to landholders operating in these catchments exceed the sustainable volumes/flows within these systems). In the case of over-allocation, the systems have subsequently been embargoed and no new water licences are to be issued within these catchments. Any new or expanded development within such catchments will therefore be unable to obtain any new water entitlements directly and will have to enter the water trading market (if available within that catchment) to seek additional water. Therefore, there can be no guarantees of obtaining additional water via this mechanism and there is the potential of restrictions on further development within such catchments. Whilst there is provision in the *WMA* to allow for limited growth in Town Water Supplies (TWS) this could still impact subsequently on other water users.

The assessment is required to address the issue of provision of a sustainable water supply for any project proposal. The assessment should include Water Management Plans detailing how a sustainable and efficient water supply can be sourced and implemented with minimal reliance on accessing valuable surface and groundwater resources. Through the implementation of BASIX,

Integrated Water Cycle Management and Water Sensitive Urban Design, any proposed development must also be able to exhibit high water use efficiency. Access to information on sustainability can be found via: http://www.deus.nsw.gov.au/business_industry.asp



Our Reference: 06/7681
OUT10/1482
8 February 2010

Mr Colin Phillips
Senior Planner Mining
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Mr Phillips

**Rocglen Coal Extension Project (09_0215)
Director General Requirements for EA**

I refer to your letter dated 23 December 2009 requesting input into the Director General Requirements (DGRs) for the above project.

Industry & Investment NSW (I&I NSW) provide the following comments which are directed at specific areas of responsibility to assist in the framing of Director-General's requirements for an Environmental Assessment report (EA) for this proposal.

MINING TITLES

As coal is a prescribed mineral under the *Mining Act 1992*, the proponents are required to hold appropriate mining titles from I&I NSW in order to mine this mineral. The proposed mine extension is partly within mining lease 1620 (ML1620) currently held by Whitehaven Coal Limited. I&I NSW notes however that the northern extension of the mine footprint to include the expansion of the Northern Emplacement area extends outside the area of the current ML 1620.

Section 6 of the *Mining Amendment Act 2008*, which is expected to be implemented later in 2010, will require a current mining lease to cover the Northern Emplacement Area.

COAL RESOURCES

The proponent is required to submit to I&I NSW a detailed Resource/Reserve Statement for the project. This Resource/Reserve Statement should include an overview of:

- The exploration and geology of the project area.
- Coal seam geology and coal quality.
- Estimated in situ coal resources for all seams.
- Recoverable and Marketable Coal Reserves.

- Limits of proposed mining and parameters used to define these limits.

The resource and reserve estimates should be in accordance with the “JORC Guidelines for the Estimation and Reporting of Australian Black Coal Resources and Reserves”.

I&I NSW requires that this statement be submitted in digital format prior to the completion of the EA. The statement would be confidential to the Department.

The EA should include a brief summary of the information contained in the Resource/Reserve Statement.

ENVIRONMENTAL

As part of the EA, the proponent should provide a detailed rehabilitation strategy which addresses the following:

- Describe feasible rehabilitation objectives for the project, including the post-mining land use(s) and the post-mining landforms (conceptual plan) for each domain within the project. Describe the outcomes of any relevant stakeholder consultation and any alternatives that were considered and why they were rejected.
- Describe how each rehabilitation objective complies with relevant Government legislation or plans and describe the potential for integrating the rehabilitation strategy with any other offset (or conservation strategies) in the region.
- Identify each rehabilitation domain and propose strategic completion criteria for each domain having regard to the various stages of rehabilitation and outline proposed timeframes for progressive rehabilitation.
- Outline the proposed rehabilitation techniques, monitoring and research programs.
- Describe any post-rehabilitation maintenance requirements for the project site and how these will be managed.

AGRICULTURE

I&I NSW encourages an integrated and sophisticated approach to the pasture and grazing management of lands associated with mining titles. The EA should include the:

- Predicted potential and cumulative environmental and socio-economic impacts on agricultural activities.
- Potential opportunities for sustainable agricultural production on land under the control of the proponent during and post mining.

- Key proposals to ensure such outcomes. For instance; if agricultural land use is to be retained the EA should include:
 - The proportion / area of the mining site to be retained as grazing lands
 - The general approaches that would be adopted to ensure the sustainable management of cleared pasture areas and to retain / enhance productive land
 - Management plans for pasture management, the control of weeds and grazing management.

FISHERIES CONSERVATION AND AQUACULTURE

I&I NSW Fisheries Conservation and Aquaculture Branch is responsible for managing fish (including aquatic invertebrates), and fish habitat throughout NSW under the provisions of Part 7 of the *Fisheries Management Act 1994* (FM Act). I&I NSW are also responsible for the management of threatened fish, populations and ecological communities according to the provisions of Part 7A of the *Fisheries Management Act 1994*.

The EA should specifically address impacts on the aquatic ecology as proposed below;

AQUATIC ECOLOGICAL ASSESSMENT

The EA should include:

- a topographic map of the locality at a scale of 1:25,000 or less detailing the location of all component parts of the proposal, any areas of aquatic habitat, and aquatic habitat likely to be impacted.
- description and maps of aquatic habitat areas (creeks and wetlands) within the study area including mapping and description of aquatic and riparian vegetation
- hydrological information of watercourses such as bed substrate, and flow duration.
- the extent of aquatic habitat removal or modification which may result from the proposed development
- discuss the potential impact of the modification or removal of habitat.
- environmental offsets or compensation for any loss of aquatic habitat
- aspects of the management of the proposal which relate to impact minimisation eg Environment Management Plans.

HYDROLOGICAL IMPACTS

- Assessment of likely impacts on surface water hydrology and groundwater hydrology including the capture of surface water or the redirection of surface water.
- The impacts of altered hydrology on associated aquatic ecosystems
- Monitoring of groundwater and surface water interactions to ensure that no negative impacts on surface water quantity or quality.
- Assessment of long term impacts on surface water and associated aquatic ecological impacts
- Potential amelioration of impacts

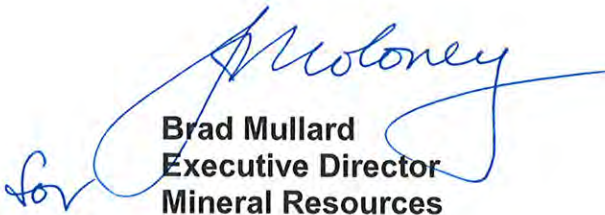
BUFFER ZONES

I&I NSW support the incorporation of riparian buffers surrounding aquatic habitats. Details of existing and proposed buffer zones surrounding the waterway system should have been mapped in detail and included in the Environmental Assessment. I&I NSW advocate incorporation of riparian buffer zones lined with native vegetation adjacent to drainage lines and creeks in accordance with I&I NSW *Policy and Guidelines Aquatic Habitat Management and Fish Conservation 1999* available on the Department's website at <http://www.dpi.nsw.gov.au/publications/aquahab.htm>.

The environmental assessment process should identify how well this riparian buffer zone will be protected and identify any inconsistencies with I&I NSW policy requirements where areas of riparian buffer zones can be improved or even remediated through revegetation.

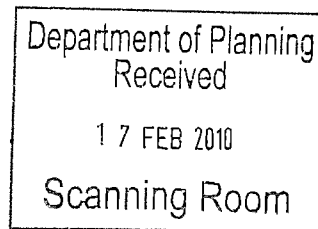
Should you have any enquires regarding this matter please contact Julie Moloney, Principal Adviser, Development Coordination on (02) 4931 6549.

Yours sincerely


Brad Mullard
Executive Director
Mineral Resources



Colin Phillips
Senior Planner
NSW Planning
22-33 Bridge Street
SYDNEY NSW 2000



Gunnedah Shire Council. Rocglen Coal Extension Project (09_0215).

Dear Sir

Reference is made to your letter dated 23 December 2009 to the Roads and Traffic Authority (RTA) concerning the proposed extension to the existing Belmont Mine.

At present road works are about to commence for the Kamilaroi Highway and its junctions with Bluevale Road and the Coal Loader Road to cater for the impact of the existing approved mines that use this route, as required by the previous conditions of consent.

As it appears that there will be no increase in traffic generation the previous conditions would be adequate for the proposed extension to the mine.

If a revised study is considered necessary then it should include a review of the transport route that assesses the impacts on road safety, traffic management, pavements, infrastructure and transport. The criteria listed in Table 2.1 of the RTA's Guide to Traffic Generating Developments should be used. The following specific issues also need to be considered:

- i. Description of the route, operations, junctions and any constraints.
- ii. Vehicle types and traffic data.
- iii. Sight distances at public and private junctions or accesses.
- iv. Pavement widths and condition.
- v. Provisions for turning traffic at junctions and accesses.
- vi. Speed management.
- vii. Impact on any existing town or school bus routes.
- viii. Existing pedestrian and bicycle networks.
- ix. Servicing and parking arrangements.
- x. Any existing or proposed road maintenance arrangements.
- xi. Impact and mitigation measures for any road traffic noise and dust.

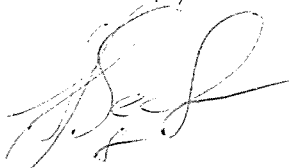
The RTA would recommend that AUSTROADS guidelines should be used to assess these issues.

At this time the RTA does not envisage that any further road works will be required on the Kamilaroi Highway for the proposed development.

A copy of the RTA's letter for the Canyon Hub study is attached for your information.

For any further enquiries please contact Greg Sciffer (Ph: 02 66401344) for advice.

Yours faithfully

A handwritten signature in black ink, appearing to read 'David Bell', with a stylized flourish at the end.

15 FEB 2010

David Bell
Regional Manager, Northern Region

File No: 180NTH10/00024
Your reference: Lt_WHM03-001_ID-RTA 20100120
Gregory Sciffer

Ms Eryn Bath
GSS Environmental
PO Box 907
HAMILTON NSW 2303

Proposed Canyon Hub Project. Hoads Lane. Boggabri.

Dear Sir

Reference is made to your letter dated 20 January 2010 to the Roads and Traffic Authority (RTA) concerning the proposed development.

At present road works are about to commence for the Kamilaroi Highway and its junctions with Bluevale Road and the Coal Loader Road to cater for the impact of the existing approved mines that use this route.

Any study should include a review of the transport route that assesses the impacts on road safety, traffic management, pavements, infrastructure and transport. The criteria listed in Table 2.1 of the RTA's Guide to Traffic Generating Developments should be used. The following specific issues also need to be considered:

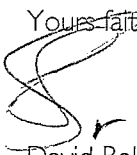
- i. Description of the route, operations, junctions and any constraints.
- ii. Vehicle types and traffic data.
- iii. Sight distances at public and private junctions or accesses.
- iv. Pavement widths and condition.
- v. Provisions for turning traffic at junctions and accesses.
- vi. Speed management.
- vii. Impact on any existing town or school bus routes.
- viii. Existing pedestrian and bicycle networks.
- ix. Servicing and parking arrangements.
- x. Any existing or proposed road maintenance arrangements.
- xi. Impact and mitigation measures for any road traffic noise and dust.

The RTA would recommend that AUSTROADS guidelines should be used to assess these issues.

At this time the RTA does not envisage that any further road works will be required for the Kamilaroi Highway for the proposed development.

For any further enquiries please contact Greg Sciffer (Ph: 02 66401344) for advice.

Yours faithfully



David Bell
Regional Manager, Northern Region

- 5 FEB 2010

Eryn Bath

From: Carl Dumbleton [Carl.Dumbleton@planning.nsw.gov.au]
Sent: Wednesday, 3 February 2010 3:34 PM
To: Eryn Bath
Subject: Fwd: Rocglen Coal Extension Project (09_0215)

Eyrn,

please find below Gunnedah Council's advice in regards to the DGRs.

Regards,

Carl Dumbleton
Planner
Industry & Mining
Department of Planning NSW
22-33 Bridge Street, Sydney
2000.
Tel: (02) 9228 6283
Fax: (02) 9228 6331

>>> "Hunt - Carolyn" <carolynhunt@infogunnedah.com.au> 28/01/2010 11:16 am >>>

Carl,

In regard to the Rocglen Coal Extension Project (09_0215), Gunnedah Shire Council's requirements for the extension project would be essentially the same as the original proposal - being, that the Wean Road deviation be sealed throughout and dedicated as the public Wean Road. The existing Wean Road for the deviation section would need to be closed.

Regards,
Carolyn

Carolyn Hunt

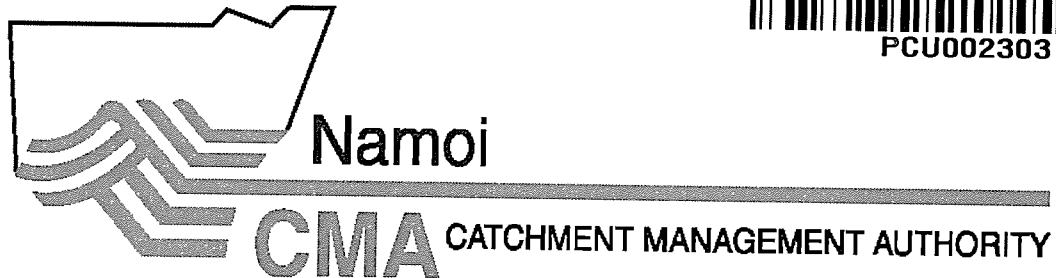
Manager Development & Planning | Gunnedah Shire Council
PO Box 63, GUNNEDAH NSW 2380
T: (02) 6740 2122 | F: (02) 6740 2129 | M: 0427 214 124
E: carolynhunt@infogunnedah.com.au

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PCU002303



29 January 2010

Department of Planning
GPO Box 39
Sydney NSW 2001

Department of Planning
Received
01 FEB 2010
Scanning Room

Attention: Mr Colin Phillips, Major Development Assessment

Dear Colin

Re: Rocglen Coal Extension Project (09_0215) – Preliminary Environmental Assessment - DG Requirements

Thank you for the opportunity to provide input into the Director General's requirements for Environmental Assessment for the Rocglen Coal Extension Project.

Namoi CMA is primarily interested in major developments such as the Rocglen Coal Extension Project from the perspective of catchment impacts and benefits.

Namoi CMA has two documents which guide development and activities, including mining, in the Catchment:

- Namoi Catchment Action Plan 2007 (Namoi CAP), and
- Extractive Industries Policy (NCMA EIP 2009) for the Namoi Catchment.

The Namoi CAP is a strategic plan which guides natural resource management in the Namoi Catchment. The major natural resource management assets of the Catchment are its landscapes, surface and groundwater ecosystems, native plants and animals and the people and their communities. Within each of these assets, management targets have been established that address issues identified as having significant impact on these catchment assets. There are 13 Management targets within the Namoi CAP which is available from our website (www.namoi.cma.nsw.gov.au)

Namoi CMA would like the respective management targets considered and addressed by the proponent in the EA when assessing the impacts, mitigation measures and risks associated with each environmental and community issue.

The NCMA EIP 2009 details our position on mining in the Namoi Catchment. The policy contains 10 statements which we would also like the proponent to consider

when preparing the EA. A copy of the NCMA EIP 2009 is attached as Annexure 1. Within the policy there is a strong emphasis on risk management assessment of the cumulative impacts, monitoring and evaluation and consideration of the Namoi CAP.

1. Specific Requirements

1.1 Soils and Land Capability

The EA needs to:

- Address the potential short term and long term impacts on the soils within the development area. Issues that need to be addressed are the potential for soil degradation, soil suitability for rehabilitation, and potential erosion impacts. Measures to manage soils to prevent degradation and methods to monitor and evaluate soils need to be thoroughly addressed in the EA.
- Consider current and proposed land use, capability and suitability especially in consideration of the management targets within the Namoi CAP:
 - MTL1 states that 'From 2006, increase the area of land managed according to BMP'; and
 - MTL2 states that 'From 2006, increase the area of land used in accordance with land capability'.
- Undertake a thorough pre and post mining risk assessment with respect to long term impacts on soils and land capability both within the mine site and within the Catchment.

1.2 Surface and Ground Water

The EA needs to:

- address the potential impacts on surface and ground water quality and quantity, especially with regard to clean water, dirty water and contaminated water. Impacts need to be identified and mitigation measures and safeguards addressed. Water treatment proposals need to be completely addressed including risk assessments and long term impacts addressed;
- address the potential impacts on groundwater, especially with regard to likely quantities and qualities of groundwater intercepted, treatment and disposal methods, likely impacts on the availability of groundwater to other uses including river systems and GDE's;
- include a detailed water balance including both surface and groundwater interceptions, extractions, water uses including coal handling and processing, reject disposal, etc and the interactions with Water Sharing Plans;
- consider the impacts and safeguards especially in consideration of the management targets within the Namoi CAP:
 - MTW2 states that 'From 2006, maintain or improve surface and ground water quality suitable for irrigation, raw drinking water and aquatic ecosystem protection at Gunnedah, Narrabri and Goangra;.....'

- undertake a thorough pre and post mining risk assessment with respect to long term impacts on surface and ground water both within the mine site and within the Catchment.

1.3 Flora and Fauna

The EA should address and consider the following:

- the potential impacts on both fauna and flora from clearing, specifically fragmentation of vegetation, destruction of habitat, corridor loss, edge effects, increased predation and weed introduction;
- Regional Vegetation Communities (NCMA 2009) and the established benchmarks, especially when addressing rehabilitation and revegetation;
- riparian areas need to be identified, terrestrial and aquatic impacts assessed and mitigation measures and safeguards addressed;
- significant natural features including threatened species, geological features and aboriginal cultural heritage issues. Potential impacts need to be identified and mitigation measures and safeguards addressed; and
- thoroughly explore options for Biodiversity offset areas.

The EA needs to consider the impacts and safeguards especially in consideration of the management targets within the Namoi CAP:

- MTB1 states that 'From 2006, maintain or improve the extent, distribution and condition of existing native vegetation of the catchment';
- MTB2 states that 'From 2006, support the recovery of priority fauna populations, and Threatened Species, Populations and Communities'; and
- MTB3 states that 'From 2006, reduce the economic and environmental impacts of targeted invasive plants and animals.'

The EA needs to undertake a thorough pre and post mining risk assessment with respect to long term impacts on fauna and flora both within the mine site and within the Catchment.

1.4 Cultural Heritage

The EA should address and consider the potential impacts on aboriginal cultural heritage especially with regard to clearing and potential loss of significant aboriginal cultural sites. Mitigation measures and safeguards need to be addressed and assessed.

Additionally, the EA needs to:

- consider the impacts and safeguards especially in consideration of the management targets within the Namoi CAP:

- MTP1 states that 'From 2006, continually improve people's recognition of, and attitude to, NRM issues and appropriate management practices',
- undertake a thorough pre and post mining risk assessment with respect to long term impacts on cultural heritage both within the mine site and within the Catchment.

1.5 Traffic, Transport, Noise, Vibration, Air Quality, Visual Amenity, Site services and Waste management

The EA should address and consider the potential impacts, mitigation measures and safeguards on all of the above issues especially with regard to impacts on both the local and broader catchment community.

The EA needs to consider the impacts and safeguards especially in consideration of the management targets within the Namoi CAP:

- MTP3 states that 'From 2006, improve the economic stability and well being of people in the Namoi catchment'.

The EA needs to undertake a thorough pre and post mining risk assessment with respect to long term impacts of the above issues on local and catchment communities.

1.6 Rehabilitation

The EA needs to consider and address the following:

- proposed methods of rehabilitation, land uses and final landforms which should be similar to current land uses and landforms. Detailed plans of proposed landforms including the location and specifications of emplacements and voids should be included in the EA;
- impacts of clearing, access and rehabilitation on the current and proposed long-term land uses. These activities have the potential to result in soil degradation and erosion and off site sedimentation, reduced water quality, weed invasion and changes to vegetation communities and therefore altered land use and management;
- reject disposal and the methods for rehabilitation and long term land uses, especially with regards to the potential for salinity and pH impacts on soils, surface and groundwater;
- measures to mitigate impacts and safeguard against impacts need to be addressed in the EA.

The EA needs to consider the impacts and safeguards especially in consideration of the following management targets in the Namoi CAP:

- MTL1 states that 'From 2006, increase the area of land managed according to BMP'; and

- MTL2 states that 'From 2006, increase the area of land used in accordance with land capability'.
- MTB1 states that 'From 2006, maintain or improve the extent, distribution and condition of existing native vegetation of the catchment';
- MTW2 states that 'From 2006, maintain or improve surface and ground water quality suitable for irrigation, raw drinking water and aquatic ecosystem protection at Gunnedah, Narrabri and Goangra;.....';
- MTP3 states that 'From 2006, improve the economic stability and well being of people in the Namoi catchment'.

The EA needs to undertake a thorough pre and post mining risk assessment with respect to long term rehabilitation and land uses both within the mine site and within the Catchment.

1.7 Social and Economic Considerations

The EA needs to address the potential negative and positive social and economic impacts of the development specifically on the catchment community. The cumulative social and economic impacts on the both rural and urban communities needs to be considered and mitigation measures and safeguards need to be considered.

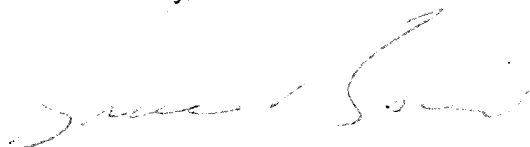
The following EA needs to consider the impacts and safeguards especially in consideration of the management target within the Namoi CAP:

- MTP3 states that 'From 2006, improve the economic stability and well being of people in the Namoi catchment'.

The EA needs to undertake a thorough pre and post mining risk assessment with respect to long term social and economic considerations both for the mine site and within the Catchment.

In concluding, if you need to discuss the matters outlined above further, please do not hesitate to contact Glenn Bailey on (02) 6742 9204.

Yours Sincerely



Bruce Brown
General Manager
Namoi Catchment Management Authority

EXTRACTIVE INDUSTRIES

OBJECTIVE

To progress a policy on extractive industries in the Namoi Valley which is consistent with Namoi Catchment Management Authority's vision "Vibrant Communities and Landscapes for the Future".

PREAMBLE

The Namoi Catchment Management Authority (Namoi CMA):

Accepts the Catchment, a discreet hydrological unit of the Murray-Darling Basin, as the most appropriate scale to effectively plan, integrate, monitor and evaluate, land and water management actions and outcomes.

Recognises that the communities within the Catchment expect the Namoi CMA to deliver environmental outcomes as identified in the Catchment Action Plan and to address significant impacts on its four key regional 'assets':

- native plants and animals;
- surface and groundwater ecosystems;
- the landscape; and
- people and their communities.

Recognises that extractive industries compete for a wide range of resources including the natural resources of land, water, air and visual amenity and, in particular, may:

- make a significant contribution to greenhouse gas emissions;
- impact on the landscape, with rehabilitation resulting in an artificial rather than natural topography and leaving visual scars, with initial mounds, terminal pits and permanently altered geological structure resulting in possible permanent land-use change;
- impact on surface runoff and rivers, physically and chemically, from the change in landform from open cut mining and subsidence from underground mining;
- impact on groundwater flows due to the interception of aquifers;
- result in clearing and loss of habitat;
- result in a severe degradation or loss of agricultural land, and displacement of some agricultural industries;

- require labour migration to the region to avoid labour shortages and/or increased labour costs;
- lead to loss of tourism income;
- impact on community health, via dust pollution generated during blasting, loading and transport of mineral products and exposure to heavy metals; and may
- result in other social impacts, such as disempowering of communities, loss of “place”, population growth followed by decline, and breakdown of social ties and community cohesion.

Recognises that the exploration for and development of extractive industries within the Catchment has the potential to deliver substantial benefits to Catchment communities for the life of the extractive activity, such as:

- provision of energy;
- direct and indirect employment, leading to:
 - regional prosperity and wealth creation;
 - retention of young people and population growth; and
 - improved infrastructure and services,
- increased local expenditure on goods and services;
- private sector funding for community development;
- increased gross national product and gross regional product;
- tax revenue streams to government.

POLICY

Namoi Catchment Management Authority has a duty to advise and make recommendations to the Australian and NSW Governments to ensure that the Catchment assets are sustained. To this end Namoi CMA:

- assumes a leadership role in advising on the impact of extractive industries in the Namoi Catchment, recognising that the NSW Government is the determining authority for mine approval and licensing;
- acknowledges that exploration for minerals, gas and energy resources shall continue;
- adopts the Precautionary Principle¹ on extractive industries in the Namoi Catchment;
- opposes new mine approvals in the Namoi Catchment in the absence of a rigorous risk management assessment of cumulative impacts on the four key regional assets;
- seeks to ensure that in-depth baseline natural resource management (NRM) databases are in place to ensure that adequate monitoring and evaluation of all extractive industry developments can take place;
- seeks to identify key Catchment assets then seeks to identify the risks to those assets;
- seeks to have the Catchment Action Plan considered during the approval process;
- supports the ten (10) International Council of Mining and Metals (ICMM) Principles;
- agrees to engage in constructive dialogue with the Australian/NSW Minerals Council on the risk management assessment together with the implementation and evaluation of the applicable ICMM principles; and
- will seek the reimbursement of public NRM investment funds, from the developer, where these investments are impacted upon by mining or exploration, for reinvestment within the Namoi Catchment to maintain or improve the four key regional assets.

¹ The Precautionary Principle is defined under Australia's 1992 Inter Governmental Agreement on the Environment as: *"Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, private and public decisions should be guided by:*

- (i) careful evaluation to avoid, wherever practical, serious or irreversible damage to the environment; and*
- (ii) an assessment of the risk weighted consequences of various options.*