



Queensland Murray-Darling Committee Inc.'s Submission on New Acland Coal Mine Stage 3 Expansion Project EIS

3 March 2014

Submission to:

Coordinator-General
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This submission is presented by the Chief Executive Officer, Geoff Penton, on behalf of the Queensland Murray-Darling Committee Inc. (QMDC). QMDC is a regional natural resource management (NRM) group that supports communities in the Queensland Murray-Darling Basin (QMDB) to sustainably manage their natural resources.

1.0 Background

QMDC's internal policy, *Mining and energy industry impacts on natural resources in the Queensland Murray-Darling Basin Policy Revised Final Draft 2011* (the QMDC Mining and Energy Policy) provides a framework for QMDC's submission on the New Acland Coal Mine Stage 3 Project (the Project) (See attached document). This policy document has been prepared by the QMDC in consultation with those communities, organisations and stakeholders QMDC is working with in the region. It is currently being reviewed to reflect QMDC's growing knowledge on coal and coal seam gas (CSG) mining activities and infrastructure.



The policy's purpose is twofold:

- to address the impacts of the mining and energy industry (the industry) on the Queensland Murray-Darling Basin's natural resources; and
- to provide a framework for best practice and policy decision-making, risk management and responses to the specific and cumulative impacts of the industry on the QMDB's natural resources.

QMDC has also identified the key risks posed by the Project against the Regional NRM Plan targets. The below named natural resource assets are identified as being at risk to the impacts caused by activities and infrastructure proposed by the proponent New Acland Coal (NAC):

- Water (surface and groundwater)
- Vegetation & Biodiversity
- Land and soils
- Air

2.0 General comments

Community expectation of NAC's engagement in the EIS process is clear. NAC, when addressing the Terms of Reference, has honestly and fully considered both the impact of the Project's individual site activities and the cumulative impact of the Project.

This submission is based on the assertion that NAC has not met this community expectation. In QMDC's opinion, NAC have failed to demonstrate with certainty that all its management and mitigation strategies will provide both adequate protection, to the natural resources, and community assets, of the QMDB. We are also concerned that the local impact of this Project contributes to a wider impact on global ecosystem services and natural resources and those international communities depending on them. This wider global impact comes back full circle to a local level because of national social, economic and environmental issues the coal mining industry must address as part of government policy commitments.

NAC have not achieved is a full appreciation of the Project's long term impacts and the damage they will have on the environment and community.

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Clearly NAC have not conducted a proper and full analysis on the cumulative impact of the Project within a regional, state and national context. There are in our opinion serious economic limitations to the Project's viability, which means it is not justified.

QMDC notes, that the Regional NRM Plan, was not seriously considered by NAC. QMDC suggests that this Plan is an invaluable tool for NAC to consider because of the strategic direction that NRM Plans offer coal mining companies in their project and field planning.

QMDC submits that the EIS does not demonstrate a comprehensive understanding of the potential impacts of the Project in relation to the impact on the region's natural resources and other assets as identified in the Regional NRM Plan and the regional communities' aspiration's for these assets.

The Regional NRM Plan provides a framework to improve the management and condition of the natural resources in the project development area. The lack of integration of the Regional NRM Plan within NAC's EMP undermines regional resource conditions and aspirational targets and does not support the actions of the regional communities to reach those targets.

Regional NRM Plans because they integrate with other regional planning activities such as the draft Regional Vegetation Management Plans (RVMP), Water Resource Plans and other regional planning instruments require NAC to invest in natural resource planning processes enabling more comprehensive NRM outcomes.

QMDC submits that the EIS neglects to fully consider and take into account the strategic direction regional NRM Plans offer NAC and the coal mining industry in their project and field planning. Due consideration would have provided NAC with the opportunity to consider its EIS in a manner that supports the coordinated delivery of natural resource management in the public interest.

QMDC urge the Coordinator-General to make a decision on this EIS that is in the public interest at a local, state and national level.

Should the Coordinator-General find the EIS lacking in crucial detail and data, and NAC fails to provide confidence that adverse impacts on strategic cropping land (SCL) and associated groundwater resources will be avoided or adequately mitigated then the Project should, in the interests of the public, not be allowed to proceed.

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QMDC, the agriculture, housing and mining industries, community and conservation groups have long demanded certainty with regards to land use planning in this region. Saying no at the outset to developments on SCL areas identified as being high environmental and social value is a much better use of time and financial resources for all concerned.

QMDC does not support NAC being given an opportunity to have a second “bite of the cherry”, namely to submit a Supplementary EIS on the impacts it will have on SCL. NAC have had ample legal opportunity to justify this Project, any extended opportunity jeopardises further the health and wellbeing of local communities who have suffered long enough.

QMDC does not support the moving of the coal heaps from Jondaryan, for a number of reasons. QMDC does not support a another contaminated site created at the new proposed siting of the coal heap. QMDC asserts the best option is to mitigate the current site by providing adequate screening and coal dust suppression methods. Additionally a novel and new economic resource could be to modify and utilise the current site as a tourism destiny once it is assessed to be feasible on economic, health and safety levels.

3.0 Specific comments

3.1 Section 3.3 Project rationale

QMDC asserts NAC fails to show how the Project is justified in terms of its strategic, economic, environmental and social implications. The Project’s status is not discussed adequately to address a range of issues relevant to a regional, state, and national context. Additionally the Project is not compatible with policy and planning trends relevant to sustainable development, environmental accounting, greenhouse gas (carbon) emission reduction, renewable energy commitments, and global market demands.

QMDC argues that the estimated benefits \$18.7 billion to Australia, \$16.7 billion to the State and \$3.9 billion to the region are estimations only. We do not believe that these estimations take into account key matters such as externalities, tax subsidies afforded to the company at the expense of public monies, the vagaries of the Australian and international energy market etc.

They certainly do not reflect the costs associated with both local and international social, human health and environmental harm. The figures offered by NAC are therefore unreliable and cannot be relied upon as a true and accurate estimation.

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QMDC asserts that NAC have failed to produce crucial technical reports that demonstrate an evaluation of alternative forms of development, and what significant weight should be given to strategies which would avoid or minimise the impacts on the region's natural resources.

Issues not considered by NAC within a regional, state and national context

The protection of the environment and the social fabric of regional communities must be the baseline from which NAC needed to start. A comprehensive understanding of the projected impacts of the Project needed to ascertain what those impacts will be on the region's natural resources and other assets as identified in a plethora of regional studies, reports and planning instruments, e.g. the Regional NRM Plan. A number of these will be referred to in more detail in following discussions.

Overall QMDC is concerned that the drive for this Project is swimming against the tide of community expectations of government. In our opinion the community expectations of government are to improve transparency of decision making, and governance, and safeguard environmental values and assets in balance with economic and social development.

Communities in the Darling Downs region are strongly advocating for development that aims to balance the protection of the natural environment whilst developing a sustainable economic platform for the region.

NAC clearly fails to address social planning issues pertinent to the region such as the long term productive capacity of agriculture including the mental health of farmers and their concerns related to business surety.

The Project in our opinion, therefore not only exacerbates land-use conflicts between mining and agriculture, it also increases the lack of confidence community has, in current statutory planning processes and instruments. NAC have not given equal consideration to social, economic and environmental interests and values.

QMDC argues that a public resource such as coal should be managed for public good. NAC could therefore better preserve that public good by addressing in balance the region's social, environmental and economic needs.



The key 'economic growth' driver of NAC is obviously biased towards expansion – there is no assessment of the boom/bust syndrome and whether this is acceptable in terms of sustainable productivity. QMDC argues that the State Government needs to slow the mining and resource industry down and protect public resources for future Australian generations. The faster it is mined, the faster it goes to other countries.

The Project specifically fails to deliver on the promise made by the LNP prior to the March 2012 election to enact 'statutory regional planning' for the purpose of giving priority agricultural areas absolute protection from mining. "If elected to government, we would quickly introduce Statutory Regional Planning Schemes to protect strategic cropping land on the Darling Downs and in the Golden Triangle" <https://lnp.org.au/local-news/darling-downs/>

NAC does not recognise the fact that agriculture contributes more to Gross Regional Product (GDP) and employment in the Darling Downs region than the mining industry. The lifespan of this Project is approximately 15 years in comparison to the much longer lifespan of the agricultural industry. Queensland's mining industry has experienced periods of high growth in the past but is currently demonstrating negative economic growth. Uncertainty envelops the long term viability of the mining industry. The Project will certainly undermine the stated election policy intent and agricultural strategy of doubling agricultural production by 2040.

NAC need to be regionally accountable to all sectors of the community with a clear focus on the public good.

For the regional economy, to run effectively and sustainably, this requires the Queensland Government to account for the finite character of natural resources, especially water and highly productive soils.

Although mining companies are developing ways to deliver goods and services more efficiently, their overall reliance on natural capital is growing in the region. Clearly NAC should have valued natural capital and realised the long term costs on the region's communities for resource use and consequential pollution in this EIS.

It has been estimated by Epstein et al (2011)¹ that the life cycle effects of coal and the waste stream generated are costing the U.S. public a third to over one-half of a trillion dollars annually. If the damages are accounted for this conservatively doubles to triples the price of electricity from coal per kWh generated, making wind, solar, and other forms of non-fossil fuel power generation, along with investments in efficiency and electricity conservation methods, economically competitive.

The State of Green Business 2013 Report by Joel Makower and the Editors of GreenBiz.com info@greenbiz.com identifies that among companies around the world “their top four environmental impacts represent about 80% of their overall footprint” and in the global view of business, that 80% comes from greenhouse gas emissions of all types (41%); water extraction — the process of taking water from any source, for irrigation, energy production, manufacturing, drinking water, or other uses (27%); acid rain and smog precursors, which include sulphur dioxide (SO_x), nitrous oxides (NO_x) and ammonia for acid rain, and NO_x and carbon monoxide for smog (7%); and dust and particles suspended in air, microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems (5%).

<http://www.greenbiz.com/research/report/2013/02/state-green-business-report-2013>

The above mentioned mix of environmental impacts is evident in the Darling Downs region and international research findings could have helped to inform this EIS. Profiles of the mining and agricultural sectors could have allowed NAC to calculate a damage cost and apply it ? to each resource and emission, so as to generate an external environmental cost profile.

The costs would then have represented the quantities of natural resources used or pollutants emitted multiplied by their environmental damage costs to the economy and the region. External costs are incurred whenever a natural resource is used or emissions are made in the region to air, land or water. The external cost of using an environmental resource, such as water, or emitting a pollutant, such as carbon dioxide, should not be the cost that is borne by the region through the degradation of the environment. This cost is rarely borne by the company that uses the resource or emits the pollutant.

¹ Paul R. Epstein, Jonathan J. Buonocore, Kevin Eckerle, Michael Hendryx, Benjamin M. Stout III, Richard Heinberg, Richard W. Clapp, Beverly May, Nancy L. Reinhart, Melissa M. Ahern, Samir K. Doshi, and Leslie Glustrom. 2011. Full cost accounting for the life cycle of coal in “Ecological Economics Reviews.” Robert Costanza, Karin Limburg & Ida Kubiszewski, Eds. *Ann. N.Y. Acad. Sci.* 1219: 73–98.



The Project has not been designed to cater for these externalities in spite of the resource industry having the potential to phenomenally increase such costs.

Makower et al. state that “the European Commission estimates that dust and particles from sources including fuel cause the premature deaths of almost 370,000 people every year and reduce life expectancy by 8 months. Air pollutants could result in €189-609bn in health costs by 2020. Measures to reduce pollutants could cost the market economy around €7.1bn annually, saving at least €42bn in health costs” (*The State of Green Business 2013 Report*).

Research in Australia also suggests that “air pollution is responsible for 2.3% of all deaths in Australia. It is estimated that air pollution causes 640 to 1400 premature deaths and almost 2000 hospitalisations per year in the Greater Sydney Metropolitan Region. Air pollution costs New South Wales around \$ 4.7 billion dollars per year in health costs.”

http://www.health.nsw.gov.au/publichealth/environment/air/air_pollution.asp

Ambient air quality data from the Upper Hunter Air Quality Monitoring Network (UHAQMN) shows that particle pollution in the Hunter Valley exceeded national standards during 2012.

In QMDC’s opinion exceedences are all too frequent in coal mining operations.

<http://www.epa.nsw.gov.au/agms/20130037HunterAir2012.htm>

The fact that these types of external costs are not apparent in the EIS means that the inherent assumptions about the economic “growth” created by the mining industry do not take into account, for example, how burning diesel for road transport generates particulates which have an adverse effect on human health and the environment.

Although increasing road traffic in the region is identified in all coal and CSG Environmental Impact Statement and Environmental Authority applications as a major social and environmental impact, the EIS does not account for the total social costs associated with this product - these will be borne by health services.

By valuing environmental impacts certainty could be advanced for the future sustainability of the region as a key part of the Queensland economy. Accounting for the damage that is done to society and human capital by pollutants and natural resource use, will progress better decisions on development which includes quantifying associated human health costs.

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“Sustainability” has taken on a new, poignant meaning, which not only aligns economic, environmental and social interests, but is also increasingly linked to reducing supply-chain risk and ensuring business continuity during disruptions, the social licence to operate in resource-stressed areas, reliable and cost-efficient energy supplies, and brand value and reputation.

Weight should be given to the serious consideration of the economic and social impacts of mining developments on agriculture. The uncertainty created by exploration, for example, has dire and immeasurable impacts such as loss of confidence in - future farm innovation and investment, succession planning, mental health stresses and so forth. Many landholders in the QMDB e.g. Oakey, Jondaryan Felton, Cecil Plains, Miles, and Chinchilla are suffering on all levels. Mining companies’ economic analyses are notoriously poor and rarely consider base case scenarios such as loss of farm production through impacts on mental health and decreasing family succession on farms.

NAC should have considered these social factors alongside climate impacts and extreme events, renewable energy opportunities, and resource efficiency. They should have also considered risk, resilience and transformative strategies as they relate to the surety of agriculture, tourism and mining investments. NAC have not taken into account how communities currently assess the responsibility of companies within their regions, in terms of the fair appropriation of local resources especially when they are scarce.


The Project is not insulating the region from turbulent times, it doesn’t align with Government’s election promises, and it does not ensure, that communities, where mining companies may be permitted by the Queensland Government to operate, will welcome that development. It has not in QMDC’s opinion helped the region’s communities to be resilient, survive and/or transform amid disruptions, climatic or political.

The EIS delivers no appreciation of how mining and agricultural activities interact in practice, other than grazing. In the region current impacts range from minimal (which might allow simultaneous operation in close proximity) to extreme (requiring demonstrative separation through time and space).

The Project is guaranteed to increase uncertainty, interpersonal conflict and the cost of doing business for all parties. In particular, it leaves resource companies exposed to the risk of widespread community backlash when they operate beyond the terms of community tolerance and NAC have failed to secure a ‘social license’ to operate within the region.

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NAC have not fully evaluated future scenarios and asked the communities they serve (and themselves), what happens if the Darling Downs devolves into an undesirable state of condition? What scenario would the region's communities prefer to be in and how can they get there? In 10 to 20 years, resiliency planning is likely to not be enough. It is therefore essential that NAC had seriously considered mechanisms for transformability in addition to resiliency when justifying the Project to affected communities.

Should the Project be implemented in its current form, the Darling Downs region may well degenerate into an undesirable state of being: with depleted natural resources; economic crises and social disharmony. If this occurs resilience will be near impossible. A better plan for the region is needed to identify specific contingency planning strategies that prepare the region for transformation.

Transformation actions required from NAC including using the EIS to look to that future (or current) untenable state of the region and anticipate what makes it unbearable and evaluate the Project's impacts within that context. For example, if communities cannot live with the pollution caused by fossil fuels extraction, production and use, government and corporate businesses have a responsibility to plan and promote alternative ways of generating power. If communities cannot live in a condition that lacks biodiversity and healthy ecosystems, it is incumbent that the State and development projects protect species and habitat immediately. Rehabilitation of soils and aquifers is not a given. The need for contingency planning by NAC should have been seriously addressed in the EIS as part of a discussion around the Project's rationale.

NAC has not provided the Darling Downs community with much needed surety nor has it successfully improved communities' capacity to change the region from any current or future undesirable state of condition to one they would like to or could live in.

NAC needs to view - incremental changes to the Project as insufficient; ignorance as unacceptable; and unpredictability as the new norm. This failure to do so is unacceptable and dangerous especially in the face of ongoing social impacts, climate extremities, market fluctuations and political uncertainties.



Listed below are key regional issues the Darling Downs region currently faces and which should have been considered in context of the viability and impact of the Project in the region:

- Agriculture and its associated industries within the Darling Downs region continue to grow with certainty and investor confidence.
- Stringent protection mechanisms for Good Quality Agricultural Land and Strategic Cropping Land Uses within the Darling Downs region.
- Opportunities for sustainable businesses that protect and improve the natural and social capital of communities in the Darling Downs region optimised.
- The growth potential of towns within the Darling Downs region is determined by the threshold limits of the natural resources of the region to provide sustainable ecosystem services.
- Provision for business activities to locate within the region where they meet the communities' expectations as determined by sustainable economic, environmental and social interests.
- The Region is able to rely on the continued capacity of water resources to provide social, economic and environmental opportunities. Improve water quality for key catchments and achieve and maintain healthy riverine ecosystems across the region and significantly reduce threats and impacts on water quality in the region. Implementation of regional water quality guidelines and the requirement to avoid or restrict discharges of contaminants in to waterways.
- Vegetation clearance that will result in unacceptable impacts on regional ecosystems will not be permitted. The Region's aim will be no net loss. Continue to limit tree clearing and implement vegetation management, particularly endangered ecosystems and ensure any offsets program requires no net loss.
- Ensure consistent action across development areas and not concentrate solely on economic growth.
- Develop a clear understanding of responsibilities and mechanism for implementation of regional outcomes at local and regional levels. Mechanisms put in place for ongoing community information sharing on regional progress.

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- Provide for the management of cultural heritage sites across multiple tenures. Develop the region's cultural site audit and mapping. Invest in the collection of cultural knowledge and ensure site management plans are developed for enhancing tourism and education potential.
- Implement a coordinated approach to waste management across Darling Downs region, e.g. a recyclables circuit. Develop incentives and disincentives for improving regional waste management. Progressive conversion of landfill/ refuse sites to waste separation centres for maximum recycling.
- Incorporate review of existing infrastructure efficiency into a regional infrastructure plan. Develop infrastructure design guidelines and implement green building design standards.
- Develop regional targets for renewable energy. Identify suitable sites for renewable energy infrastructure development and ensure electricity grid is compatible with future renewable energy options.
- Identification of threshold triggers and threshold limits to streamline the development assessment and approval process. Identification of natural assets that are at risk from cumulative impacts of development. Develop with the community a set of agreed cumulative assessment methodologies.
- Coordination of weed and pest management activities across the region. Consider opportunities for improved effectiveness of management and control strategies.
- Establish a consistent system for monitoring and reporting against regional sustainability indicators in collaboration with local government, State Government, Non-Government Organisations and industry. Develop and adopt common monitoring and information sharing arrangements for key regional parameters consistent with the NRM regional plan.
- Improve the region's science capacity and knowledge transfer systems to ensure high levels of adoption of research outcomes. Future food security and regional food production capacity requires ongoing Research, Development and Extension. Invest in regionally relevant field research and develop a science plan for the Darling Downs region.

The Queensland Government's policy and legislative direction to increase agricultural production is redefining strategic cropping land by its ability to be irrigated. This creates conflict if water resources prioritise water allocation to New Acland mine over the agriculture industry as it will prevent the ability of the region to improve intensification of agriculture as per the State's plan.

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The Project development area is ideal for the intensification of agriculture, but is compromised particularly because of the water being taken away from potential Gowrie Creek irrigators. NAC has currently over 5000MegL water allocation for the area and over 1631ha is currently Strategic Cropping Land plus extra along spur line and balloon loop. This area therefore has a high potential to be highly valued as irrigated Strategic Cropping Land. In QMDC's opinion, the loss of productivity is substantially greater than may otherwise be portrayed by NAC.

QMDC asserts the State needs to restore balance in order to rectify current unacceptable water impacts and hazards and deal with current operations rather than adding more impacts and issues which the Project will present.

One underlying issue is that there does not seem to be a total water balance and total salt (pollutants) balance approach to management of water from this Project and other mining activities within the QMDB. This poses very important implications with an increase in salt additions to Basin streams for Basin salinity targets, environmental watering plans and Sustainable Diversion Limits in the event that dilution flows are required.

NAC have acknowledged that: "The Walloon Coal Measures aquifer outcrops over much of the revised Project site" and "The Walloon Coal Measures is the major groundwater aquifer intersected by the revised Project". Current evidence suggests that there is vertical discharge from the measure into the overlying alluvium of Oakey Creek (that intersects Jondaryan) where the stream meets the Walloon strata (Hillier Report, 2010).

The concentration of salts in the area from the Walloon Coal Measures may be quite high. The 'liberation' of these salts and their storage has to be monitored. The salinity risk assessment done by DERM (2007) (in conjunction with Condamine Alliance) has shown that the mine site region is prone to salinity outbreaks.

It is also worth noting here that Oakey Creek, which confluences with Lagoon at Jondaryan, may be moderately groundwater dependant (it is listed in the federal database of ground water dependant ecosystems).

Lacking in the EIS are details on how local communities, landholders, farmers and irrigators are impacted by NAC sourcing water e.g. from bores, municipal water supplies etc. Water supply and demand for the Project will potentially deny its availability to other businesses and industry. What short and long term impact this may have on the sustainable economic development of the region and liveability for local communities is not yet understood fully.

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Current regional planning interests

Current regional planning interests are not being considered in light of the intention of Minister Jeff Seeney's proposed Regional Planning Interests Bill (the Bill) and the Darling Downs Regional Plan. Minister Seeney in his evidence to the State Development and Infrastructure Committee stated: "The outcomes in the regional plan are very clear. They are about protecting priority agricultural areas. They are about protecting priority living areas. They are about protecting strategic environmental areas. Any assessment will have to meet those objectives that are in the regional plan. That means that the priority agricultural land uses within those priority agricultural areas cannot be displaced or constrained or restricted or unduly impacted upon." www.parliament.qld.gov.au/SDIIC

QMDC asserts NAC is driven by an economic growth agenda that promotes mining development over all other planning needs for the region. The EIS they have submitted is based on the premise that agriculture and coal mining can "co-exist".

Experience has shown that the successful interface between the two sectors is yet to be determined because it depends on which type of agriculture enterprise, and mining activity; it is reliant on the social well-being of farmers and the communities they are a part of, and it is also dependant on the cumulative impacts on the threshold limits of the natural resources relied upon to sustain the ecosystem services being used by not only the agricultural and mining industries but all users of those assets.

Minister Seeney posits "The best example of co-existence is when a landholder and a company both voluntarily agree. That is co-existence." www.parliament.qld.gov.au/SDIIC

Many farmers and community members of the Acland, Jondaryan, Oakey and wider Toowoomba region and NAC do not voluntarily agree over the expansion of this Project and its proposed land use and the impacts it will have on agricultural land including neighbouring strategic cropping land. Therefore, clearly co-existence is not possible.

QMDC made recommendations to the State Development, Infrastructure and Industry Committee on the proposed Bill and Darling Downs Regional Plan. These are very relevant to the Project's rationale.

QMDC supports regional strategic planning and providing regional plans with legislative power. Some of our main concerns, are that dedicated areas with high agricultural, environmental and tourism value will be protected.

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Additionally cumulative impacts should be considered where development in non-agricultural areas have the potential to impact on agricultural areas e.g. groundwater contamination.

We do not support the principle of co-existence being imposed by mining companies and the State government. Transparent and accountable assessment and decision making processes are crucial as the Bill and Plan are dealing with regional interests and public resources. Environmental assessments and conditioning must remain in place.

The issues we have raised are supported by the finding of a scoping study that was completed on mining and coal seam gas development in 2011 for the Darling Downs and South West Queensland Committee - Regional Development Australia. (Parsons Brinckerhoff Australia Pty Ltd, Scoping Study –Mining and coal seam gas development, October 2011).

The following area of concern was identified:

- the need for greater consideration of agricultural impacts during project assessment (Parsons Brinckerhoff Australia Pty Ltd, Scoping Study –Mining and coal seam gas development, October 2011 at p.2)

Bioregional assessments


The Australian and Queensland Government have expressed their intentions to protect water resources at a strategic level rather than by a case by case project level with the intention of providing at a regional level greater certainty regarding the sustainable use of water resources. Some of these mechanisms include bioregional water resource assessments, water resource planning, regional water quality guidelines, make good arrangements, water use efficiency programs, environmental water trading rights etc.

Any use of surface water or extraction of groundwater must be managed to not only protect bore owners, surface waters and natural spring ecosystems, which are comparatively vulnerable in these circumstances, but also to protect the QMDB, and Great Artesian Basin (GAB).

Bioregional assessments are one of the key mechanisms used to assist the Independent Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) in developing advice for the Federal Environment Minister based on best available science and independent expert knowledge.

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QMDC has prepared a first bioregional assessment draft of the water assets in the Border Rivers and Maranoa Balonne Region. This preliminary assessment identifies water systems/assets in the region, and then assesses their ecological, environmental and anthropomorphic values.

QMDC argues that NAC have failed to incorporate bioregional assessment data to help the Project define, characterize and explain causal pathways describing, for example, the chain of interactions and events connecting depressurization and dewatering of coal seams at depth with impacts on anthropogenic and ecological receptors located at the surface or depth. NAC have not generated adequate quantitative or qualitative analyses of the likelihood of impacts of the proposed new coal mining activities on receptors from the application of ecology, surface and groundwater hydrology, hydrogeology and coal resource development models.

They have not developed an improved assessment of the likelihood of the risks to receptors and the subsequent values of water dependent assets from their Project. They have not provided sufficient independent information based on the level of confidence of scientific advice on these impacts.

QMDC asserts that the Condamine and Balonne Resource Operations Plan Amendment should have encouraged NAC to address surface and groundwater sustainable use of the QMDB and GAB water resources. We do not believe they have ensured that practices relating to their water use and management will implement high-quality stewardship of all surface and groundwater.

We are not confident that their operations will minimise disturbances to surface and ground water resources; and protect those resources for future human and environmental purposes. NAC's access to regional water resources and any exercise of water "rights" they have must be tenable in terms of the long term sustainability of the region's natural resource assets.

In terms of both a regional and state context NAC should have considered cumulative impacts by considering the bioregional water assets and values of the Walloon Coal Measures and its associated aquifers, the Condamine and Balonne Resource Operations Plan Amendment, and the other mechanisms we have listed.

Key issues relevant to a regional context include for example:

- aquifer contamination
- increasing the number of regional contaminated sites

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- degradation of groundwater
- disturbance of farming land
- land subsidence
- leachate pollution
- thermal pollution
- excessive water consumption
- degradation of regional water quality.

The Project poses a new threat to regional water resources both in terms of water quantity and quality.

3.2 Section 3.5 Project alternative

At the very least NAC should have explored in detail as alternatives to the Project the potential opportunities for:

- Agricultural business development
- Transition of coal miner jobs to employment in energy efficiency, renewable energy, tourism, community development, NRM or ag sector
- Diversification in rural economies
- Renewable energy development in rural settings
- Conservation of regional ecosystems
- Improved food security

Rural unemployment is a serious issue. For this reason alone it is disappointing NAC have not provided reliable research into the causal effect of the mining industry on loss of employment in other industries and businesses and what potential sustainable economic solutions for this region could be instead of and beyond the Project. NAC have failed to present well considered alternatives. This we believe is reflected in their response to the TOR for this section.



In the Toowoomba region employment within 14 industries surpass mining jobs.

Industry	Jobs	
Health Care & Social Assistance	8,918	Toowoomba
Retail Trade	7,026	Toowoomba
Education & Training	6,490	Toowoomba
Manufacturing	5,623	Toowoomba
Public Administration & Safety	4,352	Toowoomba
Agriculture, Forestry & Fishing	3,642	Toowoomba
Accommodation & Food Services	3,527	Toowoomba
Construction	3,479	Toowoomba
Professional, Scientific & Technical Services	2,782	Toowoomba
Transport, Postal & Warehousing	2,605	Toowoomba
Other Services	2,501	Toowoomba
Wholesale Trade	2,334	Toowoomba
Financial & Insurance Services	1,917	Toowoomba
Administrative & Support Services	1,113	Toowoomba
Mining	837	Toowoomba
Rental, Hiring & Real Estate Services	821	Toowoomba
Electricity, Gas, Water & Waste Services	713	Toowoomba
Information Media & Telecommunications	595	Toowoomba
Arts & Recreation Services	540	Toowoomba
Total 59,815		

<http://www.economicprofile.com.au/toowoomba/economy/employment#bar-chart>

Agriculture, forestry and fishing were the most significant industries in the Darling Downs region in 2010-11, making up 10.6 per cent of nominal Gross Value Added (GVA). This was followed by Construction at 9.0 per cent of nominal GVA, then Ownership of dwellings at 8.2 per cent.

Manufacturing GVA was 8.0 per cent and mining GVA measured at 5.1 per cent. From 2006-07 to 2010-11, output in the agriculture, forestry and fishing industries grew on average by 8.6 per cent and was the major contributor (0.7 percentage point) to the region's growth.

<http://statistics.oesr.qld.gov.au/qld-regional-profiles>

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Interestingly, the largest change in the 2010-11 composition was seen in the manufacturing and agriculture, forestry and fishing industries, falling by 2.9 and 4.7 percentage points from 2010-11. Retail and wholesale trades also declined. These declines happened at the same time the mining boom took a hold in the region. In contrast, the mining industry increased by 4.2 percentage points over the 10 years to 2010-11.

<http://www.oesr.qld.gov.au/products/publications/experimental-estimates-grp/experimental-estimates-grp-2010-11.pdf>

In 2011-12, mining industry output (as measured by gross value added) represented 10.6 per cent of Queensland economic activity, 0.1 percentage point down from 10.7 per cent in 2010-11 (Australian Bureau of Statistics, Australian National Accounts: State Accounts, 2011-12, Cat no. 5220.0). Further, Queensland's mining industry accounted for only 2.8 per cent of total employment in 2011-12 (Australian Bureau of Statistics, Labour Force, Australia, Detailed, Quarterly, Dec 2012, Cat no. 6291.0.55.0030.) .

Demand for Queensland's mining output in 2008-09 was heavily affected by the onset of the global financial crisis, and while there was a bounce in 2009-10, flooding of mines and related disruptions to transport corridors has impacted production levels for 2010-11.

The Productivity Commission submission to House of Representative Standing Committee on Economics, *Inquiry into Raising the Level of Productivity Growth in the Australian Economy, 2009*, notes that the continued investment in mining and demand for labour may be due to business expectations of sustained high export demand, and consequently sustained high prices.

These expectations are precarious as the global crisis in 2008-09 as the floods in 2010-11 have shown us and now today as the drought of 2013 -? is warning us.

Diversification in rural economies and new business opportunities is therefore, in QMDC's opinion, needed to sustain this region because of the region's unique demographics and the urgent need to address social and mental well-being of rural and regional communities. NAC should have addressed the above statistical information and trends as relevant matters to the EIS.

Mental illness in rural communities is a big concern in the QMDB. Developing employment alternatives for miners affected by the boom/bust vagaries of coal mining will help to strengthen the capacity of rural and regional communities to address social and mental health needs.

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This EIS should have produced a robust and clear pathway for rural communities to work together to strengthen their collective awareness, understanding, collaboration and leadership in supporting the wellbeing and mental health of rural and remote farm families, and their associated communities through new economic opportunities. Providing real alternatives to coal mining will increase coal miner's confidence, and ability to manage transition to new ways of life.

QMDC believes creating jobs in the energy efficiency industry is one of those alternatives.

Energy efficiency technology has developed extensively over the last few years that it would take potentially hundreds of skilled trade workers from HVAC to plumbing and electrical, years upon years to upgrade public buildings, businesses, and homes in the QMDB to become more energy efficient. <http://www.thethoughtfulcoalminer.com/2013/11/job-alternatives-for-coal-miners.html>

Not only would a commitment to energy efficiency give people good steady jobs outside of the coal mines - it would decrease the need for fossil fuels, regionally, and nationally, it would alleviate many environmental concerns, and even provide national energy security.

An obvious alternative in community eyes, then why isn't it considered by NAC in this EIS? QMDC argues that energy efficiency may not be something NAC wants to promote in spite of widespread aspirations of governments, communities, small businesses and socially responsible corporate companies.

NAC claim they are a diverse energy business, investing in coal, gas, oil and even coal to liquids, both at a production and a research level. This strategy spreads their business risk. We suggest they take the chance now to consider renewable energy as part of their diverse energy portfolio. It seems that Acland would be the ideal site for a project of this nature which would gain widespread community acceptance as well as resolving environmental and agricultural production concerns. If no one needs to use as much electricity then the power companies don't need to produce as much electricity. If the power companies don't need to produce as much electricity then they don't need to buy as much coal. This flow on domino effect will of course be felt by the executive echelon of NAC- less earnings, bonuses, and lifestyle privileges.

QMDC asserts that there is a lot of room for opportunity in the developing energy efficiency industry.

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New businesses of re-tooled coal miners could, for example, be established as co-ops, companies that are employee owned in which everyone makes the decisions and everyone gets their fair share of the total profit, instead of it all going to an elite group of executives and shareholders.

Coal miners admittedly would have to settle on the idea that they may not make the same amount of money at first. There will be an adjustment period but there are potential benefits waiting that could outweigh the benefits of the Project's expansion.

Community groups in Queensland, like Friends of Felton and Oakey Coal Action Alliance are working to develop alternative pathways for future energy and food security that are not dependent upon coal. In the Felton Valley, the community has developed a renewable energy plan for an area where a proposed open cut coal mine was to be developed.

Sustainable Energy Systems consultant Trevor Berrill was commissioned by Friends of Felton to carry out a study of the renewable energy potential of the area, as an alternative to coal development.

http://www.fof.org.au/uploads/media/RE-Felton_Report_V1.pdf

The report states that "the Felton Valley has a number of attributes that make it suitable for development as a smart, distributed grid area, including:

- Access to good renewable energy resources of both wind and solar energy,
- Potential hydro storage/power sites,
- Potential usable land area that doesn't conflict with current food production on fertile soils,
- Access to large and small electrical system transmission and distribution lines,
- A supportive community looking for an alternative to coal mining,
- Proximity to a major growth corridor in South East Queensland".

The report also reveals that Felton has "higher levels of solar radiation than southern Spain, a major global solar power region". Recent data released by the Bureau of Meteorology shows that Australia is already feeling the effects of climate change. Every decade since the 1950s has been hotter than the one before. At the same time, our population is forecast by the Government to increase from 22 million now to 36 million by 2050, giving rise to concerns about possible food shortages in the future.

Renewable Energy at Felton is offered in the report and by the Felton community as a much better option than coal mining. It would protect the quality and quantity of food production capacity, the environment, and the community.

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It would produce clean power and provide lots of new jobs. This example could be replicated across the country, and provide a significant reduction in carbon emissions.

The report demonstrates how the multiple objectives of a just transition and a reduction in our coal dependence can be achieved in tandem.

The Acland Sustainable Energy Plan - Alternatives to mining: food, jobs and clean energy production on Acland land, a report prepared for the Oakey Coal Action Alliance, February 2014 by Trevor Berrill offers a similar alternative to NAC's coal mining operations.

The report provides an alternative land use and regional development scenario for much of the Project development area.

This includes “deploying solar PV farms across the land in combination with sustainable farming practices on good quality soil. Only non-strategic cropping land (NSCL) that is less suitable for cropping and does not threaten remnant native vegetation or cultural heritage would be used for the solar farms.”

The report also provides a model for farming and power generation development that is compatible to the agriculture sector and is sustainable.

It also quantifies the employment opportunities that can be created by solar PV farming, and that complement existing or future farming practices.

The key findings from the study highlight that:

- Strategic cropping land, which is the current Queensland classification for the highest quality agricultural soils, is preserved fully
- Solar PV farming could provide between 900 and 1900 full-time equivalent (FTE) job years, both directly and indirectly
- 700 to 800 hectares of non-strategic cropping land is currently available for Solar PV Farms
- This area of land would allow for between 300 and 400 Megawatts (MW) of peak power capacity from solar PV farming.
- Annual Electrical Energy Production for Solar PV Farms would provide for the energy needs of about 70,000 average south east Queensland homes or twice that number of new well designed, energy efficient homes. According to the 2011 Census, there are 53213 houses in Toowoomba.
<http://profile.id.com.au/toowoomba/dwellings?WebID=10>).
- Food energy production could be increased.

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- Total greenhouse gas emissions from the mine construction and operation would be reduced from about 2.4 to about 0.6 megatonnes (millions of tonnes) CO₂e over the life of each project. This does not include savings from preventing transport of coal via Brisbane port for export or for local use. A further 232 Mt CO₂e would be prevented if the coal was not exported and combusted overseas, and solar energy was used to produce the equivalent electricity generation at sites with a similar solar resource to Acland.

These local energy plans are crucial to a decision on the Project's viability and present real alternatives to mining developments which carry a social licence.

QMDC argues there are many other lessons to be learnt from overseas communities where coal mining has either destroyed or seriously damaged both the natural and social environment of rural and remote areas.

In 2013 Lindsay McNamara wrote an article, *An Appalachian Alternative to Mountaintop Removal Coal Mines*, comparing the benefits of the wind energy industry to coal mining. McNamara writes that in the last 30 years, "the coal industry in West Virginia has increased production by 140 percent while eliminating more than 40,000 jobs. Alternatively, the wind industry, in the United States, already operates more than 35,000 turbines and employs 85,000 people — a number equal to those employed by the coal industry."


<http://www.motherearthnews.com/nature-and-environment/mountaintop-removal-coal-mining-app-zb01301zrob.aspx>

McNamara claims that one of the best solutions for high poverty rates in Appalachia, is to phase out mountaintop removal (MTR) coal mining, as this will eliminate a number of problems in the region. MTR coal mining, although very different to NAC's operations, has impacts which are comparable. MTR has ruined land that McNamara argues "would otherwise be suitable for viable agriculture, sustainable forest products and other economic developments." Like NAC'S grazing claims, the MTR coal industry frequently boasts of improving land for other uses. McNamara, writes that "only about 10 percent of former MTR sites have been converted to anything besides a barren area of rock." Another issue McNamara raises is the coal mining impact on county tax revenues through absentee land ownership. "In the late 1800s and early 1900s, railroad companies bought immense amounts of surface and mineral rights from local mountaineers.

According to the last study of land ownership patterns in Appalachia (completed in 1981), over 60 percent of West Virginia's land is owned by landholding corporations. This percentage is even higher in coalfield counties. The landholding companies do not pay their fair share of property tax, causing lower tax revenues throughout the region."

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Will NAC's landholding have a similar impact on the region's and Queensland's tax revenues?

The final issue raised by McNamara is that "coal production is expected to decline 40 percent from 2010-2015, according to the 2010 Annual Energy Outlook by the U.S. Energy Information Administration, creating a need for other economic options". In 2000, the U.S. Geologic Survey estimated that the most economically recoverable coal in West Virginia would be mined out within 20-30 years. West Virginia must move away from coal mining in order to have a sustained economy in the future.

McNamara asserts the Appalachian region should invest in both energy efficiency and renewable energy projects to replace MTR. To date, the Appalachian Regional Commission has invested over \$4.3 million and leveraged \$18 million in private investment that improved energy efficiency and reduced business costs. It is predicted that this type of funding will continue, and grow. [About ARC](#)

Supporting the transition from coal mining to renewable energy, a non-profit organisation based in West Virginia, [Coal River Mountain Watch](#), proposed wind turbines on top of Coal River Mountain in southern West Virginia instead of continuing coal mining. In 2007, a wind potential study was conducted to test the feasibility of wind energy in the area. The wind potential and subsequent economic studies found that it is possible to place 328 megawatts of wind energy on Coal River Mountain, which is enough to power 70,000 West Virginia homes and provide \$1.7 million in taxes to the county every year. The study also estimated that the proposed wind farm would only lead to the clearing of 50-100 acres of forest — less than 2 percent of the proposed mining area. The four surface mining permits proposed for the same area would produce coal and energy for only 14 years, while the wind farm would offer renewable energy for much longer.

There are many who criticize eliminating coal mining in West Virginia because of the number of jobs the sector provides. The study reveals that a wind farm would employ over 200 local residents during the two-year construction phase, and create 40-50 permanent maintenance jobs afterward. It is also argued that a wind farm would allow the mountain to be used for other purposes, like "sustainable forestry, mountain harvesting, and gathering of wild forest plants, creating additional jobs and the opportunity for stable income for locals".

[Save Coal River Mountain!](#)

This solution is sought by communities in Appalachia because they believe it will put them at the forefront of a growing economic sector and allow for economic diversification in the region. Renewable energy industries are more labour intensive than traditional fossil fuel methods, which the Appalachian communities assert could help remedy their high unemployment rates while providing electricity to a region often lacking basic infrastructure.

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<http://www.crmw.net/projects/sustainable-energy-economic-diversification.php>

<http://appalachiantransition.org/sites/ati/files/essays/Hansen%20Essay%20FINAL.pdf>

Relevant to a comprehensive response to the TOR and the consideration of project alternatives, are the large scale emission reduction opportunities in the QMDB. QMDC, in our submission to the Australian Government' green paper on the *Emissions Reduction Fund*, identified a number of key emission reduction actions which would clearly support alternatives to the Project. See publications section at www.qmdc.org.au

Those most relevant to this EIS are:

- The decommissioning of all coal fired power plants; coal mines; coal seam gas-fields and plants.
- No expansion of coal mines and coal seam gas fields.
- Restricting the development of projects that produce significant carbon emissions or, imposing conditions on such projects that require the avoidance or reduction of emissions through renewable energy technology solutions and management practices.
- Aside from the above abatement options, the greatest area for carbon saving is by avoidance through energy efficiency. Many initiatives exist to encourage more energy efficient practices in the region. Some of these include; ZCA 2020 Plan, the Energy Efficiency Opportunities for large scale businesses; the Queensland Energy Management Plan investigating renewable energy development; and the Energy Efficiency Information Grants under which QMDC won funding approval for a small to medium size business initiative. The promotion and implementation of energy efficiency programs will be important Australia wide.

Green jobs

“Green jobs” for the region offer an alternative to coal mines in the region, particularly, when they leave a legacy of contaminated sites. Green jobs can benefit local communities by diversifying the region’s energy mix to include renewable energy sources and by providing new, skilled jobs that are less subject to boom-and-bust cycles.


Another category of green jobs can be developed in the region: those, for example, related to improving regional air and water quality, soil conservation, regional ecosystem and biodiversity recovery that have been impaired by coal mining and other industries.

Creating a region that depends on the fundamental link between jobs and healthy natural resources is achievable.

Once again evaluation of international efforts should have been in NAC’s consideration.

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The city of Chattanooga, Tennessee provides an interesting study. In 1969, the United States Department of Health, Education and Welfare declared Chattanooga the worst city in the country in terms of particulate air pollution (Poovey, 2008). The area also has its share of water pollution problems, including a “Superfund site” on Chattanooga Creek (USEPA, 2009b).

In response, Chattanooga began to clean up the pollution and improve the condition of its natural resources with the goal of developing its regional economy for the betterment of its residents.

“A Superfund site in Tennessee is designated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) environmental law.

The CERCLA federal law of 1980 authorized the United States Environmental Protection Agency (EPA) to create a list of polluted locations requiring a long-term response to clean up hazardous material contaminations. These locations are known as Superfund sites, and are placed on the National Priorities List (NPL). The NPL guides the EPA in "determining which sites warrant further investigation" for environmental remediation. As of May 3, 2010, there were thirteen Superfund sites on the National Priorities List in Tennessee and four Superfund alternative sites. Two more sites have been proposed for entry on the list and six others have been cleaned up and removed from it.”

http://en.wikipedia.org/wiki/List_of_Superfund_sites_in_Tennessee

Chattanooga communities worked hard to clean up the downtown and waterfront areas. In 1992, what was then the world’s largest freshwater aquarium opened downtown. The aquarium had admitted its millionth visitor, by October (RiverCity Company, 2002). The aquarium features exhibits based on local river and forest ecosystems. The Tennessee River is also visible through its windows. One year on, the Walnut Street bridge was opened to pedestrian traffic; today it connects downtown to the North Shore, including a popular riverside park, with a carousel, rock-climbing wall, shops, condominiums, and restaurants. An expanding river walk allows pedestrian access from downtown through the Bluff View Art District past the local rowing club’s boathouse and through the river park to the Chickamauga Dam recreation area.

In 2000, the minor league baseball team moved to the riverfront and the annual Pops in the Park Independence Day Celebration was renamed Pops on the River and moved from the Chickamauga Battlefield to the riverside park.

The revitalization efforts formally began in 1984 with a movement known as “Vision 2000”. More than 1,700 people were involved, setting goals and priorities for community improvement (SCN, 1996). The results successfully attracted large and small businesses, leading to a sharp increase in the tourism industry.

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In Australia, the people of Daylesford in Victoria's Hepburn Shire built the first community-owned wind farm. They raised \$9.8 million from the community and attracted 2,000 community investors. By June 2011 they had two turbines with four megawatts of combined total capacity generating enough electricity to offset around 2,000 to 2,200 homes. That's more than the houses in the local town of Daylesford and surrounding areas.

The wind farm produces enough renewable energy to meet local energy needs making them carbon neutral for power generation. The farm prevents about 12,200 tons of CO₂ from being released into the atmosphere every year.

The 2,000 members (mostly locals) receive a financial return on the shares they've purchased. There is also a local neighbourhood benefit program where electricity is made more affordable for local residents. They are given a gift of shares so they have a voice in the project. A community was started as soon as the farm began generating electricity it was part of the community vision to spread the benefits widely. \$15,000 per annum per turbine (\$30,000 total) is contributed into the community fund.

<http://2degreesproject.com.au/Story/Victorian-town-wipes-out-its-carbon-footprint-for-power-generation>

Fayetteville, West Virginia is another Appalachian community that promotes its water-focused recreational opportunities. The town is located just west of the New River Gorge Bridge, where the annual Bridge Day festival draws hundreds of skydivers who land in the river 876 feet below and up to 150,000 spectators each year.

Although this is the most extreme sport in the area, the New River is also the state's most popular commercial destination for whitewater rafting and a popular river for flat water boating, bird watching, trout and bass fishing, and other water-focused activities.

These two cities—Chattanooga and Fayetteville—demonstrate how cities and towns in Central Appalachia have embraced their streams and rivers and turned them into economic engines. This region could follow suit and by doing so fulfil the following aspirations:

- Australia is a key player in an international movement to pursue a renewable energy economy
- Less contaminated areas to rehabilitate and decommission
- No new threats to environment
- Sensitive receptors not subjected to more disturbance
- Regional air quality maintained

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- Less lung disease deaths
- NAC opportunity to engage new shareholders with a focus on sustainable development

Food security

Prioritising a national sovereign obligation to supply food for the communities and people of Australia first and foremost is undermined by the simple fact that more and more land is being taken out of production because of mining operations, urban expansion, and salinity impacts. The need to improve sustainable production will need to fully consider those impacts, alongside population growth. National food security obligations must take precedent over economic coal mining ventures that are geared towards chasing international market opportunities.

National food security relies on good land management appropriate to regional land types. Food security will be achieved by building resilient and adaptive production systems and communities, especially during times of drought. Land condition decline greater than that which is recognized as drought induced, and a result of land use and management practices, needs to be identified and assistance provided to apply better management appropriate to land type.

Regional food networks, supporting a “paddock to plate” ethos, and regionally branding food are all tools being utilized in this region to support national and regional food security.

The Southern Queensland Country Regional Food Network (SQCRFN) is an organization that promotes the trade in local produce.

SQCRFN’s mission is to share and showcase the unique culture and authentic regional food and wine experiences of Southern Queensland Country. <http://www.seasonalfeast.com.au/>

SQCRFN is supported by the program, *Regional Food Systems*, which is helping regional Australians create paddock to plate trading relationships. The program is helping regional communities to grow more of what they eat and eat more of what they grow.

From a regional economic development perspective, the program offers strategic collaboration to establish links between the agriculture, food, manufacturing, retail, hospitality and tourism industries. This cross-sector collaboration generates “economic and logistic efficiencies to overcome some of the intractable challenges that have, in recent history, impeded localised trade.

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Beyond Regional Food Systems, the multi-industry networks established through the program facilitate a shared understanding of local opportunities and challenges and encourage a cooperative approach towards achieving other strategic regional objectives”.

From a tourism perspective, research demonstrates that there is a noticeable gap between what visitors to regional Australia are seeking and what they experience on the ground. SQRCFN and the Regional Food Systems Program are committed to developing strong regional food brands, and tourist destinations that “carve out a unique position in a crowded market place and deliver on what visitors truly want from a regional experience – authentic connections to the people, the landscape and the culture”. They are providing for this region a stronger local food culture which aims to not only “create a reason to visit, stay longer and spend more, it also provides visitors a “story” to take home and share with friends and family (along with the local delicacies they’ve taken back with them!)”.

The vision of these regional initiatives is that further than the duration of visitors’ stay, the enjoyment of local food in this region will construct an awareness of and appreciation for the local food that can lead to export opportunities both to other domestic cities and regions, and also internationally.

From a community perspective, the *Regional Food System* program improves access to fresh, seasonal and regionally produced food for locals and visitors alike. Notwithstanding the obvious “health and environmental benefits of produce with low “food miles”, support for a region’s paddock to plate value chain facilitates education and awareness of the whole food journey, strengthens social bonds and helps communities to be more self-sufficient.”

<http://www.regionalfoodsystems.com.au/user>

NAC have failed to consider how developing sustainable agricultural programs could well serve the region’s economy and national food security requirements as an alternative to the Project.

3.3 Section 3.7 Public and Stakeholder Consultation

Community engagement, disclosure of information and public consultation must meet community expectations for a more enduring and direct role in the planning, decision-making and implementation of natural resource policies and activities as they relate to coal projects.

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QMDC asserts NAC's process still need improving to ensure timely and adequate notification of proposed developments.

This is particularly for individual landholders, local governments and communities where the development and associated developments have the potential to impact on the planning and resourcing of supporting infrastructure, services and land use e.g. farming, Industrial and residential zoning, waste management, sewerage management, roads, infrastructure, services (health, police, schools), airports, and emergency services.

QMDC submits that public engagement that is timely, meaningful and relevant and conducted appropriately for each stakeholder will encourage and facilitate active public consultation. This also includes public notification and consultation for EISs and any proposed changes to EAs or EMPs.

NRM organisations are well placed to strongly represent their catchments, and achieve policy and legislative positions that balance developments with sustainable NRM. QMDC would therefore assert the opportunity for regional communities and organisations to assist both the policy and assessment arms of government, with EIS and EA application assessments, drafting model conditions and broader policy should be supported. NRM expertise and regional networks provide an invaluable opportunity to facilitate and engage the region's communities in the current and long term sustainable management of the region's natural resources.

3.4 Section 4.6 Associated infrastructure

Power generation facilities

QMDC is concerned that a full assessment has not been carried out to evaluate the impacts associated with NAC's demand on electricity and other energy sources.

The Project's electricity demands will impact on the current electricity infrastructure and by association, current users of this infrastructure in the Project development area. Additionally if NAC considers the demands on fuel to be significant, then this is also likely to impact on other users of these resources.



Aggregate volume

QMDC argues that estimations related to that infrastructure need to provide not only sufficient detail but also accurate estimations of the aggregate volume required.

QMDC is concerned about the aggregate volumes needed for the foundations of all of the production facilities. Increases in these volumes are likely to place pressure on the region's existing borrow pits and quarries, other users of those resources, and transportation and road infrastructure. If estimations are incorrect, road impact assessments will be also inaccurate and not provide a true picture of how the Project's supporting infrastructure and logistics will impact on the region's resources and communities.

QMDC is aware that CSG companies already operating in the region are having a major impact on the increased demand for aggregate, which is not being able to be locally supplied.

In light of these known impacts NAC have not duly identified how they are going to have an impact on electricity demand or aggregate shortages or strains on supplies.

3.5 Section 4.7 Decommissioning and rehabilitation

The below impacts will or may be caused by the Project:


- Erosion due to soil type
- Alienation of potential strategic cropping land
- Land contamination
- Conflicting land use

Soil management requires the coal industry to view the soil as a finite resource and not a receiving medium for a whole range of toxic substances. NAC identifies a large number of activities that have the potential to cause land contamination.

QMDC submits that thorough and detailed rehabilitation research programmes have not yet demonstrated that mining prime agricultural land is only a temporary cessation to agricultural production and that disturbed landscapes and soils can be reconstructed to pre-mine capability and productivity.

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QMDC is therefore concerned that because of the number of activities proposed in the Project that either involve major soil movement, long term storage ponds or facilities or have inherent contamination risks then the land associated with the Project that is deemed strategic cropping land will not be able to be reinstated or fully restored to strategic cropping land condition. The development would therefore permanently alienate rather than temporarily diminish productivity which requires NAC to demonstrate that there is no other appropriate site than on strategic cropping land.

QMDC submits that in order to return the soil close to its original state (and cropping potential), entire soil profiles would have to be cut into layers and then stockpiled separately and replaced, in order, after mining.

Mixing of the soil profile is likely to result in depression of crop yields due to the increased salinity and exchangeable sodium percentage in the upper layers. Additionally, the stockpiling of soil, which would be necessitated because of the restraints of the mining process, would result in organic matter breakdown in the surface layer and in the dispersion and erosion of the subsoil layers. If NAC stockpiled a pile of topsoil for 10 years, most of it would be anaerobic. It would lose its biology and structure.

NAC's proposed facilities because they are situated in flood prone areas means that flooding poses the risk of further damage to stockpiles.

The potential impacts of the project development area on the cropping soils could include a reduction in the yield potential of the reinstated soil, loss or reduction of underground water supplies and dust impacts on surrounding crops.

The Project is occurring within existing and/or proposed food production areas, which will result in a fragmented landscape with inadequate buffers. Failure to protect agricultural areas will impact on landscape features that support agricultural systems, resulting in either complete losses of agricultural uses on affected lands or diminished productivity.

QMDC submits that by focussing on existing land use the opportunity to secure strategic cropping areas that will prove invaluable as climate refugia for cropping in the future is being overlooked.

Protecting SCL and associated soils requires addressing the need to protect water. If land achieves the versatile cropping land classification it is because of access to groundwater as well as cropping reliability and soil criteria.

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Financial assurance

QMDC does not support the “commercial-in-confidence nature of financial assurance” so that proponents do not have to disclose what that assurance is. QMDC submits that regional communities need to be assured NAC can fulfill this obligation adequately to account for cumulative impacts. Will, for example, NAC’s financial assurance take into consideration the impacts of climate change and variability on the project? Will it factor in possible impacts caused by economic recession, both local and global? Will it address global crises such as world food shortages etc?

3.6 Section 5.1 Climate, natural hazards and climate change

Flood impacts

QMDC’s comments below aim to promote a greater correlation between floodplain management and land use planning. That correlation needs to recognise the multiple functions of a floodplain, identify what natural and human assets are at greatest risk and which strategically require the greatest protection, for example, aquatic ecosystems, strategic cropping land, endangered vegetation, community health infrastructure etc

In the Darling Downs the floodplain’s natural function does not allow for multiple land uses and the Queensland Government needs to encourage limited land use on the floodplain.

The *Floodplain Better Management Practices Manual* (the Manual) was designed by landholders, State and local government to help implement best floodplain management practices in the Darling Downs including providing a mechanism to enable an overall coordinated planning approach to the floodplains of the Darling Downs. The Manual describes management practices which, when used, reduce flood damage on the floodplains.

Section 3 of the Manual outlines the “golden rule” principles and practices for landholders farming on the floodplains.

Some of the key management practices are based on the following:

- Minimising diversion and concentration of floodwaters by roads, fences, levee banks; and irrigation structures
- Using strip cropping on contours to spread flood flows

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- Managing special problem areas carefully e.g. melon-hole country, natural stream levees, active gullies, concentrated flow areas, residual flow areas
- Maintaining natural drainage areas.

Relevant measures not fully considered by NAC include:

- Strip cropping most effective on slopes of less than 1%
- Crop rotation and stubble retention essential for strip cropping to be successful
- A minimum of 30% stubble cover is required to protect soil surface from wind and rain erosion and retain good moisture storage
- Certain grasses can be used to spread floodwaters, help stabilise gullies and scours caused by concentrated flows
- Land levelling should align with natural slope and blend with natural surface profiles within and surrounding a block or property to minimise impact on natural flow paths.

Section 4 of the Manual addresses planning and designing infrastructure in the floodplains, specifically railways, roads, farm roads and tracks, fences and fence-lines, levees, irrigation infrastructure, and drains.

Some of the key management practices are based on the following:

- Co-ordinating planning with all stakeholders involved, to develop run off management plans for the length and breadth of the floodplains
- Identifying the issues, particularly those of strategic importance and resolving them in a workshop type environment to ensure equitable planning and realisation and acceptance of responsibility by stakeholders
- It is best to try to avoid the use of flood protection levees because they exclude flow from one area to potentially concentrate and increase the velocity and depth of flows in another area.

Relevant measures not fully considered by NAC include:

- Maintaining a crown height of a road or access track in a flood section to 100mm above natural ground level will reduce diversion of overland flood flows and erosion problems on surrounding land
- Formed roads prone to damage because of high moisture content after flooding should be built at least 5m wide with a solid foundation
- Damage to unformed roads and access tracks can be minimised by placing low banks or “whoa boys” at intervals no more than 200m apart

Improving the resilience of communities in the Darling Downs requires the correction of past mistakes and not permitting the building of new infrastructure or levees on floodplains that will act to restrict floodplain width and function.

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This action is better managed by establishing buffer zones to protect both natural and human assets. It also requires enforcing the Floodplain Management Guidelines.

Appropriate planning and design of infrastructure at the landscape and local level is needed to identify and adequately protect all waterways, floodplain functioning and wetlands, environmental values and function, taking into account:

- In-stream flow regimes
- Surface water flow systems (eg potential contaminants such as salt, erosion, groundwater interface, barriers to movement of flow and in-stream species risks)
- Ground water flow systems
- Riparian function (e.g. ground cover, bank stability, habitat, connectivity)
- Wetland and floodplain function.

QMDC recommends that specifics for the design and construction of new buildings in a flood hazard area for mining infrastructure needs to be provided. QMDC also asserts that model codes should apply to all developments that impact on floodplains. Floodplain maps must be validated within the community by performance outcomes and acceptable solutions, which are then articulated as reliable model code provisions.

QMDC therefore questions whether the State's power to determine a proposed development as a 'significant project' is improving the resilience of communities in the Darling Downs. 'Significant project' design should be required to incorporate state planning policies into their decision making. Permitting the continuation of development in the floodplains on a large scale such as an open cut mine or a coal seam gas field does not take seriously the vulnerabilities of development in a floodplain.

As per previous comments, QMDC have a low confidence in absolute numbers but appreciate relative impact at the bottom end of the catchment near Jondaryan may be less. QMDC assert that mitigation requirements needed to have included bank stabilisation (with endemic vegetation species) along and downstream of the levees. Managing the adjacent floodplain to maintain cover and monitor to manage erosion as required should also have been considered.



Flood risks are major, and NAC's water estimates are understated. NAC need ponds to meet their water requirements. They have totally forgotten Doctors Creek but the middle of the Willeroo pit is the watershed between Doctors and Lagoon creek and there are levee banks so both creeks need addressing.

Both Lagoon and Doctors Creeks flood neighbouring towns. Lagoon Creek floods Jondaryan especially when the mine releases water and Doctors Creek floods Oakey, due to alteration of the West Moreton line rail embankment and altered Doctors Creek bridge to carry coal trains.

Should this Project be allowed to proceed there is the very real risk that in some years hence mine pits will fill and burst. Recent history has proven this is possible, and the proponents own risk assessment states that the risk of mine wall failure is high. A few years ago Reynolds 1GL farm dam burst at Rosalie Plain north of Acland and caused Myall Creek to flood.

3.7 Section 5.2 Land

QMDC is concerned that common toxic contaminants (See Appendix 4 of the "Environmental Guidelines: Assessment, Classification and Management of Non-Liquid Wastes" (NSW EPA, 1997)) are ever increasing in Queensland. These are contaminants found in products, by-products and waste.

Ongoing development in Queensland is creating the opportunity for more industrial pollution and land use known to be associated with land contamination. The Australian And New Zealand Guidelines For The Assessment And Management Of Contaminated Sites (ANZECC Guidelines) lists 30 industries and land uses that are known to have been associated with land contamination (ANZECC & NHMRC, 1992). A similar list is also included in the "Contaminated Land Practice Standard" by the Australian Institute of Valuers and Land Economists (AIVLE, 1994). It contains 67 items and incorporates most of the ANZECC Guidelines items. Some of these are industries such as mining are expanding in Queensland.

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Associated legislative and planning processes and mechanisms should therefore be able to:

- define “no go” zones where any land contamination is not acceptable;
- provide clear and predetermined standard environmental practices acceptable under legislation e.g. safe effluent disposal, defined buffer zones for activities and infrastructure against stream order classifications; and
- provide more efficient administrative processes so that a proposal for development if its impacts do not live within those threshold limits it is not allowed to proceed.

Management of land contamination action targets should focus on motivating changes in land use and in environmental management practices, protecting and conserving regional and catchment environmental values and, as appropriate, undertake activities to arrest degradation and rehabilitate degraded areas.

Regional NRM Plans, and associated technical reports, regional profiles or overviews can provide important data on resource condition and trend analysis. These Plans therefore offer a better understanding on the waste reduction and recycling investment activities needed for the long term health and sustainability of a region’s natural assets and its communities.

In QMDC’s opinion, NAC’s land and water contamination is equally a historical, current and future problem and recommends the Coordinator General to implement best practice for managing land contamination to include planning and development control processes that address site specific and *cumulative impacts*.

QMDC is fast becoming a “cess pit” for an extensive array of mining activities that produce hazardous contaminants e.g. drilling fluid, brine, leachate, PM^{2.5} dust etc

QMDC asserts NAC has not addressed best practices which adequately manage the operations of it specific project and the nature of the hazardous contaminants resulting from those operations.

Addressing land contamination in terms of improving or maintaining resource condition and meeting aspirational targets for Queensland’s regional assets will improve the capacity of regional communities to achieve waste management aspirations encapsulated in the NRM Plans. This level of responsiveness is clearly needed to enable the alignment of state and regional planning processes.

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QMDC asserts this requires NAC to include a threshold limit approach in the EIS. This approach would have provided greater clarity and certainty because threshold limits would help to define those natural resource assets identified as being both nationally and regionally at risk to the impacts caused by activities and infrastructure associated with the land contamination.

Setting threshold limits for natural assets (water (surface and groundwater); vegetation and biodiversity; land and soils; air) will help the contaminated land professionals to identify whether a new development or existing industries or businesses can operate without generating or disposing of levels of hazardous waste that will cause unacceptable impacts on those assets within the defined threshold limits.

QMDC does not support the position that it is not necessary or practical to remove all the contamination from a site in order to prevent environmental harm and/or public health risks.”

QMDC is concerned that a number of key factors need to be identified by the EIS to inform such a position. QMDC recommends that site management plans if they recommend not removing all contaminants:

- involve a robust risk analysis which take into account site specific and cumulative impacts of all NAC’s controlled waste, and especially waste oil, used tyres (750 tonnes tyres per annum), tailings and spoils, leachates and other contaminants;
- rely on industry standards that are not out of date and which adequately address the unique operation or activities of a specific development or project; and
- if a new land use is proposed it does not inherit any contaminants that can migrate and do not have a bioaccumulation affect nor is the new land use sensitive to the contaminant that remains.

QMDC asserts that there is a need to review the range of exposure settings for this EIS because of the past and existing policy, planning, and regulatory influences on soil quality and uses and the potential site specific and cumulative impacts of the current mining boom in the State.

QMDC is concerned that contamination of agricultural land by mining activities may in the future lead to failure of produce to comply with the Australian Food Standards Code, or create problems with export market standards.

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Maximum Residue Limits and Maximum Permitted Concentrations for contaminants in commercially-produced foods, whilst taking protection of health into consideration, tend to be based upon what is achievable with good agricultural practice rather than purely toxicological/public health grounds.

A further policy consideration is the principle, of 'maximum beneficial land use', which represents an ideal situation where remediation of contaminated sites occurs to the point where the land becomes suitable for all potential uses. If such remediation does not occur, and only one particular type of land use is deemed safe or permitted to occur on a contaminated site, then clearly there need to be planning control mechanisms so that changes to more sensitive land uses are restricted. This was recommended in the ANZECC position paper, '*Financial Liability for Contaminated Site Remediation*' (1994):

'Governments should put in place appropriate mechanisms within the planning process to ensure that potentially contaminated land is not rezoned to allow a more sensitive use without adequate assessment of environmental and human health risks and appropriate remediation where necessary.'

The health and safety of employees on a contaminated site is another policy consideration. Although exposure, for example, to volatiles must comply with standards set by WorkSafe Australia, and workers potentially exposed during remediation of a site are afforded protection under occupational health and safety procedures and standards, the exposure settings and their associated default exposure ratios are intended to be used for the derivation of investigation levels. They are not necessarily to be translated into 'response' or 'acceptance' levels.

Site and contaminant specific factors will be important in the derivation of acceptance or response levels, as may risk management and community consultation strategies. QMDC, however believes it is necessary to continue to develop best practice in this area to validate the approach taken, and in particular to keep investigational criteria under review in the light of any site-specific sampling data.

QMDC believes a need to ensure a general understanding of the use and intention of 'investigation levels'. This general understanding must also align to community aspirations and values.



Some regulatory authorities have noted that since specific soil response criteria have not been established in Australia, the health-based investigation levels tend to be seen as de facto acceptance criteria by many consultants.

QMDC argues that there are likely to be occasional instances where the existing investigation criteria are inadequately protective of ecosystems or groundwater resources, and perhaps even under-protective of humans if all possible exposure pathways are investigated and taken into account. This means that there always remains a need to consider sites on their respective merits, rather than unthinkingly comparing soil sample analytical results to established criteria.

International efforts to develop sophisticated exposure and risk assessment models may resolve some of these problems, but it does appear likely that there will always be a place for professional judgement and a site-specific approach.


QMDC is concerned that proposed exposure settings proposed have been somewhat arbitrarily chosen based upon available information about patterns of land usage. QMDC therefore recommends that categories will need to be kept under review to ensure they remain appropriate, and to allow for important variations to be incorporated as required.

Exposure assumptions (including indoor/outdoor activity patterns, soil ingestion, home-grown food production and consumption patterns) similarly need to be kept under review. Improving methodologies to study issues specific to contamination and rehabilitation at every opportunity, will improve knowledge on the links and differences between theoretical exposure scenarios and likely actual exposure patterns, making them as clear as possible.

The National Land and Water Resources Audit (NLWRA) reported in 2000 that a total of 48 000 ha of land was estimated to be affected by salinity in Queensland (CoA 2001). The Australian Bureau of Statistics reported in 2002, however, that the current area of saline land in Queensland was 107 000 ha (ABS 2002). This represents a more than twofold increase in saline area in just two years. This increase in area is attributable mainly to landholders' greater understanding or recognition of salinity. The NLWRA has estimated that if no preventive measures are taken, the saline area will to increase to about 3.1 million ha by the year 2050".

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Daniel Brough (Department of Natural Resources and Water) in a report assessing land in Queensland affected by salinity states that, “the value of assets affected by salinity is not well quantified”, and notes that the costs to the community of salinity affecting agricultural land will potentially be significant. Productive land is a finite resource. The communities of Queensland will bear the full cost of the loss of productive land, to a potentially irreversible salinity outbreak.

http://www.derm.qld.gov.au/environmental_management/state_of_the_environment/state_of_the_environment_queensland_2007/state_of_the_environment_queensland_2007_content/land_salinity.html

The sustainability of prime agricultural land and Australia’s food security requires all industries and development to view the soil as a finite resource and not a receiving medium for a whole range of toxic substances. Australia’s most important asset is the soil. This EIS should be rigorously reviewed so that industrial or development projects including residential avoid land contamination on productive land assets.

QMDC asserts these issues require an economic analysis to assess how the reduction of SCL and GQAL over the lifetime of the Project affects regional and national economies. This should include an assessment of economic losses resulting from changing cropping land into grazing land over the life of the Project. What length of time does the life of the Project need to be measured? Does it include a 30-50 year time span after decommissioning? What is the appropriate duration of time to gain a true measure of the economic impacts?

Many CSG, coal mining and other development Environment Impact Statements (EISs) and Environmental Authority (EA) applications have identified a large number of activities that have the potential to cause land contamination and or sterilisation.

QMDC asserts that mine drainage or acid run-off which dissolves heavy metals such as copper, lead and mercury into ground and surface water may also prevent Australia’s ability to secure food for the future. This impact is too great to support mere actions of management or mitigation.

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NAC should therefore have provided relevant data and detail to address:

- site-specific investigations once contaminants are deemed to exceed the investigation criteria for that particular land use; and
- protocols on complex issues such as home-grown produce sampling, air monitoring for volatiles, groundwater testing, and the implications of complex mixtures for health risk assessment.

QMDC asserts that the EIS needs to be evaluated so that proposed Project, must be required to demonstrate and guarantee that their proposed mine management methods can prevent the problem of heavy metal contamination, and that mine design is effective and able to keep water away from acid generating materials and help prevent contamination of water sources, agricultural land and soils occurring. Whether heavy metals are treated actively through a water treatment plant or passively through a self-operating system any contamination is in QMDC's opinion, unacceptable.

The storage of large volumes of associated water awaiting treatment or reuse, potentially contaminated with many toxic substances, is a serious risk. If untreated CSG water, for example, comes into contact with good clay soils, they become impervious to water and useless for agriculture.

There are also risks of contamination associated with dam wall-failures and spills after intense rainfall events, as well as re-injected water contaminating aquifers.

Strategic Cropping Land, either neighbouring or affected by the Project may not be able to be reinstated or fully restored to a strategic cropping land condition. The development would therefore permanently alienate rather than temporarily diminish productivity.

QMDC submits that thorough and detailed rehabilitation research programmes have not yet demonstrated that mining prime agricultural land is only a temporary cessation to agricultural production and that disturbed landscapes and soils can be reconstructed to pre-mine capability and productivity. In order to return the soil close to its original state (and cropping potential), entire soil profiles would have to be cut into layers and then stockpiled separately and replaced, in order, after mining.

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Mixing of the soil profile is likely to result in depression of crop yields due to the increased salinity and exchangeable sodium percentage in the upper layers. Additionally, the stockpiling of soil (through open cut coal mining), would result in organic matter breakdown in the surface layer and in the dispersion and erosion of the subsoil layers. If the projects stockpiled a pile of topsoil for 10 years, most of it would be anaerobic.

The potential impacts of mining on the cropping soils of the Darling Downs and surrounds have been associated with (1) reduction in the yield potential of the reinstated soil, (2) loss or reduction of underground water supplies and (3) dust impacts on surrounding crops (ASSSI,2009).

In regards to the natural soil assets of the QMDB, to the knowledge of QMDC, no field research has been undertaken to show the feasibility of reinstating prime agricultural land based on Vertosols on the Darling Downs.

QMDC assert that due to the productivity of these areas and the potential detrimental effects that may occur during the permitted land use activity including remediation and rehabilitation, it is essential that research should be conducted to demonstrate whether it is even feasible to reinstate these landscapes, before the activity is permitted..

QMDC recognises that the Australian mining industry has developed the technology to rehabilitate diverse landscapes back to native vegetation or grazing, particularly in the case of mining of bauxite and mineral sands. Rehabilitation of land mined for coal by open-cut methods in QLD and NSW has involved, in almost all cases, establishment of pastures for grazing or of native ecosystems on land that was capable only of supporting grazing or forestry (Mulligan, 1996). There is no scientific evidence that Vertosols can be reinstated to pre-mining activities.

QMDC asserts that NAC has not provided a reliable suitability statement that has measured the Project development area suitability against asset condition and targets in regional NRM Plans and other regional and local planning schemes and aspirations.

The Waste Account, Australia, Experimental Estimates (cat no. 4602.0.55.005) shows that in 2009-10 a total of 3,500 kilotonnes of hazardous waste was generated in Australia, which represented 6% of the total waste generated. This hazardous waste comprised quarantine waste, contaminated soil, industrial waste and asbestos.

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The most hazardous category of waste is controlled waste which includes those wastes that exhibit toxicity and chemical or biological reactivity.

<http://www.abs.gov.au/ausstats/abs@.nsf/Products/4602.0.55.005~2013~Main+Features~Hazardous+Waste?OpenDocument>

3.8 Section 5.3 Nature conservation

Priority landscape scale regional ecosystems

QMDC asserts priority landscape scale regional ecosystems should be maintained or improved so that ecological processes and ecosystem linkages are increased in extent and abundance at priority catchment scales.

QMDC submits that the decline in populations of 'at risk' flora and fauna species must be prevented. Native fauna are territorial and cannot simply move to another area if disturbed by noise, dust etc. NAC must demonstrate scientific understanding of the importance of remnant vegetation and the habitat requirements of native fauna by preventing further fragmentation or destruction of ecosystem corridors. It should not be assumed fauna can be removed to another ecosystem if found where vegetation is to be cleared and that birds will simply fly away to somewhere else if disturbed by noise, dust etc.

NAC must demonstrate scientific understanding of the importance of remnant vegetation and preventing further fragmentation or destruction of ecosystem corridors.

QMDC submits that destroying habitat before equivalent habitat has been restored increases the risk of species extinction. Additionally, species need time to colonise a restored habitat, and too frequent a turnover of habitat may increase the risk of species extinction.

QMDC posits that the long term conservation of biodiversity and the well-being of the region's communities depend upon both the protection of natural assets and maintaining the integrity of the ecological processes that sustain them. A focus on process recognizes that ecosystems are temporally and spatially dynamic and that the components of ecosystems interact in complex and diverse ways that contribute to, and sustain biodiversity. Processes may also act as selective forces to which particular species are constantly adapting.

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In QMDC's opinion the EIS fails to respond adequately to the complexities in the ways in which threats affect ecological processes and regional ecosystems. For example:

- Impacts may occur far from the location of the initial threat or disturbance.
- Threats that affect one species may have cascading effects on other species.
- Environmental responses to a threat are not necessarily directly proportional to the level of threat (ie a linear response). Non-linear responses mean there are critical thresholds where small increments of change can result in dramatic shifts in the state of the system.
- There is often a time delay, from days to decades, between alteration to an ecological process and its full effects on biodiversity.
- Threats may have a combined impact greater than their independent effects.
- Complexities in interrelationships among species and chance environmental variation may mean that often there will be uncertainty about the effects of a particular threat on processes.

QMDC believes further terrestrial and aquatic ecology studies are required to ascertain which processes have the greatest influence in this area, their role, the spatial extent over which they operate, the kinds of threats that are limiting their function. NAC, in our opinion have failed to direct its management strategies where it will have the greatest impact. A fundamental tenet of regional ecosystems is recognition of the interaction between pattern and process. The identification and management of locations directly associated with a specific process is a practical way for NAC to protect regional ecological processes.

Examples in the project development area include:

- Protecting floodplains adjacent to river channels to maintain lateral hydrological connectivity and the ecological benefits of periodic flooding.
- Maintaining continuous vegetation along elevational gradients to enhance opportunities for altitudinal migration or range shifts in a changing climate.
- Protecting key wetlands & natural springs along the migration paths of waterbirds as critical stops for refueling.
- Maintaining riparian vegetation to promote interactions between terrestrial and freshwater systems.
- Protecting small ephemeral streams and wetlands to aid the re-establishment of ecological process in restoration.

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QMDC asserts that in relation to the infrastructure mapping and ESAs and Regional Ecosystems and regrowth these are not adequately addressed in the EIS.

There is no independently peer reviewed evidence or information provided that outlines what potential impacts may be. Additionally no attempts by NAC have been made to demonstrate or guarantee no impact.

QMDC acknowledges that there may be an increase in costs to NAC as a consequence of development at an alternative site. QMDC asserts however that Government should not support any more development within the ESA when viable alternatives exist. In all cases buffer zones protecting a Vulnerable Ecosystem should limit development. Additionally buffer zones protecting an Of Concern or Least Concern ecosystem require NAC to consider offsets. QMDC asserts the EIS must demonstrate how the Project will protect ESAs, regardless of the effect of cost on a company's profits.

The preparation of technical reports should include an evaluation of alternative forms of development, and significant weight should be given to those strategies which minimise the impacts on natural resources. Due consideration should be given to the protection of ESAs and waterways. The siting of Project infrastructure should aim to avoid potential land use conflicts and long term impacts on regional ecosystems.

QMDC maintains that destroying habitat before equivalent habitat has been identified and restored increases the risk of species extinction. Additionally, species need time to colonise a restored habitat and too frequent a turnover of habitat may increase the risk of species extinction. With native vegetation depleting in this region the further destruction of remnant ecosystems and other habitats needs to be avoided.

The targeted surveys relied upon by NAC have not accurately assessed the complexities in the ways in which threats affect ecological processes and regional ecosystems, including the distance between the source of impact and the impacted receptor, non-linear responses to impacts, the time delays between activity and impact, combined impacts versus independent impacts, species and environmental variation resulting and unpredictable impacts in response to an activity.

Siting of infrastructure away from EPBC communities and species may help to reduce potential cumulative impacts.

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However NAC have failed to produce a full assessment of the total impact of the Project and other regional developments including CSG mining projects to determine if the risk to EPBC listed communities and species (e.g. koalas, earless bearded dragon) is too great for their survival.

3.9 Section 5.4 Water resources

QMDC is concerned key issues pertaining to both surface and groundwater quality, quantity, and ecology are not adequately addressed. The limitation of water resources have not been recognised within an environmental best practice framework that takes into account social and economic factors. Reverse Osmosis water for dust suppression, cleaning coal etc is not an opportunity without inherent risks and impacts.

A full cost environmental accounting of water use and disposal required social and economic issues to be addressed by NAC.

Below is a list of key issues that in our opinion have been considered poorly or not at all:

- **Hydrology: Changes in Dynamics and Aquifer Interconnectivity.** NAC have shown by their lack of data that there are knowledge gaps in surface and groundwater connectivity, bore integrity, and mine site remediation. These are crucial elements to better understand potential long-term impacts on water resources. QMDC asserts NAC have failed to provide all the relevant water data regarding connectivity at given locations and any predicted changes that are likely to occur over time as a function of floods, droughts, pumping and other factors.
- **Ecosystems and Water: Environmental Tolerances, Responses, and Mitigation.** The EIS does not provide community with the confidence that NAC have a good scientific understanding of the ecological impacts caused by changes to water quantity, quality, and flow; and as a result the Project is not designed to monitor and mitigate the effects of coal mining on aquatic ecosystems, key species and ecological communities.
- **Chemicals: Water-related Risks to Environmental Health.** Additionally NAC have not expressed a satisfactory understanding of water related risks associated with the chemicals they use, their movement in surface and groundwater systems, and their toxicity. NAC's successful management of salts and heavy metals is therefore doubtful.

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- Cumulative Impacts: Monitoring, Assessment, and Evaluation. The EIS has not addressed the cumulative impact of the Project in light of the significant number of proposals being considered in regional contexts and the impacts on the surrounding farming sector.

The fact that the revised Project assumes to be operating with the same arrangements as the current project is of grave concern. No indication is given of how current operations have already impacted on the receiving environment and/or how any outstanding issues have been addressed. Is the EIS informed by current EA arrangements?

QMDC assert not enough detail is offered in terms of how contaminated water is handled with release into the stream conditions not clearly defined, for example, what is the final destination and release conditions of pit water?

QMDC is concerned that the flow duration analysis and Spells analysis are very generic. It should have been in NAC's consideration to detail impacts more rigorously including the significance of pumping volume access, particularly for the one licence on Lagoon Creek (5610R) and with regard to drier years when water access is more critical. NAC has not made use of local data or landholder recollections to validate the DISITIA flow exceedence curve here or other derived hydrology in section 5.9. QMDC suspect this creek has no flow more than 20-30% time.

QMDC is concerned that all the hydrology modelling and projections would have very low reliability.

Water Quality Guidelines are not rationalised with any local Lagoon Creek data, for example, pH 6.5-7.5 may be lower than natural range – 6.5 to 8.5 from Dawson may be a better option. This was confirmed with especially no flow samples not complying with guidelines. No comments made with regard to this non-compliance. From the numbers given QMDC would suspect that stock had access to Lagoon Creek in the time preceeding no flow samples.

Some justification of relevance of the Dawson information such as similar geography/Regional Ecosystems etc would help justify the use of the Dawson dataset – however it would need to be confirmed that the Dawson or any other adopted Guidelines have been justified with local data – subsequently the limited number of samples in the EIS are inconclusive at best.

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Condamine Alliance has been working with the Condamine catchment community in drafting a set of environmental water values for the ground and surface water in the catchment. These two documents represent a number of years of consultation with key stakeholders and community members.

 [Consultation Report Draft Surface Water Environmental Values for the Condamine Catchment](#) (Full report) (2973 KB)

 [Consultation Report Draft Groundwater Environmental Values for the Condamine Catchment](#) (Full report) (2851 KB)

NAC has in our opinion given no real consideration to these reports and the science that informs them.

Overall NAC in QMDC's opinion have failed to respond properly to the TOR in terms of considering: EC, major cations and anions, dissolved metals, minor ions, hydrocarbons, any other potentially harmful substance, turbidity, sediment, pH. Although NAC has supplied a list of values for these compounds, they have failed to test for them all. Lead, BTEX chemicals, iron or aluminium were not tested, even when these are likely contaminants.

QMDC accepts that as per the "Environmental considerations" discussion nutrients and, to some degree, sediments are likely to be elevated to a considerable degree by agriculture. However these considerations and those discussed in section 5.7.1 consider only the direct impact of surface drainage and pit development on water quality and riparian zone. QMDC consider another significant risk to water quality would be associated with the accumulation of mine related dust across the catchment and the subsequent runoff especially in the rising stages of first freshes (flow events/minor or major floods). Impacts of associated material should be considered with regard to acute and chronic impact on Lagoon Creek, Doctor Creek and Oakey Creek. Sources of dust and spoil need to be considered as part of the impacts of the mining process, the transport processes as well as the mining and transport infrastructure already considered to some degree.



3.10 Section 5.5 Air quality

Air pollution

Research over the last 30 years confirms that air pollution causes adverse effects on community health and the environment and imposes a real cost on the community.

Economic theory shows that for resources to be used and distributed efficiently, all costs and benefits of an activity need to be adequately considered. QMDC argues that NAC, similar to many development proponents, view the costs of air emissions as 'external' to coal production and consumption decision making processes. This is because such costs are imposed on the wider community rather than the coal mining company as the polluter.

Many of the costs associated with motor vehicle use, for instance, are external. Examples include the costs of congestion, and noise, water and air pollution. If users had to pay the full cost of road transport, including external costs, they might choose different forms of transport or decide to travel less.

NAC have failed to address the presence of external costs, or negative 'externalities', because to do so would mean acknowledging the Project is a 'market failure', and that the social cost of its activities are greater than the private cost. The rationale for the expansion of coal mining is not based on a cumulative impact assessment of full costs, which would highlight the Project's expansion as inefficient use of resources.

If all the health costs associated with NAC's coal production and its use were encapsulated in the economic analyses and cumulative impacts of this Project would customers and consumers pay the full cost of coal production, including external costs, or would they choose different forms of energy?

A cumulative impact assessment must consider all costs and benefits of a proposal, including 'external' effects, such as air emissions. Failure to do so could mean that costs or benefits are significantly underestimated and the analysis is biased.

Although no local or regional studies exist to measure the health burden of coal mining in the QMDB, there have been other regional and wider national studies done which could have been extrapolated from. The health burden of coal in Australia due to air pollution, for example, was estimated by the Australian Academy of Technological Sciences and Engineering to be \$2.6 billion per annum (or \$13 per megawatt hour) (The Hidden costs of electricity: Externalities of Power Generation in Australia (ATSE) 2009).

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[scribd.com/doc/36842518/ATSE-Hidden-Costs-Electricity-report](https://www.scribd.com/doc/36842518/ATSE-Hidden-Costs-Electricity-report)

The total health costs of annual emissions of common ambient air pollutants from all sources in the Greater Sydney Metropolitan Region from 2000 to 2002 were conservatively estimated to be between \$1 billion and \$8.4 billion per annum. This is equivalent to between 0.4 per cent and 3.4 per cent of gross state product (Air Pollution Economics; Health Costs of Air Pollution in the Greater Sydney Metropolitan Region, the NSW Department of Environment and Conservation).

environment.nsw.gov.au/resources/air/airpollution05623.pdf

Trachea, bronchus and lung cancers (C33-C34) were the fourth leading cause of death in 2011. Over the last 10 years, deaths due to this cause have increased by 11.1%, from 7,303 in 2002 to 8,114 in 2011.

<http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/3303.0Chapter42011>

Where is the proper consideration of these studies in NAC's EIS?

Social and mental health impacts are obvious in the local towns and communities neighbouring the mine. NAC's mining has changed the lifestyles and characters of these communities.

Higginbotham and colleagues detailed the social and political consequences that result from the inaction of state authorities in addressing residents' health concerns. They noted the obstacles blocking a public-requested health study and air monitoring included: the interdependence of state government and corporations in reaping the economic benefits of coal production; lack of political will, regulatory inertia and procedural injustice; and study design and measurement issues (Higginbotham N, Freeman S, Connor L, Albrecht G. *Environmental injustice and air pollution in coal affected communities, Hunter Valley Australia*. Health Place 2010; 16: 259-266).

NAC have failed to analyse mining- and coal-related air pollution in a contested socio-political arena, where residents, civil society and local government groups struggle with corporations and state government over the burden of imposed health risk caused by air pollution. Medical practitioners in coal mining areas have reported that increases in stress and mental ill health have become more common.

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As more coalmines opened and expanded, as occurred in parts of the Hunter Valley in New South Wales, and which is occurring in this region, the social fabric of a region changes, the role and function of a township alters, and many inhabitants of these regions have developed depression, anxiety and ill health (Connor L, Albrecht G, Higginbotham N, et al. *Environmental change and human health in Upper Hunter communities of New South Wales, Australia*. EcoHealth 2004; 1 (2 Suppl): 47-58). http://www.fof.org.au/uploads/media/MJA_Coal.pdf

Listed below are a number of health and safety studies and reports relevant to a cumulative impact assessment and its delivery to the “greatest extent practicable”. QMDC is disappointed that the insight they provide to address a range of cumulative impacts, predominantly health issues is not embraced by the assessment.

- Hendryx M, Ahern MM. Relations between health indicators and residential proximity to coal mining in West Virginia. *Am J Public Health* 2008; 98: 669-671.
- Hendryx M. Mortality from heart, respiratory, and kidney disease in coal mining areas of Appalachia. *Int Arch Occup Environ Health* 2009; 82: 243-249.
- Australian Bureau of Statistics. Directory of mining statistics, 2002. Canberra: ABS, 2002: 49-63. (ABS Cat. No. 1144.0.)
http://www.ausstats.abs.gov.au/ausstats/free.nsf/0/9AD51E2188924080CA256C8B0082DFD7/File/11440_2002.pdf
- Gunningham N. Mine safety: law, regulation and policy. Canberra: Federation Press, 2006; chapter 1
http://www.anu.edu.au/fellows/ngunningham/docs/Mine_Safety_Chapter_One.pdf
- Lockwood AH, Welker-Hood K, Rauch M, Gottlieb B. Coal's assault on human health: a report from Physicians for Social Responsibility. Washington DC: PSR, 2009. <http://www.psr.org/assets/pdfs/psr-coal-fullreport.pdf>
- Smith DR, Leggat PA. 24 years of pneumoconiosis mortality surveillance in Australia. *J Occup Health* 2006; 48: 309-313.
- Kizil GV, Donoghue AM. Coal dust in the longwall mines of New South Wales: a respiratory risk assessment. *Occup Med (Lond)* 2002; 52: 137-149.
- Epstein PR, Reinhart N. Testimony for the Kentucky General Assembly, House of Representatives Committee on Health and Welfare. London, Ky: Kentuckians for the Commonwealth, 2010.
<http://www.kftc.org/blog/linkedddocuments/documents/Epstein%20Testimony.doc>
- Smail S. Toxic chemicals found in coal gas projects in Queensland. AM [radio program]. Brisbane: ABC, 2010.
<http://www.abc.net.au/am/content/2010/s3043048.htm>

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- Fraser A. Contamination fear fails to stop project. The Australian 2010; 10 Nov. <http://www.theaustralian.com.au/national-affairs/contamination-fear-failsto-stop-project/story-fn59niix-1225950389968>
- Higginbotham N, Freeman S, Connor L, Albrecht G. Environmental injustice and air pollution in coal affected communities, Hunter Valley Australia. Health Place 2010; 16: 259-266.
- Fowler A. A dirty business. Four Corners [television program]. Sydney: ABC, 2010. <http://www.abc.net.au/4corners/content/2010/s2870687.htm>
- Connor L, Albrecht G, Higginbotham N, et al. Environmental change and human health in Upper Hunter communities of New South Wales, Australia. EcoHealth 2004; 1 (2 Suppl): 47-58.
- Kjellstrom TE, Neller A, Simpson RW. Air pollution and its health impacts: the changing panorama. Med J Aust 2002; 177: 604-608.
- Australian Air Quality Group. Particles. AAQG: Armidale, 25 Apr 2010. <http://aaqg.3sc.net/air-pollution-and-health/particles>
- Judek S, Jessiman B, Stieb D, Vet R. Estimated number of excess deaths in Canada due to air pollution. Vancouver: Metro Vancouver, 2004 <http://www.metrovancouver.org/about/publications/Publications/AirPollutionDeaths.pdf>
- Last J, Trouton K, Pengelly G. Taking our breath away: the health effects of air pollution and climate change. Vancouver: David Suzuki Foundation, 1998. http://www.davidsuzuki.org/publications/downloads/1998/healthFULL_eng.pdf
- Grant WB. Air pollution in relation to US cancer mortality rates: an ecological study; likely role of carbonaceous aerosols and polycyclic aromatic hydrocarbons. Anticancer Res 2009; 29: 3537-3545.
- Pirrone N, Mason R. Mercury fate and transport in the global atmosphere: emissions, measurements and models. Dordrecht: Springer, 2009.
- Voigt T, Bailey M, Abrahamson M. Air pollution in the Latrobe Valley and its impact upon respiratory morbidity. Aust N Z J Public Health 1998; 22: 556-561.
- Halliday JA, Henry RL, Hankin RG, Hensley MJ. Increased wheeze but not bronchial hyper-reactivity near power stations. J Epidemiol Community Health 1993; 47: 282-286.
- McMichael AJ, Neira M, Bertollini R, et al. Climate change: a time of need and opportunity for the health sector. Lancet 2009; 374: 2123-2125.
- McMichael AJ, Butler CD. Climate change and human health: recognising the really inconvenient truth. Med J Aust 2009; 191: 595-596.
- Australian Academy of Technological Sciences and Engineering. The hidden costs of electricity: externalities of power generation in Australia. Melbourne: ATSE, 2009.

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http://www.apo.org.au/sites/default/files/ATSE_Report_Hidden_Costs_Electricity_2009.pdf

- Epstein PR, Buonocore JJ, Eckerle K, et al. Full cost accounting for the life cycle of coal. *Ann NY Acad Sci* 2011; 1219: 73-98.
- United Nations Development Programme. International human development indicators: Human Development Index (HDI)—2010 rankings. New York: United Nations, 2010. <http://hdr.undp.org/en/statistics>

Blasting

Project emissions of fume forming acid gases such as NO_x and SO_x to the atmosphere have to be well understood because of the environmental and health effects of these emissions.

Although NO_x from blasting for the Project may only contribute a small proportion of total NO_x emissions, the rapid release and high concentration that may be associated with such activities may pose a health risk should the resulting plume not dissipate rapidly and subsequently drift on to the populations in the surrounding environs.

Other EISs QMDC has studied show that the plume is less readily dispersed in an area when there are more stable or neutral atmospheric conditions. If this is so the potential impact on humans is significant as that sort of weather encourages more outdoor living activities and increases the likelihood of greater exposure to contaminated air.

Research conducted to investigate coal mining blasting was reported on in *NO_x Emissions from Blasting in Open Cut Coal Mining in the Hunter Valley* by Moetaz A. et al.


The report writes:

Quantitative measurements of CO, NO, NO₂ and SO₂ in plumes from blasting were made at two open cut mines showed that NO₂ was present in most of the plumes although in relatively low concentrations (typically ranging between 0 and 17 ppm). The highest concentration measured during all the field campaigns was about 17 ppm at ground level.

In contrast, much higher concentrations of CO, NO and SO₂ were detected in the plumes and in many cases, the levels of these gases within the blast exclusion zone were many times higher than occupational exposure standards. The approximate ratios of CO: NO: SO₂: NO₂ was determined to be: 500: 27.5: 5.5: 1 respectively.

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High levels of hydrocarbons in the blast were measured at ground level. These compounds are believed to be derived from the diesel or fuel oil in the ANFO explosive.

<http://www.acarp.com.au/abstracts.aspx?repld=C14054>

Numerical modelling of the behaviour of plumes resulting from blasting was made to assess the possible downwind concentrations of NO₂. Overall the modelling suggested that these emissions would become very low at distances greater than 5 km from the blast. QMDC is concerned that there are a large number of sensitive receptor locations within close proximity to the mine.

An in-depth literature review was also conducted during the above named research. The review highlighted that for NO_x emissions from blasting operations utilising ANFO explosives influencing factors for NO_x fume formation and the interactions of these mechanisms are “still poorly understood”. It also found that research studies were also confined to smaller scale experiments. Investigations also identified avenues for alternative field monitoring techniques to be developed and applied.

The characterisation of NO_x emission fluxes allowed the researchers to make comparisons against the National Pollutant Inventory (NPI) emission factor. The sampling regime also identified and measured other ANFO reaction products within the gaseous plumes. It was detected that high concentrations of CO and NO were present even in the absence of the highly visible NO₂ plumes.

QMDC's reading of other EISs and EMPs has found that concentration levels for some of the air pollutants contained in blast fume, when compared with national occupational health and safety standards, exceed allowable limits for those particular gases, albeit mostly within the perimeter of the blast exclusion zone. QMDC appreciates that while the concentrations were elevated, the duration of time that this concentration exists at a particular location is usually small.

The researchers suggested in their report that a number of areas may warrant further investigation, these included:

- Continuation of the measurement campaign.
- Expand the sampling regime to better capture and quantify gaseous products under different conditions using ANFO blasting agents and derivatives.
- Better characterisation of gaseous hydrocarbon emissions to identify possible toxic compounds such as PAHs and VOCs.

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<http://www.acarp.com.au/abstracts.aspx?repld=C14054>

In light of the report and information read in other EISs, EMPs, QMDC does not believe the modelling conducted by NAC is adequate.

Blasting parameters must be considered so that air blast limits are met. If compliance cannot be met by the Project it should not be allowed to proceed, or at the very least not be allowed to operate on days or nights when there will be exceedences. The EIS has not factored in these types of scenarios to its economic analysis nor the *Hazard Analysis*.

QMDC argues the Project will not make an equitable contribution to state and national air quality targets.

Fugitive emissions

Fugitive emissions are not considered seriously by NAC. QMDC is concerned that the Project will add to the global carbon total through typical mining practices. Below are fugitive sources not thoroughly considered in the EIS in terms of the Project's impact on air quality:

- point sources
- equipment leaks
- open vats and mixing
- storage tanks
- wastewater treatment
- emissions from cooling towers
- maintenance operations
- vehicle movement and exhaust
- liquid spills
- storage piles
- bulk materials handling and unit operations
- loading and unloading of vehicles
- painting
- equipment cleaning and solvent degreasing
- surface coating
- abrasive blasting
- asphalt paving
- construction and demolition
- welding
- open area wind erosion

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Any assessment of carbon emissions and carbon offsets showing that interactions between terrestrial carbon disturbance and coal production can be managed or mitigated misses the point. It is urgent the region's current carbon emissions need to be managed through:

- reduction in the rate of deforestation and land degradation;
- development of carbon sequestration projects in forestry and agriculture;
- promoting energy efficiency;
- development of alternative and renewable energy sources;
- reduction in solid and liquid waste;
- shifting to low or zero emission transportation modes;
- soil and biomass storage, and
- improving land reclamation best practices.

It is paramount that the Project does not contribute to an increase in carbon emissions through fugitive emissions and that this considered in terms of its cumulative impact and offset obligations.


3.11 Section 5.6 Greenhouse gas emission reduction

Queensland has been identified as the fastest growing and most energy intensive state in Australia. Queensland's contribution to Australia's total carbon emissions was 24.7% in 2011. <http://www.oesr.qld.gov.au/subjects/environment/environment-general/tables/carbon-dioxide-equivalent-emissions/index.php>

Additionally more harmful greenhouse gases (GHG) are produced per person in Queensland than any other state with approximately 43 tonnes of greenhouse gas emissions per capita (2010). The activities required to fully support the Project will require a large consumption of energy and will result in increased GHG emissions.

QMDC asserts that an appropriate assessment of the significance of the emissions should be by way of assessing the Project's contribution towards exceeding the internationally agreed target of remaining below 2°C warming. Meinshausen et al. posit that the remaining 'budget' of global emissions to have reasonable chance (80%) of remaining below 2°C warming is approximately 529 GtCO₂ between 2011 and 2050².

² Meinshausen, M., N. Meinshausen, W. Hare, S. C. B. Raper, K. Frieler, R. Knutti, D. J. Frame and M. R. Allen (2009). "Greenhouse-gas emission targets for limiting global warming to 2°C." *Nature* 458(7242): 1158 as updated for an expert report to the Queensland Land Court available at www.envlaw.com.au/wandoan



This would therefore indicate that the emissions from the Project will devour some of the world's remaining budget to stay below a 2°C warming. The IPCC Working Group I report (2007) noted that in order to achieve keeping global warming below 2°C requires global CO₂-e concentrations to remain below 450ppm (See Table 10.8 of that Report).

When you take into account the coal Australia exports, the industry's contribution to global climate change becomes very significant – around 5%, and that's from about 0.3% of the global population. The IEA has calculated that removing fossil fuel subsidies, globally, would create enough incentive to discontinue their use and provide around half the necessary cuts to emissions to stay under two degrees of warming.

Plans to massively expand existing export markets in both Queensland and NSW are leading to local health problems and environmental damage. There are also massive global consequences, in the form of guaranteed emissions. This all comes at a critical juncture in international energy markets.

The cost of solar and wind energy is sufficiently declining in many countries, to the extent that it can compete on price alone with new and expanding coal mining projects (without even considering externalities of pollution).

Windows of opportunity for new coal investments are closing, but if these projects and NAC's go ahead, Australian exports could be locking other countries into a polluting energy trajectory for decades to come.

In Stockholm, at the Twelfth Session of Working Group I (WGI-12) in September 2013, the Summary for Policymakers (SPM) of the Working Group I contribution to the IPCC Fifth Assessment Report (WGI AR5) was approved and the underlying scientific and technical assessment accepted.

https://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml

The SPM concludes that “continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system”.



“Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions. Cumulative emissions of CO₂ largely determine global mean surface warming by the late 21st century and beyond”.

http://www.climatechange2013.org/images/uploads/WG1AR5_Headlines.pdf

QMDC asserts that NAC should have addressed in the EIS their responsibility for the Project’s proportional contribution to the global impacts of 2°C warming, identifying the total % of all of the impacts of climate change at that level. This includes the Project measuring Scope 3 emissions.

In this region there are many NRM Managers, farmers, conservationists, and rural business owners who are committed to reducing CO₂ emissions. What is sought in this region by these stakeholders is a commitment by the government to address the urgent need to cut carbon emissions. This direction and leadership is being driven by world recognised climate change science, local technical expertise and knowledge, including Traditional Owner knowledge on Country, and a sustainable development economic agenda.

In 2012 QMDC commissioned a project to undertake a high-level emissions inventory of the QMDB region and report on the findings. The project aimed to establish an emissions baseline for the region in accordance with national standards for carbon accounting, which can be used as a lead into more detailed calculation work in the future, and ultimately, inform the formation of carbon mitigation strategies. A report was prepared by the University of Queensland’s UQ Smart Group, *Queensland Murray Darling Basin Regional Greenhouse Gas Emissions Inventory 14 August 2012* (the Report). The QMDB region, spanning from Toowoomba to the west of Charleville, has an area of over 286,000km² and accounts for 15 per cent of the total area of Queensland.

The Report provides an estimate of the total inventory of all six Kyoto greenhouse gas (GHG) emissions for the 2010/2011 fiscal year, and a 12 month projection has also been provided. The inventory has been defined according to eight sectors: Mining; Transport; Industry; Agriculture; Water; Stationary Energy (including households); Local Government; and; Waste.

The GHG emissions were separated in to Scope 1 (direct) and Scope 2 (indirect) emissions, with some sectors considering an estimate of scope 3 (indirect) emissions. The calculations were based on both the National Greenhouse Account (NGA) factors and previous emissions calculations. The emissions were also measured in terms of their total tonnes of carbon dioxide equivalent (tCO₂e).

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For the financial year 2010-11, the report was able to tell QMDC what the estimated total GHG emissions (Scope 1 and 2, as consistent with national measurement standards) for the QMDB region were (the equivalent to approximately 9.1 million family sedans on the road) and the relative percentage of each industry's emissions. The highest emitters were stationary energy, industry, transport, mining and agriculture.

Within the QMDB region there are five open cut coal mines all of which produced an average of 4.35 million tonnes of raw coal within the 2010-2011 time period. Relevant data was obtained by investigating NAC's annual reports. It was then possible to apply ratios and ultimately calculate the necessary carbon emissions figures. Information specific to the remaining coal mines was not publicly available and therefore the New Acland figures were the base resource for the final calculations. The emissions calculations from the coal mining sector found the sector is responsible for approximately 1.124Mt CO₂e within the region. The figures in the report from the coal mining sector attempted to cover all scope 1, scope 2 and scope 3 emissions.

All of the data obtained and used for extrapolation was from either NGER's reports, websites or government reports. The main source or base for the calculations was data found regarding the New Acland mine. The growth rate was essentially the first necessary calculation, due to data only being available for years 2008/09 and 2009-10. This growth rate was determined and applied to this data in order to predict the amount of raw coal produced in years 2010-11. Southern Queensland Open Cut Mine data from years 2005-2010 was analysed and an estimate for the average growth rate was calculated to be 3.93%. Once approximate figures for raw coal produced in 2010-11 were able to be calculated this figure then needed to be converted to tonnes of CO₂e.

With respect to coal mining emissions, specific mines have not been identified. NAC is however Mine "D".

Summary of Findings

Table 17 – QMDB GHG Emissions from Mining & Resources 2010-2011


Category	Scope 1 (tCO2e)	Scope 2 (tCO2e)	Scope 1 + 2 Total (tCO2e)	Scope 3 (tCO2e)	Total (tCO2e)
Gas Field	1,514,455*		1,514,455	10,649,193.13	12,163,648
Transmission	284,664.37*		284,664.37	-	284,664.37
Crude	6,170.27*		6,170.27	66,985.46	73,155
Oil/Condensate					
Total Oil & Gas Emissions	1,805,269	-	1,805,289	10,716,179	12,521,467
Coal Mine A	124,700	13,600	138,300	2,904,000	3,042,300
Coal Mine B	169,000	18,400	187,400	3,934,000	4,121,400
Coal Mine C	104,200	11,400	115,600	2,427,000	2,542,600
Coal Mine D	459,900	50,100	510,000	10,707,000	11,217,000
Coal Mine E	155,700	17,000	172,700	3,626,000	3,798,700
Total Coal Mining Emissions	1,013,500	110,500	1,124,000	23,598,000	24 722 000
Limestone	13,602	2,090	15,692	-	15,692
Quarrying	8,017	34,560	42,577	12,086	54,663
Bentonite	1,608	37	1,645	-	1,645
Silver	-	-	-	-	-
Total 'Other' Mining Emissions	23,227	36,687	59,914	12,086	72,000
Total Mining Emissions	2,841,996	147,187	2,989,203	34,326,265	37,315,467

It is evident that coal mining activities in the QMDB region produce a total of 1,124,000 tonnes of CO₂e where approximately 90% were scope 1 emissions and the remaining 10% were scope 2 emissions. These estimates were developed using published information on coal production from each mine in the study region (recorded in Department of Employment, Economic Development, and Innovation, 2009). Scope 1 emissions were calculated by using data from the New Acland mine (Mine D). This information was readily available and therefore was an easy tool for developing an accurate emissions factor.

Essentially, New Acland was the primary source of all the other mines scope 1 emission calculations and therefore the method used has its limitations as exact figures for each mine were not publicly accessible. NGER's data was sourced so that a ratio of scope1:scope2 emissions could be developed to breakdown the data into fugitive and indirect emissions. Additionally, data had to be extrapolated with regards to scope 1 and scope 2 emissions from larger mining companies outside the region, thus creating another limitation.

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Coal mining operations are clearly a carbon-intensive activity and one, which has a significant impact on the QMDB region. The five open cut coal mines in this region over 2010/2011 produced a total of 24.704 million tonnes of CO₂e and it was estimated that this would increase to 25.69 million tonnes for the period between 2011 and 2012. The companies currently seeking approval to develop new or expanding existing mines in the QMDB will serve to further increase Scope 1 and 3 emissions.

Issues relevant to the potential irreversible and significant level of harm, particularly on areas of high conservation value, in QMDC's opinion, required the Project's GHG emissions and climate change impacts to be assessed as part of its rationale discourse. The lack of attention given to this matter and current IPCC findings illustrates a lack of appreciation of the Project's capacity to cause serious and irreversible environmental harm.

QMDC notes that a comprehensive review by Richard Tol found social costs of carbon through climate change to be \$30/tonne rising 2% each year (Tol, R., *On the Uncertainty About the Total Economic Impact of Climate Change* (2012) Environmental Resource Economics). If that level is applied to the total cumulative emissions from the Project, this would allow the Coordinator General to assess the economic impact in dollars. Based on the finding of other coal mining economic analyses QMDC believe that the amount will outweigh the Project's estimated benefit to the Queensland economy.

Information available in the EIS illustrates that the Project will expand global emissions of greenhouse gasses. QMDC is alarmed that this will occur at a time in the world's history when emissions have already exceeded the resilience of the atmosphere to cope.

From the information provided by NAC it is likely that the Project's emissions will not only intensify the current harms caused by climate change but will be a contributor to pushing global thresholds and the resilience of the atmosphere towards 2°C, which Australia has agreed internationally should be avoided.

QMDC is therefore concerned that the EIS fails to provide all relevant information on GHG emissions, namely it fails to:

- provide calculations of cumulative Scope 1, 2 and 3 emissions for the life of the Project;
- assess the resilience of the environment to receive further emissions;
- describe the significance of the impact of cumulative emissions by reference to 350ppm and 450ppm resilience thresholds;
- describe the cumulative impacts caused by the Project; and

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- assess the proportional contribution of the Project's cumulative emissions to the global threshold

3.12 Section 5.7 Noise and vibration

QMDC is concerned by the number of predicted noise limit exceedences. Further investigation is required to ensure the mitigation measures suggested will actually alleviate the problems.


Noise needs to be monitored regularly and mitigation designed accordingly including stopping operations until compliance can be achieved. Ongoing and regular monitoring programs has not ensured compliance at all times. NAC have received noise complaints from nearby residents as a result of mining activities, necessitating additional noise monitoring.

QMDC is concerned that the control strategies have failed in the past and projections show there will still be exceedences, recognised as being harmful to neighbours.

3.13 Section 5.8 Waste

QMDC asserts that Queensland's contaminated land policy and legislative framework needs to be implemented to primarily **avoid** impact caused by waste generation and the disposal of hazardous contaminants. Currently it is mostly focussed on a mitigation or minimisation objective. Critical to this EIS is an environmental, social and economic audit and analysis of increased waste streams created by the Project and the capacity of the region to deal with this waste. Waste management at a coal mine must be looked at in terms of its cumulative impacts. NAC is currently contributing to general waste, hazardous waste and will increase the total number of current contaminated sites registered on the Environmental Management and Contaminated land Registers.

Intelligent consideration of all these issues and registered contaminated lands puts genuine waste management measures into a broader context of cumulative impact of waste and contamination on human health, land, water and air quality, current and future land use capacity and economic sustainability. This is urgent in this region and should have informed this EIS.



Such important information and consideration is not being offered by either the government or the mining industry to facilitate future land use in Queensland. Consequentially this means this EIS is based on values that support ongoing waste creation and contamination regardless of existing waste streams and contamination and its restrictions on land use, its hazards to health, its detriment to economic sustainability and its contradiction to community aspirations for a clean future with less toxic pollutants and zero waste.

3.14 Section 5.10 Currently Identified Aboriginal Parties

QMDC acknowledges the Traditional Owner groups with registered claims with the Native Title Tribunal and whose Country the Project is situated in the project development area. QMDC also recognizes those Traditional Owners who do not have a registered claim with the Native Title Tribunal and those Aboriginal people that have strong historical connections to the region.

QMDC submits that NAC has restricted itself to an exclusive Aboriginal consultation which denies some Aboriginal communities and Traditional Owner groups to exercise their unique and special relationship (physical and spiritual) with their Country. If the Aboriginal communities and Traditional Owners in whose Country the project development area lies are to have a more meaningful involvement in the future decision-making, planning and management of the region's natural resources then their voices must be recognized by NAC.

Mechanisms aimed at involving Aboriginal people in cultural heritage and natural resource management within the region will need to accommodate, in an appropriate way, the dispersed locations of the Traditional Owners and those with historical interest.

QMDC submits that the *Regional Caring for Country Plan* (the Caring for Country Plan) is a mechanism available to NAC that delivers vision and direction for the planning and management of Aboriginal cultural resources throughout the region. It recognizes the need to protect important cultural, ecological, social and economic values in the region. It also represents the strategies and a framework to care for Country.

<http://www.qmdc.org.au/publications/browse/5/plans>

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The Caring for Country Plan was prepared by QMDC in partnership with Aboriginal communities from the Maranoa-Balonne and Queensland Border Rivers catchments. The Caring for Country Plan has been developed as a key supporting document to the NRM Plan, to clearly highlight the cultural and natural resource management aspirations and goals of Aboriginal communities in the region and to provide further detailed direction to the NRM Plan.

As a key supporting document to the Regional NRM Plan, strategies have been developed that NAC can take and implement with the likes of QMDC and/or other partnering organizations.

3.15 Section 6 Social values and management of impacts

QMDC argues that although social impacts have been partially addressed in the EIS it is still important to address “market failure” in terms of how economists’ failure to value environmental and ecosystems services in their measurement of GDP and business profits will affect the Project.

NAC has not provided a robust discussion on “international demand” and “market failure”. NAC has not provided research data that analyses the manner that market forces influence decisions, both in a negative and positive way, on coal production at a local, regional, and national level. What impact on the region’s communities and natural resource assets does placing more importance on the economy than the natural or social capital have?

Local communities are heeding warnings from world acclaimed scientists that we cannot afford to create more carbon emissions through prolonged coal mining and production activities.

NAC must address social impacts in relation to their ‘social licence to operate’. QMDC asserts that NAC fails to address other key energy policy drivers and has selected only a very narrow ‘business as usual’ paradigm that promotes corporate profit over social well-being.

NAC have failed to produce a cost benefit analysis to quantify the potential social impacts of the Project, for example, health and safety, and quality of life impacts caused by- increased noise, dust, traffic; groundwater depletion; chemicals that can potentially bioaccumulate within the environment; greenhouse gas emissions; tree clearing, or damage to any natural habitats within the development footprint etc.

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Any argument proposing that communities in the region are benefiting from the development of coal resources needs to be supported by real data and research which compares both positive and negative impacts of the mining and energy industry on local communities. NAC's claims to benefitting the region shows a lack of appreciation of the huge impacts local communities are suffering from in terms of housing, social service provision, roading and transport, waste management, labour shortages, mental and physical health etc.

3.16 Section 7 Economies and management of impacts

Royalties, taxes and jobs

QMDC is yet to see evidence NAC's current operations provide royalties resulting in genuine economic gains for the region. Evidence has not been produced clearly showing what the net economic value will be should the Project proceed. QMDC is concerned that a thorough economic analysis may show liabilities, such as regulatory, social and environmental costs far outweigh its worth in royalties, jobs and taxes.

QMDC and the wider public seek assurance that a decision on the Project is not unduly influenced by the current debt the Queensland Government is carrying and the reliance on royalties to fix that debt. We are also aware of the inherent bias that mining companies have created with their 2012 LNP election campaign donations. Indeed Queensland's LNP was the biggest recipient of donations in the financial year ending 2012, mainly due to contributions from mining companies and pharmaceutical companies, one of which was Washington H. Saul Pattinson, an NAC shareholder, who donated \$200,000.


http://www.brw.com.au/p/brw-lounge/miners_dig_deep_league_queensland_lriHts2TgskhnoeWF7AaZJ

Additionally, mining on land that was alienated in fee simple by the Crown before 1 March 1910 (prevalent throughout the Darling Downs region) returns nothing in royalties to the State. It is our understanding many of the early mining permits in Acland fall in to this category. NAC has failed to disclose this information.

Currently there is no specific policy or legislative mechanism that ensures royalties or taxes collected by government are reinvested 'dollar for dollar' in the areas where resources are extracted. There is some accountability on monetary returns to regional areas through 'Regional Budget Statements' which outline the government's commitments to key services and infrastructures in regions and the newly established *Royalties for Regions program* initiated by the government in 2012.

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However there is, to the best of our knowledge, no publically accessible information that analyses net economic value to a region against cumulative impact on social and environmental assets of a region. The claimed economic benefits of mining companies through either their tax and royalty contributions or commercial operations and job creation opportunities is not in our opinion based on a full and accurate analysis of all key aspects.

The Australian Institute, using Australian Bureau of Agriculture and Resource Economics (ABARE) statistics, examined the costs associated with 39 mining projects in Queensland. Collectively these projects have a capital expenditure of more than \$55billion and will employ an estimated 39,668 people. Modelling for the China First mine, has highlighted however that for every two mining jobs created one non-mining job will be destroyed. The Australian Institute suggests it is possible that the proposed mining jobs could destroy 20,000 jobs across Queensland and Australia. The majority of these losses are potentially in the manufacturing sector <http://tiny.cc/wucfew>

Research is showing in Australian and globally that politicians are overestimating the positive economic effects of the mining boom and not enough consideration is being given to economic costs. The boom will undoubtedly make large profits for predominantly foreign owned companies and benefit those workers associated with the industry. Other businesses and communities will miss out and have to contend with higher rents, mortgages, interest rates etc.

QMDC argues it is easy for NAC to talk up the benefit of its individual mine but when all mines are considered together the overall impact is not as positive as Queenslanders have been led to believe. In our experience, the mining and resources industry is quick to claim credit for job creation but is reluctant to assume responsibility for any adverse impacts the expansion of exploration and mining activities may create.

A recent article in the *Newcastle Herald* (29/01/14) by Rod Campbell an economist at the Australia Institute www.tai.org.au challenged NSW Minerals Council chief executive Stephen Galilee's discussion of the role of mining royalties in NSW as being narrow ("Time for coal cash to fill some of the holes", Herald, 20/1).

Although Mr Galilee's claim that the \$1.3billion in coal royalties paid last year helps "to pay for hospitals, schools and public transport" is true, Campbell stated it needs to be put in the following context - Total NSW government revenues for 2012-13 were \$59.9billion. Coal royalties accounted for just 2per cent of state government revenues.

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Campbell writes that the real funding for NSW hospitals, schools and public transport comes from the Commonwealth (47per cent) and from state taxes (37per cent). Coal royalties are therefore “less important to the state than gambling taxes (\$1.8billion) or taxes on motor vehicles (\$2.1billion).”

Campbell also draws attention to the latest budget papers. NSW spends \$11.2billion on schools, \$12.7billion on hospitals and \$11.3billion on transport. If royalties alone, were solely relied upon, Campbell accounts that these services would run for “only two weeks of the year.” Campbell continues by including all the other services provided by the state – such as police and courts and thus concludes that coal royalties would only “fund a few days.” <http://www.theherald.com.au>

Leading international organisations, including the World Bank, the International Energy Agency (IEA), the International Monetary Fund (IMF) and the United Nations, have all called for an end to government subsidies for fossil fuels, as has the G20. Australia is the current president of G20. Although, the Australian Government currently provides around \$10 billion each year encouraging more fossil fuel use, it appears to be in a phase of ending corporate welfare.

Should the Australian Government finally cut all subsidies to the mining sector what impact will this have on the viability of the Project? This question and the potential explosion in the costs of the Project have not been considered by NAC. QMDC assert this detail of economic value is absolutely necessary to justify the Project. Without taking into account these subsidies allows NAC to boast potential profits and economic input into the GDP that has invisibilised key accounting data.

The Australian Greens, using costings from the Parliamentary Budget Office, for example, claim the government could save \$13 billion over the next four years by doing away with handouts like the diesel fuel tax rebates. The consumption of diesel fuel will be extensive during the expansion and extended 25 years of the mine. A calculation of how much public money is being spent for the privilege of NAC having cheap fuel is not included in NAC’s projected economic worth regionally or nationally.

The average Australian pays 38 cents tax per litre of fuel. Large mining companies operating in Australia pay just 6c/litre tax. This massive tax refund costs the Australian taxpayer around \$2 billion a year.

<http://www.theaustralian.com.au/news/latest-news/scrap-subsidies-and-save-the-budget/story-fn3dxiwe-1226638669479>

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Environment Victoria also estimates cheaper fuel for large mining companies costs \$2 billion a year, free carbon permits to Australia's dirtiest coal-fired power stations will cost \$4 billion over the next four years, special tax treatment for big oil, coal and gas projects will cost more than \$3 billion over the next four years and subsidised fuel for airlines will cost \$3.8 billion over four years.

Where are the calculations measuring the public cost of NAC's fuel subsidies, carbon permit and tax discounts? NAC have projected diesel use for excavator/shovels, haul trucks, track dozer, graders, wheeled loader and dozer to be 46239L in 2019; 50893L in 2023; 41121L in 2029. How much of this diesel is subsidised?

Environmental accounting

QMDC advocates for corporate transparency and accountability and the use of non-financial information to support NAC's claims in the EIS. The environmental and social performance of the mining sector has come under increased scrutiny from community organisations.

There is also a growing worldwide push for the corporate sector to embrace the principles of 'corporate social responsibility' and 'sustainable development'.

<http://www.iisd.org/business/issues/sr.aspx>

QMDC is working on producing environmental accounts for the QMDB with the Wentworth Group of Concerned Scientists (the Wentworth Scientists). The Wentworth Scientists are an independent group comprising of leading Australian scientists, economists and business people.

The purpose of creating environmental accounts is to provide information needed to take practical action to maintain healthy and productive land, freshwater and marine resources. In order to do this the condition of environmental assets is measured and then this information is placed into an accounting framework so that it can be used to inform EIS and other economic and policy decisions.

In 2008, the Wentworth Group of Concerned Scientists in association with other experts developed the [*Accounting for Nature*](#) model as "a practical, scientifically credible and affordable method for measuring the condition of Australia's environmental assets, at scales at which economic and policy decisions are being made."

<http://wentworthgroup.org/regional-environmental-accounts/by-regions/>

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QMDC is currently compiling a database of the assets in the QMDB to be measured (e.g. soil, native vegetation, native fauna and flora, forestry, landscape) and water (riparian zones, rivers & surface water, groundwater dependent ecosystems, groundwater and aquifers, wetlands, floodplain).

The Accounting for Nature model enables NRM organisations like QMDC, industry, policy makers, the community and other key stakeholders in the region to:

- “better understand complex scientific information;
- set and evaluate measurable standards and policy targets;
- estimate the cost of meeting those standards and targets;
- evaluate the cost-effectiveness of investment decisions; and then
- monitor progress over time”.

“The unique feature of the Accounting for Nature model is that it uses science to create a common (non-monetary) currency which can be used to create local, regional, state and national asset condition accounts”.

<http://wentworthgroup.org/regional-environmental-accounts/by-regions/>

Ten of Australia’s 54 Regional Natural Resource Management authorities, with support from experts in Commonwealth and State government agencies, the CSIRO, The Ian Potter Foundation, and the Wentworth Scientists, have undertaken a regional scale, ‘proof of concept’ trial of the Accounting for Nature model with the objective of then aggregating this information to create national environmental asset condition accounts.

Econd is the common currency used. It does not imply a monetary value, nor does it describe a desired state. This type of currency allows the comparison of the relative condition of one environmental asset with any other asset in different locations, using different indicators (e.g. vegetation extent of a specific area with the number of Regional Ecosystems surrounding it). These indicators are quantifiable and transparent measures of ecosystems that can be used to detect change and provide a simple measure for a complex system. They are not intended to cover pressures on environmental assets or management responses to pressures. They reflect an ecosystem’s - vigour (level of productivity); its organization (structure and interactions); and reliance (ability to recover from shock).

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“Econd is based on the long established science of reference benchmarking to create an index between 0 and 100, which compares the current condition of an asset against a scientific estimate of its natural or potential condition in the absence of significant human alteration. Central to the creation of this common unit of measure is a formal process of accreditation to ensure that the complex and diverse information that goes into the accounts is scientifically valid”.

<http://wentworthgroup.org/regional-environmental-accounts/by-regions/>

The above mentioned trials are nearing completion, with the initial observations on the results available at <http://wentworthgroup.org/2013/08/initial-observations-of-regional-environmental-accounts-proof-of-concept-trial/2013/>

The ‘proof of concept’ was tested initially at the regional scale and early results provide strong evidence of the value of a common currency such as Econd to inform decision making at this level. These trials also demonstrate that it is practical and affordable to apply the concept of asset condition accounting using the Accounting for Nature model.

Current ‘proof of concept’ regional accounts and accompanying documentation can be accessed through [NRM Regions Australia](http://www.nrmregionsaustralia.com.au) at www.nrmregionsaustralia.com.au

The Productivity Commission has also researched non-market values and environmental accounting.

http://www.pc.gov.au/_data/assets/pdf_file/0005/131693/non-market-valuation.pdf

Internationally, the United Nations Environment Programme, is urging decision and policy makers to address socio-economic and environmental issues: by integrating environmental, economic and social data for a proper assessment of environmental impact; by improving environmental governance – including accounting systems – to recognise the true value of natural capital and ecosystem services; and by implementing regulatory, market and information-based policies that aim to change human and corporate behaviour. United Nations Environment Programme (UNEP). (2012) GEO-5 Assessment

www.unep.org/geo/geo5.asp

William Nordhaus a respected economist in the United States published in August 2011, a paper entitled *Environmental Accounting for Pollution in the US Economy*. It was the lead paper in the American Economic Review, the leading economics publication, and to our knowledge, the findings have not been contested by any other economists.

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The paper presents a framework to include air pollution into a system of national accounts, i.e. calculations of gross domestic product and other macroeconomic statistics. It estimates the value of air pollution damage created by several industries in the United States.

Nordhaus makes estimations based on the impacts of six pollutants (sulphur dioxide [SO₂], nitrous oxide [NO_x], volatile organic compounds, ammonia, particles at less than 2.5 microns [PM_{2.5}], and particles less than 10 microns [PM_{10-2.5}]) on human health, agricultural yield, visibility, accelerated depreciation and human recreation. Air pollution concentrations are related to human illness and death and the projected economic loss.

The paper concludes that: Several industries cause damages greater than their "value added" – the difference between the value of the inputs they take in and the value of the output they produce. Coal fired power generation was found to produce damages from 0.8 to 5.6 times its value added. In other words, the damage caused is worth at best 80 percent of the net value of the industry and at worst 5.6 times greater.

pubs.aeaweb.org/doi/pdfplus/10.1257/aer.101.5.1649

These findings indicate, that at best, coal fired power generation has no economic value to the community. At worst, the industry is a huge economic burden.

QMDC argue that the Project cannot be justified if global impacts caused by coal fired power plants are taken into account.

The Union of Concerned Scientists conducted a case study examining the side effects of a 500 megawatt coal plant. Below are the findings of their study:

“A 500 megawatt coal plant produces 3.5 billion kilowatt-hours per year, enough to power a city of about 140,000 people. It burns 1,430,000 tons of coal, uses 2.2 billion gallons of water and 146,000 tons of limestone.”

It also puts out, each year:

- 10,000 tons of sulphur dioxide. Sulphur dioxide (SO_x) is the main cause of acid rain, which damages forests, lakes and buildings.
- *10,200 tons of nitrogen oxide.* Nitrogen oxide (NO_x) is a major cause of smog, and also a cause of acid rain.
- *3.7 million tons of carbon dioxide.* Carbon dioxide (CO₂) is the main greenhouse gas, and is the leading cause of global warming. There are no regulations limiting carbon dioxide emissions in the U.S.

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- *500 tons of small particles.* Small particulates are a health hazard, causing lung damage. Particulates smaller than 10 microns are not regulated, but may be soon.
- *220 tons of hydrocarbons.* Fossil fuels are made of hydrocarbons; when they don't burn completely, they are released into the air. They are a cause of smog.
- *720 tons of carbon monoxide.* Carbon monoxide (CO) is a poisonous gas and contributor to global warming.
- *125,000 tons of ash and 193,000 tons of sludge from the smokestack scrubber.* A scrubber uses powdered limestone and water to remove pollution from the plant's exhaust. Instead of going into the air, the pollution goes into a landfill or into products like concrete and drywall. This ash and sludge consists of coal ash, limestone, and many pollutants, such as toxic metals like lead and mercury.
- *225 pounds of arsenic, 114 pounds of lead, 4 pounds of cadmium, and many other toxic heavy metals.* Mercury emissions from coal plants are suspected of contaminating lakes and rivers in northern and northeast states and Canada. In Wisconsin alone, more than 200 lakes and rivers are contaminated with mercury. Health officials warn against eating fish caught in these waters, since mercury can cause birth defects, brain damage and other ailments. Acid rain also causes mercury poisoning by leaching mercury from rocks and making it available in a form that can be taken up by organisms.
- *Trace elements of uranium.* All but 16 of the 92 naturally occurring elements have been detected in coal, mostly as trace elements below 0.1 percent (1,000 parts per million, or ppm).

A [study](#) by DOE's Oak Ridge National Lab found that radioactive emissions from coal combustion are greater than those from nuclear power production.

The 2.2 billion gallons of water it uses for cooling is raised 16 degrees F on average before being discharged into a lake or river. By warming the water year-round it changes the habitat of that body of water.

Transportation of coal is typically by rail and barge; much coal now comes from the coal basins of Wyoming and the West. Injuries from coal transportation (such as at train crossing accidents) are estimated to cause 450 deaths and 6800 injuries per year.

Transporting enough coal to supply just this one 500 MW plant requires 14,300 train cars. That's 40 cars of coal per day."

http://www.ucsusa.org/clean_energy/coalvswind/brief_coal.html

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3.17 Section 8.1 Hazard and risk assessment

QMDC submits that, although Government as the regulator plays the “last card” on “acceptable risk”, initial determinations are not the prerogative of a private coal company nor any consultants it pays to conduct research. Both coal company and consultants will have commercial interests in the outcome.

It is common practice that company based risk assessments, are frequently deemed confidential, do not incorporate regional NRM targets, do not respect local knowledge, depend too much on economic modelling which lacks peer review or environmental and social application and do not advocate a community participatory process or a precautionary approach.

The scientific reports relied upon by NAC for the EIS weaken the intentions of the *Environmental Protection Act* by merely suggesting “preventative measures” which are based on a limited scope to address risks associated with potential impacts.

If the primary objective of the *Environmental Protection Act* is to improve the total quality of life, both now and in the future by maintaining ecological processes on which life depends then in relation to the EIS the science and technical expertise relied upon should be as a matter of routine independently peer reviewed in order to provide the best available science and knowledge to protect, public health, aquifers, waterway, soils, biodiversity etc.

Providing peer reviews and their conclusions or at the very least referencing them as per the above comments would demonstrate that NAC is building on historical and current research to advance the region’s scientific knowledge. *Best available science*; where definitions and criteria are based on peer reviewed scientific research would enable community to consider the EIS in terms of its saliency, credibility and legitimacy, namely whether NAC addresses legislative and policy relevant questions; whether the science relied upon meets standards of scientific rigour, technical adequacy, and truthfulness; and finally whether the science is fair and politically unbiased.

Application of significance assessment method

QMDC asserts an independent peer review needs to be conducted to assess the findings of the technical studies relied upon.



Environmental framework

QMDC asserts that the reasons offered for uncertainty undermine the purpose of the EIS. The details or information not provided by NAC are absolutely essential because of the area that the Project resides within and the significant impacts on social and environmental values both site specific and cumulative that the Project will have.

Describing impacts as “typical” minimises the significant impact they may have on, for example, regional ecosystems, or individual fish species, or farming businesses, or human health, or air quality and so forth.

The region’s communities seek certainty where it is warranted.

Environmental values

The environmental framework approach promoted by this EIS requires not only the accurate identification of environmental values but also a full consideration of the Project’s impact on those values. An accurate identification will enable NAC to assign levels of sensitivity to those values and then apply an appropriate level of environmental constraint.

If, however, NAC has failed to accurately identify the environmental values, then the environmental framework that NAC uses to inform its project development on becomes flawed, resulting in inappropriate development and/or the application of inappropriate environmental management controls.

QMDC is concerned that if environmental values have been incorrectly identified and technical reports and assessments have not been independently peer reviewed, site specific and cumulative impacts on groundwater systems, existing land users, “sensitive receptors”, regional ecosystems etc are being underestimated or ignored.

QMDC argues that the risk based assessment process has not assigned correct sensitivity value, for example, to the Condamine Alluvium.

Avoidance, mitigation and management measures

QMDC argues that the primary action needed to be taken by NAC is to ensure its production facilities do not produce the identified exceedences in the first place.

Residual impacts

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QMDC does not accept the mitigation action of separating distances from sensitive receptors as the most appropriate action. The exceedence should not occur in the first instance especially if production facilities will be operating for 15 years, 24 hours a day, 7 days a week.

3.18 Section 9 Cumulative Impacts

NAC must demonstrate that they have described and considered local and regional cumulative impacts to the greatest extent practicable.

In our opinion the NAC has failed to address the TOR successfully. This clearly shows NAC is disinterested in how impacts caused by the proposed Stage 3 Project will aggregate and interact. This we would argue is because they currently do not know how to fully manage and monitor cumulative impacts created by their current mining activities.


Additionally NAC's cumulative impact assessment has rehashed an EIS assessment completed for BHP Billiton Mitsubishi Alliance on the Caval Ridge Coal Mine Project. Indeed some excerpts of that assessment have been simply cut and pasted into this EIS. QMDC believe this action shows a lack of integrity by NAC and a blatant disregard for due EIA process. See the below website for a comparison:

<http://www.bhpbilliton.com/home/aboutus/regulatory/Documents/creisCumulativeImpacts.pdf>

Current localised and regional cumulative impacts are affecting the mine's neighbouring residents, towns' and communities' health and safety, access to services, social values, environmental values, natural resource condition, agricultural activities and economic sustainability.

Individual and collectively significant actions that have occurred over time and space include the sequential, incremental and conjoined impacts caused by a range of activities.

The company's actions to relocate residents and demolish homes and community facilities, for example, has destroyed the social fabric of Muldu and Acland by turning the once vibrant rural community into a ghost town; it has also potentially exposed those remaining residents and mine workers including sub-contractors to dust from asbestos and concrete debris during demolitions and in consequent clean-up attempts.



Acland and the surrounding communities of Muldu, Oakey and Jondaryan have suffered and continue to suffer the ill effects of the mine's operation on the local farming economy through the loss of good quality agricultural land to the mining site, and wage disparity across industries which has led to inequitable competition for labour, and the collapse of local businesses.

Air quality has diminished - blasting, increased traffic, coal dust from coal piles and uncovered train carriages, background noise from 24 hour mine operations, and lighting are collectively significant actions changing the environment, locally and regionally.

These few examples clearly highlight how negative impacts have been generated by the compounding activities of a single mining operation or multiple mining and processing operations.

The interaction of mining related impacts with other past, current and future activities that may not be related to mining are also apparent e.g. vegetation clearance and reduction of region's biodiversity (local wildlife observations in Muldu have recorded silver perch, fresh water mussels, dragonflies, juvenile wood ducks, black ducks, blue teal ducks, pelicans, cormorants and other birdlife, nesting or living in native waterlilies and water habitats of the by-pass dams and channels), infrastructure in a floodplain impeding natural flows causing flooding in downstream communities, and contamination of bore water from chemical use and seepage from waste pits into aquifers.

NAC has failed to focus on the opportunity and challenge to proactively identify and respond to cumulative impacts. They have not provided practical approaches, methods and case studies to improve the assessment, management, monitoring and reporting of cumulative impacts and to enhance coordination, collaboration and confidence amongst community stakeholders.

Location

QMDC argues the project development area is in a rural area which by its very nature will have major impacts on households and businesses that do not typically operate from or within a "town". It is also situated within the Condamine Alluvium which needs to be protected.



QMDC asserts the following assets identified in the Regional NRM Plan will be affected by the cumulative impacts of the Project's location:

- air quality
- water quality and quantity
- floodplain integrity and function
- soil integrity, maintenance of good quality agricultural land and food security for the region.

Avoidance of any adversity caused by these impacts needs to be fully considered before management or mitigation strategies are relied upon through the Environment Management Plan (EMP) or any conditions of an environmental authority or imposed Coordinator-General and Commonwealth conditions.

QMDC asserts that facilities that operate for 15 years 24 hours a day and 7 days a week will have a major impact on any "sensitive receptors", agricultural businesses, towns, residences, and other human dwellings or services, regional ecosystem and their biodiversity existing in close proximity to those production facilities.

In QMDC's opinion NAC fails to fully consider the cumulative impact that this Project and all other production facilities of other mining companies, also proposing to operate for 15 or more years, 24 hours a day, 7 days a week.

Agriculture

QMDC notes that throughout the EIS NAC refers to how agriculture has led to significant modification of the environment. While this is true it seems NAC relies on this to justify further modification by the Project. QMDC believes because of the historical impact agriculture has had on the region's physical and natural environment, precaution should be encouraged with regards to further modification by new developments and industry to ensure the cumulative impacts do not push ecosystems and natural resources over their threshold limits.

Impacts related to the proximity of coal seam gas mining developments

With the predicted 40,000 holes to be drilled in Queensland, 7,500 production wells in the QMDB for Arrow's Surat Gas Project (Refer: Arrow's EIS for the Surat Gas Project Volume 1, Chapter 5; Section 5.2.1 Production Wells; p 6) it is urgent that these cumulative impacts and risks are quantified in terms of the location of this Project.

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Groundwater quantity associated with aquifer and aquaclude integrity, for example, may be seriously compromised by collective extraction through coal and coal seam gas mining activities such as drilling, fracking and repatriation activities as wells as agriculture, domestic and town supply use.

In our opinion NAC needed to have asked the question what cumulative risks do slow aquifer recharge rates pose to the region's groundwater resources?

In areas where the controversial fracking process is used, there is serious and unquantified risk of groundwater being contaminated, either by fracking fluids, by saline associated water contaminated with the chemicals naturally present in the coal seam entering a freshwater aquifer, and / or by the gas itself. Fracking presents as one of those "unknowns" or areas of "uncertainty" where QMDC believes the precautionary principle should be applied.

This type of information needs to be accounted for in NAC's modelling and reporting on aquifers and water sources. QMDC is most concerned that the sensitivity assigned to the Condamine Alluvium Aquifer has not been adequately recognised leading NAC to incorrectly identify the environmental value of the groundwater natural resource asset.

NAC has failed to identify not only risks but also thresholds or proximity to thresholds that influence ecosystem vulnerability.

QMDC believes NAC needed to justify natural resource asset recovery rates, maximum impacts in relation to cumulative impact scenarios and align it to the completion of the Project. QMDC believe discussion around issues and impacts that may evolve should a new industry come on board and what affect this may have on those predictions should have also been offered by NAC.

Impact of Australian energy market trends

The Australian Energy Market Operator (AEMO) officially recognised the scope of lower demand, when it highlighted the fact that energy demand across the country the National Electricity Market was 5.7 per cent lower than forecast in 2011/12 because of the combined effect of energy efficiency measures, solar PV, and lower manufacturing.

<http://reneweconomy.com.au/2012/aemo-slashes-energy-demand-forecasts-by-nearly-10-per-cent-56289>

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Demand in Queensland fell for two years running from 2010, and the State had the biggest downgrade in energy forecasts. Its energy demand had been expected to grow at 4.1 per cent a year over the next decade, the strongest in the country, but its forecasts have been revised down to 2.9 per cent a year, which some think is still optimistic. Its peak demand projection for summer in 2012/13 was a huge 17 per cent below its 2011 forecasts.

The full extent of the excess capacity was revealed in Stanwell Corp's [own annual report](#). It noted that on average during 2011/12, the State had 4,500MW of capacity more than it needed. Which according to Parkinson was another way of saying that its entire 4,000MW portfolio of mostly coal and gas fired generation was surplus to requirements for much of the year.

Coal fired generators averaged little more than 60 per cent capacity, and that was only because they exported at least 10 per cent of their power to NSW. Needless to say, the State's electricity consumers have been paying for that excess capacity in some form or another, and for the network upgrades that have accompanied it.

AEMO asserts there is such a surplus in capacity in the State that it expects there will be no need for any new baseload plant in the next decade. Some private experts predict there will never be any need for such capacity. TRUenergy, which had planned 1,500MW of baseload and intermediate gas-fired generation in Queensland, has now put those plans on hold, and Stanwell Corp has also cancelled a planned 504MW power station that would have used "gassified" coal as a fuel source.

Most of these power plants are being closed because they can no longer compete with other generators, either because they have particularly high emissions, or higher costs and are victims of falling demand and increased renewables. That in turn, has pushed wholesale electricity prices lower, and pricing regulators in South Australia and NSW are now acting to ensure these falls are passed on to consumers. Black coal generation fell significantly in 2012, with brown coal generation also starting to be impacted.

In the US, the closure of coal-fired generation is happening at a rapid rate. The Brattle Group released a study that showed that 59-77 GW of coal power was likely to be retired by 2016. The authors of the study claim, the change is "primarily due to changing market conditions, not environmental rule revisions, which have trended towards more lenient requirements and schedules".

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David Roberts (writer for a NFP independent journal GRIST) notes in a 2012 article that even though the regulatory climate for coal is more favorable the market conditions, namely declining energy demand, decreasing costs of renewable energy, developments in natural gas industry) are discouraging the use of coal. Roberts calculates that to be a closure of 20-25% of the United States' entire coal fleet in just a few years.

<http://grist.org/climate-energy/yes-coal-is-dying-but-no-epa-is-not-the-main-culprit/>

QMDC believes this is not an unlikely scenario for Australia coal companies. An over reliance on export promises is not a sustainable practice.

<http://reneweconomy.com.au/2012/is-this-the-beginning-of-the-end-of-coal-fired-generation-49290>

In QMDC's opinion, undertaking a comprehensive review of the Project's rationale required NAC to examine the impact on global demand for coal created by policies on climate change and renewable energy being adopted domestically and internationally by the key export markets.


It is common practice for coal production forecasting to take into account a range of market and macroeconomic factors such as the likely effects of government policies. Emission reduction targets committed to by Queensland coal buyers, and taxes on carbon those buyers are bound by, will, for example, impact on long term demand for coal. The Queensland government recognises that carbon prices will have implications not only on coal production but also on the planning, design, construction and management of coal-related infrastructure in Queensland.

The previous Queensland government in its *CoalPlan 2030* stated that the one uncertainty that is likely to affect demand for coal is "the emerging global response to climate change". Production forecasts by Wood MacKenzie and ABARES relied upon in the *CoalPlan 2030* did not take in to account the extent to which global carbon pollution mitigation will place pressure on Queensland coal forecasts. We argue that by not doing so means any forecast is fraught with gross uncertainty.

This poses a huge economic risk when infrastructure planning and coal expansion projects are allowed to proceed on sketchy forecasting ignoring a universal move towards renewable energy and carbon emission reduction.

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In 2010 the Australian Government asked the Productivity Commission to undertake a research study into effective carbon prices that result from emissions-reduction policies in Australia and other key economies - China, Germany, India, Japan, New Zealand, South Korea, the United Kingdom and the United States.

By providing information about the extent of climate action in key economies and sectors, it was anticipated that this study would shed some light on Australia's mitigation effort relative to other selected countries. By also estimating impacts of mitigation policies on particular sectors such as electricity generation, the study aimed to assist in assessing potential impacts of Australia's policy actions on the international competitiveness of domestic emission-intensive trade-exposed industries, such as coal mining.

Some of the countries studied have introduced emissions trading schemes (ETSs), and all have in place a range of more limited, less direct measures, such as mandatory renewable energy targets, feed-in tariffs, energy-efficiency measures and capital subsidies for constructing or installing sources of renewable energy.

The establishment of an emissions trading scheme in China should therefore be viewed in the broader context of developments in Acland and throughout Australia. China's scheme dovetails with other global schemes, paving the way for a global climate change agreement coming into force in 2020.

Chinese authorities are developing a series of provincial emissions trading systems, in order to put a price on carbon. By pricing carbon, enterprises in China will be incentivised to produce more efficiently, and will invest further in low carbon technology. Seven pilot emissions trading schemes in multiple geographies were launched in 2013-14. Though covering a fraction of China's total emissions, in aggregate they will make up the second largest emissions trading scheme in the world.

"These pilots are expected to cover 700 million tonnes of CO₂e by 2014, compared with 382 million tonnes in Australia, 165m tonnes in California and 2.1 billion tonnes in Europe. Depending on their design, individual pilot schemes will cover a range of industries including electricity, cement, iron and steel, chemicals and large public buildings. The Chinese government will then study these pilot schemes with the hope of launching a nationwide scheme by 2015-16." (Richard Scotney, Sarah Chapman, Cameron Hepburn, Cui Jie, The carbon market and climate policy China's pursuit of a clean energy future, The Climate Institute, October 2012)

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http://www.climateinstitute.org.au/verve/resources/ClimateBridge_CarbonMarketsandClimatePolicyinChina_October2012.pdf

According to the Commission's study all of these types of measures either "encourage abatement or discourage emissions of greenhouse gases. They essentially alter relative prices to favour production and consumption of low-emissions products over high-emissions ones."

More than 1000 carbon policy measures were identified in the nine countries studied, ranging from (limited) emissions trading schemes to policies that support particular types of abatement technology.

The study concludes that "when governments intervene to encourage the provision of low-emissions but high-cost production in place of high-emission, low-cost production, they can obviously have an effect on the competitiveness of businesses using that production as an input. The potentially more vulnerable firms will be those that are energy intensive and trade exposed. In the context of this study, those firms would be the larger users of electricity and/or road transport fuel."

Other important conclusions were:

"Explicit budget subsidies decrease the costs of the low-emissions producers, enabling them to be competitive at prevailing market prices. While businesses using these products will not have to pay for the subsidies via higher prices, taxes will need to be higher (or government spending lower elsewhere), with ramifications throughout the economy.

Implicit subsidies to low-emissions producers will generally be passed on via higher prices to consumers and user industries, reflecting higher average costs of production.

Explicit carbon taxes or trading schemes will directly increase product costs according to their emissions intensity, with these costs being passed on to consumers and user industries."

The Commission estimated the impact of a sample of emissions-reduction policies on the retail prices of electricity and transport fuels but recognised the estimates as being "illustrative or at most indicative."

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The Commission concluded that “assessing impacts on the competitiveness of individual firms would require detailed information for particular firms and industries, including knowledge of the cost functions for the comparable industries in the competing countries, relative energy intensities, the net impacts of other policy measures affecting the cost of production, and the ability to pass on costs.

Moreover, Australian firms may compete with those in a wide range of countries — in many cases including countries other than those in this study — and the position would change as market conditions and exchange rates change”. <http://www.pc.gov.au/projects/study/carbon-prices>

This is calibre of assessment is expected of NAC but not forthcoming in this EIS. The economic benefit of the Project could potentially be completely decimated by one or more of the 1000 existing policies affecting the profits and viability of coal commodities.

External costs of coal

A National Academy of Sciences report, (National Research Council. *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*. Washington, DC: The National Academies Press, 2010) http://www.nap.edu/catalog.php?record_id=12794#toc found that the external costs of coal from US coal-fired power plants add up to over \$62 billion in environmental damages a year. These include damage done to crop and timber yields, to buildings and materials, and the toll coal takes on human health—including the cost of illness and premature deaths. The study examined 406 coal plants that collectively create about 95% of the nation's coal-burned electricity. The report notes, that the "aggregate damages associated with sulfur dioxide, nitrogen oxides and particulate matter emitted by the facilities amounted to \$156 million on average per plant." These are costs not borne by coal and power companies. The study did not consider any potential damages done by greenhouse gas emissions.

http://www.sourcewatch.org/index.php/Environmental_impacts_of_coal

A 2011 report, "[Mining Coal, Mounting Costs: the Life Cycle Consequences of Coal.](#)" led by associate director of the [Center for Health and the Global Environment](#) at Harvard Medical School Dr. Paul Epstein, found that accounting for the full costs of coal would double or triple its price.



A study, which was released in the *Annals of the New York Academy of Sciences*, tallied the economic, health and environmental costs associated with each stage in the life cycle of coal – extraction, transportation, processing, and combustion - and estimated those costs, which are borne by the public at large, to be between \$175 billion and \$500 billion dollars annually.

In terms of human health, the report estimated \$74.6 billion a year in public health burdens in Appalachian communities, with a majority of the impact resulting from increased healthcare costs, injury and death.

Air pollutants from combustion accounted for \$187.5 billion, mercury impacts as much as \$29.3 billion, and climate contributions from combustion between \$61.7 and \$205.8 billion. The study discussed a number of other impacts that are not easily quantified, including effects of heavy metal toxins and carcinogens released into water supplies as part of coal mining and processing; the death and injury of workers mining coal; and the social impacts in mining communities.

The study concluded:

"Our comprehensive review finds that the best estimate for the total economically quantifiable costs, based on a conservative weighting of many of the study findings, amount to some \$345.3 billion, adding close to 17.8¢/kWh of electricity generated from coal. The low estimate is \$175 billion, or over 9¢/kWh, while the true monetizable costs could be as much as the upper bounds of \$523.3 billion, adding close to 26.89¢/kWh. These and the more difficult to quantify externalities are borne by the general public." The average residential price of electricity at the time of the report is 12¢/kWh.

http://www.sourcewatch.org/index.php/Environmental_impacts_of_coal

[Skeptical Science](#) notes that when the coal externalities of the study are included in coal's price, it increases the costs to approximately 28 cents per kWh, which is more than the 2009 U.S. [Energy Information Administration](#) cost of hydroelectric, wind (onshore and offshore), geothermal, biomass, nuclear, natural gas, and solar photovoltaics, and is on par with solar thermal, although the costs of solar thermal are falling.

http://www.sourcewatch.org/index.php/Environmental_impacts_of_coal

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The report stated that its estimates did not include the full cost of coal:

"Still these figures do not represent the full societal and environmental burden of coal. In quantifying the damages, we have omitted the impacts of toxic chemicals and heavy metals on ecological systems and diverse plants and animals; some ill-health endpoints (morbidity) aside from mortality related to air pollutants released through coal combustion that are still not captured; the direct risks and hazards posed by coal sludge, coal slurry, and coal waste impoundments; the full contributions of nitrogen deposition to eutrophication of fresh and coastal sea water; the prolonged impacts of acid rain and acid mine drainage; many of the long-term impacts on the physical and mental health of those living in coal-field regions and nearby MTR sites; some of the health impacts and climate forcing due to increased tropospheric ozone formation; and the full assessment of impacts due to an increasingly unstable climate."

http://www.sourcewatch.org/index.php/Environmental_impacts_of_coal

QMDC assert that globally, economic analyses of the industry are revealing that coal is not cost competitive in the short or long-term. QMDC therefore argues, that relative to American scientific studies, the Project will not provide the overall economic benefits that NAC claims it will.

Doctors for the Environment (DEA) have "serious concerns about Australia's addiction to coal". They assert that contrary to dominant views about the industry, "coal-fired power is not the cheapest fuel and its value to the community is dubious".

DEA argue against the rationale that coal is the cheapest source of energy. DEA alongside prominent economists, environmentalists, community groups are demanding that the total costs of coal mining, transport and burning need to be taken into account to understand the true cost of coal. These externalities include the above mentioned healthcare costs of people affected by coal pollution, and also economic losses and environment damage to water sources, land and food production. DEA also recognise the need to take into account the costs of climate change and extreme weather events resulting from greenhouse gas emissions caused by the coal industry. DEA assert that the externalities are rising rapidly in many countries including Australia.

http://dea.org.au/images/general/How_coal_burns_Aust._-True_cost_of_burning_coal_04-13.pdf

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If NAC had shown due diligence in their response to the TOR they should have considered these studies or others to address the health issues raised by local communities.

Subsidies and campaign contributions

The below website tracks which American politicians and parties are receiving large contributions from oil, petroleum and gas companies <http://dirtyenergymoney.com/>. This political favour is reflected in the current Australian political system.

The Australian Electoral Commission records show NAC's shareholder Washington H Soul Pattinson has given more than \$720,000 to the Liberal Party and the LNP since 2009.

<http://www.abc.net.au/news/2014-02-20/darling-downs-coal-mine-approval-process-being-subverted/5272142>

QMDC is concerned that this Project could be potentially propped up by campaign contributions and subsidies, which is why NAC should have provided a rigorous economic and environmental analysis, proving otherwise.

A new report commissioned by Environment Victoria has found that Australia's dirtiest coal fired power stations are making windfall profits from 'compensation' payments designed to offset the impact of the carbon price.

The Australian government designed the Energy Security Fund to ensure energy security and prevent asset value loss for brown-coal fired power stations that were to be most impacted by the carbon price. The package was worth \$5.5 billion.


However, this new report shows generators have been passing on more than the full cost of the carbon price to customers, and are set to make between \$2.3bn and \$5.4bn in windfall profits from the compensation in coming years. The compensation is actually increasing the profit margin of the dirtiest power stations in the country – the public are paying them to pollute. <http://environmentvictoria.org.au/windfallprofits>

One recent study in America compared poverty rates in West Virginia coal-mining counties to poverty in West Virginia counties without mining. The data showed that coal-mining communities were more impoverished than counties outside the coalfields, and the trend appears to be getting more pronounced. (Source: [Sierra Club Coal Report](#))
<http://www.sierraclub.org/coal/coal101/faq.aspx>

Acland underground coal mines were low output and low impact, and were operated for local markets and by entirely local workforces. Farms existed on top of the mines. They operated in the district from 1913 to 1984.

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Open cut coal mining came into the district in 2001, with the Stage 1 New Acland mine. There is evidence of declining socio economics in the district in Oakey, Acland and Jondaryan related to the expansion of this mine.

Certainly jobs are important, (especially to those whose pay comes from mining), but coal jobs do not support a core pillar of Australia's economy. Coal mines employ only a tiny fraction, and these jobs are replaceable. Per investment dollar, investments in wind and solar power would create at least 2.8x the number of jobs as coal; investments in conservation would create 3.8x as many jobs, and investments in mass transit would create 6x as many jobs as coal!

Investments in fossil fuels drive up fuel prices as economically recoverable fuels become scarcer, while investments in renewable energy make alternative fuels more affordable as technologies improve and energy markets grow. U.S. Energy Information Administration (EIA) information on coal "reserves" does not take into account economic recoverability. Yet like every finite resource, at some point coal supplies will 'peak', meaning that as recoverable supplies dwindle the energy-return-on-investment (EROI). The EORI will be lower than can justify mining, processing, and transporting the coal. When this peak will occur is one of the factors that set the price of coal, and in turn determine the cost competitiveness of other energy technologies. The availability of coal is important to understand before permitting the expansion of coal mining projects.

<http://priceofoil.org/fossil-fuel-subsidies/>

The report [Coal: Resources and Future Production \(2007\)](#) concludes that statistics on global coal supplies are flawed since they are based on poor data sets. For instance, several countries (e.g. Vietnam) have not updated 'proven reserves' for 40 years. Other countries have dramatically reduced their coal supplies. <http://www.energyjustice.net/coal>

QMDC asserts there are other measuring tools that should be used to weigh the costs and benefits e.g. regional natural resource management plans; threshold limits and cumulative impact assessments. QMDC also believe an assessment of the whole life cycle of a mineral resource when determining the cost of regulation and the benefits of its exploitation is needed. QMDC strongly recommend that coal seam gas exploration and production activities should not be permitted or limited in areas, regions, bioregions, and catchments where the environment and natural resources and those communities dependent on them are adversely affected (including human communities like Acland).

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This is particularly the case when environmentally sustainable farming practices based on precision agriculture and conservation agriculture are involved.

Upper Condamine aquifers, the Great Artesian Basin (GAB) and the Murray-Darling Basin are already recognised as the most susceptible aquifers in the country so added impacts on their already existing stresses are likely to be major. The GAB underpins the economy of inland Queensland. Without it most outback towns would cease to exist and the pastoral industry would face much more risk and volatility. This would reduce the resilience of the agricultural industry of Queensland. It would also further undermine the Queensland Government's policy of doubling agricultural production by 2040. The strategic importance of the GAB, means surely the precautionary principle applies in this case.

There are many scientists, conservation bodies, farmers and community members questioning the impact of coal seam gas mining on the GAB to ignore this concern.

Government, industry and regional communities should be looking at all avenues to value add within Queensland's borders to benefit Australians and Queenslanders rather than overseas markets and competitors. USA provides gas to its domestic users at a substantial discount to the international price to give its domestic manufacturers a competitive advantage. Australia's support of a "free market philosophy" puts long term sustainable domestic manufacturers and Australian jobs at a significant disadvantage.

Groundwater

QMDC asserts NAC must demonstrate how it will prevent adverse cumulative impacts caused by direct disturbance to, or extraction from, groundwater flow systems by:

- Not permitting activities where the impacts are not known or understood where the environmental or human health risks are high.
- Not causing interconnectivity between groundwater flow systems.
- Not permitting activities where there are known impacts to stock and domestic or irrigation supplies.
- Not permitting activities that may, or will cause an impact to the groundwater quality, quantity and pressures in the Great Artesian Basin



Production facilities

QMDC asserts the proposed erosion control measures should aim to avoid discharge of sediment-laden water to local watercourses rather than just merely limiting discharge to those watercourses. Additionally QMDC is concerned by the recognised potential for soil loss especially if production facilities are constructed on GQAL or SCL or cracking soils.

Mine water treatment and storage facilities

QMDC is concerned that NAC is relying on dams to store mine water (treated and untreated). NAC fails to fully assess the ongoing liability and cumulative impact these dams create in respect to increasing soil and water contamination in the region, the risks associated with flooding and other climate change impacts, leakage and salinity impacts.

Significance of an impact

Technical expertise is lacking to indicate how many years a study needs to be carried out before the significance of an impact can be ascertained. QMDC argues that appropriate design responses are not the only option available to NAC to address both site specific and cumulative impacts. Avoiding development in a specific area or outside buffer zones may be more appropriate than a design response.

3. 19 Section 10 Sustainable development

QMDC asserts that by examining coal resources and reserves growth without examining the other natural resources associated with that coal is unacceptable. It paints a biased picture that promotes an economic driven science in a silo ignoring the principles and values associated with ecological sustainable development.

Sustainability reporting has become a listing requirement on several stock exchanges in non-OECD countries. The United Nations is now also asking governments to stimulate sustainability reporting by developing best practice and smart regulation. Internationally, in their introduction of policies, regulation and guidelines, governments are striving to harmonize the use of multiple frameworks.

<https://www.globalreporting.org/resource/library/Carrots-and-Sticks.pdf>

QMDC believes these global trends in sustainability reporting have been overlooked and ignored by NAC.

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In our opinion NAC should have considered these trends in the EIS as a vital means for tackling social, economic and environmental issues, which are raised time and time again by community. Sustainability reporting is increasingly a core topic in international forums and was afforded unprecedented attention at the June 2012 United Nations Conference on Sustainable Development (Rio+20). At Rio, governments agreed on the importance of corporate transparency and sustainability reporting, and that they have a role to play in advancing it, as stressed in paragraph 478 of the outcome document *The Future We Want*.

<http://sustainabledevelopment.un.org/futurewewant.html>

NAC, by committing to an internationally recognised standard of sustainability reporting process as part of this EIS would have helped both government and industry to measure NAC's current performance, and proposed expansion. A sustainability report is capable of being the key platform for communicating performance information – both positive and negative – that is needed by coal mining companies themselves, and by all those who are affected by them. Sustainability reporting is therefore a vital step for managing change towards a sustainable global economy, one that combines long term profitability with social justice and environmental protection.

While it is an increasingly popular practice, the uptake of sustainability reporting can be significantly boosted by policy, regulation, and other initiatives from both the public and private sectors.

According to the 2013 report, *Carrots and Sticks, Sustainability reporting policies worldwide – today's best practice, tomorrow's trends* produced by the United Nations Environment Programme (UNEP), Global Reporting Initiative (GRI), KPMG Climate Change & Sustainability Services and the Centre for Corporate Governance in Africa, less than 10% of the more than 45,000 publicly traded companies that are required to disclose their annual accounts, report on their sustainability performance. The writers of the report highlight the need for to use the current impetus to motivate or mandate sustainability disclosure.

<https://www.globalreporting.org/resourcelibrary/Carrots-and-Sticks.pdf>

UNEP, for example, has promoted sustainability reporting for private and public institutions along globally applicable guidelines, and works in close cooperation with the GRI, the United Nations Global Compact, the International Integrated Reporting Council, and others, to help companies better understand and address their integrated environmental and social impacts. UNEP supports increased sustainability reporting for investors to use in financial decision-making.

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UNEP promotes life cycle-based methodologies such as resource foot-printing, science-based information on critical resource flows, and capacity enhancement in developing and emerging economies.

NAC's identification of demand drivers and "production capacity" fails to address issues associated with the "social licence to operate" and sustainability reporting trends. QMDC is concerned that a number of issues e.g. energy demand management, climate change impacts and environmental impacts have not been considered fully to give credibility to the Project's projections to sustain both a domestic and export industry.

Without a full analysis of these and other associated issues, QMDC fails to see how NAC's dependency on market demand, safeguards sustainable development in the region, Queensland and Australia as a whole. If the driver for profit does not include a impetus to protect existing endangered and threatened ecosystems, biodiversity and finite natural resources it is not a sustainable development project.

NAC is required to demonstrate that they have considered the cumulative impacts of the Project from a life-of-project perspective in order to demonstrate a balance between environmental integrity, social development and economic development. QMDC believe this should have prompted NAC to consider the growing renewable energy industry as a current sustainable development aspect.

QMDC asserts that Australia's renewable energy resources are amongst some of the world's best and the most profitable to develop. The Zero Carbon Australian 2020 Stationary Energy Plan (ZCA2020 Plan) research team found that moving to 100% renewable energy by 2020 is well within the financial and industrial capability of Australia's economy.

Evidence shows that the investment required to transition Australia's stationary energy sector to renewables is a stimulus equivalent to 3% of GDP, over 10 years (Wright, M., & Hearps, P., Australian Sustainable Energy Zero Carbon Australia Stationary Energy Plan; the University of Melbourne Energy Research Institute Beyond Zero Emissions at p.xvi).

QMDC believe the ZCA2020 Plan offers an invaluable policy and financing mechanism ignored by NAC to inform their consideration of an alternative to the Project.

Some forms of renewable energy are already much cheaper for energy production than coal.

reneweconomy.com.au/2013/renewables-now-cheaper-than-coal-and-gas-inaustralia-62268

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A CSIRO analysis details expectations that solar thermal with storage will compete with coal as early as 2016.

reneweconomy.com.au/2012/csiro-to-leadpush-to-bring-cost-of-csp-to-10ckwh-83741

The World Bank has slowly been moving away from funding fossil fuel projects, last year making it official policy. In a climate change report, released July 2013, the World Bank President Jim Yong Kim said a two degrees Celsius rise in average temperatures would leave millions of people trapped in poverty. "We wanted to make clear that a two degrees Celsius warmer world would be a disaster that we have to avoid,"

"Things that we are working on at bank are one, sustainable energy for all, we think that we can provide funding and technical expertise so that every country in the world can have the energy they need to grow but grow in a sustainable fashion."

The last big coal fire power project funded by the World Bank was built in South Africa in 2010, a attracted lot of international criticism, particularly from the United States and Britain.

Erwin Jackson, Deputy Chief Executive of the Climate Institute, acknowledges that the bank's policy move reflects a change in culture. "We've seen a remarkable turnaround, and they have realised, because of their impacts that many of the world's poorest countries will suffer as a result of climate change, they need to actually walk the talk, as they've been saying."

NAC's Project is not based on a sustainable position which addresses global policy changes supporting responsible economic development and committed to reducing global temperatures(not increasing them by four degrees). Major expansion in the fossil fuel industry are being discouraged by global financial institutions.

The World Bank has doubled its financial support for renewable energy projects, such as off grid household solar in Bangladesh and Mongolia, wind farms in Turkey and geo-thermal projects in Kenya.

<http://www.abc.net.au/news/2013-07-17/world-bank-to-stop-funding-coal-fired-power-stations-in-develop/4826928>

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3.20 Section 11 Environmental Management Plan

Environmental Framework

QMDC's supports an environmental design framework, based on the commitment to avoid highly sensitive ecosystems and environments, to inform site selection and manage potential impacts. We argue that NAC fail to give QMDC the confidence that such a framework is being promoted across the Project's proposed operations and activities. There is an assumption that each activity can be undertaken in a similar manner and with appropriate environmental controls without scientific site specific analysis. This illustrates to QMDC a lack of understanding that impacts on less sensitive ecosystems may actually lead to an ecosystem becoming highly sensitive. 'One size fits all' is a dangerous assumption.

Adaptive management

QMDC argues that, although adaptive management can play a positive role in environmental impact assessments and addressing cumulative impacts and subsequent environmental management, the methodology must be correctly and appropriately applied.

Adaptive management must not be used as a substitute for committing to specific mitigation measures in order to cover a situation. An example is where NAC is unsure how to mitigate a negative environmental impact, but commits to finding the technology or science in the future, if a problem arises. Additionally, it must not be used to attempt to reduce uncertainty with respect to likely significant adverse environmental effects.

If it is uncertain whether a significant adverse environmental effect from a development will occur, adaptive management cannot be asserted to, if there is a significant impact. Adaptive management cannot be used to reduce uncertainty regarding mitigation measures, nor be used to "offset" the precautionary principle. The precautionary principle requires that when faced with uncertainty regulators should act in precautionary manner. Adaptive management and the precautionary principle play distinct roles.

"Uncertainty" in the context of the Project relates to the understanding that no matter how much scientific evidence and other information to conclude, for example, that a mitigation technique will successfully mitigate adverse effects, there are unknowns owing to the complexities of ecosystems and our inability to completely predict future events. These unknowns could prove that our predictions about mitigation success were incorrect and therefore the best advice should be to adopt the precautionary principle and not proceed with the development.

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If, for example, NAC has not undertaken baseline assessments of environmental values in potential operational areas prior to the commencement of operations, then NAC is further limited in their knowledge of the nature and severity of impacts. QMDC believe NAC have only a very limited knowledge of the nature and severity of impacts across the Project area, undermining QMDC's and the community's confidence that NAC has the capacity to develop, implement and design environmental controls based on best available science and technical data.

Monitoring

QMDC is concerned that NAC's undertaking to monitor and test at its facilities and other locations (including the 'monitoring of implementation of specific environmental management plans and procedures, regular inspection of construction and operational activities, environmental monitoring of impacts over time, reporting and analysis of regulated discharges, emissions and waste disposal as well as any other prescribed monitoring in accordance with the conditions of the relevant environmental authority') is not going to meet performance criteria and objectives in relation to environmental impacts with measurable indicators and standards.

QMDC asserts that some of that concern is based on NAC not providing sufficient data on eco-toxicity and bioaccumulation risks, potential for environmental contamination with persistent heavy metals, salt, explosives and other contaminants such as radioactive substances.

Land contamination management requires NAC to apply a wide range of actions and strategies to avoid potential contamination including natural disaster and catastrophic events from infrastructure or plant failure and/or operational accidents or failures. Analyses of risks, sampling and monitoring must, in QMDC's opinion, be regular and mandatory, not discretionary and dependent on assumptions.

NAC have failed to carefully evaluate the Project's plant or infrastructure sites, designs and operations for the worse case contamination scenario and its consequential impact on all regional and local development, businesses and natural resources.

Soil contamination may be a source of contamination for groundwater, surface water and air. Baseline soil monitoring, pro-active operational soil monitoring, and timely management of contaminated soils are recognized environmental approaches to protect soil and related resources.

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Remediation costs often increase sharply when soil contamination spreads to other resources. The EIS does not provide community the assurance that the soil resource and associated environmental media are protected.

In QMDC's opinion the objectives of site investigations as well as the contents of a report need to be articulated by NAC. These objectives should be to:

- identify sources of substance releases from the Project before they result in significant contamination to the soil resource;
- ensure actions are identified to eliminate or control the sources of soil contamination and prevent or reduce the risk of contaminant transfer from impacted soils to other environmental media (air or water) or potential receptors; and
- ensure timely assessment, management and reporting of all contaminated areas associated with approved development and projects and reduce the environmental impact associated with development approvals in Queensland.

QMDC also believes that NAC have not demonstrated satisfactorily how well they can resource the level of monitoring required because of the risks and hazards integral to this Project and because of the number of additional permits and approvals required.

Limitation of water resources must be recognised within the EMP and an environmental best practice planning framework. The Project has not proven the "opportunities" it offers are without inherent risks and impacts that will push the region's water resources beyond their capacity and threshold limits.

The EMP does not provide adequate details on the actions and procedures to be carried out during the construction and operational activities in order to show how NAC will avoid or mitigate adverse impacts.

The proposed mitigation measures, and environmental commitments do not establish a solid framework to ensure they are implemented during each stage of the Project. In effect, this means the EMP cannot be relied upon.

In accordance with section 203 of the EP Act, the EMP fails to provide the following:

- **section 1** – a description of all elements of the Project, potential adverse impacts on the environmental values likely to be affected by mining activities, and other key information to allow the administering authority of the EP Act to decide the application and conditions to be imposed on the EA.

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Consequentially the lack of key information means sections 2, 3 and 4 will only capture some aspects of the Project fail to address:

- **section 2** – how the environmental protection commitments and objectives are to be measured and audited against missing key elements of the Project, this includes control strategies needed to ensure the objectives are achieved
- **section 3** – the relevant rehabilitation objectives and does not identify rehabilitation indicators against the environmental protection objectives required and absent in section 2
- **section 4** – the indicators described in section 3 which vary for different parts of the land that have different types of disturbance.

Issues supporting our above assertion are:

- incomplete evaluation of the water quality of all mine water management structures to determine their hazard category for regulation purposes
- lack of development of a groundwater monitoring program
- lack of evaluation of pre-development surface water quality to determine appropriate discharge limits and receiving environment trigger values
- incomplete information on the stability of the material to be disposed of in the Project's spoil dumps for regulation purposes.
- lack of detail regarding the locations of monitoring points
- insufficient detail regarding receiving environment monitoring program
- water management plan does not address current drought threats nor demonstrate long term management actions for groundwater draw down (issues described in more detail below)
- waste management plan does not address adequately ongoing contamination issues
- spoil disposal facility operational plan does not provide adequate detail or data
- lack of residual void investigation
- land suitability for uses post-mining will lead to a loss of agricultural production and there is only a commitment to a partial return to productive grazing
- not met over-riding need for the Project in terms of broader public benefit that would accrue as a result of new employment, training, increased economic activity, taxes, royalties and other charges associated with the coal mine development
- rehabilitation requirements have not minimised the loss of SCL or GQAL and that NAC's rehabilitation strategy cannot be successfully implemented on affected land.

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- insufficient information was provided in relation to the proposed size of the Project development area footprint. These are matters essential to demonstrate the proponent's ability to achieve its rehabilitation objectives
- insufficient information was provided to undertake a full appraisal of the stability of the project's spoil dumps , including the proposed dewatering method and flow-ability of the dewatered fine coal tailings
- insufficient information was provided to undertake a full appraisal of the proposed method of mixing dewatered fine coal tailings and coarse rejects with mine overburden spoil
- lack of data to assess whether the operational plan will ensure best practice and reduce impacts on sensitive receptors, including the landform development stages of the spoil disposal facility and the placement technique for spoil and waste material from the CHPP on the mine site
- surface water quality, including levels of selenium and other metals, to determine appropriate discharge limits and receiving environment trigger values
- water quality of dams to determine the hazard category for each, and the appropriate design storage allowance and mandatory reporting level
- Project's relationship to the Regional NRM Plan, Condamine Catchment environmental values report, Balonne Resource Operations Plan
- real rainfall data to adequately assess the appropriate design storage allowances for the mine's water management system. Rainfall modelling requires a minimum 100 years rainfall generation model to adequately determine the hydraulic conditions of the Project site, which would subsequently determine the appropriate design storage allowances for the mine's water management dams
- potential surface water impacts including floods and contamination of rainfall run-off with sediment and salts from spoil dumps; contamination of run-off from other areas of disturbance (including rehabilitation and infrastructure areas) with sediment or elevated salinity contamination from grease, oil and fuel spills
- reduced water flows entering the local drainage systems due to capture of rainfall run-off in mining pits
- management of potential surface water releases as a result of the construction or operation of the proposed mine; including contaminant release limits, release contaminant investigation levels, receiving environment monitoring, receiving waters contaminant trigger levels, and receiving environment monitoring program.



The water management plan fails to:

- adequately identify the drains that contribute to the discharge of water from the site, and the quality and quantity of water discharging from the site
- detail how management of off-site water releases will be conducted to minimise sediment and salinity releases and minimise the potential for soil and spoil erosion, soil contamination and acid rock drainage—particularly with regard to first flush flows following rainfall events
- identify the likelihood of discharge (annual exceedence probability) in any year based on modelling of the water management system using long term rainfall information, and calculate the discharge volumes at each catchment and consequence on the receiving environment of these events to ensure protection of the environmental values of the receiving values downstream as it relates to the activity
- incorporate a sufficiently detailed risk management approach to how changing weather patterns will affect the frequency of floods and drought
- incorporate review and monitoring of the water management system and hydrological processes performance indicators for key information missing from the EIS
- design a monitoring program to identify and describe the extent of local environmental values in the receiving environment and to document the findings so the results can be evaluated and properly documented
- to account for the extraction of groundwater through mine dewatering and provide for hydrogeological investigations to indicate whether there will be an adverse impact on existing groundwater users
- to assess fully groundwater resources and quality to account for both the intensity of the potential impacts and the context in which they occur
- to assess the potential magnitude and extent of impact of the pit development on the regional groundwater system and users; inadequate site-specific hydrogeological investigations planned for and lack of a reliable predictive model to establish that impacts to surrounding groundwater uses would be limited
- mechanisms unlikely to be implemented to ensure that development of the proposed Project does not result in an undue adverse impact on the availability and quality of groundwater supplies to neighbouring landholders
- NAC's lack of commitment to reach mutually agreeable arrangements with landholders potentially affected by groundwater drawdown for the provision of alternative supplies throughout the mine life and after mine closure.

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The alternative supplies should be put in place before supplies from relevant existing landholder bores are adversely affected. The costs associated with changes to landholder extraction of groundwater from bores on affected land should be covered by the proponent.

Air quality

The EMP does not ensure that all air emissions impacts are appropriately avoided and mitigated. Particulate matter should not be emitted beyond the mine boundary, the buffering of ROM stockpiles is essential to reduce potential dust generation and the establishment of shut down thresholds for dust impacts is needed. The standards contained in the Environmental Protection (Air) Policy 2008 (EPP Air Policy) must be implemented in light of the known and projected exceedences.

QMDC is concerned that the use of the EPP Air Policy may not be the most appropriate standard for PM10 impacts; we are also concerned that the collection of meteorological data during high dust deposition events must be made readily available to local residents and calculation of dust deposition rates should show true results and not just a monthly average. We are also concerned that strategies for the worst case scenario for dust impacts is not adequately described or designed, including the extremes of inland tornados or cyclones which have been reported in the Acland district, and may occur with greater frequency due to climate change. Acland has had 3 tornadoes since colonial settlement 100 years ago.

Noise and dust

NAC's solution to major noise, dust and lighting impacts is to 'buy property and move sensitive receptors', which is not acceptable. Mechanisms to address exceedences are inadequate in the EMP.

Health, safety and risk

QMDC contends that NAC should recognise the broader impacts of natural disasters that include rain, flood, fire and cyclones under the Disaster Management Act 2003 (Qld).

NAC has not developed appropriate response plans, consultation processes and resourcing for disasters. The proposed EMP does not adequately help communities avoid disaster or mitigate the potential adverse effects of an event.



Additional key permits and approvals

QMDC is concerned by the number of additional key permits and approvals required and the compliance obligations attached to those permits and approvals as well. Clearly the monitoring that is required to assess NAC's compliance and both site specific and the cumulative impact of the Project is extensive. How will this level of monitoring be resourced to deal with all associated matters?

3.21 Recommendations:

That the Project should not be approved because of the following:

- 3.21.1** A proper risk assessment, and associated preventative measures have not been offered by NAC to demonstrate an accurate consideration of all risks minor and major to the environment and human health and well-being including the region's economic sustainable development e.g. floodplain function and air quality.
- 3.21.2** NAC has not put adequate protection strategies in place to protect the local and regional catchment resources, namely requiring all water to be accounted for on extraction and measured and accounted for either as a beneficial use or as a waste product.
- 3.21.3** It does not uphold the community identified environmental values for surface and ground waters in the Condamine catchment when allocating water resources.
- 3.21.4** The EIS is fraught with GHG reporting deficiencies and NAC has not demonstrated that 100% of the emissions including fugitive emissions from the Project can be safely and permanently sequestered.
- 3.21.5** NAC has provided an inadequate analysis of the cumulative social and environmental damage costs.
- 3.21.6** NAC failed to identify best practice in relation to the management of coal in close proximity to agricultural enterprises, residential properties and rural townships, and failed to provide appropriate ways to address such interfaces.

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- 3.21.7** NAC failed to take into account the market liabilities of the industry and examine economic benefits to the government and region in context of those liabilities.
- 3.21.8** NAC failed to provide independently peer reviewed research data that analyses international demand and the manner that market forces influence decisions, on coal production at a local, regional, and national level.
- 3.21.9** NAC failed to examine profits gained through the exploitation of natural resource assets against environmental accounting measures
- 3.21.10** NAC failed to provide a comprehensive report on sustainability indicators in order to assure sustainable development in a local, regional and national context.
- 3.21.11** NAC failed to consult with key stakeholders potentially affected by the EIS and its associated EA activities or who have an interest in the region or area likely to experience some kind of impact.
- 3.21.12** NAC failed to best facilitate community consultation in a regional partnership and collaborative process to determine best industry practices within Queensland's catchment areas and regions.
- 3.21.13** It is unable to establish safe buffer zones between infrastructure and "sensitive receptors" for all household dwellings, businesses and other "sensitive receptors" such as fauna and stock throughout the project development area.
- 3.21.14** NAC failed to recognise the importance of resilience-based decision making processes in order to protect the environmental values of the Condamine Alluvium Aquifer.
- 3.21.15** NAC failed to demonstrate how it will align its environmental management goals to the Regional NRM Plan.
- 3.21.16** NAC failed to provide a robust analysis on water quantity and quality impacts including a full assessment of the impact of using town water supplies for its source of potable water.

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- 3.21.17** NAC failed to consider a threshold limit approach to cumulative impacts.
- 3.21.18** NAC failed to conduct relevant data collection and system integrity risk assessments.
- 3.21.19** NAC failed to identify how to primarily avoid impacts or risks on regional water resources and ecosystems.
- 3.21.20** NAC failed to identify long term peer reviewed effective management or mitigation strategies for regional water resources and ecosystems.
- 3.21.21** NAC failed to consider the total health impact of air pollution i.e. the sum of:
- all independent effects of specific pollutants;
 - the effects of mixtures; and
 - the additional effects (positive or negative) due to interactions between pollutants.
- 3.21.22** NAC failed to provide responses to the specific and cumulative impacts of the Project in relation to agriculture and CSG mining operations and activities by analysing the key findings of relevant research and scientific reports e.g. the *Underground Water Impact Report* against a wider range of information, data and research.
- 3.21.23** NAC failed to provide independently peer reviewed research data that analyses what the impact on the region's communities and natural resource assets are when more importance is placed on economic growth than at the protection of natural or social capital.
- 3.21.24** NAC failed to produce independently peer reviewed scientific data to accurately compare whole of life cycle comparisons and the relative merits of coal and renewable energy sources with regard to greenhouse gas emissions and thereby comply with Queensland and Australian Government energy policies and legislation.



- 3.21.25** NAC failed to identify which communities, businesses and industries have not benefitted from its past or current operations nor show how they have not benefitted.
- 3.21.26** NAC failed to fully assess how the Project's demand for electricity and other energy sources will impact on these resources, including associated infrastructure and other users of the resources.
- 3.21.27** NAC failed to fully assess the location, proximity and capacity of existing borrow pits, the location, proximity and capacity of new or potential borrow pits and the impact on the resource and other users of these resources.
- 3.21.28** NAC failed to provide sufficient data on ecotoxicity/bioaccumulation risks, potential for environmental contamination (e.g. soil residues, pollution of air and water) with persistent heavy metals, salt, hazardous mining related chemicals and other contaminant.
- 3.21.29** NAC failed to operate in areas where soil loss will have impacts on GQAL, SCL or cracking clay/vertisol soils.
- 3.21.30** NAC failed to design a monitoring regime to assess aquifer integrity and interconnectedness and aquifer contamination.
- 3.21.31** NAC failed to prove that all disturbed lands can be returned to their previous use and suitability class.
- 3.21.32** NAC failed to accurately describe all environmental values in the project development area.
- 3.21.33** NAC failed to demonstrate how renewable energy technology should be a fundamental component of NAC's production facilities and other Project infrastructure and how it will inform NAC's climate change response.
- 3.21.34** NAC failed to improve the involvement of all Traditional Owners and Aboriginal people associated with the project development area in cultural heritage planning and implementation by adopting appropriate engagement mechanisms such as the *Regional Caring for Country Plan*.

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- 3.21.35** NAC failed to demonstrate that the siting of the Project's facilities and any associated infrastructure will NOT impact on high-conservation areas and remain outside appropriate buffer zones.
- 3.21.36** NAC failed to identify the processes that are most important in sustaining the regional ecosystems (terrestrial and aquatic) and species in the project development area.