PROJECT CHINA STONE

Attachment A Individual Responses to Submissions

PROJECT CHINA STONE
INDIVIDUAL RESPONSES TO SUBMISSIONS ON THE DRAFT EIS
for
MacMines Austasia Pty Ltd

1 INTRODUCTION

1.1 OVERVIEW

This attachment to the Supplement to the draft Environmental Impact Statement (EIS) provides the proponent's individual responses to selected submissions that were received for Project China Stone (the project). Submissions have been provided an individual response if they raised specific issues about the project, referred to specific sections of the draft EIS and/or were submitters who will contribute to the assessment and conditioning of the project.

1.2 HOW TO READ THIS ATTACHMENT

Upon lodgement of a submission with the Office of the Coordinator General (OCG), each submission was numbered and each submission issue was given a unique number identifier. For the purposes of assisting the OCG with the assessment of the responses to submissions, these unique identifiers have been retained. The following is a list of the submitters that have been responded to individually and the corresponding submitter number:

Federal Government

- Federal Department of the Environment and Energy (Submitter 42).

State Government

- Department of Environment and Heritage Protection (Submitter 24);
- Department of Natural Resources and Mines (Submitter 41);
- Department of State Development (Regional Services) (Submitter 3C);
- Department of Transport and Main Roads (Submitter 23);
- Department of Agriculture and Fisheries (Submitter 11);
- Queensland Treasury (Submitter 8);
- Queensland Public Safety Business Agency (Submitter 16A);
- Queensland Fire and Emergency Services (Submitter 16B);
- Queensland Police Service (Submitter 16C);
- Queensland Health (Submitter 25);
- Department of Aboriginal and Torres Strait Islander Partnerships (Submitter 63); and
- Department of Communities (Submitter 65).

Local Council

- Isaac Regional Council (Submitter 27).

Other Stakeholders

- Adani Mining Company (Submitter 40);
- Aurizon (Submitter 9);
- Black-throated Finch Recovery Team (Submitter 12);
- Birdlife Australia (Submitter 37), refer to Submitter 12 response;
- Australian Youth Climate Coalition (Submitter 44);
- Wangan and Jagalingou Traditional Owners Family Representative Council (Submitter 45);
- Protect the Bush Alliance (Submitter 29);
- Lock the Gate (Submitter 17);
- Mackay Conservation Group (Submitter 28);
- Land Services of Coast and Country (Submitter 35);
- Rural Services of Coast and Country (Submitter 36);
- Private submitter (Submitter 2);
- Private submitter (Submitter 7);
- Private submitter (Submitter 18);
- Private submitter (Submitters 38 and 39);
- Private submitter (Submitter 43); and
- Private submitter (Submitter 64).

If you are interested in a response to a particular submitter, find the submitter number and go to the corresponding page. For example, if you are interested in reading the proponent's response to the EHP, you would go to page 24-1 of this attachment, as the EHP is submitter 24.

In addition to the individual responses to submissions provided in this attachment, submissions were also responded to in other ways. Please refer to Section 4 – Response to Submissions for an explanation and navigation guide to responses to other submissions.

Each individual response includes a replication of each submission issue (boxed) followed by the response. Where relevant, responses refer to additional information which is provided in the technical attachments to this Supplement.

PROJECT CHINA STONE
RESPONSE TO SUBMITTER NUMBER 2 SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

2 SUBMISSION

Submitter Issue Number 2.001
The standard of aquatic ecological assessment undertaken for this project is not of the standard we've come to expect on mining EIS projects in Queensland. Poor quality EIS specialist reports undermine an EIS. My comments reference sections in the EIS Appendix G – Aquatic Ecology and Stygofauna Report and include:

The submitter's opinions on the assessment of aquatic ecology are noted. The proponent disagrees with these opinions as the assessments were undertaken by appropriately qualified and experienced aquatic biologists, in accordance with the Environmental Impact Statement (EIS) Terms of Reference (TOR) requirements and in line with appropriate methodologies. The specific issues raised in the submission are addressed in the following responses.

Submitter Issue Number 2.002
Section 4.5.1 –
Both the abundance of fish (six) and number of fishes (three species) encountered from a total of 22 aquatic survey sites across the study area appears to be an underestimate, considering the extent of aquatic habitat evident in the photos (Section 4.2).
This may be a result of inadequate fish survey effort, which was limited to dip netting and seine netting using an inappropriate mesh size (1cm mesh) (Section 3.2.7). This mesh size is too large for many of the smaller fishes that contribute to biodiversity in the Burdekin Basin, such as gudgeons, hardyheads and blue eyes. Many of the freshwater fishes occurring within water bodies of the study area may have simply passed through the oversized mesh of the nets, avoiding capture. Best practice freshwater fish survey includes both active (electrofishing or seine netting, with appropriately sized mesh) and passive survey techniques (deployment of fyke nets and baited box traps) to sample an adequate representation of fishes within a study area.
The fish survey effort for this project is grossly inadequate in comparison to survey effort for similar mining projects across Queensland.

Extent of Aquatic Habitat
The project site contains no permanent water and is characterised by ephemeral drainage lines, seasonal wetlands and farm dams used by cattle. The aquatic ecology surveys conducted indicated that aquatic ecology values were very low, due to the highly ephemeral and degraded nature of drainage lines due to stock access. The majority of drainage lines were observed to have no distinct riparian zone and aquatic habitat, such as in-stream vegetation, rocks and snags, was variable between ephemeral drainage lines. Some drainage lines are completely devoid of

aquatic habitat and are characterised by bare banks, no woody debris and no macrophyte cover for shelter and spawning.

Survey Methodology

Survey sites were chosen and assessed in accordance with the Queensland Australian River Assessment System (AusRivAS) Sampling and Processing Manual (DNRM 2001). Surveys were undertaken in accordance with best practice freshwater fish survey techniques and included active methods (seine nets) as well as passive survey techniques (the use of baited box traps). It is noted the survey effort is consistent with surveys undertaken for the proposed Carmichael Coal Mine and Rail Project (CCM&RP) EIS.

Submitter Issue Number 2.003

Turtle species richness may be underrepresented by inadequate turtle survey effort, which was limited to observation only (Section 3.2.7). As per the Queensland Vertebrate Fauna Survey Guidelines for Queensland (DSITIA 2014, and previous version DSITIA 2012), visual survey of turtles can be used as the first step in ascertaining turtle species within a study area, but should be followed up by capture techniques including trapping, snorkelling survey / capture, spotlighting survey / netting, and / or seine netting (with a mesh size of 5.5 – 15.2 cm); to capture an adequate dataset for biodiversity values.

The majority of the survey sites consisted of remnant pools in ephemeral drainage lines. These were very small in size and ranged from 0.2 to 1.5 m in depth. These areas were observed prior to fish surveys to determine turtle presence and due to their small size and depth it is considered that if turtles were present they would have been recorded during the surveys.

Other techniques, such as trapping, spotlighting survey / netting, and / or seine netting (with a mesh size of 5.5 – 15.2 cm) were therefore not considered necessary due to low probability of turtles being present. No snorkelling surveys were undertaken in larger water bodies (i.e. the dams) due to the high degree of turbidity (i.e. low visibility) of the water.

Submitter Issue Number 2.004

Section 3.3 states that water temperature was not recorded for survey sites A1, A2, A3, A4, A5 and A20 due to equipment malfunction. However, dissolved oxygen (DO) and electrical conductivity (EC) readings were still obtained. The 90-FLT multi-parameter water quality meter used (Section 3.2.8) relies on in-built temperature compensation to obtain accurate/adequate measurement of DO and EC. How did the study team account for this factor in the collection of DO and EC measurements when the temperature sensor was inoperable? Consequently, how reliable are the baseline results?

The DO and EC recordings did not indicate any results for those sites that appeared to be inaccurate.

Submitter Issue Number 2.005
The report fails to demonstrate that adequate aquatic macroinvertebrate sampling (used as a bio-indicator of stream health and ecosystem integrity) has been undertaken. Section 3.2.6(i) states that sampling was consistent with Turak and Waddell 2002, being the (superseded) Australia-Wide Assessment of River Health: New South Wales AusRivAS Sampling and Processing Manual. The project site is in Queensland. Queensland AusRivAS protocols (NRM 2001) differ greatly from NSW AusRivAS protocols, including the habitats sampled.

Section 5.3 – Editorial Corrections clarifies that the Turak and Waddell 2002 reference was included in error and should be deleted and replaced with NRM 2001.

The macroinvertebrate data from each survey site were assessed using the AusRivAS modelling programme (AUSRIVAS Macroinvertebrate Bioassessment Predictive Modelling Software V3.2.0), to enable comparison to other AUSRIVAS data sets from the region, which was the most current software available during the time of the surveys. The AusRivAS models compare the abundance and identity of macroinvertebrates collected from a sample site with a database from a large number of reference sites throughout Australia. The AusRivAS models match the sample site to reference sites for similar types of streams in the same State or region.

Submitter Issue Number 2.006
The Queensland AusRivAS protocol (NRM 2001) requires that samples be collected separately from the edge and bed habitats of stream reaches. The field team collected a composite edge/bed habitat sample (Section 3.2.4) and claim (on page 3.7) that this is a recognised approach supported by Barmuta et al. 2002, and Turak and Waddell 2002. However, neither Barmuta et al. 2002 nor Turak and Waddell 2002 condone this approach, nor is it a recognised approach for aquatic macroinvertebrate sampling in Queensland. The authors of these references have been misquoted and this should be rectified.

Section 5.3 – Editorial Corrections clarifies that the Turak and Waddell 2002 reference was included in error and should be deleted.

Submitter Issue Number 2.007
The provided photos (Section 4.2) suggest that both edge habitat (ie stream habitat within 0.5 m of the bank as per the Queensland AusRivAS protocol) and bed habitat were available to sample at a number of sites. These habitats should have been sampled separately and the data modelled separately, consistent with the Queensland AusRivAS protocol (NRM 2001). AusRivAS model outputs in the report are consequently erroneous and misleading.

As stated in Section 3.2.4 of the draft EIS Aquatic Ecology and Stygofauna Report (Appendix G), the data was compared to AusRivAS models for both edge and pool habitats and, where these differed, the lowest score was taken for the survey site.

Submitter Issue Number 2.008

The collected aquatic macroinvertebrate community data is unreliable as a baseline dataset. Oversights of macroinvertebrate sampling protocols raise questions as to whether the ecologist/s who undertook the macroinvertebrate sampling were AusRivAS accredited and have an appropriate understanding of stream bioassessment protocols in Queensland.

The aquatic macroinvertebrate community data is a reliable baseline dataset. The project site is located at the top of the catchment and as such is highly ephemeral and contains no permanent water. Aquatic ecology values identified during field surveys were very low, due to the highly ephemeral and degraded nature of drainage lines.

Submitter Issue Number 2.009

Any subsequent Receiving Environment Monitoring Program (REMP) or equivalent monitoring program prepared for the mine should first capture a baseline dataset of the aquatic macroinvertebrate community compositions prior to site preparations for the proposed mine to allow for accurate monitoring and comparisons during future operations. This baseline dataset should be collected consistent with the Queensland AusRivAS protocols (NRM 2001) so that future monitoring data can be accurately compared against baseline data. This will also allow for the baseline data to be compared (accurately) against comparable Queensland reference sites in the AusRivAS model. Unfortunately, the opportunity to achieve project efficiencies by undertaking this sampling as part of the EIS aquatic ecology assessment has been lost.

The baseline dataset was collected in accordance with the Queensland AusRivAS protocols (NRM 2001) and is appropriate to use as reference sites for the REMP.

PROJECT CHINA STONE
RESPONSE TO DEPARTMENT OF STATE DEVELOPMENT - MACKAY ISAAC WHITSUNDAY REGION SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

3C DSD MIW REGION SUBMISSION

Submitter Issue Number 3.003
The consultation undertaken by the China Stone Coal Project did not identify Mackay Regional Council (MRC) or Whitsunday Regional Council (WRC) as key stakeholders. The result of this omission is these key local authorities were not adequately consulted on the project. The impact of limited consultation with MRC and WRC may have disadvantaged the proponent and the proponent's access to relevant and supportive information to inform the EIS of the China Stone Coal Project. The lack of consultation may also introduce and impact to the Mackay region due to the lack of visibility of the region in the project.
Mackay Regional Council (MRC) and Whitsunday Regional Council (WRC) should be identified as key stakeholders and be provided equal opportunity to be engaged by the proponent to inform the Environmental Impact Statement.

The Mackay Regional Council was consulted as part of Environmental Impact Statement (EIS) issue scoping consultation undertaken for the project. This has been clarified in Section 5.3 – Editorial Corrections.

Consultation on the results of the draft EIS also included meetings with the Mackay Regional Council and the MIW RDA. This consultation is discussed in more detail in Section 2 – Consultation.

As stated in Section 7.6 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), the proponent intends to continue to engage with relevant councils as necessary in relation to the potential social impacts of the project including impacts in home-base locations.

Submitter Issue Number 3.004
The Social Impact Assessment (SIA) guideline states: Appendix 3, The social baseline assessment should include impact at the project site and, as appropriate, along the supply chains to where the associated service activity is located.'

The SIA guideline states:
Core SIA Principal
SIA will only assess impacts (both beneficial and detrimental) arising from the project and cumulatively with other developments in the region. Proponents are expected to mitigate impacts that are directly related to their project.

Area of Impact- Whitsunday Regional Council: The rail traffic of coal from the project is proposed to be transported to the Abbot Point Coal Terminal located at the Port of Abbot Point, within Whitsunday Regional Council's area of operation. The proponent will be responsible for developing the off-site rail spur connection. The rail line connecting the Galilee Basin to Abbot Point Coal Terminal will be developed by another party and will be subject to an Environmental Impact Statement.

MRC's area of operation hosts the largest and most innovative resource sector supply chain and has the highest capability and capacity to supply the sector, located within a 300km radius of the proposed operational mine. The Resource Industry Network (RIN) is the only not-for-profit member group representing the resource sector and allied industries servicing the Bowen Basin and emerging Galilee Basin. The members of RIN and associated Industrial Precinct Paget are considered to be the most comprehensive and innovative resource sector supply chain in Australia. The China Stone Coal Project may have disadvantaged their planning by not engaging fully with MRC and the resource sector supply chain in the area. Prior to commencement of the construction, the proponent is required to develop a comprehensive Stakeholder Consultation strategy, it is proposed MRC and RIN be identified as key stakeholders and consultation be undertaken.

WRC must be identified as a key stakeholder in relation to use of Abbot Point Coal Terminal and the off-site rail spur connection. The rail transport of coal, to Abbot Point Coal Terminal is a subject of impact to the communities within WRC's area and may impact MRC area depending on the alignment of the rail spur when it is determined. The off-site rail spur connection will occur under a separate environmental impact assessment and approval. This must include consultation around ancillary works and impacts associated with the spur and the use of the port.

The Mackay Regional Council will continue to be engaged in future consultation undertaken for the project. The Resource Industry Network will also be included as a key stakeholder for future consultation. This has been included in Attachment H – Additional Information on SIA.

As the submitter correctly identifies, the assessment and approval of port capacity and the off-site rail spur required for the project will be undertaken separate to this EIS process for the mine. These processes will follow regulatory requirements for consultation with relevant parties.

PROJECT CHINA STONE
RESPONSE TO SUBMITTER NUMBER 7 SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

7 SUBMISSION

Submitter Issue Number 7.001
Section 7.4.5 Rehabilitation and Decommissioning (and the associated Appendix that address tailings disposal and management ie Appendix C). Some information is presented in the EIS that is not supported by evidence. In Queensland, and more broadly in Australia and overseas, there are scarce examples of land disturbance associated with mining activities that have been successfully rehabilitated according to agreed standards. The statements "..successful rehabilitation experience at other mine sites.." and "A self sustaining native ecosystem will be established..." are provided without substantiation. The relevant technical appendix ie Appendix C devotes less than 1 page to the topic of TSF rehabilitation and closure. There is an absence of demonstrated performance of rehabilitation of mine disturbance against agreed performance specifications. This is a problem of long standing in Queensland, and is now increasingly widely reported in published literature.

Rehabilitation of mines in Queensland is regulated by conditions outlined in an Environmental Authority (EA) that is approved by the Department of Environment and Heritage Protection (EHP). The draft EIS Attachment 24-3 includes rehabilitation goals, objectives, indicators and completion criteria that were developed in accordance with the EHP Guideline *Rehabilitation Requirements for Mine Resource Activities.* This table is typically used as a basis for the rehabilitation conditions in an EA and is refined, as necessary, prior to the finalisation of the EA, to the satisfaction of the EHP. The project mining lease cannot be relinquished until these agreed rehabilitation completion criteria are met to the satisfaction of the EHP.

Submitter Issue Number 7.002
The engineering consultants who have prepared the technical information do not appear to provide:
1. information concerning the longevity of the landform created, the performance expectations (in terms of runoff/seepage quality and quantity and the assimilative capacity of the receiving environment),
2. the residual risks that the licence holder and ultimately the State is accepting for the landform created as a result of their advice, and
3. the nature and extent of works required to maintain the landform for the notional 1000 years espoused in the ANCOLD 2012 TSF guideline.
The disconnect between promises and performance means that the sector (industry and regulators) can not point to demonstrated success. In terms of the EIS process it is recommended,
1. the consulting engineers who wrote the relevant reports provide binding written agreement made in the favour of the State guaranteeing the TSF will be stable and not cause any environmental harm forever (with appropriate level of PI insurance held and maintained forever); or if this is not

possible,
2. devote effort to calculating the residual risk associated with the TSF, and nominating the associated maintenance regime [for a nominated duration (for which justification is provided) - as a starting point select 150 years)] and derive a monetary value to account for the financial liability associated with this mine disturbance for inclusion in the EIS. It is understood that the FA process, undertaken post the issue of an EA, exists; however, it is argued that this information should be made available before the decision to proceed with the project is made.

The submitter's opinions are noted. However, the submitter recommends actions that are not a requirement of an EIS and are not consistent with the current regulatory process regarding the provision of Financial Assurance (FA). FA will be provided by the proponent prior to the commencement of construction.

PROJECT CHINA STONE
RESPONSE TO QUEENSLAND TREASURY – HAZARDOUS INDUSTRIES AND CHEMICALS BRANCH OFFICE OF INDUSTRIAL RELATIONS SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

8 QUEENSLAND TREASURY SUBMISSION

Submitter Issue Number 8.001
HICB acknowledged that the EIS has strong coverage of mine safety however we believe the EIS could be strengthened by ensuring WH&S related safety considerations are also clearly addressed. These typically include understanding that whilst under construction WH&S legislation applies and WH&S legislative requirements will have to be met.
Emergency management planning needs to address non-mining specific matters including transport emergencies in remote locations, mass medical treatment and or evacuations within the camp community, communications and resourcing (without reliance on quick response from emergency services) due to the remoteness of the location.

Section 22 and Attachment 2-1 of the draft Environmental Impact Statement (EIS) acknowledge the existence and application of the *Work Health and Safety Act 2011* to the project. The proponent recognises that this legislation will apply to all phases of the project, including construction.

An Emergency Response Management Plan (ERMP) is proposed to be developed for the project, prior to the commencement of the construction phase of the project, which will discuss how site emergency response will integrate with response from emergency service providers. In addition, the proponent will also commit to addressing non-mining specific matters in the ERMP including transport emergencies, mass medical treatment and/or evacuations due to the remoteness of the project site. This has been included in Attachment I – Additional Commitments.

Submitter Issue Number 8.002
We also note that the project has a significant expectation of support from and access to infrastructure and resources associated with the proposed nearby Adani project, and that at the agency briefing it was mentioned that the China Stone project would most likely proceed regardless of the Adani project. We believe the EIS should address this matter so as to ensure a shared understanding of the extent to which the project is relying on Adani and how the project would be adequately supported regardless of the Adani project proceeding or not.

This issue has been addressed in the draft EIS. Section 4.13.5 of the draft EIS describes the potential interactions of the project with other northern Galilee Basin developments including the Carmichael Coal Mine and Rail Project (CCM&RP). Whilst the current preferred option for the rail connection to Abbot Point is to utilise the CCM&RP rail connection, the proponent also has the option of developing its own rail connection or sharing a rail connection with another proponent.

However, at this point in time Adani is indicating that it is proceeding with the development of the CCM&RP in the near future and the development of that project is therefore likely to precede Project China Stone by some years. On this basis the preferred rail connection option remains unchanged.

PROJECT CHINA STONE
RESPONSE TO AURIZON SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

9 AURIZON SUBMISSION

Submitter Issue Number 9.001
While the daft EIS does not provide for the rail infrastructure required to transport the mine production to port, the project will require new rail infrastructure which will either connect to or interoperate with the Newlands rail system operated by Aurizon Network
Accordingly, it is important both the draft EIS and any proposed EIS for the rail component of the project, properly consider (and give Aurizon Network the opportunity to respond to) the connection to, interface with and interoperability with the Newlands rail system. It is also vital for the continued development of both Bowen and Galilee Basins that the further expansion of the Newlands system be preserved in any future rail line from the Galilee Basin to the Abbot Point Coal Terminal. This corridor must provide not only for the location of the required rail infrastructure, but also for associated works such as drainage works and access roads.

The submitter correctly confirms that off-lease infrastructure for the project (such as the rail connection to port) was not included in the draft Environmental Impact Statement (EIS). As stated in Section 4.2 of the draft EIS, the rail line will be subject to separate environmental assessment and approval. The scope of this separate environmental assessment is yet to be determined. However, it would be expected to include a requirement to evaluate the interface with and interoperability of Aurizon's existing rail network, as relevant.

Submitter Issue Number 9.002
In the event that rolling stock transporting coal for the China Stone Project were, at any time, to utilise the Central Queensland Coal Network (CQCN) rail corridor operated by Aurizon network, there would be a need to comply with the mandatory requirements of Aurizon Network's Coal Dust Management Plan.

Noted. Section 15.8.12 of the draft EIS has assumed measures to control and manage dust emissions would include compliance with the relevant requirements of the Aurizon Coal Dust Management Plan at the train loading facility.

Submitter Issue Number 9.003

Future traffic management plans prepared in support of the China Stone Project's establishment/construction phase must appropriately address potential impacts to road-rail crossings of the CQCN's Goonyella and Newlands Systems. Aurizon Network is to be provided with the opportunity to review these traffic management plans, and it is recommended that the proponent engage with Aurizon Network to ascertain the requirements of same.

The project's primary transport route is expected to be from the project site to Townsville, via the Gregory Developmental Road and Flinders Highway. This route does not cross the Goonyella and Newland Rail Network. In the event of any change to this expected route, potential impacts to road-rail crossings of the Goonyella and Newlands Systems would be reassessed and, if necessary, incorporated into future traffic management plans prepared for the project.

PROJECT CHINA STONE
RESPONSE TO DEPARTMENT OF AGRICULTURE AND FISHERIES SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

11 DEPARTMENT OF AGRICULTURE AND FISHERIES SUBMISSION

Submitter Issue Number 11.001
Attachment 2-1, Table 1, pg 20) Materials affected under the Forestry Act 1959 - Further information
The Proponent should emphasise the need to contact DAF (Forestry) as early as possible in the project development process, for any required authorisations under the *Forestry Act 1959* in relation to State-owned forest products and quarry materials that would be impacted by the project.

As stated in Section 5.6 of the draft Environmental Impact Statement (EIS), timber resources or quarry materials are not currently proposed to be taken, disturbed or used for purposes other than mining within the boundaries of the proposed mining lease, or outside of the proposed mining lease as part of the project. As such, it is not expected that any authorisations under the *Forestry Act 1959* will be required. In the event this changes during project development, the proponent will contact DAF (Forestry) regarding any required authorisations.

Submitter Issue Number 11.002
Section 4.13, page 4-19) Off-lease infrastructure
For waterway barrier works outside of the Mining Leases, approval will be required for operational works that is the building or raising of waterway barrier works under the *Fisheries Act 1994* including any and all waterway diversions; levee designs; culvert or bed level crossings; rock armouring; or all and any other works within a waterway as defined under the Act. Any waterway barrier works within these mapped waterways need to meet the requirements of a Fisheries self-assessable code or be authorised through a development permit for operational works that is constructing or raising of waterway barrier works.

Noted. The draft EIS for the project specifically excludes assessment and approval for any off-lease infrastructure, as stated in Section 4.13. All necessary off-lease infrastructure will subject to separate environmental impact assessments and approvals. This will include assessment of the need for approval for any proposed waterway barrier works under the *Fisheries Act 1994.*

Submitter Issue Number 11.003
Section 5.3.2, pg 5-3 and section 5.4.4, pg 5-6 -The potential for an unmitigated loss of availability and utility of agricultural land as:
• currently grazing is the primary land use within the project site
• a stock route traverses the southern part of the project site
The Department's preferred outcome is that non-agricultural land uses coexist with agriculture.

DAF requires the upfront demonstration of:
• how the project will be mutually beneficial to both agricultural interests and resource activities;
• how the project will not cause agricultural interests to pause then restart in order to fit in with the project's development schedules;
• how the project will recognise and ensure the continual and ongoing agricultural production in areas affected by development and production activities;
• how the impacts to agriculture productivity (e.g. size of cattle herd, carrying capacity) will be minimised and mitigated during the Project;
• how the impacts to agriculture productivity (e.g. size of cattle herd, carrying capacity) will be maintained and enhanced on an ongoing and continual basis from post completion of project related activities; and
• how the project will provide positive flow-on benefits for the agricultural supply chains in and out of the local/regional community."

Given the safety requirements of an operating mine, it will not be feasible for grazing land uses to co-exist with the mine over a significant portion of the project site. In regard of the loss of agricultural use of the site, Section 8.3 of the draft EIS explains that the project site comprises either marginal grazing land (i.e. is suitable for light grazing of native pastures in accessible areas) or land that is not suitable for agricultural land uses. The grazing lands within the project site are a relatively small proportion of much larger grazing properties. The proponent is required to enter into agreements with affected landholders to gain access to the land for the project. These agreements would address the impacts of the project on landholder's agricultural land uses, as necessary.

As discussed in Section 5.4.4 of the draft EIS, the proponent will liaise with the Department of Natural Resources and Mines, the Isaac Regional Council and affected landowners in relation to the management and possible realignment of the stock route that traverses the project site. This consultation will occur prior to commencing construction. This will ensure that the project will not have a significant impact on the availability or use of the stock route.

Submitter Issue Number 11.004
Figure 5-4, pg15 Carrying and productive capacity of the property has not been identified.
The Proponent should describe the current carrying and productive capacity of the property and outline the project's impact on these capabilities.

The Terms of Reference for the project do not require the draft EIS to assess the carrying and productive capacity of the project site. However, Section 5.4.4 of the draft EIS describes the existing land uses on the project site and Section 5.6 of the draft EIS describes the potential impacts on these land uses, as required by the Terms of Reference.

Submitter Issue Number 11.005

Section 8.4.1, pg8-11 to 8-12

Coexistence is the Department's preferred position but this application has not detailed how the industries can co-exist. The Proponent indicated that "no grazing is proposed on these areas" in order to protect the integrity of the rehabilitation to achieve a self-sustaining native ecosystem post mining."

It is recommended that the proponent be required to:

• secure equivalent land for permanently impacted agricultural land (e.g. final void areas, any contaminated land, and areas of steep slopes post rehabilitation) for ensuring that there is no permanent net loss of land for agricultural production as a result of the proposed resource activity, in perpetuity; and

• securing to locate displaced cattle on adjoining land that has the capacity to support additional cattle for the period of displacement; and

• providing an 'uplift measure' to ensure the ongoing development of agriculture in the region."

The submitter correctly states that Section 8.4.1 of the draft EIS confirms there are areas of the project site that will not be suitable to be returned to their pre-mining land suitability class and agricultural land class. These areas are the open cut mine areas (including the overburden emplacement areas and the final voids) and the Tailings Storage Facility and Power Station Waste Storage Facility. These areas will not be suitable for grazing post-mining due to the need to prevent erosion initiated by cattle grazing on the rehabilitated overburden emplacements and waste facilities. However, post-mining, the remaining 13,989 ha of the project site (or 70% of the project site) will continue to be suitable for pre-mining land uses including grazing.

There is currently no legislative requirement to secure equivalent land for permanently impacted agricultural land and/or secure land for displaced cattle. The proponent will continue discussions with affected landholders regarding access to the land for the project and negotiation of associated compensation agreements.

Submitter Issue Number 11.006

"Section 9.8, pg 9-21 - Sterilisation of land due to environmental offsets.

It is recommended that the Proponent does not sterilize the availability or utility of agricultural land.

The draft EIS, including Section 9.8 of the draft EIS, does not refer to the sterilisation of land due to environmental offsets. As stated in the draft EIS Biodiversity Offset Strategy (Appendix H), an Offset Management Plan will be developed for the project to compensate for significant residual impacts on Matters of National Environmental Significance and Matters of State Environmental Significance as required under relevant Queensland and Commonwealth legislation. The Offset Management Plan will include details of the management methods that will be put in place for the offset properties to achieve appropriate conservation outcomes. This will include consideration of appropriate management of grazing pressures, pests, weeds and fire.

Submitter Issue Number 11.007

Section 10.6.1, pg 10-5 - Possible significant loss of fish habitat.

The proposed works may cause a significant loss of fish habitat through the removal of waterways mapped as green, amber and red in DAF's waterway mapping layer. This in turn may cause flow on effects to downstream purple waterways. DAF request that works involving the loss of fish habitat give consideration to the requirements of the State Development Assessment Provisions Module 5.2 Fisheries Resources WWBW to adequately provide for fish passage, and provide equal or enhanced habitat values and habitat complexity. If impacts cannot be avoided, DAF request that the impacts are minimised, mitigated or offset as per the Queensland *Environmental Offsets Policy 2014.*

The project site is located at the top of the catchment. Consequently the drainage lines that occur on the project site are highly ephemeral and flow only for short durations when sufficient rain has fallen in the wet season. Remnant pools form along these drainage lines during the wet season and generally dry out during the dry season. The drainage lines generally lack a distinct riparian zone. Section 10.6.2 of the draft EIS concluded that the majority of the drainage lines are unlikely to support significant freshwater fish communities due to a lack of both woody debris and macrophyte coverage for shelter and spawning; generally low flow; and the intermittently dry nature of the ephemeral drainage lines. This conclusion was supported by fieldwork, which confirmed very few fish records. The fish species that were recorded are common and widespread. Given this setting, the drainage lines that are proposed to be cleared do not provide significant fish habitat or fish passage values.

Section 10.7 of the draft EIS describes the mitigation measures that will be adopted to minimise impacts on aquatic ecology, including potential impacts on fish passage. These include ensuring that construction along drainage lines is only undertaken when flows have ceased; installing erosion and sediment controls and making use of a clearing procedure that restricts the area of remnant vegetation to be cleared to the minimum area required for the safe construction and operation of facilities.

Submitter Issue Number 11.008

Section 12.4.11, pg12-14 to 12-15

The potential for depressurisation of bores beyond the project site as a direct result of the Project. The details of provisions for reduction/loss of bore water supply to properties due to mining and post mining activities have not been provided.

The Proponent has indicated that "the project is not predicted to impact on bores that are located beyond the project site". However, in the event that these bores are impacted the Proponent should outline:

• make good provisions for water bores – details are not currently provided; and

• provisions for reduction/loss of bore water supply to properties due to mining and post mining activities.

The predicted impacts of the project on water supply bores are discussed in Section 12.4.8 of the draft EIS. Section 12.6 of the draft EIS discusses the licensing requirements under the *Water Act 2000* that will apply to the project and require the make good for any affected water supply bores. As is normal practice, make good arrangements for affected water supply bores typically involves either modifications or deepening of existing bores or the installation of a new bore.

Submitter Issue Number 11.009
Section 18.6.2, pgs 18-9 to 18-10
The operations phase 1 will have an average annual workforce of 3,119 and phase 2 will have an average annual workforce of 1,016 persons. However, the EIS does not specify where this workforce will be sourced or how it will be trained when required.
The Proponent should consider:
• how labour from the existing local workforce will be trained to meet emerging skill needs
• how training will be sourced and if there are Registered Training Organisations available to meet these needs.

Section 18.6.5, pgs 18-11 to 18-12
The predicted home-base locations of the workforce area stated in the EIS does not include the Fitzroy or Mackay-Isaac- Whitsunday Regions.
The Mackay-Isaac-Whitsunday and Fitzroy regions have been traditionally linked to the long history of mining in the Bowen Basin. The primary centres of Mackay and Rockhampton have good transport links and have provided long term home base locations for skilled resource workers. This involvement over many years has resulted in the experience to *'absorb any relatively minor additional population growth that may arise from the project.'*
If, *'the selection of multiple potential home base locations also aid to disperse the workforce*...', then the CQ Region, and particularly the Isaac LGA, where the project is located, should be considered as a home base location for the workforce.

The draft EIS Social Impact Assessment (Appendix N) provides detailed information regarding the likely source of labour (including assessment of possible home base locations), training of the workforce and commitments to manage associated impacts including the following:

- Section 4.3.1 discusses workforce recruitment in the construction phase.
- Section 4.1.1 discusses workforce recruitment in the operations phase.
- Section 4.4.4 discusses workforce training.
- Section 6.3.5 discusses skills enhancement in the Local Area and home base locations.
- Section 7.2 discusses the proponent's commitments relating to recruitment and training including the development of a Recruitment Plan and a Training and Skilling Plan.
- Appendix D of the draft EIS Social Impact Assessment (Appendix N) is a Labour Market Study which is a detailed study undertaken to inform the labour source locations for the project.

Section 4.4.1, Section 4.4.5 and Appendix D of the draft EIS Social Impact Assessment (Appendix N) specifically addresses the submitters concern that the Fitzroy or Mackay-Isaac-Whitsunday Regions were not currently included in the predicted home base locations. These sections explain that these regions weren't considered as likely home base locations for the project workforce as, at the time the SIA baseline was prepared, the Mackay and Fitzroy Regions were experiencing sustained population growth driven by significant expansion in the surrounding mining industry. This population growth resulted in housing availability and affordability issues across both regions, particularly in the Mackay Region. It also placed considerable pressure on existing services and facilities as well as labour supply for non-mining sector businesses. For this reason, it was assumed that the majority of project labour would not be able to be sourced from the Mackay and Fitzroy Regions. However, it was also noted that, due to the recent significant downturn in the coal mining industry since the Labour Market Study was undertaken, there has been a reduction in the number of mine employees across the Mackay and Fitzroy Regions, leading to marked changes in housing availability and affordability across these regions. House prices and rents have reduced substantially and housing availability has increased. This suggests that these areas may now have an existing supply of suitable labour and capacity to accommodate a proportion of the project workforce as permanent residents. However, given the cyclical nature of mining it is likely that within the proposed 50 year mine life, these regions will again experience sustained population growth coupled with high demand for housing, and services and facilities. Alternative regional centres will be considered as home base locations if current labour market conditions persist into the construction and operations phase of the project. To this end, and as explained in the draft EIS, the proponent has committed to updating the project labour study prior to the commencement of the project construction phase.

Submitter Issue Number 11.010

Table 30-1, pgs 30-66 to 30-67 - Further detailed planning

DAF also notes that the project proponent needs to undertake more detailed planning to identify its quarry material requirements and their proposed sources of supply for its mining operations and associated mine infrastructure within the proposed mining lease, for works to construct or upgrade roads to the proposed mine lease from the Moray-Carmichael Road, for construction of a rail spur line from the proposed Galilee Basin to Abbot Point Coal Terminal, and for any coal terminal requirements.

The proponent must consult with DAF as early as possible about its quarry material requirements for its project and the related infrastructure to ascertain if the proposed sources of quarry material are available to the project proponent and, if so, to obtain any required authorisation under the *Forestry Act 1959* to remove and use State-owned quarry material.

Noted. Refer also to response to issue 11.001.

Submitter Issue Number 11.011

Waterway Barrier Works applications and approvals under the *Sustainable Planning Act 2009* are not required within Mining Leases for projects authorised under the *Mineral Resources Act 1989*. Waterway Barrier Works applications and approvals are relevant outside the Mining Lease area.

Any waterway barriers inside or outside of the Mining Lease do however have capacity to impact upon fish movement and waterway habitats with ramifications to the fisheries resources of the region. The DAF request that for any waterway barrier works within the Mining Lease, consideration is given to the requirements of the State Development Assessment Provisions Module 5.2 Fisheries Resources WWBW to adequately provide for fish passage, and provide equal or enhanced habitat values and habitat complexity. For waterway barrier works outside of the Mining Leases, development approval will be required for operational works that is the building or raising of waterway barrier works under the *Fisheries Act 1994* including any and all waterway diversions; levee designs; culvert or bed level crossings; rock armouring; or all and any other works within a water as defined under the Act. The *Fisheries Act 1994* requires that waterway barrier applications may only be approved following consideration of impacts of the works upon fisheries resources and fish habitats.

Noted. Refer also to response to issue 11.002.

PROJECT CHINA STONE
RESPONSE TO BTF RECOVERY TEAM SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

12 BTF RECOVERY TEAM SUBMISSION

This response has been specifically prepared to address issues raised in the Black-throated Finch Recovery Team submission. It is also noted that Birdlife Australia (Submitter 37) also referred to the Black-throated Finch Recovery Team submission issues, directly quoting the Black-throated Finch Recovery Team submission.

Submitter Issue Number 12.001

The Black-throated Finch Recovery Team (BTFRT) has reviewed the Project China Stone Terrestrial Ecology Report (the Report), prepared by Cumberland Ecology for Hansen Bailey and dated July 2015. The following letter documents the BTFRTs main concerns with respect to the assessment work and findings. In summary:

- There is insufficient survey effort to assess the distribution and abundance of BTF on the site.
- There is insufficient information contained in the Report to ascertain the significance of the project area to BTFs.
- There is insufficient information to assess the significance of the proposals impact on the BTF (i.e. the MNES significant impact criteria).
- Potential impacts on the BTF may have been understated due to erroneous assumptions made about the importance of the project site to BTFs, the location and extent of suitable habitat for BTFs and the capacity to restore and/or offset BTF habitats impacted by mining.

The BTFRT is aware that the China Stone Project site adjoins the proposed Carmichael Mine where the largest known (from across the species range) populations of BTFs occur. The habitats supporting BTFs on the proposed Carmichael Mine site are contiguous with that found on the China Stone Project site. On available information, the totality of these habitats is likely to be critical to the viability and long term survivorship of the local and regional BTF population, and ultimately the conservation status and population trend of the species.

The BTFRT's main concerns regarding the China stone EIS are detailed below.

The specific concerns raised in the submission are discussed in the following responses.

Submitter Issue Number 12.002

a) There is insufficient information contained in the Report to ascertain the significance of the project area to BTFs.

b) According to the Report, BTFs were recorded at 'several locations' (shown on Figure 14 and 17) in the southern portion of project area, and the species is 'moderately common' in this area [4.33]. Mention is made of a flock of 12 BTFs and 'several individuals and small flocks' [4.33]; however, no data are provided on the number of sightings or the details of those sightings. Reliable information on BTF abundance and distribution (spatially and seasonally) is necessary to establish the importance of the project site to BTFs. The Report has not provided this.

The Terrestrial Ecology Report (Appendix F) of the draft Environmental Impact Statement (EIS) provides sufficient information to allow an assessment of the project's potential impact on the Black-Throated Finch (BTF). It includes the results of multi-season flora and fauna surveys, provides maps of available habitat and includes the location of species records within the project site. Survey data and general findings from other projects in the Galilee Basin were also considered as part of the development of the draft EIS, allowing for a robust assessment of potential impacts on the species. An Assessment of Significance in accordance with the requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is included in the Terrestrial Ecology Report (Appendix F) of the draft EIS. It concluded that the project has the potential to give rise to a significant, residual impact on the species, and offsets are therefore required to compensate for these impacts. This conclusion would not be altered by additional data on BTF abundance and distribution.

The proponent acknowledges the value, in general terms, of gathering further information about the ecology and distribution of the BTF. This information would assist with conservation efforts for this species. Recent approvals for Galilee Basin Projects have therefore included approval conditions that require further research and/or contribution to research funds. For example, Recommendation 4 of the Office of the Coordinator General's (OCG's) Evaluation Report for the Carmichael Coal Mine and Rail Project (CCM&RP) EIS describes the development of a BTF Bioregional Management Plan, funded by pro-rata contributions from Galilee Basin proponents. According to Recommendation 4, the BTF Bioregional Management Plan must provide for the bioregional survey and assessment of the BTF population and habitat in the Galilee Basin and Desert Uplands bioregion, including identifying a schedule of baseline bioregion-wide surveys and ongoing bioregion-wide surveys for the species. Conditions 15 to 19 of the CCM&RP EPBC Act approval require the contribution of funds (amounting to $1 million) to the implementation of research programs on EPBC Act threatened species. According to Environmental Authority Condition I6, the CCM&RP is also required to prepare a BTF Species Management Plan, aligned with any Bioregional BTF Management Plan, which includes a baseline research program on the specific nesting and feeding requirements of the species.

The proponent believes that supporting well planned, carefully scoped research is the best approach for improving scientific knowledge about the BTF. In contrast, undertaking additional, ad hoc site specific survey work has very limited potential to deliver meaningful data that could be

used to benefit the species, and further site work would not change the draft EIS's overall conclusion in relation to potential impacts on the species.

Submitter Issue Number 12.003
Furthermore, BTF sightings made on the China Stone site during work by GHD for the Carmichael Mine site are not shown on the Report's mapping and have not been used to inform habitat modelling. This is a significant omission of relevant information.

Please refer to Figure 1 in Attachment F - Additional Information on Ecology, which shows BTF records from the CCM&RP EIS and associated documentation. This figure also provides revised habitat modelling for the BTF and shows an excellent correlation between the revised habitat modelling and the CCM&RP EIS BTF records.

Submitter Issue Number 12.004
Information relating to the presence and abundance of BTFs has been attained via a general fauna survey program. This included timed bird census surveys (10 to 30 minutes) at various locations [3.23]. The total sampling effort for birds over the 3 surveys was 37 hours (i.e. on average 12.3 hours per survey) which is a low sampling intensity for such a large area and not in accordance with the EPBC Survey Guidelines. While the sampling design has successfully identified BTF presence, it has not properly assessed BTF distribution and abundance (spatially and seasonally) within this area. The distribution and abundance of BTFs on the project site should be ascertained via targeted studies that utilise an appropriate sampling regime and performed by suitably experienced persons. The study should consider both the southern and northern portions of the project site.

The purpose of the Australian Government's 2010 *Survey guidelines for Australia's threatened birds* (i.e. the "EPBC survey guidelines" referred to in the submission) is to "determine the likelihood of a species' presence or absence at a site" (refer page 1 of the guideline). Given that the field survey undertaken for the draft EIS has been successful in recording the BTF within the project site, the survey effort was suitable for the purpose outlined in this guideline.

Please refer to the response to issue 12.002 in relation to the issue of undertaking further surveys of the BTF, particularly surveys designed to map distribution, abundance, etc. Please also note that the habitat modelling presented in the draft EIS and Attachment F – Additional Information on Ecology is not dependent on BTF records and consequently gathering further data about the abundance and distribution of the BTF within the project site would not alter the conclusions of the draft EIS.

Submitter Issue Number 12.005

When assessing the significance of the project site to BTFs more detailed consideration should be given to work undertaken on the neighbouring proposed Carmichael Mine site. Studies by GHD indicate that large numbers of BTFs occur in the north of the Carmichael Mine site and in the south of the China Stone project site (i.e. the GHD reports contain data collected from the China Stone project site). This information and data should have received greater attention in the Report and informed assessments about the significance of the China Stone project site to BTFs.

Please refer to response to issue 12.003.

Submitter Issue Number 12.006

Modelling has been used to identify the location of 'High value', 'Low value' and 'Unsuitable' habitat for BTFs (Figure 17)[G.3]. The decision criteria for the habitat model are based on Regional Ecosystem types and distance to permanent water. The problem with this approach is that important habitats for BTFs may also occur near to ephemeral water sources; for example, in the Townsville region breeding habitat is known to occur near to ephemeral water points. With respect to the project site, these concerns are supported by the presence of BTFs in 'Low value' habitat (five of the ten (50%) BTF sightings on Figure 17 occur in 'Low value' habitat). For example, if BTF are known to use feeding areas near ephemeral water seasonally – and this is a critical resource during breeding and nesting periods. If this habitat is removed, this removes part of its annual habitat (ergo the BTF does not just use habitat around permanent water) and therefore the impact on the BTF is significant. The division between low and high value habitat is spurious. The habitat model is therefore considered unreliable, and it underestimates the area of habitat to be effected.

The BTF habitat modelling for the project site has been revised in consultation with the Federal Department of the Environment and Energy (DoEE) and the Queensland Department of Environment and Heritage Protection (EHP). An overview of the revised habitat modelling is provided in Attachment F - Additional Information on Ecology. The revised habitat modelling now includes proximity to ephemeral drainage lines.

Submitter Issue Number 12.007

The habitat mapping seems to use the REs listed in the Recovery Plan; but the data from the GHD reports clearly indicate that there are other RE types used by the BTF in the region, and other REs contain the resources (i.e. grass types, tree types for nesting) that the BTF would clearly use (e.g. 10.3.28a, 10.3.6a, 10.3.10, 10.3.11a, 10.3.14c, 10.3.14, 10.3.15k, 10.3.16, 10.5.4b, 10.10.3, 10.10.4a/c, 10.10.5a).

As noted in the response to issue 12.006, the BTF habitat modelling has been revised. An overview of the revised habitat modelling is provided in Attachment F – Additional Information on Ecology. The majority of regional ecosystems listed in this submission are now included as BTF habitat.

Submitter Issue Number 12.008
The habitat mapping seems to be missing permanent watering points, and there are springs in the sandstone ranges that the BTF would also use in the dry season, to access food resources in key REs (i.e. land zone 10 REs). These must be included in the habitat mapping to more accurately present the distribution of high value habitat.

As indicated in the draft EIS Groundwater Report (Appendix I), there are no springs on the project site. The closest springs are 22 km to the south. As noted in the response to issue 12.006, the BTF habitat modelling has been revised. An overview of the revised habitat modelling is provided in Attachment F – Additional Information on Ecology. The revised habitat modelling is no longer reliant on permanent water and also includes proximity to ephemeral drainage lines.

Submitter Issue Number 12.009
The habitat mapping and surveys do not assess the condition of the habitat or REs for the BTF in terms of diversity and composition of food resources (i.e. grass types) or potential nesting resources.

Habitat condition across the site was considered and is discussed in Section 4.2.1 of the draft EIS Terrestrial Ecology Report (Appendix F). This section concludes that, overall, all vegetation was considered to be remnant and in very good condition, although the structure of the understorey and condition of ground layer was modified in many areas by cattle grazing. The draft EIS, therefore, conservatively did not seek to differentiate project impacts on threatened species on the basis of better or poorer quality habitat and has proposed to offset impacts of clearing of all remnant vegetation, regardless of habitat condition. On this basis, a detailed habitat condition assessment for the BTF is not considered to be warranted at this stage and such an assessment would not alter the predicted impacts of the project or the requirement for offsets.

It is also noted that detailed field surveys will be undertaken of the project site and offset properties during the development of the Offset Management Plan for the project. This will include an assessment of habitat condition for the purpose of confirming offset area calculations. This will occur prior to construction of the project.

Submitter Issue Number 12.010
Potential impacts on the BTF may have been understated due to erroneous assumptions about the importance of the project site to BTFs, the location and extent of suitable habitat for BTFs and the capacity to restore and/or offset BTF habitats impacted by mining.
Understanding the significance of a site to BTFs, and the location of important habitats, is essential for identifying and quantifying impacts. As described above, the abundance and distribution (spatially and seasonally) of BTFs is poorly known for the project site, and the habitat model is unreliable. It is likely that the Report has understated the importance of the site to BTFs.

The draft EIS acknowledges the importance of the project site in providing habitat for the BTF. As detailed in Attachment F – Additional Information on Ecology, habitat mapping for the BTF has

been revised in consultation with DoEE and EHP. A conservative approach to habitat modelling has been adopted, which has substantially increased the modelled extent of BTF habitat within the project site, compared to the habitat modelling in the draft EIS.

An Assessment of Significance, provided in the draft EIS Terrestrial Ecology Report (Appendix F) was undertaken in accordance with the requirements of the EPBC Act and concluded that the project has the potential to give rise to a significant impact on the BTF as a result of BTF habitat clearing required as part of the project. Offsets are proposed for this impact in accordance with the Australian Government's 2012 *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC Act Environmental Offsets Policy)*. Attachment F – Additional Information on Ecology indicates that sufficient suitable areas are present in the region for offsets. The submitter's general concerns about offsets are noted, but the provision of offsets is a standard approach, required by Queensland and Commonwealth legislation.

Submitter Issue Number 12.011
Significant impact determinations are based on the premise that 4434ha of BTF habitat will be impacted [L8]. This assessment is based on 'High value' habitat and ignores potential impacts on 6879ha of 'Low value' habitat. This is an under estimate of true impact because the available data indicate that habitats of potential importance to the BTF occur in the areas mapped as 'Low value' habitat. A reliable habitat model should be prepared and the assessment of potential impacts should be based on this revised model. The habitat model must be informed by site-specific data collected via specialised studies.

As detailed in the response to issue 12.006, the habitat modelling for the BTF has been revised. The revised habitat model is described in Attachment F – Additional Information on Ecology. As noted in these sections, the revised habitat now includes many of the areas that were previously mapped as low value habitat.

Submitter Issue Number 12.012
Significant impact determinations are based on the premise that rehabilitation will restore woodland habitats, and in the long term (20-40 years) restore 'similar levels' of habitat [L9]. While it may be possible to restore some areas to a woodland vegetation type there is no evidence, or precedent at other locations in the Galilee Basin, that the proponent will be able to restore exactly what is being lost, noting that BTFs have specific/specialised habitat requirements (e.g. preferred vegetation structures, densities and species composition). Restoration of suitable habitat will not be possible over large portions of the project site (e.g. open cut mine areas) and these limitations have not been quantified, or considered, when assessing impacts.

The Assessment of Significance prepared for the BTF provided in the draft EIS Terrestrial Ecology Report (Appendix F), concluded that the project would give rise to the permanent loss of habitat within the project site and, for this reason, has the potential to give rise to a significant, residual impact on the species. The assessment considered potential mitigation measures (e.g. installation of watering points, mine rehabilitation) but concluded that even with these measures, the impact

was predicted to be significant and residual. For this reason, and in keeping with the requirements of the *EPBC Act Environmental Offsets Policy*, offsets will be required to be provided. Section 5.3 – Editorial Corrections clarifies that re-establishing BTF habitat as part of mine rehabilitation was not a material consideration of the impact assessment.

Submitter Issue Number 12.013

Significant impact determinations regarding the "long term decrease in the population", "reduce area of occupancy", "fragment existing populations", "adversely affect habitat critical to survival", "disrupt the breeding cycle", "modify, remove", destroy, or decrease in quality of habitat" "result in invasive species that harmful to endangered species", "introduce diseases that might cause a species to decline" and "interfere with the recovery of a species" are not undertaken in a quantitative, formal or transparent manner. There is no quantitative data (i.e. population size, indices of abundance, seasonal variation) on BTF in the project area. There is not data on breeding or breeding cycles in the project area. There is no formal analysis of area of occupancy. There is no data on habitat condition. There is analysis of the distribution of invasive species such as buffel grass (a highly invasive species that is present there) that can overtake the native grasses, often facilitated by clearing and soil disturbance. This can cause severe decline in habitat quality for the BTF. There are many modelling tools that can be used to transparently address the above MNES criteria (i.e. population viability and spatial analysis). There is also a reasonable link between increased dust, air sac mites and the decline in Gouldian Finches in the Northern Territory. This must be assessed too.

There are varying degrees of detail that can be provided in an assessment of significance, ranging from a qualitative, desktop assessment to the collection of detailed, long term monitoring data over a number of years. However, irrespective of the level of detail included in the assessment of significance, the purpose of the assessment is to determine whether an action is likely to give rise to a significant impact on a matter of national environmental significance (MNES). In the event of a significant, residual impact being predicted, biodiversity offsets are required. The assessment provided in the draft EIS is at a suitable level, and contains a similar level of detail to assessments provided in other EIS documents for projects within and beyond the Galilee Basin. There is no requirement in the Australian Government's 2013 *Matters of National Environmental Significance - Significant impact guidelines 1.1* or in the EIS Terms of Reference for a quantitative assessment as suggested in the submission. The Assessment of Significance provided in the draft EIS Terrestrial Ecology Report (Appendix F) and the revised habitat modelling provided in Attachment F – Additional Information on Ecology has provided sufficient information to support the conclusion that the project has the potential to give rise to a significant, residual impact on the species, and this has triggered the need for offsets. The additional analysis suggested in the submission would not change this conclusion.

Submitter Issue Number 12.014

The Report concludes that the proposed action will not result in a long term decrease in the size of the BTF population on the basis that: (a) unmined habitats are extensive in the Galilee Basin; (b) each mine will restore habitats; and (c) considerable offsets are proposed for each mine [L9]. Of concern is the fact that: (a) in the Galilee Basin the majority of predicted BTF habitat falls within granted MLAs; (b) the successful establishment of woodlands habitats of a type suitable for BTFs has not been demonstrated at any site in Queensland, and it is impossible to restore woodland habitats on some post-mine areas; and (d) with respect to approved MLAs in the Galilee Basin, research has demonstrated that attempts to offset impacts on BTF habitats will ultimately result in the net loss of habitat. On current knowledge these losses will impact the largest known (across the entire species range) populations of BTF. Further, the success of offsets to avoid or reduce impacts on BTFs is an unproven science and has not been quantified.

This submission relates to a broad concern from the submitter about the effectiveness of offsets and their potential to compensate for residual adverse impacts on the BTF. Offsets are well established in government policy (e.g. *EPBC Act Environmental Offsets Policy*) and proponents are required by law to provide offsets in the event of significant, residual impacts being predicted. Any concerns in relation to the general concept and effectiveness of biodiversity offsets are best directed towards the government agencies that administer the legislation and policy related to offsets.

Submitter Issue Number 12.015

Predictions about the potential impacts of the proposed action should consider all direct, indirect, on-site, off-site, secondary and cumulative impacts. This includes consideration of the potential impacts associated with mine dewatering, or other activities that may alter the temporal availability, quality and abundance of surface and ground-stored water. In circumstances where predicted impacts are uncertain the potential range in magnitude of impact should be discussed.

The draft EIS considers all relevant direct, indirect and cumulative impacts from the project. The impacts of mine dewatering are addressed in the draft EIS Groundwater Report (Appendix I) along with all other potential impacts on groundwater. The potential impacts of the project on surface water, including catchment yield impacts, are addressed in Section 13 of the draft EIS.

PROJECT CHINA STONE
RESPONSE TO PUBLIC SAFETY BUSINESS AGENCY SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

16A PUBLIC SAFETY BUSINESS AGENCY SUBMISSION

Submitter Issue Number 16.001

a) *Recently draft guidance material for Bushfire hazard has been developed in support of the State Planning Policy in the form of a draft model code (attached). The draft model code has been developed to meet QFES operational needs and adopt key recommendations for bushfire mitigation. The code is currently in consultation with peak bodies and key industry groups. In support of this process, please consider relevant sections of the draft model code as a guide to address SPP requirements for bushfire hazard. Applicable performance and acceptable outcomes within the model code are numbered 1-3, 10-15.*

b) *The State Planning Policy (SPP) interactive mapping system indicates a very high, high, and medium potential bushfire area including potential impact buffer affecting the site as shown at http://www.statedevelopment.qld.gov.au/about-planning/spp-mapping-online-system.html. This means the SPP applies to the site and relevant provisions within the draft model code given above provide a pathway to address the requirements of the SPP. The draft EIS acknowledges the site is affected by bushfire hazard areas as part of the State Planning Policy Mapping. A number of facilities and infrastructure are susceptible to bushfire risk such as the warehouse and storage of dangerous goods, LPG and explosives. The accommodation village has also been identified as susceptible to bushfire risk.*

c) *To manage the bushfire risk the draft EIS states that a bushfire management will be developed and at the advisory agency briefing the proponent stated that much of the site will be cleared to reduce the bushfire risk. PSBA supports both these measures and advises that a site assessment should be conducted to determine the level of bushfire risk to the site. This in turn will guide adherence requirements to the draft model code.*

16.001 a) The proponent has committed to developing a Bushfire Management Plan as part of the project's Safety and Health Management System to address bushfire hazards, risks and management. The draft model code for Bushfire Hazards will be consulted in the development of this plan. This has been included in Attachment I - Additional Commitments.

16.001 b) Noted.

16.001 c) A site assessment will be conducted as part of the development of the Bushfire Management Plan, if necessary, to determine the level of bushfire risk at the project site. This has been included in Attachment I - Additional Commitments.

PROJECT CHINA STONE
RESPONSE TO QUEENSLAND FIRE & EMERGENCY SERVICES SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

16B QUEENSLAND FIRE & EMERGENCY SERVICES SUBMISSION

Submitter Issue Number 16.002
The locality of the China Stone Project is approximately 2.5 hours response time for QFES appliances from the nearest QFES Station.
Any increase in road traffic, light and heavy, will impact on QFES resources and response capabilities. This impact is increased with the extended travel distances.
QFES requests consultation with the proponent to discuss whether a collaborative and mutual agreement can be reached where the Emergency Response Team (ERT) to be established for the China Stone Project will have the training and resources to assist QFES at any Road Traffic Crash or other emergency incident along this route.

The proponent acknowledges the remoteness of the project site and is committed to working with the relevant emergency response providers to ensure adequate training and resources are available to respond to emergencies. As part of this, an Emergency Response Management Plan (ERMP) is proposed to be developed for the project, which will include discussion of how site emergency response will integrate with response from emergency service providers. In addition to addressing major on-site emergencies and incidents that could impact on surrounding land uses, the proponent will also commit to addressing non-mining specific matters in the ERMP including transport emergencies, mass medical treatment and/or evacuations due to the remoteness of the project site. This has been included in Attachment I - Additional Commitments.

Submitter Issue Number 16.003
The locality of the China Stone Project and proposed airstrip is approximately 2.5 hours response time for QFES appliances from the nearest QFES Station.
The EIS identifies that approximately 40 flights per week will occur for the transportation of the Fly-In/Fly-Out workforce and construction materials when the airstrip is established. With approximately 170 persons per flight, that equates to an annual passenger manifest of approximately 353,600 persons. It is the QFES's understanding that when an average annual passenger manifest exceeds 350,000 for an airstrip, then a permanent Aviation Fire Fighting force is required to be established.
The proponent will be required to identify what China Stone's ERT's capabilities and resources will be and how any aviation incident will be managed.

As discussed in Sections 22.3.2 and 22.8 of the draft Environmental Impact Statement (EIS), the proponent will address emergency response preparedness by developing an ERMP as part of the Safety and Health Management System for the project. The ERMP will address major

emergencies and incidents that could impact on surrounding land uses. It will include firefighting requirements for all on-site activities, including aviation, in accordance with all relevant legislation. The ERMP will be developed in consultation with emergency service providers, including the QFES.

Submitter Issue Number 16.004
Installation of Special Fire Services to Australian Standards and compatibility of equipment installed with these installations to QFES appliances.
As this accommodation site is being constructed on a mining lease, the project and Special Fire Services to be installed throughout will not be required to be assessed by QFES as a referral/advice agency under the Sustainable Planning Regulation Schedule 7.
QFES recommends that they are engaged to provide the proponent with advice on compatibility of resources and any other issues that may require clarification.

Noted.

Submitter Issue Number 16.005
Safety and Health Management System (SHMS).
QFES accepts to be involved with planning for the Emergency Preparedness and Response for the SHMS.

Noted.

PROJECT CHINA STONE
RESPONSE TO QUEENSLAND POLICE SERVICE SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

16C QUEENSLAND POLICE SERVICE SUBMISSION – TOWNSVILLE DISTRICT

Submitter Issue Number 16.006
Consultation should be made with company representatives to ensure heavy vehicle movement is restricted to Port access road and not access via Boundary St and Abbot St. These suburban streets include tight turning areas at the intersections of Boundary St and Railway Ave, several traffic lights along Railway Ave, Abbot St and Flinders Highway, a pedestrian overpass at Railway Estate School, Railway Ave, a narrow pass on Rooneys Bridge on Railway Ave, and Abbot St Oonoonba.

Noted. Section 19.2.3 of the draft EIS acknowledges the need to obtain relevant permits for over dimensional vehicles from the Queensland Police Service (QPS) and includes a commitment to provide the QPS with a detailed schedule of these vehicles as part of detailed construction planning.

Submitter Issue Number 16.007
A larger than present volume of heavy vehicle movement in and out of the Townsville Port predominantly along the Port Access Rd poses potential for an increase in traffic incidents involving heavy vehicles with inherent risks.
Potential for major incident type road incidents and associated trauma requiring concentrated police reaction, heavy machinery recovery equipment, and heavy damage to road infrastructure etc.

Refer response to Issue 16.006.

Submitter Issue Number 16.008
Need for QPS representatives including the OIC at the Townsville Station. The Road Policing Unit will need to formulate a working party with Port and Main Roads representatives to identify potential 'weak point' in port exit route and city exit route in regards to large vehicles, wide load escorts, protest/blockade areas and to formulate risk management plans around those risks.

Noted.

Submitter Issue Number 16.009
There is also an issue with a perceived increase in policing presence regarding protestors along the Port access road. This could result in inherent risk of serious injury/death to protestors attempting to block movement of mining equipment.

This is a matter for the QPS. It is noted that the issue of concern is purely speculative.

Submitter Issue Number 16.010
Issues with road movement of excess dimension loads of material and machinery through heavy traffic areas within the city limits, which could impose on the availability of wide load escorts and police vehicles for the district.

Refer response to Issue 16.006.

Submitter Issue Number 16.011
Depending on the size of machinery moved, the ability for heavy vehicles to turn safely off the Port access road onto the Flinders Highway at Stuart poses traffic risks which may require police presence additional to wide load escort duties.

Refer response to Issue 16.006.

16C QUEENSLAND POLICE SERVICE SUBMISSION – CHARTERS TOWERS DISTRICT

Submitter Issue Number 16.012

- The China Stone mine will be situated approximately 30km from the Adani Carmichael holding.
- It will effectively use the same road and rail infrastructure that has been or is being built for Adani.
- At a meeting on Thursday (OCG agency briefing 20 August 2015), an Adani Executive advised that China Stone was about 3yrs behind Adani in its planning and development.
- China Stone, like Adani does not support a drive in/drive out workforce and advocates fly in/fly out or bus in/bus for safety. That said, contractors at the mine-site may not do so.
- Regardless, there will be a significant increase in the traffic flow on the Flinders Highway and Gregory Developmental Road much of which being heavy transports and in the build phase, many excess dimension loads of material and machinery.

Refer response to Issue 16.006.

Submitter Issue Number 16.013

- The heavy vehicle by-pass at Charters Towers has a narrow/low rail overpass [Dungavell Drive] which routinely requires excess dimension vehicles to be detoured through suburban streets. This increases risk to other motorists and damage to infrastructure. See photo below (Submission contains photo of overpass)
- The heavy vehicle by-pass also passes through residential areas in Charters Towers and the increase in heavy transport traffic will increase the risk to those residents. See below (Submission contains photo of road in residential area)
- The peaceful enjoyment of those residences on or adjacent to the by-pass will also be negatively affected due to the increased noise and traffic flow.
- The best solution would be to construct a heavy vehicle by-pass around the city.
- The road is generally suitable for excess dimension vehicles with there being only one narrow section, that being at the Cape River [100km south]. Advice is that this crossing will be upgraded before the mines commence.

Attachment I – Additional Commitments includes a commitment to develop a Road Use Management Plan. A Road Use Management Plan is required to address suitable routes and management measures for over-dimensional vehicles and is developed in consultation with relevant stakeholders including the QPS.

The suggestion for a heavy vehicle by-pass should be directed to the relevant road authorities who would be responsible for any such works.

Submitter Issue Number 16.014

There are sporadic communication black-spots [both radio and mobile phone] on the Gregory Developmental Road in the Division. Additional radio and mobile phone infrastructure may be necessary.

The mine access road is south of the Belyando and is within the Mackay District. Communication issues in that area are addressed in the Mackay response.

As discussed in Section 18.7.1 of the draft EIS, the proponent is proposing to coordinate project infrastructure upgrades, including communication infrastructure upgrades, with local emergency services and Adani to enable cost-effective expansion of emergency service communications along the Gregory Development Road.

16C QUEENSLAND POLICE SERVICE SUBMISSION – MACKAY DISTRICT

Submitter Issue Number 16.015
The cumulative effect of potential negative impacts on roads, traffic and safety including increased traffic and traffic disruption along the Gregory Development Road and Flinders Highway will be significant. There will be a significant increase in the movement of excess dimensional loads on the mentioned roads that has the potential to impact operational policing.

The draft EIS includes a Road Impact Assessment (RIA) (Appendix O) that addresses the traffic impacts of the project.

Refer response to Issue 16.006 in relation to over dimensional vehicles.

Submitter Issue Number 16.016
Communications including mobile phone and radio are non-existent for the majority of the Gregory Development Road and proposed mining area. It is requested that consideration is given to the proponent providing a suitable tower for the installation of communications equipment suitable to the needs of all emergency services and mobile phone coverage. It is recommended that consultation occurs with Sergeant Steve Falzon, Radio & Electronics Section, Mackay on 49683450 with respect to communications.

Refer response to Issue 16.014.

Submitter Issue Number 16.017
In addition to the Public Safety Business Agency, Queensland Fire and Emergency Service, Queensland Ambulance Service and QPS, consultation in relation to the development of Risk Management plans should take place with Local and District Disaster Management Groups. This would ensure that the emergency /risk management plans for the project do not conflict with and/or place unnecessary burdens on existing disaster management arrangements

As discussed in Section 22.3.2 of the draft EIS, the proponent is proposing to consult with key stakeholders, including emergency service providers and other relevant stakeholders, during the development of the Site Health and Safety Management System and associated Integrated Risk Management Plan for the project.

Submitter Issue Number 16.018
QPS requests that the proponent reference the Disaster Management Act 2003 and any reference to a 'disaster' should be in consideration of the definition provided for in this Act.

Section 5.3 – Editorial Corrections includes insertion of the *Disaster Management Act 2003* in Table 22-1 of the draft EIS.

Submitter Issue Number 16.019

The QPS further requests that the proponent include elements within the Risk Assessment in relation to how the proponent will deal with trespass action, nonviolent direct action, and other protest related activities that could close operations and place police, workers and protesters in danger. The QPS invites consultation with the proponent in the development of plans.

It is recommended that ongoing consultation occur with the District Officer, Mackay Police District on 48400800 and the District Officer, Townsville District on 47268640.

Section 22.6.7 of the draft EIS describes how malicious acts have been considered in the Preliminary Hazard Analysis completed for the project.

PROJECT STONE
RESPONSE TO LOCK THE GATE ALLIANCE SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

17 LOCK THE GATE ALLIANCE SUBMISSION

The following responses are provided for issues that were identified by the Office of the Coordinator General as requiring a response. Other issues raised within the submission were identified by the Office of the Coordinator General as requiring noting by the proponent.

Submitter Issue Number 17.001
MacMines Austasia Pty Ltd proposes to develop a very large-scale coal mine on a greenfield site in Central Queensland at the northern end of the Galilee Basin, within the southern block of Exploration Permit for Coal (EPC) 987.
On 31 October 2012, the Coordinator-General declared the project to be a 'coordinated project' under section 26 of the State Development and Public Works Organisation Act 1971 (Qld) (SDPWO Act). This declaration initiated the statutory environmental impact assessment procedure of Part 4 of the SDPWO Act, which requires the proponent to prepare an EIS for the project.
An Environmental Authority (EA) and Mining Lease (ML) application was lodged with Department of Natural Resources and Mines (DNRM) on 30 January 2014. The Department of Environment and Heritage Protection (EHP) notified MacMines on 18 March 2014 that the EA and ML application requires additional information, which is purported to be satisfied by this EIS, lodged with the Queensland Coordinator-General with a Draft EIS public consultation from 25 July 2015 to 7 September 2015.
The project was declared a controlled action on 30 October 2014 and requires approval under the Environmental Protection and Biodiversity Conservation Act (EPBC Act) before it can proceed. The controlling provisions are: Listed threatened species and communities (Sections 18 & 18A); Listed migratory species (Sections 20 & 20A); and A water resource, in relation to coal seam gas development and large coal mining development (Section 24D).
The proposal includes: 1. open-cut and underground coal mines 2. coal handling and preparation plant 3. tailings and water storage facilities 4. airstrip 5. accommodation village 6. power station. The mine will produce up to 55 Million tonnes per annum (Mtpa) of Run of Mine (ROM) coal, and approximately 38 Mtpa of washed thermal coal for the export market for in the order of 50 years.

A comprehensive draft Environmental Impact Statement (EIS) has been prepared in accordance with the EIS Terms of Reference (TOR) and relevant guidelines in each specialist technical area and, as such, further assessments are not necessary nor warranted. The draft EIS discusses the potential for impacts (including cumulative impacts), and the significance of impacts. Detailed assessments of Matters of National Environmental Significance (MNES) were completed in accordance with relevant Commonwealth guidelines, including Assessments of Significance for Threatened Species. The draft EIS also includes monitoring and management measures for all relevant potential impacts of the project including impacts beyond the project site. The majority of

these measures will be approval conditions applied to the project. The relevant Queensland and Commonwealth Government agencies will take this information into account when assessing the project and imposing approval conditions.

Submitter Issue Number 17.002

The scale of the China Stone Coal Project is out of proportion to global coal demand and will significantly contribute to the already oversupplied global coal market and thus further drive down the current historically low prices for Australian eastern seaboard thermal coal.

The EIS states that the indicative schedule for development is subject to change based on detailed planning as well as economic and mining conditions. Mine site infrastructure, including the accommodation village and airstrip is scheduled to commence in Project Year 1 (2016) and completed in Project Year 5 (2021). The first coal production from the open cut and underground mines is scheduled for Project Year 3 (2019).

Given the costs involved with developing this project, it seems unlikely that the mine will be developed before the FOB thermal coal price reaches the $100 mark. Long-term forecasts of coal prices predict this may not until after 2025. Others predict the price will never fully recover to this level. It is irresponsible for an Australian government to provide a foreign owned entity with a saleable mine lease that may never be developed, and according to reputable forecasts at least not before 2025.

It is noted that the spot price of thermal coal was AUD$131.05 in October 2016.

Submitter Issue Number 17.003

The proponent has already delayed the project. Originally proposed to begin production in 2014/15, it is now not expected to be in operation until 2019 at the earliest, with rehabilitation and decommissioning starting in 2066.

Open cut mining is expected to be completed by Project Year 32 (2048) with underground mining continued until Project Year 49 (2065). Mining will be followed by a final rehabilitation and decommissioning period. At the completion of mining in Project Year 49 (2065), a four-year Final Rehabilitation and Decommissioning Phase will run from Project Year 50 (2066) to Project Year 53 (2069). It is unlikely that the people now charged with assessing and determining this project will still be alive to see its rehabilitation commitments fulfilled.

The Department of Environment and Heritage Protection (EHP) will have responsibility for enforcing compliance with any Environmental Authority for the mine, regardless of the mine life.

Submitter Issue Number 17.005

The EIS states that the project's peak water demand for the operation will be in the order of 14.3 GLpa. The EIS indicates that the proponent intends, ideally, to source almost 35% of this from external and unidentified sources (Appendix F:3 Table 1). In addition, the peak evaporation is estimated to be 2.7 GLpa resulting in a total estimated peak water demand of 16.2 GLpa in year 16 (Chapter 13:19). However, this ideal scenario is never likely to arise. Indeed, our calculations suggest that the offsite median water demand is likely to be in the order of 44% of the project's

total water demand. Should climate conditions over the life of the project alter from those historical conditions the proponent used to forecast water use and supply, this could rise substantially.
Over the life of the project, the volumes of water predicted to be consumed are staggering. Table 1 sets out an estimate of water use for the project, projected from the staged water balance set out in the EIS. It suggests that the project will consume almost 706 GL of water, including 311 GL of unknown externally sourced water and 318 GL of on-site groundwater.
The EIS identifies the sources of water supply for the project are as follows:
- Mine-affected underground pit water including: Variable groundwater dewatering volumes of up to approximately 850 MLpa in the Northern Underground and 920 MLpa in the Southern Underground; and Recycled underground raw water supply of up to approximately 500 MLpa in the Northern Underground and 250 MLpa in the Southern Underground.
-Mine-affected open cut pit water including: Variable groundwater dewatering volumes of up to approximately 2,440 MLpa; and Variable rainfall runoff to the open cut pit catchments. Mine-affected TSF return water including:Variable recovered supernatant from the deposited tailings of up to approximately 1,500 MLpa; Variable rainfall runoff from the TSF area; and o Variable rainfall runoff from the PSWSF area.
-Variable mine-affected runoff quantities from contained infrastructure area catchments including: Underground and open cut MIAs; Coal and reject stockpile areas; CHPP and CHPP ROM loading station; Power station; and Train loadout.
- External raw water supply, as required (13:14).

This submission does not provide any data that invalidates the assessment of water supply requirements presented in the draft EIS. The raw water supply for the project is discussed in Section 4.13.4 of the draft EIS.

Submitter Issue Number 17.006
The proposed coal mines that make up this project stands to have a significant impact on the region's groundwater resources and potentially the Great Artesian Basin (GAB), yet these risks have not been sufficiently assessed due to modelling uncertainty and a paucity of groundwater data. The proposed open cut mining area will extend over a 12km strike length and reach a depth of approximately 300m at its deepest point. The project will also involve establishing up to three longwall operations in the Northern and Southern Undergrounds. The southern underground operation will take place below the open cut pit (Chapter 12:6).The EIS sets out the key potential impacts on the groundwater regime that could arise directly from the proposed mining operations as:
-Dewatering and lowering surrounding groundwater levels;
- Subsurface subsidence cracking of strata overlying the proposed longwall mines, changing the permeability of the overlying units and influencing surrounding groundwater levels;
- Construction of a tailings storage facility (TSF) and power station waste storage facility (PSWSF), which have the potential to generate leachate and give rise to groundwater contamination;
- Use of hydrocarbons and chemicals which have the potential to give rise to groundwater contamination; and
- Formation of a residual void in the final mine landform, that has the potential to influence

surrounding groundwater levels and quality (Chapter 12:6).
The mines will target coal seams within the late Permian Betts Creek Beds which are interbedded with sandstone, siltstone, mudstone and shale. This unit is an equivalent of the Colinlea Sandstone and Bandana Formation units (Appendix I:12). These formations are regulated under the *Burdekin Water Resource Plan.*

The EIS makes it clear that the point of transition between the Betts Creek Beds and the Colinlea Sandstone and Bandana Formation units is unknown, due to inadequate drilling data in the region. In response, the consultant for the EIS set the transition boundary between these formations in the geological model at approximately 24°S, level with the northern extent of Springsure Shelf.This point is well south of the southern extent of the project site boundary and the Betts Creek Beds, the coal bearing formation proposed for mining (Appendix I:11). The decision about where to site this point may affect the results of the modelling.

The Betts Creek Beds contains seven coal seams, named sequentially from A to G with increasing depth. Typically, the A Seam is approximately 30m below the upper boundary of this unit. Cumulative thickness of coal within the Betts Creek Beds is approximately 35m, with the thickest coal horizon being the A and B Seams (Appendix I:11).

Water take from the Betts Creek Beds and the Joe Joe Group, the formation below it, will initially range from 2 to 16 ML/day (730 MLpa and 5.8 GL pa) during open cut and underground operations, and reduce to less than 5 ML/day (1.83 GLpa) following completion of open cut mining. These formations are located within the Greater Western Sub-Artesian Area declared under the *Queensland Water Regulation 2002 (Water Regulation)* (Chapter 12:10).

Modelled groundwater inflows to the final void suggests the water take from these non-GAB units is predicted to decrease post-mining and reach an equilibrium of approximately 0.5ML/day (Appendix I:35).

The GAB aquifers relevant to the project include the Clematis Sandstone, the Moolayember Formation and the Ronlow Beds, all regulated under the *Water Resources (Great Artesian Basin) Plan 2006* (GAB WRP). The Clematis Sandstone, which occurs on the project site, and the Moolayember Formation, which subcrops between 1km and 7km west of the project site, are together designated as GAB Management Unit 3. The Ronlow Beds, which subcrop in excess of 26km west of the project site, is designated GAB Management Unit 2.

Modelling predictions in the EIS, “indicate that the project will locally depressurise the Clematis Sandstone where it is saturated within and adjacent the project site. This depressurisation will result in water from these GAB aquifers flowing into the mine. It will also reduce the volume of water flowing from the connected Rewan Formation and Betts Creek Beds into the Clematis Sandstone” (Chapter 12:9).

Accordingly, depressurisation will propagate through the Betts Creek Beds, Rewan Formation and

Clematis Sandstone (where saturated), and will be enhanced by the increased hydraulic conductivity of connective subsurface subsidence cracking" (Appendix B:17).

Exploration drilling detected a normal fault running through the northern portion of the project site aligned north-northwest to south-southeast within the Triassic and Permian sediments. The EIS suggests that geological data indicates, "the fault opens and closes at the southern and northern extremities with 100m maximum displacement in the centre. The fault breaks the continuity of the Clematis Sandstone and on the downthrown eastern side of the fault, places this unit in direct contact with the Rewan Formation that lies on the western side of the fault" (Appendix I:13).

The EIS identifies a fault located in the northern area of the project site which controls local groundwater flows, with the effect that "Groundwater effectively pools against the low permeability unit and the fault forms a localised flow boundary" (Appendix I:27). The Clematis Sandstone is predicted to be depressurised most significantly where it is saturated on the eastern side of this fault. The saturated thickness of the Clematis Sandstone prior to mining in this area is approximately 50m. The modelling predicts that the potentiometric surface may be lowered by up to 33m in response to mining. Beyond the extents of mining subsidence, the depressurisation effects within the Clematis Sandstone rapidly diminish with distance (Appendix B:17).

The EIS claims that water levels in the Moolayember Formation and the Ronlow Beds are not predicted to be affected by the project (Appendix I:33). However, the EIS admits the natural variability in hydraulic conductivity within fractured porous rocks can vary by orders of magnitude. While the EIS suggests that, "calibrated hydraulic conductivity for each unit generally falls within the range of the field measurements. The exception is the modelled hydraulic conductivity for the Quaternary sediments and the weathered rock regolith that falls outside of the range of available field data, in both the project and Carmichael models. There is limited field data for both units…" Indeed, no field data was available for horizontal hydraulic conductivity for two of the affected GAB aquifers, the Moolayember Formation and the Ronlow Formation, which were assumed to be 0.07m/day and 0.1 m/day respectively (Appendix B:21).

Clearly the EIS relies on a significant degree of gap-filling where there are uncertainties about the geology and groundwater hydrology of the area being targeted. Such an enormous and long-lasting mine demands far more data collection and confidence in its assessment. It is imperative that further data collection, analysis and modelling be undertaken to prepare an accurate picture of the groundwater impact of this project before any decisions are made.

The EIS does not quantify the water take from the Moolayember Formation, it merely states that water take from GAB aquifers is all from Management Unit 3, comprising the Clematis Sandstone and Moolayember Formation (Chapter I:35), which it estimates to peak at 9 ML/day in year 32 (Figure 42 at Appendix I:92). This coincides with mining in operations phase 2 when longwall mines begin in the A and D seam in the Northern Underground (Chapter 4:24).

Lake Buchanan is an inferred indirect discharge zone for the Clematis Sandstone groundwater via

the Moolayember Formation (Chapter 12:3). According to the Queensland Groundwater Database, at least one bore on the Doongmabulla property (RN16895) intersects the Moolayember Formation (Appendix I:24). The EIS identifies eight private bores that intersect the Moolayember Formation within 20km of the project site. Three of the bores are located on the Yarrowmere property, three on the Moonoomoo property, one on the Ulcanbah property and one on the Carmichael property (Appendix I:25).

The draft EIS Groundwater Report (Appendix I) includes a detailed groundwater assessment that is based on an extensive data set.

Submitter Issue Number 17.007

The EIS states that the mines' water take from the GAB aquifers due to the depressurisation induced by mining will increase over the project life with the maximum predicted extent of depressurisation extending to 4km from the project site during mining and 11km after mining (Appendix I:38).

The EIS estimates that water take from the GAB aquifers will peak at 9 ML/day (3.3 GLpa) when subsurface subsidence cracking from the A seam longwall first interconnects the Northern Underground with the saturated Clematis Sandstone on the downthrown side of the fault. The volume of the water take it predicted to reduce post mining due to the lesser hydraulic gradients present around the mining areas (Appendix B:18). The long term take from Management Unit 3 peaks at a most 0.5 ML/day. There is also a small take from the Ronlow Beds (Management Unit 2) of 0.015 ML/day. This take occurs indirectly as a very slight reduction in flow from the Moolayember Formation to the Ronlow Beds (Appendix I:35).

Despite the groundwater assessment assuming that the permeability of the cracked strata overlying the mine is effectively 'freedraining' (Chapter 12:10), the EIS fails to consider important potentialities that may cause unacceptable impacts on the Great Artesian Basin aquifers. The EIS fails to adequately consider the possibility and the potential impacts of faulting through the Rewan Formation that could provide a preferred flow path from the Colinlea Sandstone to the surface, the regional groundwater flow within, and likely discharge from, the aquifers above and below the Rewan Formation, the potential spring source aquifers above and below the Rewan Formation and whether they have the necessary potentiometric head to drive artesian spring flow or competing conceptualisations that may explain the source aquifer/s of the Doongmabulla Springs.

The groundwater assessment in the draft EIS Groundwater Report (Appendix I) is based on a groundwater model. The groundwater model has been developed based on an extensive data set. Sensitivity analyses have been conducted for any areas of uncertainty in the model. The results of the sensitivity analyses, including sensitivity analyses on the permeability of the fault, indicate that the Doongmabulla Springs are not likely to be impacted by the project.

Submitter Issue Number 17.008

The EIS claims that the project will not impact on the Doongmabulla GAB discharge springs, the closest springs to the project site, 22 km to the south of the proposed mining area. The EIS also claims the sole source aquifer for these springs is the Clematis Sandstone.

Evidence presented to the Queensland Land Court in Adani Mining Pty Ltd v Land Services of Coast and Country & Ors.(Footnote 5 Joint Groundwater Experts Report; Adani Mining Pty Ltd v Land Services of Coast and Country & Ors. p5) and accepted by Adani's experts was that, "the source aquifer for the Doongmabulla Springs Complex is inconclusive and that the Colinlea Sandstone aquifer is likely to contribute to the Doongmabulla Springs."

The Colinlea Sandstone and Bandana Formation units are an equivalent of the late Permian Betts Creek Beds that include the targeted coal seams interbedded with sandstone, siltstone, mudstone, shale and coal. (Appendix I:12).

The EIS for the China Stone Coal Project states that "The only mechanism by which the underground mining could impact on the springs would be via depressurisation of the underlying low permeability Betts Creek Beds and Rewan Formation in the Southern Underground propagating upwards to the Clematis Sandstone and laterally 22km to the springs. The maximum predicted extent of depressurisation in the Clematis Sandstone extends to 2km from the project site. This means that no significant depressurisation of the Clematis Sandstone due to the project will occur within 20km from the Doongmabulla Spring Complex during or post mining and therefore no impacts on the springs are predicted" (Appendix B:18). However, the EIS also states that the mines' water take from the GAB aquifers due to the depressurisation induced by mining will increase over the project life with the maximum predicted extent of depressurisation extending to 4km from the project site during mining and 11km after mining (Appendix I:38).

The EIS uses predictions relating to the Carmichael Coal Mine from the Carmichael Coal Mine EIS and Supplementary EIS documents with the 1m drawdown contour as the limit of impact for each project (Appendix B:20).

In other words, the estimated maximum predicted extent of depressurization of 11km from the China Stone project site is the extent of a 1m drawdown. This is unsatisfactory when determining the impacts on a GAB spring and dependant ecosystems that make up the MNES inherent for the springs.

The 1 m drawdown contour is typically used as the limit of predicted drawdown as 1 m is the reasonable limit of precision for a numerical groundwater model. A drawdown of less than 1 m is also unlikely to be distinguishable from monitored natural variations in groundwater levels. Regardless, the suggestion that the theoretical projection of the predicted drawdown below 1 m, over a distance of 11 kms, would potentially have a significant impact on the Doongmabulla Springs is not technically feasible.

Submitter Issue Number 17.009

To date, approved Galilee coal projects include:

- GVK Hancock's Alpha Coal (29 May 2012) and Kevin's Corner (30 May 2013) projects,
- Waratah's China First (Galilee Coal) Project (9 August 2013),
- Adani's Carmichael Coal and Rail Infrastructure Project (7 May 2014),

• AMCI (Alpha) and Alpha Coal PL South Galilee Coal (2 December 2014).
The proposed Carmichael Coal Mine, located immediately south of the China Stone project site, has a very high potential to contribute to cumulative groundwater impacts from this mine. However, the China Stone EIS has failed to adequately identify these potential impacts. The EIS suggests that the "cumulative depressurisation effects will be most extensive in the coal seams targeted by the mining operations, with cumulative depressurisation predicted in the A, C and D seams by the end of mining. The project effects on groundwater levels are most extensive in the Southern Underground, where up to 200m additional depressurisation will occur. Outside this area, the project could add between 1m to 50m to the depressurisation predicted for the Carmichael Coal Mine" (Appendix B:20). That is a very wide range.
Evidence presented to the Land Court by Land Services of Coast and Country showed that Adani's numerical groundwater modelling for the Carmichael Mine cannot be relied on as a basis for assessing the likely impacts of the mine and is no basis to assess the risk of the mine to the Doongmabulla Springs. The evidence showed that Adani's predictions underestimated the groundwater drawdown of the Carmichael mine as its groundwater model was inappropriately constrained by the unjustifiably low conductivity values (particularly in the Rewan formation and the units underlying it). Nevertheless, the conclusion of the evidence was that the understated drawdown impacts predicted in the modelling done by GHD on behalf of the Adani demonstrates that even those drawdown impacts will be sufficient to cause an unknown but significant number of the Doongmabulla Springs to dry up and the springs and their exceptional ecological value to be lost.

Section 8 of the draft EIS Groundwater Report (Appendix I) provides predictions for drawdown for the project in isolation and estimates of cumulative drawdown with the Carmichael Project, based on the approved Carmichael EIS groundwater study. Even if the Carmichael Project groundwater study has under predicted drawdown, as suggested, the project is not predicted to significantly impact groundwater levels within 11 km of the springs and will therefore not result in any cumulative impacts on the springs.

Submitter Issue Number 17.010
The EIS states that "groundwater use in the region is sporadic and dispersed over a wide area due to the generally significant depth to groundwater and typically low yields. Water quality is variable, but is generally suitable for stock watering. During mining operations the project is not predicted to impact on bores that are located beyond the project site. Private bores within the project site will be managed through land access arrangements with landholders. As part of mine closure planning, the proponent will enter into agreements with landholders of any bores potentially impacted by drawdown post mining" (Executive Summary: 35).

Modelling for the EIS predicts that during mining operations the project will not impact bores located beyond the project site and that private bores within the project site will be managed through land access arrangements with landowners. However, post-mining groundwater drawdown may affect up to 19 private bores (Chapter 12:11).

As discussed in Section 12.4.8 of the draft EIS, the post mining groundwater impacts have been predicted using highly conservative modelling assumptions and groundwater monitoring over the 50 year mine life will be used to assess the extent of likely drawdown in the post mining phase. The proponent has committed to entering make good agreements with potentially impacted water supply bore owners.

Submitter Issue Number 17.011

The EIS suggests that groundwater monitoring over the life of the mine will confirm the actual extent of groundwater impacts and validate predictions which will inform the potential post-mining groundwater impacts and identify bores that will potentially be impacted in the long-term post mining (Chapter 12:12). Despite a bore census undertaken for the EIS that identified 52 bores that could potentially be impacted by the project within a radius of 20km beyond the project site (Chapter 12:11), the proponent does not intend to enter into Make Good Agreements for any potentially impacted bores until mine closure planning (Chapter 12:12).

Obligations under Make Good Agreements (MGA) are triggered when groundwater impacts lead to bores no longer being able to supply adequate water supply of adequate water quality. It will therefore have no material impact on the proponent to enter into MGAs with owners of all potentially affected bores identified in the census unless the bores are affected. Negotiating MGAs with all these bore owners must occur to prevent the risk that landholders will be left with impacts that cannot or will not be alternatively mitigated.

MGAs are proposed for any water supply bores predicted to be impacted by the project. In the event that the extent of drawdown is greater than predicted, this would be identified by the groundwater monitoring program. Any unexpected monitoring results would trigger an investigation in accordance with the Environmental Authority conditions and additional mitigation measures, where necessary. This would include the requirement for additional MGAs in the event that an investigation indicated that additional water supply bores were likely to be impacted.

Submitter Issue Number 17.012

The EIS states that, "the project site comprises approximately 20,000 ha of well vegetated land, with low-lying scrub in the south and east and a densely vegetated ridgeline, known as Darkies Range, running north to south through the western portion of the site." Of this 11,000 ha will be cleared by the project (Appendix F: 5.29).

Studies for the Terrestrial Ecology Report undertaken by Cumberland Ecology found only four of the ten fauna species listed under the *Nature Conservation Act (Qld)* and only three of the nine EPBC listed fauna species that had potential to occur within the project site.

The fauna species found were: 1.The Squatter pigeon (southern subspecies) (*Geophaps scripta scripta*) (EPBC vulnerable), 2. Black-throated finch (white-rumped/southern subspecies) (*Poephila cincta cincta*) (EPBC endangered), 3. Koala (*Phascolarctos cinereus*) (EPBC vulnerable) and 4. Short-beaked Echidna (*Tachyglossus aculeatus*) (special least concern, NC Act) (Chapter 9:7).

The studies found only three of the five migratory species listed under the EPBC Act that had potential to occur within the project site. 1. Eastern Great Egret (*Ardea modesta*), 2. Rainbow Bee-eater (*Merops ornatus*) and 3. Satin Flycatcher (*Myiagra cyanoleuca*) (Executive Summary: 33).

The project will clear high value habitat for: 1. Squatter Pigeon (southern subspecies) - 1,439 ha and 8 ha disturbed, 2. Black-throated Finch (white-rumped subspecies) - 4,443 ha and 10 ha disturbed, 3. Australian Painted Snipe - 15 ha and 0.03 ha disturbed, 4. Fork- tailed Swift -11,010 ha and 53 ha disturbed, 5. Cattle Egret - 11,010 ha and 53 ha disturbed, 6. Rainbow Bee-eater - 11,010 ha and 53 ha disturbed 7. Satin Fly-catcher - 11,010 ha and 53 ha disturbed, 8. Eastern Great Egret - 15 ha and 0.03ha disturbed. 9. Latham's Snipe - 15 ha and 0.03ha disturbed, 10. Koala - 3,246 ha and 21 ha disturbed. 11. Short-beaked Echidna 10, 892 ha and 24 ha disturbed (Appendix F:5.30-5.35 Table 5.6).
The EIS further states that the project will clear approximately 24ha of *Eucalyptus drepanophylla* open-woodland on sandstone ranges (RE 10.10.3) and 359ha of riparian vegetation (Executive Summary: 29), but that "there are no groundwater dependent ecosystems in the project site, given the lack of shallow groundwater and "no threatened flora species were recorded during the surveys" (Appendix F: 4.25).

The submitter's views on the clearing proposed to be undertaken as part of the project are noted. With respect to the specific issue of the adequacy of the field survey methodology, the intensity of field surveys is appropriate and is typical of field survey work undertaken for EISs. The methodology was guided by the draft EIS TOR and relevant survey guidelines. The draft EIS has also drawn on the results of fieldwork undertaken in the region by other proponents. This has provided a sound knowledge base of the ecology within the project site and the broader region. In instances where a threatened species was not recorded during field surveys, but had the potential to occur based on available habitat, a conservative approach was adopted and the species was assessed in the same way as species that were recorded during field surveys.

Submitter Issue Number 17.013
The EIS admits that "the project will give rise to potentially significant residual impacts on the Squatter Pigeon (southern subspecies), Black-throated Finch (white-rumped subspecies) and Koala, but does not predict any significant impacts on the Australian Painted Snipe or the Shortbeaked Echidna (Executive Summary: 29).

The EIS claims to contains a Biodiversity Offset Strategy "which describes the offsets that will be provided for impacts on these MSES" (Executive Summary: 29) but this Biodiversity Offset Strategy is not included in the EIS as it is deemed "commercial in confidence." The adequacy of mitigation of the very severe impacts set out in the EIS cannot be properly evaluated without being provided with the details of the Biodiversity Offset Strategy. It is not acceptable that this document should not have been made available to the public to scrutinise with the rest of the EIS documents.

Please refer to Section 4.2 – Response to Common Issues regarding the confidentiality of the Biodiversity Offsets Strategy.

Submitter Issue Number 17.014

The Terrestrial Ecology Report is poorly prepared and fails to adequately assess the cumulative impacts on MNES in the region. The report merely states that there will be cumulative impacts, but fails to provide estimates of habitat clearing and the impacts this additional clearing will have on the species likely to inhabit the project site.

Please refer to submitter issue 17.012 in relation to the adequacy of field surveys, and please refer to submitter issue 17.013 in relation to the availability of the biodiversity offsets strategy. Cumulative impacts are discussed in Section 5.8 of the draft EIS Terrestrial Ecology Report (Appendix F).

Submitter Issue Number 17.017

The EIS states that "Hydraulic modelling of the mine drainage system was conducted for the 1 in 20 and 1 in 50 Annual Exceedance Probability flood events in order to assess surface water impacts on downstream properties and stream geomorphology" (Executive Summary: 40).

"The modelling results also indicate that the mine water management system has adequate capacity to contain mine affected water generated by the project with a low probability of uncontrolled discharge. During extended rainfall periods the open cut pit will collect significant volumes of rainfall runoff and this will result in a surplus of mine-affected water within the mine water management system. Following such events, in order to dewater the open cut pits and allow continuing production, it will be necessary for accumulated pit water to be discharged from site under controlled conditions"(Executive Summary: 40).

The EIS indicate that under median conditions the average annual discharge requirement is approximate 400 MLpa, with a peak annual discharge requirement of median conditions, the equivalent of less than two discharges of the total Mine Water Dam storage capacity would be required. (Chapter 13: 23) The EIS predicts the release of mine affected water in 30% of the projected years. The model relies on 124 years of historical data and extrapolates mine storage air space according to this data set.

The EIS appears to have failed to account for predicted climate change impacts.

The Queensland EPA Guidelines for preparing a Climate Change Impact Statement (CCIS) includes predicted impacts on Queensland infrastructure including:

-An average annual temperature rise of up to 4.5C.

-A potential increase in intensity of extreme rainfall events.

-Changes in relative humidity and potential evaporation of 7% to 15%

-A 10% increase in cyclone intensity and frequency.

-An increase in frequency and intensity of storms.

Queensland's Inland Flood Study proposed that Queensland local governments work into their planning a climate change factor for 5% increased rainfall intensity per degree of warming, and suggested that they plan for 2 degrees of warming by 2050, and 3 degrees by 2070. There is no recognition in the EIS that the proponent should be planning for a 10% or 15% increase in rainfall intensity over the 50 year life of the mine.

The EIS states that "these climate changes on the proposed water management system would be a potential minor reduction in the long-term accumulated rainfall runoff within the system, but an

increase in short-term storm events. Due to the robust nature and design of the proposed water management system, the predicted changes in rainfall intensity and frequency will not have a material impact on the effective operation of the water management system. In particular, any increase in runoff from higher intensity storm events would be accommodated by the conservatively sized catch dams (Table 13-3). These dams have been conservatively sized to contain 100% runoff from the 72 hour 20 year ARI storm event. Any minor increase in external water demand due to reduced rainfall associated with climate change could be managed by securing additional external water supply" (Chapter 13: 26).

As indicated in the submission, the effects of climate change on the operation of the mine water management system are discussed in Section 13.5.7 of the draft EIS. The catch dam sizing in the draft EIS has been conducted by a mine water management specialist based on appropriate long duration design storm events.

Submitter Issue Number 17.018
The EIS identifies the Belyando River for the release of mine-affected water. The EIS states that mine-affected water in the Mine Water Dam reaching salinity levels of 3,200µS/cm, "predominantly contributed by groundwater inflow to the underground workings and open cut pit" (Chapter 13: 24). The EIS appears not to incorporate the predicted increases in evaporation rates due climate change when calculating salinity levels in the Mine Water Dam" (Chapter 13: 24).

Discharges of mine affected water will only be required following extended rainfall periods. At these times, excess mine water will be predominantly fresh rainfall runoff that has collected in the open cut pits. The effect of any increase in the evaporation rate on the salinity of discharged mine affected water will therefore be minimal.

Submitter Issue Number 17.019
The EIS suggests that "controlled discharges will only be required during and following extreme wet periods when the proportion of fresh rainfall runoff in the open cut pit water and the Mine Water Dam storage is higher and groundwater salinity is diluted. The maximum modelled salinity of water in the Mine Water Dam during controlled releases is less than 1,500 µS/cm" (Chapter 13: 24). The Aquatic Ecology and Stygofauna Report fails to even discuss potential impacts on the Belyando River ecology of mine affected water releases.

The impacts of the release of mine affected water on downstream aquatic ecology, including the Belyando River, is discussed in Section 10.6.4 of the draft EIS.

Submitter Issue Number 17.020

The EIS suggests that "controlled discharges will only be required during and following extreme wet periods when the proportion of fresh rainfall runoff in the open cut pit water and the Mine Water Dam storage is higher and groundwater salinity is diluted. The maximum modelled salinity of water in the Mine Water Dam during controlled releases is less than 1,500 µS/cm" (Chapter 13: 24) and nowhere in the EIS are the potential impacts on downstream water users assessed.

Section 13.6.5 of the draft EIS discusses impacts on downstream water quality and environmental values. Downstream water use is discussed in Section 13.2.3 of the draft EIS.

Submitter Issue Number 17.021

The EIS predicts long-term void water level fluctuates in the range from 249 to 260m AHD with an average elevation of 255m AHD. The average final void water level is 50 m below the final void spill point elevation of 305m AHD. They argue that discharge from the final void is therefore extremely unlikely based upon the range of climate conditions experienced in the last 124 years. (Appendix K: 27)

The EIS states that, "Modelling of the final void water balance indicates that a lake will form in the final void. The modelling indicates that the lake will reach a quasi-equilibrium level approximately 50 m below the spill point of the final void". The predicted lake level is also below the level of the pre mining water table. This means that the final void will continue to act as a groundwater sink in the post mining phase and void lake water will not migrate way from the void and will not potentially affect groundwater quality. Groundwater modelling also indicates that groundwater inflows to the final void will be relatively minor in the post mining phase, based on conservative groundwater modelling assumptions (Chapter 8: 25).

Conditions for approval must include backfilling of the mine void in line with world's best practice.

As discussed in the referenced section of the draft EIS, the final void is not expected to result in any adverse impacts on groundwater or surface water. Backfilling the void is therefore not necessary and is also not economically feasible.

PROJECT CHINA STONE
RESPONSE TO SUBMITTER NUMBERS 18 & 20 SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

18 & 20 SUBMISSION

This response relates to submitters 18 and 20, who together, are the landholders of the Wilandspey Station.

Submitter Issue Number 18.001 and 20.001
Our property Wilandspey Station is a 19,200 hectare property situated approximately 214 kilometres south of Charters Towers and approximately 190 kilometres north of Clermont. It is a mixture of Brigalow/Gidyea scrub, Coolibah floodplains, Ironbark and Box forest country, open plains of developed buffel grass pasture and Gidyea melon hole forest country. It is naturally watered by a permanent supply in the Belyando River; seasonally watered by numerous creeks and melon holes and is principally watered by large dams equipped with tanks and troughs. There is also an auxiliary supply of water via an equipped bore with a pipeline network to tanks and troughs.
We have an estimated carrying capacity of approximately 4000 head of cattle. We have owned and operated the property for over 60 years and are in the business of breeding and fattening cattle for the beef export markets.
Our western boundary is approximately 25 kilometres from the Project China Stone Site. Due to the close proximity of the proposed Project China Stone Site and furthermore the project site's location at the headwaters of North Creek, Tomahawk Creek and Sandy Creek we believe we have strong grounds upon which to make the following submission stating the matters of concern to us in relation to the proposed China Stone Coal Project.

It is noted that the submitter's property boundary is located approximately 25 km east of the project site and the homestead on the property is approximately 50 km from the project site. Due to the considerable distance from the project site to the property and the homestead, it is not likely that the project would have any significant direct or indirect impacts on the property.

Detailed responses to specific submission issues are provided below.

Submitter Issue Number 18.002 and 20.002
Volume 1B Chapter 18: Social Economic Impact Assessment
We note discussions around socio-economic impacts relating to the project. However we feel the following areas have not been adequately discussed in 'Draft EIS - Volume 1B Chapter 18: Social Economic Impact Assessment'.
We are concerned as to how the workforce proposed for the mine construction and operation is going to be managed in relation to:
a) Drug and alcohol use

b) Code of conduct particularly in relation to neighbouring grazing properties i.e. Trespassing on private property; causing damage or stress to equipment, vehicles, livestock and pastures.
c) Safety and well being of families and associated staff who live and work on grazing properties.
We would like to know how these areas are to be addressed.

Further detail on these issues is provided in the draft Environmental Impact Statement (EIS) Socio-Economic Impact Assessment Report (Appendix N). Workforce management is discussed in detail in Section 7.3 of Appendix N. The proposed Workforce Code of Conduct will include a Drug and Alcohol Management Procedure and a Behavioural Management Procedure (Section 7.3.2 of Appendix N). Management strategies related to potential impacts on the local community are addressed in Section 7.5 of Appendix N. Proposed stakeholder engagement, including consultation with local landholders and the complaints procedure, is also discussed in Section 7.6 of Appendix N.

Submitter Issue Number 18.003 and 20.003
Volume 1B Chapter 19: Traffic and Transport
Concerns are noted around the Elgin-Moray Rd.
We note in 'Draft EIS - Volume 1 B Chapter 19: Traffic and Transport' acknowledgements are made that there will be an increase in traffic on all roads used including the Elgin-Moray Rd.
However in the road impact assessment report there is no apparent specific discussion re the impact of increased traffic on the condition of the Elgin-Moray Rd which is an unsealed road.
a) This unsealed road is the only means by which our grazing business located at Wilandspey Station can operate.
b) The Elgin-Moray Rd is difficult to maintain with the current volume of traffic particularly in dry times and there is not an adequate water supply available to continually maintain the road in good condition.
c) With current traffic volumes the road becomes extremely corrugated and large bull dust sections emerge; impeding traffic.
d) The Elgin - Moray Rd is necessary to transport livestock, fodder, machinery and business mail. There is no other route available to our business.
e) Increased traffic to the Elgin - Moray Rd would render the road unreliable; hazardous and dangerous.
f) As rate payers will we have to contribute the extra funds required to maintain the Elgin - Moray Rd if the project goes ahead?
See attachment 1 - Location of Wilandspey Station on Elgin-Moray Rd

As discussed in Section 4.2 of the draft EIS Road Impact Assessment Report (Appendix O), the Carmichael Coal Mine and Rail Project is required to seal the Elgin-Moray Road and upgrade the intersection of Elgin-Moray Road and the Gregory Developmental Road. There are no further upgrades to Elgin-Moray Road required for the project. The proposed sealing of the road will address the issues raised in the submission.

Submitter Issue Number 18.004 and 20.004

Volume 1A Chapter 9: Terrestrial Ecology

We note the inclusion of comments on the spread of weeds during the construction and operations phases of the mines. We don't believe the seriousness of the problem has been addressed for those areas affected downstream of the project.

a) There are many weeds pastoralists have been struggling with including parthenium; mimosa; parkinsonia and rubber vine for many years at great cost.

b) It is part of our lease agreement with the state government that we manage weeds on an ongoing basis.

c) It is well understood that any disturbance of soil encourages the spread of weeds. Soil disturbance on or near a water course will of course exponentially increase the potential for the spread of weeds.

d) Due to the mine's location at the head of the drainage areas for Tomahawk Creek Catchment Area; Belyando River Catchment Area and North Creek Catchment Area any uncontrolled seed disturbed during construction and or operational phases can be rapidly spread along the watercourses that flow into Wilandspey causing major negative impacts to grazing lands and waterways and native flora and fauna.

The proposed Feral Animal and Weed Management Plan described in Section 9.7.3 of the draft EIS will be designed to effectively manage the potential introduction and spread of weeds, including all relevant risks.

Submitter Issue Number 18.005 and 20.005

Volume 1A Chapter 5: Land Use

a) We note certain 'sensitive receptors' were included at a number of isolated rural residences to monitor air quality, noise and visual amenity impacts.

i) It is of concern to us that although our western boundary is only approximately 25 kms from the project site there appears to be no recorded assessments at our homestead location which is further east of the project site.

Refer to Draft EIS Volume 1A Chapter 5 Table 5-1 Sensitive Receptors and see attachment 2 - location of sensitive receptors.

ii) Therefore there is no quantitative data recorded to date for the Wilandspey residence in relation to dust (Section 15 -Air Quality); noise and blasting (Section 16 - Noise and Vibration) within the EIS.

The Wilandspey Homestead is approximately 50 km to the east of the project site. It is not listed in Table 5-1 of the draft EIS as there are a number of homesteads to the east that are closer to the project site (R2, R5 and R6). As indicated in the draft EIS air quality and noise assessment reports (Appendices L and M, respectively) the predicted air quality and noise and blast impact levels are predicted to comply with the relevant criteria at the closest homesteads to the project site, including those to the east (in the direction of the Wilandspey Homestead). In addition, the contour plans of predicted noise and air quality levels indicate that the project would essentially have no effect on the Wilandspey Homestead. This is not unexpected given that the homestead is approximately

50 km from the project site. Background monitoring at the Wilandspey Homestead is therefore not justified or necessary.

As explained in Section 17.3.2 of the draft EIS, the visual assessment was based on the three closest receptors to the project site including the closest receptor to the east. The visual impacts of the project at all receptors were assessed as low and it was noted that any potential visual impacts at more distant locations will generally be less. At a distance of 50 km, significant visual impacts would not occur due to the limited visibility at this distance.

Submitter Issue Number 18.006 and 20.006

"b) Of concern to us is the following statement in 5.3.2

"Grazing - The primary land use within the project site and surrounding area is cattle grazing. Government mapping shows there are no priority agricultural areas, strategic cropping areas or strategic environmental areas within the project site."

i) With future development of our property we hope to develop the potential available to us for agricultural areas including areas of cropping as well as producing cattle for both the EU markets and organic beef market.

ii) The location of Wilandspey has been a long established and well regarded location for beef cattle breeding and most importantly fattening.

iii) We are concerned that the construction and operation of such a mine will endanger and limit the potential of our property in relation to cropping and beef markets particularly with the concerns of hydro carbons and other chemicals from tailings and leakage from on-site waste landfills (refer to Draft EIS Volume 1B Chapter 21) that could make their way downstream through controlled and uncontrolled run off, contaminating waterways and wetlands that are fed from the Tomahawk Creek Catchment Area; Belyando River Catchment Area and North Creek Catchment Area.

iv) In fact it should also be noted that in order for us to sell our cattle we have to sign a LPA National Vendor Declaration with each consignment to the meatworks. The purpose of the LPA National Vendor Declaration is to ensure the food safety of Australia's meat and livestock industry. When we sign off on this document we are declaring compliance with all LPA requirements; we are guaranteeing that our cattle are compliant with all food safety standards to the buyer. How can we guarantee compliance if through the proposed mine our waterways and wetlands become subjected to unknown and unquantified toxins?"

The quoted statement from Section 5.3.2 of the draft EIS is factually correct. Measures to prevent contamination from leachate from the on-site landfill and the Tailings Storage Facility are described in Sections 21.3.5 and 7.4 of the draft EIS, respectively. In addition, the approval conditions for the project would require monitoring of surface water and groundwater to confirm there is no contamination. In the unlikely event that contamination was detected, the approval conditions would require investigation and rectification. Given the proposed controls and the application of standard regulatory approval requirements for mining projects, it is not likely that a property 25 km from the project site would be at risk from contamination of surface water or groundwater.

Submitter Issue Number 18.007 and 20.007

Volume 1B Chapter 19: Traffic and Transport

a) We have serious concerns regarding air traffic with the proposed construction of an air strip on the mine site. Current planning estimates approximately 40 flights per week to use the proposed air strip.

b) Helicopter mustering is a vital part of operations on Wilandspey in handling and husbanding our cattle. Helicopter mustering on Wilandspey; particularly along our western boundary will be negatively impacted by strict guidelines set out by the Civil Aviation Act 1988 if an air strip is to be constructed.

c) All helicopter flight travel to and from neighbouring properties in the vicinity of the project site will also be constrained by aircraft travel to and from the proposed air strip and strict guidelines set out by the Civil Aviation Act 1988.

The operation of the project air strip would be required to comply with the Civil Aviation Safety Authority requirements. As the Wilandspey property is located 25 km from the project site it is unlikely that the operation of the air strip would have a significant impact on low level helicopter mustering.

Submitter Issue Number 18.008 and 20.008

Volume 1A Chapter 9: Terrestrial Ecology

a) We have concerns regarding the Wilandspey Conservation Park which is gazetted for the preservation of natural ecosystems including the gidgea tree and the scrub turkey.

b) This park is located in both the Tomahawk Creek Catchment Area and Belyando River Catchment Area.

c) Currently it is a pristine area and with the proposed mine site the conservation park becomes vulnerable to any hydro carbons and other chemicals from tailings and leakage/run-off from on-site waste landfills (refer to Draft EIS Volume 1B Chapter 21) that could make their way downstream through controlled and uncontrolled run off, contaminating waterways and wetlands. The flora and fauna within the park would be severely compromised.

Refer response to issue 18.006. The discharge of hydrocarbons and other chemicals to downstream waterways is not proposed and will not be permitted by the project approvals.

Submitter Issue Number 18.009 and 20.009

Volume 1A Chapter 12: Groundwater, Chapter 13: Surface water, Chapter 10: Aquatic Ecology

Of most concern to our grazing enterprise are the following two issues:

1. Water quality of surface water and ground water
2. Water quantity of surface water and ground water

Back Ground:

The China Stone Coal Project site is not located on a water course; however it is located at the head of the drainage lines(headwaters) to three very important catchment areas. All three catchment areas are integral to the success of our cattle grazing business. (see attachment 3 - Land and Natural Waters Wilandspey Station)

Tomahawk Creek Catchment Area - includes the following water courses/wetlands through Wilandspey: Tomahawk Creek; extensive floodplains/wet lands.
Belyando River Catchment Area - includes the following water courses/wetlands through Wilandspey: View Hill Creek; Sandy Creek; extensive floodplains/wet lands.
North Creek Catchment Area - includes the following water courses/wetlands through Wilandspey: Belyando River and extensive floodplains/wet lands. (see the following attachments: Attachment 4 - Location of Wilandspey Station and three Catchment Areas; Attachment 5 - Location of Existing Site Drainage)
Proposed drainage corridors will release into these catchment areas. (see attachment 6 - Location of Drainage Corridors)
a) All of our cattle watering points (dams and water holes in Sandy Creek and Tomahawk Creek and the Belyando River) are derived from flows of water in the Tomahawk Creek Catchment Area, Belyando River Catchment Area and the North Creek Catchment Area.
b) We have two large dams-No.3 x 2;floodplains/wetlands and semi -permanent water holes relying on water from Tomahawk Creek and other creeks within the Tomahawk Creek Catchment Area along the full southern side of our property.
c) We have 7 large dams - House Dam, Sandy Creek Dam, Brigalow Dam, No.1 Dam, Middle Dam, Tony's Dam, Wellington Dam; floodplains/wetlands and semi permanent water holes relying on water from Sandy Creek and other creeks within the Belyando River Catchment Area along the full length of the property; west to east.
d) We have permanent water holes and floodplains/wetlands along the whole of our Eastern Boundary due to the Belyando River running along the complete eastern boundary of Wilandspey. North Creek and other creeks run into the Belyando upstream of Wilandspey Station and are located within the North Creek Catchment Area. (see attachment 7 - Bores and Dams Wilandspey)

Any drainage from the project site to the downstream catchments will be subject to sediment controls to control suspended sediment levels as described in Sections 13.4 and 13.6 of the draft EIS. The project does not involve any discharge of mine-affected water into the Tomahawk Creek catchment. As explained in Section 13.5.5 of the draft EIS, any discharges of mine-affected water into North Creek would be conducted in accordance with the Department of Environment and Heritage Protection's (EHP's) model mining conditions. These conditions are designed to prevent any adverse impacts on downstream environmental values and water users.

As discussed in Section 13.6.2 of the draft EIS, the impacts of the project on the Tomahawk Creek and Belyando River catchment areas are minor and the associated impacts on catchment yields at downstream properties would be minimal.

As indicated in Section 12 of the draft EIS, the project will not affect the quantity of quality of groundwater at the Wilandspey property.

Submitter Issue Number 18.010 and 20.010

e) Surface Water quality Concerns:

i) Apart from controlled discharge of mine affected water there is also potential for uncontrolled run off from open cut pit catchments and uncontrolled run off from tailings storage facilities and leakage/run-off from on-site waste landfills during extended wet seasons and heavy storm activity when storage facilities overflow.

The control of runoff from all areas of the project site is explained in Section 13 of the draft EIS. The mine affected water storages, including the tailings storage facility, are designed with sufficient storage capacity to ensure they do not overflow even during extreme rainfall events. The on-site management of the on-site landfill is described in Section 21.3.5 of the draft EIS.

Submitter Issue Number 18.011 and 20.011

ii) As noted in Draft EIS - Volume 1A Chapter 10.9: Aquatic Ecology - quality of water due to controlled (or uncontrolled) releases may increase salinity of water. It is also noted that run off waters may include hydro carbons and other chemicals.

iii). Our concerns are will all waters affected by the mine project (controlled or uncontrolled) be maintained within applicable guidelines and is it possible to maintain waters within the applicable guidelines when dealing with so many unknown factors involving unpredictable weather events? (we have experienced 8-10 inches in one storm in past weather events)

iv) There are many potential risks to properties downstream from the mine project particularly Wilandspey. The risks to our cattle enterprise are extremely high and may be irreversible. Change in the quality of water will affect all our cattle watering points; pasture quality as well as affecting our domestic usage of water- water used for cooking, cleaning, bathing and growing vegetables.

Refer response to issue 18.009.

Submitter Issue Number 18.012 and 20.012

v) All three catchment areas noted above include wetlands/flood plains - how will increased salinity and hyrdo carbons and other chemicals affect the growth and health of these pastures? There are certain grasses that only grow on these flood plains/wetlands; they are extremely nutritious and fatten cattle very quickly. If these pastures were to be affected by either increased salinity or the introduction of chemicals they would be rendered contaminated and we would no longer be able to graze cattle on these pastures; seriously effecting our business.

The discharge of hydrocarbons and other chemicals to downstream waterways is not proposed and will not be permitted by the project approvals. As explained in Section 13.5.5 of the draft EIS, any discharges of mine-affected water into North Creek would be conducted in accordance with the EHP's model mining conditions. These conditions are designed to prevent any adverse impacts on downstream environmental values and water users. The conditions include limits on the salinity and rate of discharge water, minimum receiving water flow rates and limits on downstream salinity that are set at levels designed to protect downstream environmental values and water users. The Wilandspey property is located on the Belyando River, more than 120 km

downstream of the discharge location for mine affected water on North Creek. Given the controls on any discharges of mine affected water, and the high level of dilution that would occur upstream of the Wilandspey property due to the large catchment area, it is not likely that river water salinity at the property would be significantly affected by any mine affected water discharges. Adverse effects on pastures due to increased salinity or chemical contamination are therefore not likely to occur.

Submitter Issue Number 18.013 and 20.013
vi) Further concerns over water quality control will be exacerbated if the Adani project is also successful as this project will release mine affected water into the North Creek Catchment Area and there will be a cumulative effect in the Belyando River.

As explained in Section 13.6.5 of the draft EIS, the EHP model mining conditions for the discharge of mine affected water address potential cumulative impacts with other mining projects. This is achieved by taking into account the assimilative capacity of the receiving environment in the calculation of discharge limits.

Submitter Issue Number 18.014 and 20.014
f) Surface Water quantity Concerns:
i) Any decrease in water quantity flowing through the Tomahawk Creek Catchment Area, Belyando River Catchment Area and North Creek Catchment Area will negatively impact our many floodplains/wet lands. These floodplains rely on large floods and the valuable pastures found on these floodplains/wetlands only grow during such flood conditions.

Refer responses to issue 18.009.

Submitter Issue Number 18.015 and 20.015
ii) Any decrease in water quantity will mean that the majority of our dams and waterholes will not be filled. Our dams have been strategically placed on current flow paths with calculations allowing for current flow velocities.

Refer responses to issue 18.009.

Submitter Issue Number 18.016 and 20.016
"g) other Surface Water Impact Concerns:
i) As noted in Draft EIS - Volume 1 A Chapter 13.6: Surface Water the key potential impacts of the construction and operation of the project include:
a. "Sedimentation of downstream waterways during construction and operations due to erosion from disturbed areas on the project site and increased sediment loads in site drainage water"
Comment: sedimentation fills up waterholes and dams which in turn decrease the capacity of waterholes and dams to hold water. Large storage dams have been constructed on Wilandspey to hold adequate water; the current storage capacity of these dams is extremely important in dry years.

b. "Mining disturbance and mine site drainage changing catchment areas, potentially resulting in downstream catchment yield impacts"
Comment: this will also result in our dams and waterholes not able to be filled as our dams have been strategically placed on current flow paths.
c. "Mining disturbance and mine site drainage altering downstream drainage and potentially resulting in: Changes to flood behaviour including flow paths, flood inundations areas and flow velocities and geomorphic impacts on watercourses and drainage lines including on channel bed and bank stability"
Comment: this will also result in our dams and waterholes not able to be filled. Our dams have been strategically placed on current flow paths and current flow velocities.
ii) Despite proposed management and mitigation measures to the project site itself we are extremely concerned that key potential negative impacts to our water ways will be not be prevented.
iii) We do not believe there has been any consideration of the potential for stock losses due to any interruption of surface water supply and the negative impacts this would have on our business; on a short term and long term basis.

The assessment and, where necessary, mitigation of the potential surface water impacts quoted are discussed in Section 13.6 of the draft EIS. As indicated in Section 13.6, these potential impacts will not affect the Wilandspey property, as suggested.

There has not been any consideration of stock losses on the Wilandspey property due to interruption to surface water supply in the draft EIS, as there is not expected to be any significant loss of water supply due to the project.

Submitter Issue Number 18.017 and 20.017
"h) Ground Water Quality and Quantity Concerns:
i) We have one bore on our western boundary against Hyde Park Station. We are concerned that this bore has not been included as one of the private bores in the area surrounding the proposed project site area to be monitored. (see attachment 8 - Location of Groundwater Monitoring Bores)
ii) This bore (known as the War Bore) is vital during dry times as dams; watercourses etc recede to low levels. This bore provides a reliable source of water and has an existing pipeline so that water from the bore can be pumped to 3 dams during dry times. (see attachment 7 - Bores and Dams)

All private bores within 20 km of the project site were identified as part of the groundwater study (Figure 12-6 of the draft EIS). The Wilandspey bore is approximately 25 km from the project site. The maximum extent of predicted groundwater depressurisation due to the project is shown in Figure 12-10 of the draft EIS. The predicted maximum extent is approximately 15 km from the western boundary of the Wilandspey property. Consequently, monitoring of the bore on the Wilandspey property is not justified.

Submitter Issue Number 18.018 and 20.018
iii) We are planning on sinking more bores in the future; will the potential for future groundwater now be compromised?

As indicated on Figure 12-10 of the draft EIS, the project will not impact groundwater levels on the Wilandspey property and will therefore not affect any future bores. The maximum extent of groundwater level impacts due to the project are approximately 15 km from the western property boundary.

Submitter Issue Number 18.019 and 20.019
iv) As already discussed by their very nature, the proposed mining activities have the potential to impact existing continuous supplies of good quality and quantities of ground water on our property. Subsidence will cause, at the very least, changes to aquifer characteristics in terms of storage, recharge and permeability. In terms of surface water and groundwater interactions, the activities could alter drainage patterns and flows that may then influence recharge rates, thus affecting groundwater supplies.
v) We do not believe there has been any consideration of the potential for stock losses due to any interruption of ground water supply and the negative impacts this would have on our business; on a short term and long term basis.

The draft EIS groundwater and surface water assessments (Sections 12 and 13, respectively) indicate that the water supplies on the Wilandspey property will not be affected by the project. The draft EIS groundwater assessment takes into account the impacts of subsidence on groundwater using a conservative assessment methodology.

There has not been any consideration of stock losses on the Wilandspey property due to interruption to surface water supply in the draft EIS, as there is not expected to be any significant loss of water supply due to the project.

Submitter Issue Number 18.020 and 20.020
Summary of Surface Water and Ground Water Concerns:
a) I note it is mentioned at 5.3.1 " agricultural activities have largely been constrained by unreliable permanent water sources and regional climatic conditions" (see Draft EIS - Volume 1A Chapter 5: Land Use) I think this highlights the importance and value of the catchment areas available to us; of particular value to us are all three catchment areas affected by the proposed China Stone Coal Project.
b) We have invested substantial capital over many years to build adequate water storage facilities which have been strategically placed on existing water flow paths; flow velocities and flood inundation areas and underground water streams in order to be unconstrained by regional climatic conditions and have reliable water sources.
c) We have invested substantial capital over many years to build riparian fences to protect creeks and waterholes
d) Other investments in infrastructure include 100's of kilometres of fencing and internal roads;

creek crossings and cattle yards which have been designed around existing watering points; wetlands and creeks.
e) Our long term investments in infrastructure are at risk given the consequences anticipated in changing the current catchment areas or underground drainage pathways which guarantee the supply of quality water for the continutation of our business activites.
f) Our business plan/model going forward in order to remain as a viable business have also been created around current catchment areas and current underground drainage pathways.
[*(g) moved to issue 18.021 by OCG*]
h) Should any of the water impacts noted above be realised our cattle grazing business will be put in a very precarious position. This would lead to the property becoming unviable given that we would have inadequate volumes of quality water to sustain our current cattle herd and some pastures would likely be compromised also undermining the ability for us to sustain our current cattle herd.
i) Any negative changes to water entitlements or pasture quality could result in a potentially significant decrease in the market value of the property which currently includes the added value of these water entitlements and wetlands floodplains.
j) Any negative changes to water entitlements or pasture quality could result in a potentially significant decrease in the carrying capacity of cattle on Wilandspey. This would seriously compromise the economic viability of our grazing business.

Refer responses to issues 18.009 and 18.012.

The project will not affect the submitter's water entitlements.

Submitter Issue Number 18.021 and 20.021
g) We agree that the Belyando is a regionally significant watercourse. (as per Draft EIS - Volume 1A Chapter 13.2.2: Surface Water). We believe that it should be noted that Sandy Creek and Tomahawk Creek and North Creek are also significant watercourses and do warrant a plan outlining environmental values and water quality objectives specific to these catchment areas to be developed.

Noted. The Queensland government is responsible for administration of the *Environmental Protection Water Policy 2009* (EPP Water) and the development of associated plans.

Submitter Issue Number 18.022 and 20.022
Conclusion:
In our view the EIS - China Stone Coal Project does not adequately outline the miner's capacity, capability and willingness to rapidly and effectively respond to any of the potential problems that may occur to properties in the catchment areas downstream of the project site as and when they may arise. We do not know the effectiveness of measures proposed to manage those impacts at the project site as set out in the EIS. It troubles us that measures proposed to manage those impacts at the project site as set out in the EIS are predominantly relating to the project site itself. Management and mitigation measures must extend beyond the project site.

The draft EIS includes monitoring and management measures for all relevant potential impacts of the project including impacts beyond the project site. The majority of these measures will be approval conditions applied to the project. In particular, both surface water and groundwater monitoring programs extend beyond the project site (Section 24 of the draft EIS).

Submitter Issue Number 18.023 and 20.023
We expect the potential negative environmental impacts likely to be created by the China Stone Coal Project in relation to Wilandspey Station will be given due consideration; particularly in view of the obviously weak future outlook for the coal industry by comparison to the very positive future outlook for the Australian clean beef industry which is highly regarded the world over.

All relevant environmental impacts of the project have been assessed in the draft EIS. The Wilandspey property is not specifically addressed in the draft EIS as it is 25 km from the project site and is too far away to be significantly impacted.

PROJECT CHINA STONE
RESPONSE TO TMR SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

23 TMR SUBMISSION

MacMines, Hansen Bailey and Cardno (project traffic engineers) representatives met with Transport and Main Roads (TMR) representatives and the Office of the Coordinator-General (OCG) in relation to the TMR submission on 16 December 2015. Following the meeting TMR confirmed their final requirements for the responses to the submission issues via an email to the OCG dated 17 December 2015. The issue responses below have been confirmed to be acceptable by TMR in the correspondence to the OCG dated 17 December 2015.

Submitter Issue Number 23.001
B-Doubles are shown as the largest vehicle used for construction and operation even though the routes used permit up to Type 1 or 2 Road Trains. Confirm in the Additional information to the EIS (AEIS) that vehicles larger than B-Doubles will not be used.

The information presented in the referenced sections of the draft EIS Road Impact Assessment (RIA) (Appendix O) is correct.

Submitter Issue Number 23.002
Key roads are listed in Table 3-1 and expected project generated traffic is shown in Table 6-3. No mention is made of which roads are expected to see an increase of more than 5% of background average annual daily traffic (AADT).
Bowen Developmental Road connects the mine site to the townships of Bowen and then Proserpine. It is conceivable that these towns are likely to be sources for the construction/operational workforce.
The southern end of Bowen Developmental Road currently has very low (AADT-29) traffic volumes and has numerous hazards – gravel road of low standard, floodway's etc. An extra 2 vehicles/day would exceed 5% of background traffic.
Include an assessment of development generated traffic on Bowen Developmental Road in the AEIS. If AADT exceeds 5% undertake a safety assessment of the route south of Collinsville (88B) with a particular focus on whether signage of any new hazards is required in accordance with the *Manual of Uniform Traffic Control Devices* and TMR's *Transport Road Use Management Manual.*

As discussed in Section 4.5 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), due to the remote location of the project site and concerns related to driver fatigue, the proponent will not support long distance Drive-In Drive-out (DIDO) workforce arrangements. Bowen and Proserpine are located approximately 7 hours drive (370 km) and 8 hours drive (460km), respectively, by road from the project site. Consequently there is not expected to be any DIDO workforce traffic on the Bowen Development Road.

Attachment I – Additional Commitments includes the following additional commitments:

- The RIA will be updated six months prior to the commencement of construction;
- The proponent's DIDO workforce policy will be enforced through the project employment agreements; and
- A Road Use Management Plan, including a commitment to monitor project generated traffic, will be prepared for the project, if necessary.

Submitter Issue Number 23.003
Maps throughout the Road Impact Assessment (RIA) incorrectly show Yarromere Road as Mirtna Road In the AEIS update the maps within the RIA to show the correct road name.

The referenced road section is not impacted by the project and is not relevant to the draft EIS RIA (Appendix O). Section 5.3 – Editorial Corrections notes the amendment of the road name in the RIA figures, as requested.

Submitter Issue Number 23.004
Figure 3-2 shows outdated background traffic data from 2012/13.
Subsequent Road Impact Assessments are to use the latest traffic data available from TMR/Local Government if less than 12 months old. If no recent data is available, the proponent should obtain their own traffic data.

The draft EIS RIA (Appendix O) utilised intersection traffic count data from late 2013 and link volumes from 2012 and 2013 calendar years as identified in Tables 3.3 and 3.2, respectively. Use of this data is appropriate given that the data is still representative if not slightly conservative as background traffic volumes have decreased slightly since 2012 and 2013 as identified in Table 6-2. The performance of the assessed intersections and links is therefore likely to be slightly better than that reported given the lower baseline volumes more recently observed.

The request for use of recent data for any future RIA updates is noted.

Submitter Issue Number 23.005
Section 4.2 mentions the traffic associated with the Carmichael coal mine and rail project has been included in the traffic assessment but section 9.1 mentions Equivalent Standard Axle's associated with the Carmichael coal mine and rail project have not been included in the pavement assessment.
The RIA should provide assessment of road impacts with and without the Carmichael coal mine and rail project. There is uncertainty regarding the timing of the delivery of the Carmichael coal mine and rail project and necessary assessment should be undertaken so as to understand what the impacts of the project will be on the state-controlled transport network. The proponent is also to commit to a final RIA that includes Carmichael coal mine and rail project impacts if at the time it is clear the Carmichael coal mine and rail project will/has preceded the China Stone project.

As discussed in Section 9.1 of the draft EIS RIA (Appendix O), there is insufficient detail within the Carmichael Coal Mine and Rail Project (CCM&RP) RIA Report in relation to pavement loadings associated with the CCM&RP for the purposes of calculating detailed future baseline pavement loadings. Consequently a conservative approach was adopted to identify areas of potential pavement impacts from the project. As discussed in draft EIS Section 19.2.7 and Section 9.2.3 of the draft EIS RIA (Appendix O), the proponent has already committed to recalculate the road pavement impacts, including any associated monetary contributions to TMR, prior to the commencement of construction and based on confirmed estimates of CCM&RP traffic from Adani's RIA which is required to be submitted to TMR in the future, prior to the commencement of the CCM&RP.

At this point in time, the most likely scenario is that the CCM&RP will commence well in advance of the project. In the unlikely event that the CCM&RP does not proceed prior to Project China Stone, should Project China Stone proceed on its own, any update of the project RIA pre-construction would take into account the absence of CCM&RP traffic in the baseline. Attachment I – Additional Commitments includes a commitment to update the RIA six months prior to the commencement of construction. On this basis, it is not necessary to provide an assessment of the road impacts without the CCM&RP as this is an unlikely scenario and if it were to eventuate, it would be addressed in the pre-construction RIA update.

Submitter Issue Number 23.006
Sections 3.2 and 6.2.1 propose a linear background growth rate of 3% for all state roads.
TMR Mackay has projected growth rates for all state roads within this district. These take into account some expected future development and in most cases are higher than 3% and compound figures.
It is acknowledged in recent years there has been a reduction in AADT on some roads. TMR accepts the use of 3% growth but compound growth rates must be used in the updates of the RIA.
To be consistent with other development assessments and traffic growth as described in TMR's Traffic Analysis and Reporting System (TARS) software.

The draft EIS RIA (Appendix O) assumed global traffic growth of 3% (linear) per annum in addition to specific traffic volume growth associated with the nearby CCM&RP project. The assessed value of the global growth parameter (i.e. 3%) was selected after consideration of various indicators on the basis that it would be linear not compound. The net effect of the two growth allowances (i.e. global and specific growth associated with CCM&RP) results in an effective rate of 4.3% linear or 3.3% compound on the Greggory Development Road. It is noted that Table 6.2 identifies that in fact negative growth has recently occurred and therefore in this context the assessed growth is still considered to be conservative (i.e. likely to result in a worst case assessment scenario). No changes to the adopted growth forecasting approach are therefore considered warranted.

Appropriate growth rates will be used in any future updates of the RIA.

Submitter Issue Number 23.007
A SIDRA performance assessment was undertaken for the intersection of Flinders Highway/Gregory Developmental Road. No mention is made of the percentage of heavy vehicles used in the assessment.
In the AEIS use a heavy vehicle percentage that is representative of the development traffic.

The draft EIS RIA (Appendix O) SIDRA assessment adopted a 30% HV factor for all movements associated with the Flinders Highway/Gregory Developmental Road intersection. This factor is considered representative. Irrespective the analysis indicates that even at the 2028 design horizon with the addition of project generated traffic demands the intersection will operate at 10% of maximum capacity as compared to the industry accepted 80% thresholds. This result establishes that the acceptable operation outcome is highly insensitive to the precise HV factor adopted given the very significant extent of spare capacity.

Section 5.3 – Editorial Corrections includes clarification that a heavy vehicle factor of 30% was adopted for the SIDRA assessment.

Submitter Issue Number 23.008
For the intersection assessment of Gregory Developmental Road/Elgin-Moray Road there appears to be no correlation between Figure C15 and D7. Given that the access is on a 110km/h section of rural highway and large vehicles will frequently be decelerating and using the access the proposed Short Channelized Right and Basic Auxiliary Left treatment may not be deemed necessary.
In the AEIS the Gregory Developmental Road/Elgin-Moray Road intersection should be reassessed to further take into consideration the potential safety issues of large, fully loaded vehicles decelerating from 110km/h along the Gregory Developmental Road and turning into the Elgin-Moray Road. The majority of turning movements are right into the Elgin-Moray Road which may warrant the upgrade to a CHR/AUL(S). A CHR(S) may not adequately provide heavy vehicles to satisfactorily decelerate safely. The intersection assessment should also include lighting. The assessment is to be in accordance with TMR's *Road Planning and Design Manual.*

There is no correlation between Figure D7 and the Gregory Developmental Road/Elgin-Moray Road intersection assessment. This is to be expected given that Figure D7 reports the results of an assessment undertaken for a different intersection. Figure D6 which provides the assessment for the Gregory Developmental Road/Elgin-Moray Road intersection however confirms the appropriateness of the completed assessment. That is Figure D6 confirms that a more "substantial" intersection form than strictly warranted based upon application of the standard turn warrants is proposed to be provided.

The provision of turn lanes at the Gregory Developmental Road/Elgin-Moray Road intersection has been assessed against both efficiency criteria being degree of saturation and safety criteria being the industry standard Austroads Turn Warrants. The SIDRA assessment identified that the intersection will have significant spare capacity and therefore no upgrading of the existing form is warranted based upon efficiency considerations. The Austroads Turn Warrants assessment

identified that a Basic Left (BAL) and Basic Right (BAR) turn treatment would be appropriate based upon strict application of the industry accepted Austroads turn warrant assessment procedure. The research underpinning the Austroads turn warrant assessment methodology directly considers the likely crash cost reductions due to reduced speed differentials. The draft EIS RIA (Appendix O) identified that whilst not strictly required based upon direct application of the Austroads turn warrants it was proposed to provide a Channelised (Short) Right Turn (CHR(s) treatment instead of a Basic Right Turn treatment. That is a more substantial right turn treatment was proposed than strictly warranted based upon either safety or efficiency criteria. It is noted that it appears that the author of the submission has mistakenly referred to Figure D7 which relates to the assessment undertaken for a different intersection and therefore their concerns may be resolved by reference to the correct figures. Review of the relevant figures being Figures D4 to D6 will confirm the appropriateness of the assessment already undertaken.

Section 5.3 – Editorial Corrections includes clarification that the predominant turns at the Gregory Developmental Road/Elgin-Moray Road intersection are right in and left out.

This intersection is proposed to be upgraded as part of the development of the CCM&RP. The TMR approval of this upgrade would include lighting, if necessary.

Submitter Issue Number 23.009
The section mentions a 10 year mitigation time frame for pavement impacts. Pavement assessment should be for the whole of the project.
The AEIS is to reflect a pavement assessment horizon that covers the life of the project.
To meet the requirements of the Guidelines for Assessment of Road Impacts of Development.

The pavement assessment included within the draft EIS RIA (Appendix O) adopted a full project life impact assessment period and a 10 year mitigation period as per the requirements of Section 9.1 of the *Guidelines for the Assessment of Road Impacts of Development*. Section 9.1 clearly identifies including a worked example that consideration of a 10 year mitigation period for pavement impacts is appropriate furthermore this is consistent with practice adopted by TMR across Queensland.

Submitter Issue Number 23.010

Section 8.0 shows the Level Of Service for key roads used but makes no mention of increased safety risks associated with increased heavy vehicles where in Table 9-2 suggests ESA's will increase on Gregory Developmental Road by up to 70%.

There are sections of Gregory Developmental Road and Peak Downs Highway where seal width is under 6.5m and narrow structures exist. There will be an increased risk associated with a higher number of multi-combination vehicles passing opposing traffic at these locations.

In the AEIS for Gregory Development Road and Peak Downs Highway undertake a route assessment in accordance with TMR's *Route Assessment Guidelines for Multi-Combination Vehicles in Queensland*.

To assist the preparation of the assessment attached is a memo prepared by TMR in response to the Carmichael coal mine and rail project.

The Gregory Developmental Road and Peak Downs Highway are designated Multi-Combination Vehicle routes and the proposed use of these routes by b-doubles is therefore appropriate.

The Gregory Developmental Road is an approved "Type 1 & Type 2 road trains, 23 metre & 25 metre B-double" route whilst the Peak Downs Highway is an approved "Type 1 road trains, 23 metre & 25 metre B-doubles only" route. The proposed use of these routes by b-doubles associated with the project is appropriate as it is in compliance with the vehicle combinations approved for use on both routes. The referenced guideline describes the assessment process to be undertaken for the consideration of new routes not already approved routes. Furthermore the guideline notes that only TMR employees directed to do so by a Regional Director of the Department are authorised to undertake such an assessment. Any reconsideration of the suitability of the Gregory Developmental Road and Peak Downs Highway to continue to accommodate multi-combination vehicles into the future is therefore a strategic network planning decision for the Department. It is asserted that it would not be a reasonable onus for the development proponent to be required to undertake such an assessment. Instead the proponent should be required to only utilise vehicle combinations that are approved for use on any specific route.

Submitter Issue Number 23.011

The Road Impact Assessment does not mention the need to provide a Road Use Management Plan (RMP) as described in section 8.1 of *Guidelines for Assessment of Road Impacts of Development*. Also the proponent may need to enter into an infrastructure agreement (IA) with TMR particularly if it is determined that any ameliorative measures are to be staged.

The AEIS is to include a commitment to provide a finalised RMP 6 months before commencement of project traffic in accordance with TMR's Guideline for preparing a Road Use Management Plan (attached) and an IA if required.

Attachment I – Additional Commitments includes commitments to develop a Road Use Management Plan and an Infrastructure Agreement, if necessary.

PROJECT CHINA STONE
RESPONSE TO EHP SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

24 EHP SUBMISSION

The proponent, Hansen Bailey and the Office of the Coordinator General (OCG) met with representatives from the Department of Environment and Heritage Protection (EHP) on 10 November 2016 and 29 November 2016 to discuss the EHP submission issues and the proponents proposed approach to resolving their issues.

24.1 EHP SUBMISSION

Submitter Issue Number 24.001
Appendix L – Air Quality Report (Katestone Environmental) Section 5.3.2. Emission inventory
Issue 1: Sulfur dioxide emission rate is very high.
The sulphur dioxide emission rate of the proposed power station is provided in Table 20. This was based on the information provided by the proponent and/or estimated using the NPI emission factors. According to Figure 4-28 (Section 4: Project Description) two flue gas desulfurization units will be installed at the proposed power station. The sulphur dioxide mass emission rate of 891 g/s is very high after the flue gas desulfurization process. It is not clear that the emission inventory considered the sulphur control efficiency.
Further information is required on how the sulphur dioxide emission rate was calculated and the sulphur control efficiency adopted for the flue gas desulfurization units. This information will assist in setting the sulphur dioxide emission limit for any environmental authority.

Flue gas desulfurization is not proposed and should not be shown on the conceptual layout in Figure 4-28. This has been clarified in Section 5.3 – Editorial Corrections.

The sulphur dioxide emission rate noted in Table 21 of the draft Environmental Impact Statement (EIS) Air Quality Report (Appendix L) is correct and has been calculated using NPI methods and the coal sulphur content provided by the proponent, as explained in Section 5.3.2 of the draft EIS Air Quality Report (Appendix L).

Submitter Issue Number 24.002
The sensitive receptors are sufficiently distant to avoid potential noise or vibration issues. The regulatory requirement is correctly addressed for noise given all the relevant policies were referenced and used. The sleep disturbance was correctly addressed using the relevant World Health Organisation references. The modelled worse case included a temperature inversion gradient of 3deg/100m. The sound power levels used for the model are in line with other data reviewed. The sound contours produced by the model reflect acceptable impact to sensitive receptors.

Noted.

Submitter Issue Number 24.003
Advice on MNES is provided in this review to reflect the EHP jurisdiction and assessment responsibility set out in the Environmental Assessment Bilateral Agreement with the Commonwealth government. Many of the identified MNES species impacted are also defined as MSES values by the Queensland Environmental Offsets Act 2014 and supporting policy.

Noted.

Submitter Issue Number 24.004
From a EHP officer site visits during wet season BTF surveys carried out within the adjacent Carmichael project footprint in early March 2015 breeding BTF were observed watering at non-permanent waters such as roadside puddles. The assumption that only 3km around permanent waters is high value habitat is unlikely to be valid – refer to previous EHP advice (18 May 2015).

The proponent has not carried out wet season surveys at sites in the south-eastern part of the project area – an area that the Carmichael Project proponent identified as having very high BTF habitat values with multiple BTF records. There are five BTF records within the proposed project area from the Carmichael Project survey work.

There is also permanent water in the southern part of the proposed China Stone project area.

The proponent should comprehensively account for all likely BTF habitat and revise impact estimates on BTF habitat. EHP can assist by participating in a workshop or meeting to detail the issues to be resolved. The session should involve the respective experts on BTF in the region and relevant agencies.

The BTF habitat modelling for the project site has been revised in consultation with the Federal Department of the Environment and Energy (DoEE) and the Queensland EHP. The revised habitat modelling is provided in Attachment F – Additional Information on Ecology.

In response to the specific issues raised in this submission:

- The revised habitat modelling includes habitat around non-permanent sources of water (the habitat modelling contained in the draft EIS was based on permanent water sources only); and
- The revised habitat modelling incorporates the south-eastern part of the project site, and the BTF records from the Carmichael Project wet season survey work that are referred to in this submission fall in an area mapped as BTF habitat (using the revised BTF habitat modelling).

Please note that the assertion in the submission that the southern part of the project site contains permanent water is contrary to findings of field survey work undertaken during the preparation of the draft EIS and contrary to advice from the landowner. It may be that the submission is referring to cattle troughs. These are only supplied with water when cattle are grazing in adjacent paddocks and do not provide a permanent source of water. Nevertheless, this point is no longer material to the BTF habitat modelling, given that the definition has been extended to include ephemeral watercourses, and the southern part of the project site is now mapped as BTF habitat.

Submitter Issue Number 24.005

Appendix F – Terrestrial Ecology Impact Assessment, Table H.2 Assessment of Likelihood of Occurrence – Yakka Skink

There are nine identified potentially present MNES species. EHP officers advise that suitable habitat is present for the yakka skink. Previous Galilee mining project EIS's have reported similar habitat for yakka skink. The known habitat distribution model and known wildnet records demonstrate that this skink core habitat is within the Brigalow Belt. Records exist in the Desert Uplands to the west of the project area in the same habitat and to the north in the Einsleigh Uplands bioregions. Habitat is likely to be present within the project area. It is recognised that no habitat was reported during the 2012 and 2013 EIS flora fauna surveys.

Yakka skink distribution is at the edge of its range and therefore the population in this area is important as it is at its limit of its distribution and important to establishing habitat linkage to more western known habitat.

Habitat requirements of the yakka skink are poorly known. The species is known from rocky outcrops, sand plain areas and dense ground vegetation, in association with open dry sclerophyll forest (ironbark) or woodland, brigalow forest and open shrub land. The yakka skink has also been recorded in lancewood forest on coarse gritty soils in the vicinity of low ranges, foothills and undulating terrain with good drainage.

Within these broader habitat types the yakka skink is often associated with partly-buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. It is also known to excavate deep burrow systems. The yakka skink can persist in cleared habitats if shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens are available.

The yakka skink is endemic to Queensland and its distribution is highly fragmented, at least partly as a result of land clearing. Isolated populations occur throughout sub-humid to semi-arid areas in the interior of Queensland from St George in the south, to Coen and Cape York Peninsula in the

north.
The proponent should more comprehensively account for likely Yakka skink habitat and include impact estimates on habitat. EHP can assist by participating in a workshop or meeting to detail the issues to be resolved. The session should involve the respective experts on Yakka skink in the region and relevant agencies.

The draft EIS Terrestrial Ecology Report (Appendix F) contains a detailed assessment of the likelihood of the Yakka Skink occurring within the project site. It explains that the species was not recorded during the draft EIS field surveys conducted for this project, nor was it recorded during field surveys conducted for the Carmichael Coal Mine and Rail Project (CCM&RP). The draft EIS Terrestrial Ecology Report (Appendix F) explains that the project site lacks core habitat for the species, given that it is not located with the Mulga Lands or Brigalow Belt South Bioregions. Based on these factors, the draft EIS Terrestrial Ecology Report (Appendix F) concluded that there is a low potential for the Yakka Skink to be present in the project site.

The EHP indicated in its submission on the draft EIS that EHP officers believe that the project site contains suitable habitat for the species, although the submission explained that the habitat requirements for the Yakka Skink are poorly known.

The conclusions of the draft EIS in relation to the potential presence of the Yakka Skink within the project site are valid based on publicly available information about the species. However, it is acknowledged that there is some uncertainly in relation to the distribution and habitat requirements of this species. Given this uncertainty, the Yakka Skink has been considered as part of the assessment of project impacts. This information is included in Attachment F – Additional Information on Ecology.

Submitter Issue Number 24.006
Biocondition data of impact areas

a) Noting the clarifications in Section 9 – Terrestrial Ecology (Subsection 9.4.5), Section 11 MNES (Subsection 11.5.5) and Appendix F (Subsection 3.3) – the Threatened Species Habitat Mapping does not detail clearly the assessment of habitat condition at the impact sites for any matter. The TOR clearly state this requirement:

The methodology in Biocondition: A Condition assessment framework for terrestrial biodiversity in Queensland: Assessment Manual (version 2.1) (Eyre et al. 2011) and Ecological Equivalence Methodology Guidelines (version 1) (Department of Environment and Resource Management 2011) is suitable for impact sites possibly requiring offset considerations under the Queensland Environmental Offsets Policy (Department of Environment and Heritage Protection 2014).

b) The referenced guideline should be used when offset property surveys are undertaken which appear to be intended post the EIS process.
c) The guideline should also be used for habitat quality assessment for threatened species and EPBC listed migratory species habitat to be impacted by the project. Existing ecological equivalence data can be adapted for this purpose. Habitat condition assessment

for all matters (both MNES and MSES) that are to be impacted by this project should be fully addressed in line with these guides. The basis of both Ecological Equivalence and Habitat Quality are the same (i.e. biocondition) and therefore any field data is readily interchangeable.

d) The proponent should assess the habitat quality of all matters impacted that are likely to require offsets for use in the relevant offset calculators for MNES and MSES.

The proponent intends undertaking habitat condition surveys as part of the development of the Offset Management Plan. It is noted that the Ecological Equivalence Methodology referred to in the Terms of Reference (TOR) has been superseded, and the proponent will therefore make use of the methodology in current use at the time of the survey (e.g. *Guide to Determining Terrestrial Habitat Quality* [EHP 2015]). The survey work undertaken as part of the development of the Offsets Management Plan will:

- Address all species (MNES and MSES) that require offsets;
- Include survey of the land proposed to be used for offsets (i.e. offset property/properties); and
- Include survey of the areas that require offsets (i.e. sections of the project site proposed to be cleared).

Section 4.4 and 4.6 of the draft EIS Biodiversity Offset Strategy (Appendix H) explain that habitat quality surveys will be undertaken as part of the development of the Offset Management Plan. The proponent is unable to undertake the surveys at this point in time, given that it is currently undertaking commercially sensitive land access negotiations with the owner of the most prospective property. Surveys of the properties cannot be undertaken until negotiations are concluded.

Information gathered during these field surveys will be used in the relevant offset calculators for MNES and MSES to determine the size and quality of the offset required.

Submitter Issue Number 24.007

Impacts on Threatened Fauna Species – Impact area of BTF habitat likely to be greater than estimated.

The definition of high and low value habitat is not accepted. There appears to be an underestimation of BTF habitat on the site. The interpretation of the BTF habitat definitions need to be discussed further. Previous study methodologies that addressed BTF habitat mapping in the region should be considered. EHP can assist by participating in a workshop or meeting to detail the issues to be resolved. The session should involve the respective experts on BTF habitat mapping in the region and relevant agencies.

Please refer to the response to issue 24.004, which explains that the BTF habitat mapping has been revised as part of the preparation of the Supplement, and that the revised mapping does not

distinguish between high and low value habitat. The extent of the area mapped as BTF habitat has increased as a result of the revised habitat modelling methodology.

Submitter Issue Number 24.008
Offsets – Impact areas for BTF habitat and Yakka Skink habitat and the consequential offset requirements need to be reconsidered.

Refer to responses to issues 24.004 and 24.005.

Submitter Issue Number 24.009
Need for verification of EIS revised mapping by the Queensland Herbarium
The Terms of Reference for the project state that '*for each significant natural vegetation community likely to be impacted by the project, vegetation surveys should be undertaken at an appropriate number of sites, at once in the wet season and once in the dry season and satisfy the following:*
• *The relevant regional vegetation management codes*
• *Site data should be recorded in a form compatible with the Queensland Herbarium CORVEG database and HERBRECS*
• *Minimum site size should be 10 x 50 metres*
• *A complete list of species present at each site should be recorded*
• *The surveys to include species structure, assemblage, diversity and abundance*
• *The relative abundance of plant species to be recorded*
• *Any plant species of conservation, cultural, commercial or recreational significance to be identified*
• *Specimens of species listed as protected plants under the NCA (Wildlife) Regulation, other than common species, are to be submitted to the Queensland Herbarium for identification.*
• *The methodology in Biocondition: A Condition assessment framework for terrestrial biodiversity in Queensland: Assessment Manual (version 2.1) (Eyre et al. 2011) and Ecological Equivalence Methodology Guidelines (version 1) (Department of Environment and Resource Management 2011) for sites possibly requiring offset considerations under the Queensland Environmental Offsets Policy (Department of Environment and Heritage Protection 2014).*
The changes to regional ecosystem mapping should be submitted to the Herbarium in the format defined in the terms of reference.
In the interim and for the purposes of the EIS outcome the proponent should provide EHP with the 2012 and 2013 survey site data that supports the proposed regional ecosystem mapping changes. EHP can then provide advice on any conflicts with site mapping and Herbarium mapping as well as the methodology used.

The EHP has produced an information sheet, *How to Address Environmentally Sensitive Areas and Offset Requirements in an Application for an Environmental Authority for Resource Activities* (EHP, 2016), which addresses vegetation mapping, including the use of government RE mapping and ground-truthed mapping. The guidelines note that ground-truthing can be used as the basis of the assessment if the details of the ground-truthing surveys are provided and if "an appropriately qualified person can confirm that the surveys completed were sufficient for describing ESAs and

MSES". The guideline also notes that "*Applicants are encouraged to undertake ground-truthing surveys to accurately assess the RE type, condition and ecological value of any vegetation proposed to be significantly disturbed before lodging an EA application…Where ground-truthing surveys are undertaken, the survey approach adopted should be consistent with the relevant methodologies published by the Queensland Government (For example, REs should be described in accordance with the 'Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland' published by the Queensland Herbarium …)."*

Details of the ground-truthing surveys are provided in the draft EIS Terrestrial Ecology Report (Appendix F), the surveys were undertaken in accordance with the methodology specified in EHP (2016) and the surveys were undertaken by an appropriately qualified person. The draft EIS therefore makes use of the ground-truthed mapping. It should be noted that neither the EIS TOR nor EHP (2016) contain any reference to a requirement for the Queensland Herbarium to verify the ground-truthed mapping.

Submitter Issue Number 24.010

6.2.4 Rehabilitation of subsidence cracking.

Given the evidence of sandstone at the surface in some of the EIS photos, it is likely that subsidence cracking in areas of double seam extraction may result in block style slumping and tilting that may not be able to be rehabilitated by conventional methods. This has been observed in the first panels at Moranbah North Mine and the southern end of panels at Bundoora Mine. This would mean increased disturbance as part of rehabilitation. This would also affect offset requirements.

Appendix F

Impact on flora due to subsidence.

Ironbark is a species that appears to be susceptible to root shear and tree death. Crinum Mine had observed high mortality rates in ironbark and significant dieback in red gums. This would also affect offset requirements.

These issues were discussed with the proponent on 20/21 August 2015.

Further work is required to determine high risk areas of blocky subsidence and the consequences for subsidence area management and any biodiversity offsets.

Further work is required to determine the risk areas of tree deaths and methods for management as well as any biodiversity offset requirements.

Introduction

Subsidence effects due to longwall mining and the potential for subsidence effects to impact trees are dependent on a number of factors that can vary considerably from one mine site to another. In the absence of a detailed consideration of these factors, it is not reasonable to assume that simply because effects have occurred at one mine site that they are likely to occur at another mine site. The subsidence predictions for the project have been prepared by Gordon Geotechniques. Nick Gordon is a leading longwall mine subsidence specialist with more than 30 years' experience in the Australian coal mining industry. He has unparalleled experience with subsidence predictions and subsidence effects at Queensland longwall mines and has operating and consulting experience at

all of the mines used as examples to support the claims in this submission. Highlights of Nick's relevant experience include the following:

- Full time onsite geotechnical engineer at the Kestrel longwall mine (5 years) and the Kenmare longwall and Laleham bord and pillar operations (6 years).
- Provision of geotechnical design advice to the Ensham bord and pillar mine since the pre-feasibility studies commenced in 2004. Nick still spends two full days underground at this operation checking, assessing and back analysing the design recommendations.
- Contractual geotechnical roles at the Crinum, Broadmeadow, Dendrobium, Bundoora longwall mines in Queensland and NSW.
- Subsidence assessments at numerous operating longwall mines in Queensland such as the Grasstree, Newlands, Kestrel, Crinum, Moranbah North, Grosvenor, Ensham mines (for a proposed longwall layout).
- Subsidence assessments and reviews for a number of projects, including the Aquila, Belvedere, Sarum and Moranbah South projects.
- Annual subsidence reviews and inspections at the Grasstree Longwall Mine.
- Geotechnical services to more than fifty longwall and bord and pillar mines in the western, northern and southern coalfields of the Sydney Basin.

The following sections respond to each of the specific claims made in this submission. The response draws on Nick Gordon's detailed technical understanding of Project China Stone and each of the operations used as examples in the submission. It is noted that the examples given in the submission appear to be anecdotal and unreported.

Given the evidence of sandstone at the surface in some of the EIS photos, it is likely that subsidence cracking in areas of double seam extraction may result in block style slumping and tilting that may not be able to be rehabilitated by conventional methods. This has been observed in the first panels at Moranbah North Mine and the southern end of panels at Bundoora Mine. This would mean increased disturbance as part of rehabilitation. This would also affect offset requirements.

Project China Stone Overburden Geology and Subsidence Effects

The effect of the Clematis Sandstone overburden unit was considered in the development of the subsidence predictions for the project. As discussed in Section 4.5.3 and Section 12.3.3 of the draft EIS, the Clematis Sandstone outcrops in Darkies Range in the area that will be subject to longwall subsidence. In this area the sandstone is deeply weathered and clay bound, and consequently has very low strength. The strength of the overburden units and the assessment of the potential for blocky rock movements and massive spanning units were assessed in Sections 3.6 and 3.7 of the draft EIS Subsidence Report (Appendix A). The assessments concluded that caving behind the retreating longwalls will occur readily, due to the low strength of the overburden units and the width of the longwall panels.

It should also be noted that dual seam extraction is also not in itself a reason why potential block style subsidence would occur, as suggested. The predicted tensile strains for the dual seam longwall mining areas are actually less than the single seam areas due to a number of factors including the depth of cover and the relatively thin interburden thickness between the two extracted coal seams.

The claim in the submission that block style subsidence is likely to occur due to the presence of Clematis sandstone near the surface in dual seam mining areas is therefore not scientifically supported.

Bundoora Mine

The submission uses the example of subsidence effects at Bundoora Mine as support for the claim that blocky style subsidence may occur at the project site. The submission does not, however, provide any comparison between the two operations in relation to overburden geology and mining parameters in order to justify the relevance of this example.

Nick Gordon worked as the Bundoora Mine geotechnical engineer during the extraction of Longwalls 402 and 403 in 2008. He continued his geotechnical assistance to the Bundoora operation by providing consulting advice to the on-site geotechnical engineer whilst the remaining 400 and 401 longwalls were extracted. As well as the day to day underground work, Nick compiled a subsidence assessment report for Longwall 403. This was required because the longwall panel retreated close to surface infrastructure such as transformers, power poles and dams. The subsidence effects from Longwall 402 were reviewed and ground-truthed as part of this assessment. Subsequent to this work, Nick was engaged to provide a subsidence assessment of the Aquila longwall layout in 2014. This required ground-truthing of the subsidence effects above the Bundoora, Aquila and Grasstree mines at the German Creek mining complex.

Nick is not aware of any "block style slumping and tilting that may not be able to be rehabilitated by conventional methods" at Bundoora Mine. It is also worth noting that there are significant differences in the overburden geology between Bundoora Mine and Project China Stone and any experiences at Bundoora are not relevant to Project China Stone. The overburden lithology at Bundoora is characterised by strong and thickly bedded sandstone units of Permian age, compared to the weak and poorly cemented sandstones (Clematis Sandstone Unit) of Triassic age at Project China Stone. The longwall mining at Bundoora was also relatively shallow with a depth of cover ranging from 45 m to 130 m compared to between 140 m and 420 m at China Stone. In the shallower parts of China Stone at depths of cover similar to Bundoora, the sandstone is not present. Due to the significant differences in the overburden geology and mining operations at Bundoora Mine, any comparison between subsidence effects at Bundoora Mine and Project China Stone is not valid.

Moranbah North Mine

The submission also uses the example of subsidence effects at Moranbah North Mine as support for the claim that blocky style subsidence may occur at the project site. The submission does not,

however, provide any comparison between the two operations in relation to overburden geology and mining parameters in order to justify the relevance of this example.

Nick Gordon was first involved at Moranbah North Mine whilst working at the Kestrel mine as part of a due diligence exercise carried out by Rio Tinto in 2002. He subsequently prepared subsidence predictions for Longwalls 201 to 204 in 2006. More recently, as part of work on the Moranbah South Project and for the Grosvenor Mine, Nick undertook a review of surface and subsurface cracking effects at Moranbah North Mine. In addition, Nick audited the Moranbah North Mine and the Grosvenor Mine as part of due diligence assessments earlier this year.

Nick's work at Moranbah North Mine has not identified any examples of block style subsidence. In addition, Nick is not aware of published accounts of block style subsidence at Moranbah North Mine. It is noteworthy that the Moranbah South Subsidence Assessment, prepared by Mine Subsidence Engineering Consultants (MSEC) references subsidence behaviour above Longwalls 101-108 and 201-203 at Moranbah North, but makes no mention of block style subsidence. Irrespective of any possibility of block style subsidence at Moranbah North Mine, the overburden geology and depth of cover at Moranbah North Mine are distinctly different to those at Project China Stone. Similar to Bundoora, the sandstones in the Moranbah Coal Measures are strong and of Permian age, whereas the sandstones at Project China Stone are weak and poorly cemented. The initial longwall panels at Moranbah North were also shallow at a depth of around 100 m. Sandstone is not present at Project China Stone in the areas that will be mined at these depths. The comparison with Project China Stone is therefore not technically valid.

Hansen Bailey has also undertaken work at Moranbah North Mine for a number of years, including a recent audit of the mine, and is not aware of instances of blocky subsidence or significant tree deaths.

Rehabilitation Disturbance and Offsets

The submission claims that, by not accounting for the potential for blocky style subsidence that cannot be rehabilitated by conventional methods, the draft EIS has underestimated rehabilitation disturbance and this could affect offset requirements.

As discussed above, the claim that blocky style subsidence is likely to occur on the project site appears to be based on invalid comparisons with unreported subsidence effects at mines with distinct differences in material factors related to potential subsidence effects. The claim that rehabilitation disturbance has been underestimated and offsets could be affected is therefore not technically justified.

Ironbark is a species that appears to be susceptible to root shear and tree death. Crinum Mine had observed high mortality rates in ironbark and significant dieback in red gums. This would also affect offset requirements.

Widespread tree deaths due to root shear are not common at Queensland longwall mines. Any instances where this occurs would be due to particular site-specific surface geology and longwall mining factors. The factors that could potentially increase the potential for tree root shear are numerous and, in addition to tree species, include the nature of surface soil and rock material in the rooting zone, surface tensile strains and the extent of and nature of surface cracking.

Nick Gordon has worked on site at Crinum Mine and also provided subsidence assessments for the Crinum South, Crinum East and Crinum North mining areas. Nick also worked for 5 years at the adjacent Kestrel longwall operation. A substantial part of the Crinum longwall mining area is overlain by thick basalt deposits of Tertiary age at the surface. The basalt material is high strength and is in places >90 m thick.

The majority of the Crinum longwall panels are also < 150 m deep. The overburden characteristics and depth of cover at Crinum Mine are again distinctly different to Project China Stone and the subsidence effects are therefore not comparable. Hence any claim that tree deaths at Crinum Mine indicate that tree deaths are likely to occur at Project China Stone is not technically valid.

Further work is required to determine high risk areas of blocky subsidence and the consequences for subsidence area management and any biodiversity offsets.
Further work is required to determine the risk areas of tree deaths and methods for management as well as any biodiversity offset requirements.

As discussed above, blocky subsidence and tree deaths are not predicted to occur at Project China Stone due to the highly weathered and low strength nature of the Clematis Sandstone.

As noted above, Nick Gordon has experience with each of the mines listed as examples in this submission. These mines are not directly comparable to Project China Stone due to significant differences in overburden geology and/or mining depth and so even if block style slumping or tree deaths had been observed at these mines, this would not mean that these effects are likely to occur at Project China Stone.

The claims in the submission that blocky style subsidence or tree deaths are likely to occur are purely speculative and based on invalid examples. The submission therefore does not provide any reasonable justification for any further work in relation to these issues.

As discussed in Section 9.7.3 and Section 24.4.3 of the draft EIS, the Subsidence Management Plan will include a vegetation monitoring program which will be undertaken to confirm that subsidence does not give rise to impacts greater than those listed in the draft EIS Terrestrial Ecology Report (Appendix F) and to identify additional mitigation measures in the event of unanticipated impacts. This existing management measure will ensure that the actual impact of subsidence on vegetation is confirmed and, if necessary, additional mitigation measures would be identified. In the case of any significant residual impacts on matters of state environmental

significance or national environmental significance, mitigation measures would potentially include additional offsets.

Submitter Issue Number 24.011

Appendix H – Biodiversity Strategy – Potential Offset properties

a) Given the large area of impact to a significant population of BTF and cumulative impacts from other proposed Galilee mining projects – the offset strategy needs to present existing BTF habitat as offset areas.
b) The habitat quality assessment of threatened species habitat impacted by the project needs to be carried out for use in the EPBC calculator and EOA calculator to determine the size and quality of the offset required for each MNES and MSES value respectively (where they don't overlap).
c) The terms of reference state (see page 30) that if land-based offsets are proposed for terrestrial ecosystems, an assessment of ecological equivalence (habitat quality) for each impact area and proposed offset area should be provided.
d) Appendix H provides potential direct offset areas that are not the basis for an adequate EIS outcome or post EIS process offset approvals without further information on calculator based offset requirements. For the EIS outcome the proponent's 22 June response is not acceptable. An estimation of offset requirements via the calculators is required. The maximum offset habitat quality of 7 and multiplier of 4 may be applied in the calculator (MSES) unless other biocondition data is presented. For the purposes of the EIS the proponent should:

1. carry out habitat quality assessment (the updated methodology for assessing habitat condition) of all MNES and MSES values to be impacted on the site.
2. present offset requirements for MNES values in the EPBC calculator using estimated habitat quality for known habitat based on field data or expert advice
3. present offset requirements for MSES values in the EHP land-based calculator using estimated habitat quality for known habitat based on field data of expert advice for the nominated properties
4. propose known habitat for species as potential offset areas
5. estimate the habitat quality of the direct offset site offered relative to the habitat quality at the impact site.
6. provide an assessment of the offset availability for each MNES and MSES value in the context of available known habitat for each impacted MNES and MSES value on relevant tenure types. The aim is to identify known habitat available, whether adequate habitat is available and the cumulative impacts in the basin
7. provide details on the likely staged impacts of the project and timing of the availability of any direct offsets.

24.011 a) As the proponent does not own any land or have agreements with any landowners regarding offset properties, the draft EIS Biodiversity Offset Strategy (BOS) (Appendix H) has conservatively assessed several properties for the purpose of demonstrating that there are suitable offset properties. In relation to the BTF, two of the four properties are confirmed as providing BTF habitat (i.e. Property C and Property D) and have records of the species from the properties. As

discussed in Attachment F – Additional Information on Ecology, the most prospective property (i.e. Property C) has in excess of 68,000 ha of estimated potential BTF habitat. This is considerably more habitat than the 8,524 ha of BTF habitat estimated to be disturbed by the project.

24.011 b) As stated in the response to 24.006 D, the proponent intends to undertake an assessment of habitat quality of the threatened species habitat proposed to be cleared. This will be undertaken as part of the development of the project's Offset Management Plan and will include detailed field surveys of both the project site and potential offset properties. This information will be used in the relevant offset calculators for MNES and MSES to determine the size and quality of the offset required. It is not possible to undertake this work at this stage, given that field surveys of the offset properties are not currently possible as the proponent does not have formal access agreements with the relevant landowners.

24.011 c) It is noted that since the TOR was issued, the Ecological Equivalence Methodology (as outlined in *Ecological Equivalence Methodology Guidelines (version 1) (Department of Environment and Resource Management 2011)),* has been superseded by the methodology described in *Guide to Determining Terrestrial Habitat Quality* (EHP 2015). As acknowledged in the EHP submission (issue number 24.006) and as stated in Section 4.6 of the draft EIS BOS (Appendix H), the *Guide to Determining Terrestrial Habitat Quality* (EHP 2015) will be consulted prior to undertaking habitat quality surveys of the potential offset property/properties and the project site. The detailed habitat quality field surveys will be undertaken as part of the process of developing the Offset Management Plan. The surveys will occur once project approval has been received, when the proponent has entered into a formal access agreement with the relevant landowners. As noted above, it is not possible to undertake this work at this stage because the proponent does not have formal access agreements with the relevant landowners.

24.011 d) As stated in the response to 24.011 b, the proponent intends undertaking detailed field surveys as part of the development of the project's Offset Management Plan. These surveys will provide the necessary data for input into the relevant MNES and MSES offset calculators. It is not currently possible to undertake the work at this stage, given that the proponent does not have formal access agreements with the relevant landowners of the potential offset properties. This approach is consistent with precedent set by the recent EPBC Act approval for the South Galilee Coal Project issued in July 2015. This approval contains a table listing the area of threatened species habitat proposed to be cleared and requires that on Offset Management Plan be provided (post-EBPC Act approval) which provides details of the offsets to be provided for this clearing. The approval does not provide minimum areas for the offsets or stipulate the way in which the offset area is to be calculated.

Submitter Issue Number 24.012
Additional management options for BTF should be considered.

There are no additional management options for the BTF reasonably required over and above the proposed land based offsets. It is noted that this issue was not included in the submission provided by the EHP.

Submitter Issue Number 24.013
Subsidence impact on the northern seasonal wetland - uncertain impact and uncertain offset offered

a) For the EIS outcome the wetland area impact should be more fully described and contingency offsets outlined if required. It is not clear if this is an impact or not and to what extent.
b) The mitigation and offset requirements for the wetland area should be finalised before submission/approval of any Plan of Operations for the relevant area and Biodiversity Offset Strategy for the project. The subsidence management issues outlined ~~on page 18~~ (in issue 24.10) of this submission are also relevant.

The draft EIS Aquatic Ecology and Stygofauna Report (Appendix G) provides a preliminary assessment of impacts on the Northern Seasonal Wetland. The assessment predicts the wetland will potentially experience impacts due to surface cracking, changes in drainage including increased surface area and storage capacity, and a reduction in the wetland pond catchment. The assessment in the draft EIS is based on the current mine layout and even minor changes in the mine plan could significantly alter the predicted nature and extent of impacts on the wetland. The draft EIS indicates that the assessment of impacts will be reviewed prior to subsidence of the wetland based on detailed mine planning (informed by further exploration work) and subsidence predictions. In the event of significant, residual impacts being predicted, offsets will be provided. This additional assessment work will be described in the Plan of Operations for the relevant area. Attachment I – Additional Commitments includes this commitment.

It should also be noted that Sections 5.3.3, 5.4.3, 5.5.3, and 5.6.3 as well as Figure 2, 7, 12 and 17 of the draft EIS BOS (Appendix H) confirms that mapped wetlands occur on all four offset properties that were assessed. These include HES wetlands on all four properties.

Submitter Issue Number 24.014
As wetlands exist on the site that constitute suitable habitat for Australian painted snipe, this species would have a high potential of occurring within the project site and that this habitat is important to the population. The wetlands described in Appendix G - Aquatic Ecology and Stygofauna report are suitable habitat for this species. The proponent should account for Australian painted snipe habitat within the project area and detail the likely impacts and mitigation activities.

The draft EIS has accounted for Australian Painted Snipe habitat in the project site and the following sections of the draft EIS provide findings in relation to the Australian Painted Snipe:

- Section 4.6.6 iii of the draft EIS Terrestrial Ecology Report (Appendix F) concludes there is a moderate potential for the Australian Painted Snipe to occur within the project site based on the presence of suitable habitat including the two seasonal wetlands.
- Figures 19 and 20 and Appendix G of the draft EIS Terrestrial Ecology Report (Appendix F) describe the habitat modelling conducted for the species and show the 135 ha of high value habitat for the species that was identified within the project site, including the two seasonal wetlands.
- Appendix L3 of the draft EIS Terrestrial Ecology Report (Appendix F) includes an assessment of significance for the species, conducted in accordance with the *EPBC Act Significant Impact Guidelines for Endangered Species*, which concludes that the project will not have a significant residual impact on the species.

Submitter Issue Number 24.015
It is unclear how the proponent would ensure sufficient drying and compaction of the Tailing Dam wastes.
For the EIS outcome and development EA conditions details should be provided on the methodology to achieve the required dewatering of the tailings dam. There should also be commitments to regular testing of tailings dam density / compaction throughout the life of the tailings dam.

The proposed life-of-mine tailings storage facility (TSF) is a conventional wet tailings dam. Wet tailings dams operate by progressive drying and consolidation of deposited tailings solids. The progressive drying and consolidation process increases the shear strength and bearing capacity of the deposited solids.

The operation of the tailings dam, including the drying and consolidation process, will be controlled by the deposition strategy described in Sections 6.2.3 and 6.2.4 of the draft EIS Mine Waste Storage Facility Conceptual Design Report (Appendix C). Tailings will be deposited in successive layers that are allowed to dry and consolidate through evaporation, seepage and runoff. Section 6.2.3 and 6.2.4 of the draft EIS Mine Waste Storage Facility Conceptual Design Report (Appendix C) describe the method for dewatering the tailings dam. The management of tailings return water is described in Section 2.3.2 of the draft EIS Water Management System Modelling Report (Appendix K).

The tailings deposition strategy allows for the formation and maintenance of a sloped tailings beach. The beach slopes to a central decant pond where supernatant tailings water and incidental rainfall runoff will collect under gravity. The tailings decant pond will be dewatered by a pontoon mounted return water pump moored in the TSF decant pond. The return water pump will maintain a low level in the TSF decant pond by transferring water to the Return Water Dam for reuse as a

priority supply to the Coal Handling and Preparation Plant. This deposition strategy is well-established and commonly used in conventional wet tailings storage facilities in the coal mine mining industry. Section 7.4.5 of the draft EIS describes the rehabilitation and decommissioning of the TSF. The final rehabilitation includes dewatering of the TSF decant pond and allowing the final tailings surface to dry and consolidate prior to capping. Capping the final tailings surface is also standard practice and generally also results in further consolidation of deposited tailings.

EHP Guideline EM944: Model Mining Conditions requires that tailings management procedures are included in the Plan of Operations. In addition, model conditions presented in *EHP Guideline EM634: Structures which are dams or levees constructed as part of environmentally relevant activities* require that a detailed design plan for the TSF be developed and certified prior to commencement of operation of the TSF.

Consistent with the EHP guidance, a TSF design plan will be developed prior to lodgement of the Plan of Operations or commencement of TSF construction. The TSF design plan will describe the physical dimensions of the TSF, the materials and standards to be used for construction of the TSF and the criteria to be used for operating the TSF. The design plan will address dewatering, seepage and stability issues and any associated design assumptions. Detailed tailings management procedures will be developed as part of the TSF design plan, including procedures for managing the deposition, dewatering and consolidation of deposited tailings.

The draft EIS presents sufficient information on the methodology to achieve the required dewatering of the tailings dam to allow the development of draft EA conditions that are consistent with the EHP guidelines.

Section 6.2.7 of the draft EIS Mine Waste Storage Facility Conceptual Design Report (Appendix C) describes the TSF monitoring program. Additional detailed monitoring procedures will be developed as part of the TSF design plan. The monitoring procedures will include regular testing of tailings dam density throughout the operational life of the TSF. A new commitment to include monitoring of the consolidation of the deposited tailings in the TSF design plan has been included in Attachment I – Additional Commitments.

Submitter Issue Number 24.016

TSF and PSWSF final landform design - stormwater shedding

The Tailings Storage Facility (TSF) and Power Station Waste Storage Facility (PSWSF) are proposed to be rehabilitated using the same techniques as are proposed for Waste Rock Emplacements. The discharge of storm water from the plateaus on top of these structures is proposed to be achieved using contour drains running down the external batters, the drains having a capacity to discharge the 20 year ARI critical duration storm event.

Because the TSF and PSWSF contain fine material they are different to the Waste Rock Emplacements, and present a higher environmental risk where long term, post closure erosion of the batters may expose the finer material in the core sections of these containments. Contour drains designed to carry the design discharge for a 20 year ARI storm event are unacceptable as a

permanent solution for the management of runoff coming off the top of the TSF and PSWSF.

This proposal to direct runoff down contour drains designed for the 20 year ARI storm on the external batters of these structures is described in a number of different sections of the EIS including :

EIS Section 13 Surface Water Section 13.4.1 "Site Drainage Plan and Design Principles" sub-section "Rehabilitation Contour Drains"

Appendix C Mine Waste Facility Conceptual Design Section 7.1 "Closure and Final Landform" Section 7.3 "Runoff Management"

EIS Section 7 Mine Waste Management Section 7.4.2 "Overview of TSF and PSWSF Design" Section 7.4.5 "Rehabilitation and Decommissioning" sub sections "Landform" and "Runoff Management"

To prevent the escape, in perpetuity of tailings stored in engineered structures such as Tailings Storage Facilities, the Australian National Committee on Large Dams (ANCOLD) recommends that "At the end of mine life, closure spillways should be designed for PMF flows for all Consequence Categories". This is discussed in section 5.1.4 of the ANCOLD Guideline on Tailings Dams – Planning, Design, Construction, Operation and Closure. May 2012.

Because the China Stone Coal TSF is proposed to drain to the north or to the north west during the mine's operational life, the northern end of the TSF is the most logical place for a Probable Maximum Flood (PMF) spillway at closure.

The proponent should make this commitment in the EIS, in the same way as the commitment in Section 13.4.1 of the EIS to construct the highwall drains above the pit and the final voids with sufficient capacity to convey peak flows from the PMF.

The PSWSF is proposed to be immediately adjacent to, and abutting onto the TSF. It contains fine material in its core sections like the TSF, and although not strictly a dam because this material is proposed to be placed dry, the containment PSWSF would be 30 metres high at closure and will be subject to the same risks as the TSF in regard to erosion of the outside face by storm runoff. The planning for closure of the PSWSF should therefore include the same kind of protections which are appropriate for the TSF.

TSF and PSWSF final landform design - Final Batter Slopes on the TSF and PSWSF at Closure

It is proposed to construct both the TSF and the PSWSF with 1V:4H external slopes during the operational life of the mine (Appendix C Mine Waste Facility Conceptual Design Section 3.1 "Design Drivers and Criteria" dot point 6).

At closure, it is proposed to buttress the external slopes of the TSF with mine overburden, so that the final slope on the external face is 1V:6H. For the PSWSF it is proposed to doze down the external slopes, also to achieve the final external slope of 1V:6V; but in this case by effectively stripping material from the upper sections on the PSWSF embankment. This is unnecessarily increasing the risk of erosion failure in the long term by thinning of the PSWSF embankment in the upper levels. These differing plans for the two structures are outlined in the following sections:

Appendix C Mine Waste Facility Conceptual Design Section 7.1 "Closure and Final Landform"

EIS Section 7 Mine Waste Management Section 7.4.5 "Rehabilitation and Decommissioning" sub section "Landform"

For the EIS outcome further information is required on the rehabilitation design including

• E-W cross-sections through the southern mine section to gain perspective of natural landform,

depth of residual void, height of spoil and tailings dam
• PMF spillway design at mine closure
• Final batter slopes on TSF and PSWSF
Additional details will be required for any EA application outcome and this topic should be the subject of a workshop or meeting to detail the issues to be resolved.

Detailed recommendations
The runoff from the PSWSF should be directed to a purpose built PMF spillway. This could be achieved by raising the PSWSF to the same final Elevation Level as the TSF. Extreme flood runoff from the PSWSF could then be directed across onto the TSF, adding to the flow which would be occurring simultaneously from the TSF, and both flows may be discharged through the PMF spillway at the northern end of the TSF.
Sections of text in the EIS which should be reconsidered include :-
• Sections 13.4.1 , 7.4.2 , and 7.4.5 in the EIS Main Report
• Sections 7.1 and 7.2 in Appendix C to the EIS
• figures should be also be reconsidered, which at present show the TSF and PSWSF at closure as green rehabilitated areas, without any spillways for the shedding of extreme rainfall events from the plateaus on top of the structures. Final spillway arrangements need to be shown for the TSF and the PSWSF in
o EIS Section 4 Project Description Figure 4-16
o EIS Section 7 Mine Waste Management Figure 7-2
o EIS Section 8 Rehabilitation Figure 8-5
o EIS Section 13 Surface Water Figure 13-7
o Appendix C MWSF Design Report Figure F007
o Interim spillway arrangements for the PSWSF after Year 10 for the shedding of runoff from the PSWSF plateau to the TSF would also need to be considered on some other Figures.

The external face of the PSWSF should be buttressed with imported mine waste to achieve the desirable slope of not more than 1V:6H, rather than be dozed down as presently proposed. Sections of the text sections in the EIS which need to be reconsidered include Appendix C Mine Waste Facility Conceptual Design Section 7.1 “Closure and Final Landform” and EIS Section 7 Mine Waste Management Section 7.4.5 “Rehabilitation and Decommissioning” sub section “Landform”

A new commitment has been included in Attachment I – Additional Commitments in response to this issue. The new commitment is that the conceptual design of the final surface of the TSF plateau will include an internal drain with capacity to convey runoff from the (Probable Maximum Precipitation) to natural ground at the northern end of the TSF. The drain will have a gradient of less than 6H:1V that is suitable to ensure the long term stability of the TSF capping layer. The construction of the drain may involve the use of mine overburden to extend the TSF landform to the north-west and enable the TSF plateau to tie into the natural ground level with a gentle gradient. The PSWSF final landform will also be integrated with the TSF final landform so that the plateau area of the PSWSF is at the same level and contiguous with the TSF plateau. A revised

conceptual final landform figure for the PSWSF and TSF is included in Attachment E – Additional Information on Surface Water.

The PSWSF will be constructed by truck and shovel dumping and the final 6H:1V landform slopes in the waste material will need to be constructed with dozers. Once formed at 6H:1V slopes, the final waste slopes will then be capped with overburden. There is no embankment proposed on the PSWSF as indicated in the submission and the rehabilitation method does pose an erosion risk from the batters, as suggested. Interim spillways for the PSWSF are not necessary prior to the decommissioning of the TSF as any erosion on the slopes of the PSWSF can be maintained during the operational phase of the project.

As discussed in the response to issue 24.015, the model mining conditions require a detailed design plan to be developed for the TSF and certified by a Registered Professional Engineer of Queensland. The detailed design planning process will address the TSF closure commitments including appropriate drainage from the plateau area of the TSF to ensure the long term integrity of the capping layer and the integration of the PSWSF and TSF final landforms.

An east-west cross-section of the final landform through the southern section of the mine has been previously provided to EHP and is presented in Attachment K– Final Landform Cross Sections.

Submitter Issue Number 24.017

Drainage off the top of the TSF and the PSWSF at closure is not adequately addressed.

The Tailings Storage Facility (TSF) is proposed be a regulated structure with a significant consequence category. Section 7.4.2 states that the TSF will have a footprint at closure of 603 hectares (approximately 6 square kilometres). The Power Station Waste Storage Facility (PSWSF) which is immediately adjacent to the TSF would have a smaller footprint at closure of 80 hectares.

The proposed Final Landform for Overburden Emplacements at the end of mine life (section 8.2.1) proposes an external slope of 6H:1V and a 2% grade on top plateau areas “to promote runoff”.

The proposed Final Landform for the TSF and the PSWSF (section 7.4.5) proposes that external slopes of the TSF and PSWSF also be 1V:6H, and that the top surfaces be profiled with a 2% crossfall “to promote runoff”.

It is proposed that the water shedding and runoff management for the TSF and PSWSF be designed at the same standard as the water shedding and runoff management for overburden emplacements.

The difficulty of successfully shedding runoff water from the 6 km2 top surface of the TSF is not fully addressed. The volume and rate of runoff generated in a large storm event are not addressed. Preferential flow paths would develop, and there is no adequate discussion of how erosion would be prevented in these flow paths in large events.

Contour drains (section 13.4.1) down the sides of the TSF and PSWSF could be installed to convey the peak runoff from a “20 year ARI” storm however these would not provide adequate protection for the TSF and PSWSF. These two structures contain fine material with no cohesive strength easily mobilised if erosive forces were to expose it.

For the EIS outcome the conceptual designs of TSF and PSWSF are not acceptable. Please refer to the detailed recommendations and background information on pages 26-29 of the DEHP submission.(Not included in spreadsheet due to length)"

Refer to response to issue 24.016. The revised conceptual final landform design includes an internal drain on the TSF plateau with sufficient capacity to convey runoff from the (Probable Maximum Precipitation) to natural ground at the northern end of the TSF. The conceptual drain capacity calculations are provided in Attachment E – Additional Information on Surface Water.

Submitter Issue Number 24.018
The draft EIS does not describe in detail the sewage management system for the three proposed sewage treatment plants for the disposal of effluent and sludge. Any EIS outcome involving stated EA conditions for sewage management would require the EIS to provide further sewage management details.
The conceptual design of the sewage management system should be revised to conceptually reflect the guideline attached to this submission (Attachment 2) particularly incorporating in the EIS the need for "Class A" effluent and proposed irrigation site options.
Attachment 2 Information Required For "Project China Stone" Waste Management Issues – "Sewage Treatment" (ERA 63) Component

As indicated in Table 12-1 of the draft EIS, the sewage treatment plants will be designed and operated in accordance with relevant regulatory requirements, including the referred guideline and the model mining conditions. As is normal practice for projects of this nature, the proponent has not completed the detailed design of the sewage treatment plants or the associated effluent disposal systems at this stage. Regardless, the proponent will ensure that the designs are compliant with the relevant requirements and guidelines as part of the detailed design process, including ensuring appropriate treated effluent water quality standards and effluent disposal methods.

Submitter Issue Number 24.019
Section 24 Water Release criteria
There is high environmental risk releasing into a predominating dry drainage line, which then reaches North Creek and eventually reaches the Belyando River. Discharge flow should not be based on Belyando River flow criteria as there is a high risk of discharge not reaching Belyando River. There is also the chance of no flushing flow down North Creek for extended periods of time so any remnant pools would be mine affected water.
The amount of dam storage will dictate how much water needs to be released as opposed to in pit storage. Pressure to continue mining with an open pit would increase the risk to allow mine water release
The potential environmental impact of controlled releases to North Creek have not been assessed
The proposed release point (RP) for controlled releases of mine-affected water is located on North Creek, >60 km upstream of the confluence with the Belyando River. Because the proposed release to flow criteria are to be developed on the basis of flow within the Belyando River, it is likely that

releases will occur at times when natural flows in North Creek have receded to very low or no flow conditions.

Although, the ephemeral creeks in the project area do not constitute waterways under the Water Act, it is not appropriate to argue that the ephemeral creeks in the project area, including North Creek, do not have environmental values (such as aquatic ecosystems), under the Environmental Protection (Water) Policy.

EIS Appendix G demonstrated that even the upper reaches of Pigeonhole Creek and Tomahawk Creek included remnant pools that harboured aquatic fauna, including macroinvertebrates and fish. Site A10 in the Tomahawk Creek catchment, and site A13 high up in the Pigeonhole Creek catchment harboured fish, and could be considered as refugia sites.

EIS Appendix G did not provide information on the ecological condition of North Creek downstream of the proposed release point.

EIS Appendix G included only two survey sites (A1 & A2) high up in the North Creek catchment, and did not include sites downstream of the proposed release point.

The Queensland Government Wetland summary maps (http://www.wetlandinfo.com.au/resources/pdf/maps/v3.0/wetlands-tile-100k-bulliwallah.pdf) indicate lacustrine wetlands located on the lower reaches of North Creek and palustrine wetlands on the Belyando floodplain downstream of the confluence. EIS Appendix G did not include this information.

The potential impacts of controlled release of mine affected water on the environmental values of North Creek (particularly the aquatic ecosystems and possibly the riparian ecosystems) were not assessed in the EIS.

Sediment control

The EIS does not commit to release limits for suspended solids or turbidity. Smaller scale activities such as quarries design to a 50 mg/L release limit based on containment of at least a 1 in 10 year 24 hour duration storm event.

http://www.ehp.qld.gov.au/era/prescribed/stormwater-guideline-era-em368.pdf

Whilst the design storm events for release may be different in mining due to the need to attain optimum water balance between water input (groundwater inflow plus stormwater), water needs and release, the objective should be to minimise the amount of sediment and turbidity discharged to waterways in accordance with best practice erosion minimisation and sediment control.

To develop model and site specific conditions for the site the water quality information requested should be provided.

For the purpose of the EIS outcome and any EA conditions the discharge criteria should be based on least flow in North Creek (the intended discharge point).

An assessment of the potential impacts on downstream environmental values as a consequence of controlled release of mine affected water will be required. It is recommended that this occur for the EIS process. This assessment should address the likely impacts to aquatic and riparian ecosystems.

For the development of any EA conditions information is required on controlled releases of mine-affected water to North Creek, occurrence at times of low or no flow in North Creek, and the level of monitoring to assess the impacts of the releases. The following requirements should be addressed:

• develop a Receiving Environment Monitoring Program (REMP) that would
a. encompass the extent of North Creek downstream of the release point and any lacustrine and palustrine habitats associated with North Creek and the proximal reaches of the Belyando River.
b. determine baseline water quality with respect to all toxicants and physio-chemical indicators of concern before any releases commence. These would include, electrical conductivity, total dissolved solids, major ions (i.e. Na2+, Ca2+, Mg2+, K+, Cl-, SO42+, HCO3-), hardness, alkalinity, pH, turbidity, total suspended solids, dissolved oxygen, nutrients (i.e. ammonia, oxidised nitrogen, total nitrogen, total phosphorus, free reactive phosphorus), chlorophyll a.
c. determine baseline ecological condition, including riparian vegetation, emergent macrophytes, aquatic macroinvertebrates and fish.
d. monitor any changes in physico-chemical and ecological parameters during and subsequent to controlled releases of mine-affected water.
e. Information to discriminate between any potential impacts due to the China Stone Project and those subsequent to releases from the Carmichael project and any other users of the Belyando River and North Creek.
• describe the objectives and methodology of the REMP within a REMP design document.
• require that the REMP design document be approved by the regulatory authority before commencement of monitoring.
• mitigate against any erosion and sediment transport that are likely to occur as a consequence of controlled releases of mine affected water.
• the EIS should include specific commitments to meet best practice for turbidity and suspended solids management, with likelihood of releases minimised, as demonstrated by a water balance.

Receiving Waters and EA Conditions for Mine-Affected Water Releases

In order to address the key issues raised in this submission, the proponent has agreed that discharge flows for mine-affected water releases will be based on the flows in North Creek rather than the Belyando River, as proposed in the draft EIS.

As discussed in Section 13.2.4 of the draft EIS, the project site is remote and is located at the head of the catchment. It has highly ephemeral, short duration, surface water flows. These factors severely limit the ability for any regular sampling of surface water flows from the project site hence there is currently insufficient receiving water quality and flow data to enable the detailed calculation of flow triggers and water quality release limits associated with this change in accordance with the EHP model mining conditions.

Consequently the proponent is proposing to implement a baseline water quality and flow monitoring program so that that receiving water flow criteria for discharge, maximum release rates, Electrical Conductivity (EC) and turbidity release limits can be calculated, in accordance with the EHP model mining conditions, prior to the commencement of the project. The details of the proposed amended mine affected water EA conditions and the proposed monitoring programs are described in Attachment E – Additional Information on Surface Water.

Impacts on Downstream Environmental Values in North Creek

The release of mine-affected water based on flows in North Creek and the strict application of the EHP model mine conditions will ensure that sufficient flushing flows occur in North Creek following any discharge events and that there are no adverse impacts on downstream environmental values in North Creek, including aquatic ecosystems.

The draft EIS does not suggest that ephemeral creeks in the project area (and specifically North Creek) have no environmental values under the Environmental Protection (Water) Policy, as suggested in this submission. Downstream environmental values, including aquatic ecology, are discussed in Sections 13.2.2, 13.2.3 and 13.2.4 of the draft EIS. The downstream impacts on environmental values due to the release of mine-affected water (based on the original release proposal) are discussed in Section 10.6.4 of the draft EIS.

Monitoring of Mine-Affected Water Releases

Additional information in relation to the proposed monitoring of mine-affected water releases is also provided in Attachment E – Additional Information on Surface Water. The proponent has also agreed to the specific requirements listed in this submission to be included in the REMP (Attachment E – Additional Information on Surface Water). Other REMP requirements mentioned in this submission are already requirements of EHP's model mining conditions.

Water Management System Design and Suspended Sediment Control

The project water management system, that is specifically designed to minimise the likelihood of releases, and the results of water management system performance modelling are described in detail in Section 13 of the draft EIS. The draft EIS already contains clear commitments to minimise erosion and suspended sediment levels in site runoff in Sections 13 and 24. The requirement to control erosion and sediment in accordance with an Erosion and Sediment Control Plan prepared by an appropriately qualified person is also a requirement of the EHP model mining conditions. As discussed above, turbidity limits will be determined for releases based on further baseline monitoring and in accordance with the EHP model mining conditions.

Submitter Issue Number 24.020

The water quality of any releases of mine-affected water to North Creek should conform to the WQOs for that waterway. As the WQOs of the Burdekin Basin have yet to be scheduled under the Environmental Protection (water) Policy (2009), it will be necessary to develop locally relevant WQOs for North Creek as a basis for the REMP.

Some sampling and data collection for monitoring locations MP1 and MP2 is shown in the EIS. MP1 was the only site representing North Creek (the exact location is not shown in the EIS - Figure 13-2 of the Surface Water Chapter 13 indicates that it is slightly downstream of the confluence with Eight Mile Creek). MP2 provides data representative of the Belyando River, and appears to be the same as the proposed upstream monitoring point. Both of these sampling sites appear to be Carmichael Coal Mine sampling sites. None of the other data collected at DNRM monitoring locations (i.e. MP3 at the 120301B Belyando River at Gregory Development Road, and gauging station, MP4 on the Suttor River, MP5 at the outfall of the Burdekin Dam) can be considered suitable for the development of WQO for the receiving waters for this project. These data were

presented in summary Tables 1 & 2 in the attachments to the Surface Water chapter 13 of the EIS. Both these tables indicate that the number of samples was ≥5. This does not provide sufficient information to allow interpretation or assessment of the data. If it is possible to calculate a median, as has been presented in these tables, the number of samples represented by that statistic must be indicated.

Five water quality samples are not adequate to develop WQOs for North Creek, and that more data will need to be collected in accordance with section 4.4.3 of the Queensland Water Quality Guidelines. This would form the basis of REMP baseline data in the event that controlled releases of mine affected water to North Creek are to be permitted.

For the EIS outcome the following advice should be addressed.

Water quality

For the development of EA conditions the proponent will need to collect substantial water quality data in order to develop locally relevant WQOs for North Creek. These data should be collected in accordance with section 4.4.3 of the Queensland Water Quality Guidelines. These data will form the basis of the REMP baseline for North Creek.

For the purpose of monitoring water quality downstream of any controlled releases of mine affected water, the proponent should propose a downstream monitoring location that is:

• downstream of the upstream monitoring location MP2 on the Belyando River.

• at a minimal distance downstream of the confluence of North Creek and the Belyando River but upstream of the confluences of any other tributaries of the Belyando River (i.e. upstream of the confluence with Tomahawk Creek) or any other sources of potential dilution or contamination.

Water flow

For the development of EA conditions the proponent should collect water flow data. These data should be collected in accordance with section 4.4.3 of the Queensland Water Quality Guidelines. These data will form the basis of the REMP baseline for North Creek. The proponent will need to install a flow gauging station to measure stream flow at a suitably close location upstream of the confluence between North Creek and the Belyando River. The most suitable location is likely that currently designated as the upstream MP2 monitoring point with access via the Moray Carmichael Boundary Rd. Release to flow conditions will need to be developed with consideration of the likely cumulative impacts of releases from the Adani Carmichael project approximately 30 km upstream."

The monitoring data presented in Section 13 of the draft EIS was focussed upon the potential impacts to the Belyando River as the receiving waters for releases of mine-affected water from the project site. The draft EIS cited extensive water quality and flow data from which to derive a suitable baseline, locally relevant water quality objectives and EA discharge conditions.

As discussed in the response to issue 24.019, in response to numerous submissions the proponent has agreed to adopt North Creek as the receiving water for mine-affected water rather than the Belyando River. This change in discharge strategy was not anticipated and consequently the available water quality and flow data relating to North Creek is limited. In addition, the project site is remote and is located at the head of the North Creek catchment and experiences highly

ephemeral, short duration, surface water flows which severely limits the ability for any regular sampling of surface water flows from North Creek.

As discussed in the response to issue 24.019, the proponent is proposing to implement a baseline water quality and flow monitoring program for North Creek. The baseline monitoring program will be undertaken in accordance with the Queensland Water Quality Guidelines, prior to the commencement of the project.

Baseline water quality and flow data collected as part of this monitoring program will also be used to establish locally relevant water quality objectives for North Creek in accordance with the Queensland Water Quality Guidelines. The water quality objectives will be used in the development of site-specific EA conditions for the controlled release of mine-affected water to North Creek in accordance with the EHP model mining conditions.

The baseline water quality data (and derived water quality objectives) will also inform the REMP baseline and objectives. The REMP is described in detail in Attachment E – Additional Information on Surface Water.

The details of the proposed baseline water quality and flow monitoring programs are provided in Attachment E – Additional Information on Surface Water. Water quality and flow gauging will be undertaken on North Creek downstream of the proposed controlled release point and on the Belyando River. In order to address the specific submission requests the monitoring programs include:

- A monitoring location downstream of EIS monitoring location MP2 on the Belyando River (as shown on Figure 13-2 of the draft EIS) and a minimal distance downstream of the North Creek-Belyando River confluence.
- A flow gauging station located at EIS monitoring location MP2.

Release conditions will be developed in accordance with the EHP model mine conditions and this approach will ensure that sufficient flushing flows occur in North Creek following any discharge events and that there are no adverse cumulative impacts on downstream surface waters.

Submitter Issue Number 24.021
There is no discussion about the potential downstream impacts of controlled releases of mine-affected water.
Section 13.6.5 Controlled Releases Of Mine-Affected Water should provide specific information on the risks to downstream environmental values consequent to the controlled release of mine-affected water. There is no recognition that downstream aquatic ecosystems harboured within the "remnant pools" of the ephemeral streams ("drainage features") will potentially be inundated with comparatively saline (up to 1,500 µS/cm) water.
An assessment of impacts to downstream aquatic ecosystems should be provided including

• potential salinity of mine-affected water to be released under controlled release management strategies or the presence of the presence of any other chemicals of potential concern;
• downstream extent of any contamination;
• duration of any contamination;
• expected impact on ecological communities.

In response to issue 24.019, the proponent has agreed that discharge flows for mine-affected water releases will be based on the flows in North Creek rather than the Belyando River, as proposed in the draft EIS.

The release of mine-affected water based on flows in North Creek and the strict application of the EHP model mine conditions will ensure that sufficient flushing flows occur in North Creek following any discharge events and that there are no adverse impacts on downstream environmental values in North Creek, including aquatic ecosystems.

Submitter Issue Number 24.022
There are watercourses likely to be impacted by the proposed mining activities.
This section states that; "A water course determination was undertaken by DNRM for the project in order to identify any water courses in the study area. It determined that there are no water courses in the study area." However, that does not mean that the ephemeral streams that form the catchments of Pigeonhole-Tomahawk and North Creeks do not possess environmental values as aquatic ecosystems. The aquatic ecosystem values of these streams are clearly stated within the Appendix G and the EIS. For example:
• Figure 9 of the Cumberland Ecology Aquatic Ecology and Stygofauna Impact Assessment report (Appendix G) describes the upper tributaries of Pigeonhole Creek as being a "General Ecological Significance Wetland".
• the Cumberland Ecology Aquatic Ecology and Stygofauna Impact Assessment report (Appendix G) provides extensive evidence that the ephemeral tributaries of Pigeonhole, Tomahawk and North Creeks contained numerous remnant pools (if not flow) that persist into the dry season, and that although most dried up during the dry season, some persisted through to the end of the dry season.
• remnant pools harboured aquatic fauna, including macroinvertebrates and fish. Site A10 in the Tomahawk Creek catchment, and site A13 high up in the Pigeonhole Creek catchment harboured fish, and could be considered as refugia sites.
• Section 13.2.2 of the Surface water Chapter (Chapter 13) describes Pigeonhole Creek as a 4th order "drainage feature", Tomahawk Creek as a 1st to 2nd order "drainage feature" and North Creek as a 2nd order "drainage feature". The use of the term "drainage feature" is inconsistent with the allocation of "stream order" to the waterways in the project area.
Any management strategy that will see the controlled release of mine-affected water to any of these ephemeral streams (referred to in the EIS as "drainage features") will need to consider any potential risks to their ecological sustainability.
Although the ephemeral streams in the project area do not appear to comply with the definition for watercourses under the Queensland Water Act 2000, the risks to aquatic ecosystems within these

waterways should be considered as part of the EIS, particularly if mine-affected wastewater is to be released into these systems at times of no or low flow. Section 13 should be revised to reflect this.

The response to issue 24.019 clarifies that the draft EIS does not suggest that ephemeral creeks in the project area (and specifically North Creek) have no aquatic ecology environmental values. As acknowledged in this submission, the aquatic ecology environmental values are clearly described and assessed in the draft EIS Aquatic Ecology and Stygofauna Report (Appendix G).

Section 13.2.2 of the draft EIS states the Strahler stream order for relevant watercourses and drainage features. The Strahler stream orders have been provided in order to satisfy a requirement of the EIS TOR. The Strahler stream orders presented in the draft EIS are based upon the Geoscience Australia '1:100,000 drainage network of Queensland' dataset managed by the Department of Natural Resources and Mines (DNRM). This dataset provides Strahler stream orders for watercourses and drainage features including rivers, streams and gullies. On this basis, there is no inconsistency in the allocation of stream orders to drainage features. Nonetheless, this minor terminology issue has no bearing on the assessment of aquatic ecology environmental values in the draft EIS Aquatic Ecology and Stygofauna Report (Appendix G).

Notwithstanding, as discussed in the response to issue 24.019, the proponent has agreed that discharge flows for mine-affected water releases will be based on the flows in North Creek rather than the Belyando River, as proposed in the draft EIS. The release of mine-affected water based on flows in North Creek and the strict application of the EHP model mine conditions will ensure that sufficient flushing flows occur in North Creek following any discharge events and that there are no adverse impacts on downstream environmental values in North Creek, including aquatic ecosystems.

Submitter Issue Number 24.023

The water quality data-set for ephemeral creeks has not been used within the EIS. This data offers the best available data for the development of a baseline characterisation for the receiving environment.

Cumberland Ecology collected water quality data with respect to physico-chemical indicators, nutrients and metals / metalloids for the survey sites in the ephemeral streams in the project area. None of these data have been used in the Surface Water Chapter. However, although substantially larger volumes of data would be required to assess background water quality, the data presented in the Ecology report are extremely valuable and can contribute to the characterisation of receiving waters. This characterisation is needed to develop controlled release conditions for a release to these ephemeral systems. The only caveat on these data is the fact that they were collected from non-flowing waters, which would likely limit the usefulness of the data collected in October 2012 (post-dry season) which would not be indicative of wet-season base-flows. However, the May 2012 data (post-wet season) are likely to provide a good representation of waters flowing within these ephemeral streams at the end of the wet season.

The physico-chemical and nutrient water quality indicators collected as part of the Aquatic Ecology

surveys were not evaluated using appropriate guidelines. The ANZECC & ARMCANZ (2000) trigger (guideline) values for the protection of slightly to moderately disturbed aquatic ecosystems in Tropical Australia (Tables 3.3.4 and 3.3.5) were used, but the most appropriate source of default guideline values (nutrients and physicochemical) for the protection of slightly to moderately disturbed upland streams is Table 3.2.1a of the QWQG (DEHP 2013b). With regard to Wetlands, Table 3.2.1a of the QWQG defaults to ANZECC & ARMCANZ (2000) and Tables 3.3.4 and 3.3.5 in ANZECC & ARMCANZ (200) would be appropriate. None of these water quality data appear to have been used within the Aquatic Ecology Chapter (Section 10).
The water quality data collected in May 2012 as part of the Cumberland Ecology Aquatic Ecology and Stygofauna Impact Assessment report (Appendix G) should be used to help develop a baseline condition for the ephemeral streams in the project area.
The EIS should be amended to reflect the available data for managing controlled releases of mine–affected water to these ephemeral streams.

It is noted that while the submission initially indicates that water quality data-set for ephemeral creeks may be valuable in characterising the receiving waters of North Creek, the submission goes on to state that water quality data collected from 'non-flowing' water within remnant pools is of limited usefulness. This is consistent with the approach adopted in the draft EIS.

The submission specifically cites the data collected in October 2012 as unrepresentative of 'wet season baseflow' within the creek. In order to avoid misunderstanding, it should be noted that sampling locations and the proposed receiving waters are highly ephemeral headwaters and as such are highly ephemeral systems, with essentially no baseflow component and no sustained post wet season baseflow following rainfall events.

The submission states that the data collected in May 2012 is likely to represent flows at the end of the wet season. This data was collected approximately one month after rainfall (and two months after significant rainfall) and is therefore not representative of flowing streams. It should also be noted that these locations are extensively grazed and following the recession of ephemeral flows in these headwaters, remnant pools are an immediate focal point for cattle watering. Water quality within cattle-impacted remnant pools is therefore not representative of ephemeral flows.

Due to these limitations, the proponent has agreed to implement a baseline water quality monitoring program so that receiving water quality objectives can be calculated prior to the commencement of the project. The details of the proposed baseline monitoring program are described in Attachment E – Additional Information on Surface Water. Water quality data collected from the baseline monitoring program will be used in the development of draft EA conditions for mine water release.

The draft EIS Aquatic Ecology and Stygofauna Report (Appendix G) provides a description of the existing ecological conditions in the surface water environment. This description is supported by water quality monitoring data. These data are presented alongside water quality guideline values for illustrative purposes only. While the submission correctly notes that alternative guidelines could

have been used to support this description, this would not materially change the description of the existing ecological values.

Submitter Issue Number 24.024
Strategies should be presented for the controlled release of mine-affected water during extended rainfall events.
The need to release mine-affected water to the Belyando River catchment in the event of extended rainfall was stated in the EIS Sections 10 and 13. The EIS states that controlled releases would be conducted in accordance with the EHP's model EA discharge conditions" referring to the EHP Model Mining Conditions. The information that would facilitate the development of EA conditions is still required (see previous issues raised) and draft EA conditions still need to be presented within the EIS.
The EIS should provide information that will permit the development of EA conditions for the release of waste-waters to the environment

Refer to the response to issue 24.019 which describes the proponent's commitment to implement a baseline water quality and flow monitoring program to facilitate the development of EA conditions. Details of the proposed monitoring programs are described in Attachment E – Additional Information on Surface Water.

Amended mine affected water EA conditions are also presented in Attachment E – Additional Information on Surface Water. Additional information in relation to the proposed monitoring of mine-affected water releases is also provided in Attachment E – Additional Information on Surface Water.

Submitter Issue Number 24.025
For the EIS outcome further information is required in the form of a groundwater monitoring program.
For the development of EA conditions a map is required of all relevant groundwater monitoring bores and nominated triggers.
EHP can assist by participating in a workshop or meeting to detail the issues to be resolved. The session should involve the respective agencies with groundwater expertise for the region. "

Section 12.5 of the draft EIS and Section 9 of the draft EIS Groundwater Report (Appendix I) provide details of the groundwater monitoring program. The groundwater monitoring program has been developed by a suitably qualified person and is appropriate for detecting significant change in groundwater quality and standing water levels due to the project.

The draft EIS provides an explanation of the proposed groundwater monitoring program in relation to the wider groundwater regime, the collection and review of monitoring data, the reconciliation of the monitoring data against model predictions, and the further investigations triggered in the event that significant departures from the model predictions are observed.

Attachment 24-4 of the draft EIS presents a full list of the bores that form part of the groundwater monitoring program. Figure 12-12 of the draft EIS has been amended to show all listed groundwater monitoring program bores. The amended figure is provided in Attachment D – Additional Information on Groundwater.

As discussed in Section 12.5 of the draft EIS, the groundwater triggers will be finalised based on the outcomes of the ongoing baseline groundwater monitoring program.

Submitter Issue Number 24.026
A number of issues should be confirmed before finalising the EIS and before developing EA conditions including
• possible peer review of the groundwater modelling to confirm assumptions made and methodology used
• clearer alignment with the Carmichael Project predictions on drawdown and the proposed monitoring program as well as the cumulative impact
• groundwater flow direction
• groundwater monitoring network
• Lake Buchanan source water
The issues raised have not been adequately addressed in the proponent's response and are not finalised for the purposes of the EIS. For the purpose of the EIS outcome the dot point issues should be fully addressed across relevant agencies. Any EA conditions on groundwater issues may be developed when these issues are confirmed in consultation with Department of Natural Resources and Mines, Commonwealth Department of the Environment including the IESC.

Peer Review of the EIS Groundwater Model
There is no requirement for a peer review of the groundwater model in the EIS TOR nor is it standard practice for mining EISs. The draft TOR for the project prepared by the OCG did not include a requirement for a groundwater model peer review. The draft TOR were publicly exhibited and EHP, DNRM and DoEE were provided an opportunity to comment on the draft TOR prior to its finalisation. EHP, DNRM and DoEE's submissions on the draft TOR did not request the need for a peer review of the groundwater model for the project. In addition, all specific submission issues that were raised in relation to the draft EIS groundwater model have been responded to as part of the preparation of the Supplement. This has included discussions with the key regulatory agencies, including EHP, DNRM and DoEE. It is not reasonable to now require a peer review of the groundwater model at this stage, given that it is not a requirement of the TOR, the groundwater study has addressed the project's TOR and all specific groundwater issues that were raised by regulatory agencies have been addressed, in consultation with the agencies.

Alignment with Carmichael Coal Mine Project EIS – Drawdown Predictions
The groundwater drawdown/depressurisation predictions presented in the groundwater assessments undertaken as part of the Carmichael Coal Mine Project EIS are a function of the groundwater, geology and mine planning data available, and also the way that this information was used to construct, parameterise and calibrate the groundwater model.

The relevant hydrogeological data from the Carmichael Coal Mine Project EIS was included in the Project China Stone EIS groundwater assessment, and includes relevant geology from bore logs within the Carmichael Coal Mine site and surrounds. This initial dataset was developed with the addition of groundwater and geological data collected from the project site and surrounding area. The outcome is that the Project China Stone EIS groundwater assessment draws from a significantly larger body of data relevant to the groundwater assessment.

In developing the EIS groundwater model, the parameters used in the Carmichael Coal Mine Project EIS groundwater model were considered, along with publicly available feedback from regulators on the groundwater studies undertaken for the Carmichael Coal Mine Project.

Therefore, while it is not the responsibility of the proponent, nor is it possible based on publically available information, to conduct a detailed comparative assessment with the CCM&RP groundwater assessment, the proponent has nonetheless taken all reasonable steps to ensure alignment with, or improvement upon, the CCM&RP groundwater model and drawdown predictions.

It should be noted that the Project China Stone site and the Carmichael Mine site are located in distinctly different groundwater settings. The Project China Stone site is dominated by Darkies Range that is formed by an elevated and unsaturated outcrop of the Clematis sandstone. The site is also located at the top of the surface water catchment and has highly ephemeral drainage lines with no significant creeks or watercourses traversing the site. In contrast, the Carmichael Mine site is located in lower lying topography and is traversed by a major river and its floodplain. It is therefore not surprising that there are some differences in the groundwater impacts between the two projects.

Alignment with Carmichael Coal Mine Project EIS – Cumulative Impacts

Section 12.4 of the draft EIS explains the method of superimposition that has been used to determine the potential cumulative effects of groundwater depressurisation associated the project and the adjacent Carmichael Coal Mine. This method is widely used to determine the cumulative depressurisation effects of multiple coal mining activities. Within the Galilee Basin, the Galilee Coal Project SEIS states that the Coordinator General and DNRM endorsed this approach to cumulative impact assessment (although a lack of published drawdown contours from adjacent mines ultimately prevented its use). This method is therefore considered theoretically sound and suitable for the purposes of undertaking a cumulative impact assessment.

The depressurisation effects of the Carmichael Coal Mine were approved as part of the EIS assessment process for that project. There is insufficient publicly available information to accurately recreate the approved depressurisation effects of the Carmichael Coal Mine in the Project China Stone groundwater model. The proponent has therefore used approved maximum depressurisation contours presented in the Carmichael Coal Mine Project EIS as the basis for the cumulative groundwater impact assessment.

The draft EIS Groundwater Report (Appendix I) provides contour plans showing the maximum predicted cumulative depressurisation associated with the project and the adjacent Carmichael Coal Mine. The use of maximum predicted depressurisation for the project and the Carmichael Coal Mine represents a worst-case scenario. This ensures that the cumulative impact assessment is conservative.

Section 12.4 of the draft EIS explains that the magnitude of cumulative depressurisation at a given location corresponds to the sum of these contours.

Alignment with Carmichael Coal Mine Project EIS – Groundwater Monitoring Network

Refer to the response to issue 24.025 which describes the proposed groundwater monitoring program. This program includes offsite groundwater monitoring locations to provide additional coverage of the GAB sediments to the north, south and west of the project site and the groundwater regime in the vicinity of the Carmichael Mine.

Groundwater Flow Direction

There is no specific information provided in the submission on which to respond. Refer to the responses to DNRMs issue 41.016, 41.020 and 41.026 for a specific response to specific issues raised in relation to groundwater flow direction.

Groundwater Monitoring Network

There is no specific information provided in the submission on which to respond. Refer to the response to issue 24.025, issue 41.019 and Attachment C – Responses to IESC Advice issues 33 and 47 for specific responses to specific issues raised in relation to the groundwater monitoring network.

Lake Buchanan Source Water

There is no specific information provided in the submission on which to respond. Refer to the responses to DNRMs issue 41.016 and Attachment C – Responses to IESC Advice issue 25 for specific responses to specific issues raised in relation to groundwater interactions with Lake Buchanan.

24.2 EHP SUBMISSION ON CONFIDENTIAL BIODIVERSITY OFFSETS STRATEGY

Submitter Issue Number 24.027

Appendix H – Biodiversity Offset Strategy Section 5 – Potential Offset Properties

a) The offset areas identified on [redacted] (Property A) and [redacted] (Property B) mainly consist of regional ecosystem 10.5.1 in water remote areas. While the BTF recovery plan mentions 10.5.1 as suitable habitat, there are no BTF records from this regional ecosystem. 10.5.1 generally contains less suitable native perennial grass cover, more shrubs and is generally remote from water as most landholders do not place artificial water in paddocks containing this regional ecosystem due to the presence of heartleaf (*Gastrolobium grandflorum*)– a plant noxious to cattle. The areas of potential habitat that are presented in page 14 Appendix H Table 2 are therefore not accurate, especially for [redacted] and [redacted] (Property A and Property B).

b) The results of the EPBC Act Protected Matters Search Tool presented in Appendix A state the following:

[redacted] (Property D)

- Squatter pigeon – likely to occur
- Black-throated finch – may occur (note that the proponent's own records confirm that BTF are known to occur on this property)
- Australian Painted Snipe – may occur
- Koala –may occur
- Yakka skink – may occur

[redacted] (Property C)

- Squatter pigeon – likely to occur
- Black-throated finch – known to occur
- Australian Painted Snipe – may occur
- Koala –may occur
- Yakka skink –may occur

[redacted] (Property A)

- Squatter pigeon – likely to occur
- Black-throated finch – likely to occur
- Australian Painted Snipe – may occur
- Koala – may occur
- Yakka skink – may occur

[redacted] (Property B)

- Squatter pigeon – likely to occur
- Black-throated finch –likely to occur
- Australian Painted Snipe – may occur
- Koala – may occur
- Yakka skink – may occur

The search tool maps are indicative rather than definitive.

May occur – these are areas within a broad environmental envelop or geographic region that encompasses the probable range of the species. With sufficient reliable location points, modelling tools such as Maxent may be used to define the broad environmental envelope within which the species or its habitat may occur.

Likely to occur - these are areas of preferred habitat, within the range of the species. A conservative threshold chosen from a species modelling tool (e.g. Maxent) may be used where appropriate. The use of buffers is avoided where possible.

Presenting potential habitat as a direct offset is not acceptable. The proponent should provide proposed direct offset areas where the MNES or MSES values are known to occur. For BTF offsets the locations should be sourced from known habitat where current or demonstrated BTF records exist and within habitat that is: • Defined as high quality or quality similar to the impact area eg predominantly RE 10.5.5n or RE 10.3.6 • with low infestations of buffel grass and other exotic ground cover. EHP can assist by participating in a workshop or meeting to detail the issues to be resolved. The session should involve the respective experts on BTF habitat mapping in the region. The issues include making use of the latest knowledge on BTF ecology and the points outlined in the adjacent column including the areas of RE 10.5.1 as only being suitable habitat when they occur adjacent to large areas of RE 10.5.5 with adequate water sources in the vicinity.

24.027 a). The BOS included an assessment of four potential properties in order to demonstrate there were several options available for securing offsets for the project. The inclusion of these different properties wasn't, however, meant to detract from the fact that one property (Property C) is the most prospective. The draft EIS explained that the most prospective property has sufficient vegetation to satisfy the projects considerable offset requirements, alone. Attachment F – Additional Information on Ecology has included a revised property profile of the most prospective offset property, based on the revised BTF habitat modelling. The revised property profile demonstrates that this property will still be able to satisfy the project's offset requirements alone, even with the revised habitat definitions.

As discussed with EHP, in the unlikely event the most prospective property is not able to be secured for the project's offset requirements, one or more of the other potential properties may be used. If necessary, the suitability of RE 10.5.1 on Property A and B would be assessed as part of the development of the Offset Management Plan.

It is noted that RE 10.5.1 is listed in the species recovery plan, unrestricted. The project will disturb approximately 2,678 ha of RE 10.5.1, requiring offsets. It would be unreasonable to require offsets for the clearing of this RE, whilst not permitting this RE to be used for the provision of offsets.

24.027 b) The proponent considers it inequitable for potential offset properties to be restricted to properties containing records of threatened species, whilst requiring that impacts on *potential* habitat be offset (including potential habitat where there are no records of a threatened species) despite recent surveys. For example issue 24.005 states that "*EHP officers advise that suitable habitat is present (within the project site) for the Yakka Skink*", despite acknowledging that the Yakka Skink was not recorded during field surveys (nor was it recorded during field surveys of the nearby CCM&RP). Offsets are now being proposed for potential impacts on the Yakka Skink, despite a total lack of records of the species within the project site and surrounding area.

With respect to the BTF, the response to issue 24.011 explains that two of the four offset properties are confirmed as providing BTF habitat and there are records of the species from the

properties. The most prospective of these properties has in excess of 65,000 ha of estimated potential BTF habitat.

As discussed in response to 24.011 a), the proponent does not own any land or have agreements with any landowners regarding offset properties. As such, the draft EIS BOS (Appendix H) has conservatively assessed several properties for the purpose of demonstrating there are suitable offsets that could be provided for the project. The suitability of any of the potential properties to provide offsets for the project will be confirmed based on ground-truthed information gathered during detailed field surveys proposed to be undertaken as part of the development of the Offset Management Plan for the project. These surveys may confirm the presence of various threatened species, as well as assessing the quality of vegetation and habitat. This approach is consistent with precedent set by the recent EPBC Act approval for the South Galilee Coal Project (issued in July 2015).

PROJECT CHINA STONE
RESPONSE TO QUEENSLAND HEALTH SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

25 QUEENSLAND HEALTH SUBMISSION

Submitter Issue Number 25.001
Drinking water: Describe where drinking water will be sourced from, treated and how it will be stored. Describe details of a drinking water quality sampling and monitoring program for potable water.

As stated in Section 4.8.5 and 13.5.2 of the draft Environmental Impact Statement (EIS), potable water will be sourced as part of the external raw water supply for the project and treated on-site. On-site package water treatment plants will be installed at the mine industrial areas and at the accommodation village in accordance with relevant standards and regulatory requirements. Water quality sampling and monitoring programs will be developed as necessary to comply with regulatory requirements and to protect the integrity of potable water supply on the site.

Submitter Issue Number 25.002
Disease vectors: The disposal of liquid wastes or contouring of the ground should not allow ponding of water or other liquids, which are likely to provide a breeding site for mosquitoes. A mosquito management plan may be desirable should a nuisance exist on site.

The Preliminary Hazard Analysis presented in Table 22-5 of the draft EIS identifies possible avenues for disease vectors to be a potential hazard on the site and provides an assessment of the possible consequences. With the proposed risk control measures that will be put in place to reduce the risk of this becoming an issue on the site, it has been assessed as a low risk.

Submitter Issue Number 25.003
Workforce accommodation camp/s: Outline detail about the provision of food to the construction workforce.

Food management at the accommodation village will comply with all relevant legislative requirements. Further detail is beyond the reasonable scope of the draft EIS.

Submitter Issue Number 25.004
Workforce accommodation camp/s: Provide detail on the accommodation village, and if this will be included as a sensitive receptor.

Sections 4.3.5 and 4.4.6 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N) describe the workforce accommodation for the construction and operations phases of the project.

In accordance with the Department of Environment and Heritage Protection Model Mining Conditions, the on-site accommodation village is not considered to be a sensitive receptor and has, therefore, not been included in the assessment of residential amenity impacts described in the draft EIS. However, the health and wellbeing of workers staying at the accommodation village has been considered and is discussed in Section 22.3.3 of the draft EIS.

Submitter Issue Number 25.005
Workforce accommodation camp/s: Provide the frequency of turnover of workers (ie. shift rotation) at the accommodation village.

As stated in Section 4.3.3 and 4.4.3 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), the construction and operations phase workforces are anticipated to operate on a 7-day-on/7-day-off roster arrangement.

Submitter Issue Number 25.006
Health services: Outline the health services that are likely to be affected and the impact of these services on neighbouring communities / towns. The number of employees involved in the construction and future operation of the project has the potential to impact on the existing health, medical and community health services.

As stated in Section 4.4.6 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), employees will access the following on-site health services:

- A permanent sick bay with 24/7 nursing staff;
- Registered nurse(s) able to dispense and administer prescribed drugs and to handle all restricted pharmaceutical items;
- A link to an internet medical service and a relationship and agreement with emergency air services (Royal Flying Doctor Service);
- Firefighting, rescue and emergency services to serve the mine, the village and the airport;
- Mine security and safety services to provide on-site security and policing services; and
- A working relationship and agreements with the local police force for major security and or safety issues.

Employees and their families will also continue to access health services in their respective home base locations during rostered time off. The potential for project induced population growth in home base locations has been assessed in the draft EIS and is considered unlikely to be a significant impact. However, as shown in Table 27 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), the proponent has committed to monitoring potential impacts in home-base locations including through engagement with service providers.

Submitter Issue Number 25.007
Air Quality: Provide details of the air monitoring and measuring programs to be conducted during construction and the operational phases of the project, particularly at sensitive receptor locations.

Section 15 of the draft EIS and the draft EIS Air Quality Report (Appendix L) assess the potential air quality impacts of the project during the construction and operations phases. This technical assessment confirms that the project has a low potential for adverse air quality impacts. This is largely due to the considerable distances to the closest sensitive receptors, the closest of which is approximately 7 km from the project site and only four of which are located within 20 km of the project site. As impacts are predicted to be low, any potential air quality issues that arise during the construction and operations phases are proposed to be managed through a complaints handling process. This process will include an investigation into the complaint and air quality monitoring, if necessary.

Submitter Issue Number 25.008
Recycled Water: Provide detail on any water that is intended to be recycled on-site.

Section 13.5 and Figure 13-9 of the draft EIS provide an overview of the water management system proposed for the project. This includes identifying the following supplies/sources to reuse water on the site:

- Water from underground operations;
- Tailing Storage Facility return water;
- Power Station Waste Storage Facility runoff ;and
- Runoff from the mine infrastructure areas.

Water that is reused on the site is predominantly used in the Coal Handling Preparation Plant or for dust suppression.

PROJECT CHINA STONE
RESPONSE TO ISAAC REGIONAL COUNCIL SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

27 IRC SUBMISSION

Submitter Issue Number 27.001
The ammonium nitrate storage area is in close proximity to the rail line, mine access road, and in the vicinity of the Airport. In the event of an explosion caused by the ammonium nitrate storage area, its location and the potential blast radius may put employees at serious risk and hinder emergency vehicle access.
Relocate the ammonium nitrate storage area to a location where the risk from a potential blast is minimised.

To clarify, the ammonium nitrate storage area is located approximately 1.2 km from the mine access road and rail line and is more than 2 km from the airstrip at the closest point.

The storage of explosives on mine sites is regulated under the *Explosives Act 1999* and the *Coal Mining Safety and Health Act 1999*. The storage areas will be designed, constructed and operated in accordance with all applicable legislative requirements. These requirements are designed to identify and manage the potential risks including any risks to employees and emergency vehicle access in the event of an emergency.

Submitter Issue Number 27.002
(Project need Executive Summary p1) “the long term forecast is for demand to remain strong, particularly in Asia” – A$140 to A$63 since 2011 “recent softening”?
According to the International Energy Agency 450 scenario in World Energy Outlook 2014, there is a projected 35% reduction in global thermal coal usage over project life (2040). How is the strong demand for this project consistent with IEA projection?

Due to the wide range of complex factors that can influence the global coal market, it is not surprising that long term forecasting of demand and pricing has commonly been proven to be unreliable and inaccurate. Over the past 5 years the thermal coal price has varied from AUD$126 (per metric ton) in October 2011 to AUD$131 in October 2016, with a low of AUD$71 in April 2016 (IndexMundi, 2016). This variation in prices and the recent return to prices above AUD$100 per ton, are indicative of fluctuations in the thermal coal market. These fluctuations would be expected to occur over the 50 year life of the project, and were discussed in the assessment of economic impacts described in the draft Environmental Impact Statement (EIS) Socio-Economic Impact Assessment Report (Appendix N). It is noted the reduction in the coal price during this period was not related to demand. The drop in coal price was related to an oversupply rather than a reduction in demand.

There are many different predictions of the future demand of thermal coal. Despite the variation in the actual forecast numbers, demand for thermal coal is forecast to continue, particularly in Asia and India.

Submitter Issue Number 27.003
Off-lease infrastructure not included – port capacity, rail connection to port, mine site access road and water supply. What potential impacts on Isaac Regional Council and IRC area?
Further consultation with IRC/CTRC as project progresses

As explained in Section 4.2 of the draft EIS, the off-lease infrastructure listed in this submission will be subject to separate environmental assessments and approvals.

These separate environmental assessments and approvals will evaluate the impacts on the Isaac Regional Council (IRC) and land within the IRC area and will include consultation between the respective proponents for this infrastructure and the IRC and the Charters Towers Regional Council (CTRC), as relevant.

Submitter Issue Number 27.004
A workforce accommodation village will be located in the south-eastern part of the project site.
Detailed design of civil works for service road, pathway, stormwater infrastructure, sewer and water infrastructure must be provided including but not limited to the following:
1.Stormwater management plan
2.Erosion and sediment control plan
3.Site based management plan

Detailed design plans and related management plans for civil works within the mining lease would be provided to the IRC, as necessary, prior to the commencement of construction as part of any IRC building approvals that are required.

Submitter Issue Number 27.005
Power station – 3x350MW (1 standby) yet Moray Power at Carmichael start at 150MW. This appears to be a significant difference in power needs or supply.
Please clarify if there is any intent to export power to other users or indicate if this misunderstanding on our part (700MW x 40% = 280MW, say almost 5% of Queensland coal generating , see http://www.nem-watch.info/widgets/RenewEconomy/)

In regards to the capacity of the power station, it is proposed to have 3 x 350 MW supercritical generating units, which will provide a sufficient guaranteed supply for the potential peak power demand of the mine. 350 MW generating units are proposed in order to enable maximum thermal efficiency, consistent with best practice. Peak mine power demand is estimated to be equivalent to approximately 400 MW.

Project operations during peak power demand will include the operation of:

- Open cut mine at peak production having two separate pits using:
  - Two large scale draglines; and
  - In-pit crushing and conveying (supplemented by truck and shovel), to transport overburden to waste dumps and Run-of-Mine (ROM) coal from open cut mining areas to the washplant.
- Three longwalls;
- 55 Mtpa raw coal feed washplant; and
- Other associated facilities such as workshops, workforce accommodation village and supporting infrastructure.

A single generating unit will have a net 325 MW of available power and hence two generating units will need to be operational for the peak mine demand. The third generating unit provided will be provided as redundancy. Due to the remote location of the project site, the power station is required to have redundancy to ensure a continuous, reliable power supply for mining operations.

The proponent is not seeking approval for any off-site provision of power supply to other users. However, this is a potential option for the future and the proponent is currently investigating the feasibility of this option. Additional power generation could be achieved by the construction of additional generating units and/or utilisation of any redundancy which would be determined in the future and based on the performance of the mine generating units. As part of the ongoing assessment of the feasibility of off-site power supply, the proponent is consulting with a range of potential power supply customers and relevant government agencies. Should off-site power supply be determined to be feasible and economically viable in the future, this would be subject to separate environmental assessment and approvals.

Submitter Issue Number 27.006
Proponent to seek up to 12,500 MLpa external supply from third party.
Further consultation with IRC/CTRC as project progresses to assess other potential water users and to assess expected total yield from each of the possible sources

Refer to response to issue 27.003.

Submitter Issue Number 27.007
50 year climate sequences based on 124 years of historical records. EIS suggests 1-7% reduction in rainfall and runoff offset by greater number of extreme rainfall events.
Please clarify how these projected rainfall reduction and temperature/evaporation increases due to climate change over project period are offset.

The point being made in Section 13.5.7 of the draft EIS is that climate change predictions indicate a reduction in average rainfall as well as an increase in extreme events like cyclones. A reduction

in average rainfall would result in a decrease in the accumulation of mine water whereas an increase in the frequency of extreme events including cyclones would result in an increase in the accumulation of mine water. Regardless, the design of the mine water management system is robust and these changes would not impact the effective operation of the system.

Submitter Issue Number 27.008
Proximity of accommodation village to airstrip QDCMP3.3 – is airstrip industrial/development activity?
Provide ANEF contours and explain acoustic design of accommodation village

Aircraft noise is discussed in Section 16.6.7 of the draft EIS and Section 4.9 of the draft EIS Noise Report (Appendix M). The accommodation village will comprise air conditioned units that are unlikely to be adversely impacted by external noise. The detailed design process for the accommodation village will consider the need for acoustic insulation and it will be included in the design of accommodation units, if deemed necessary. This has been included in Attachment I – Additional Commitments.

Submitter Issue Number 27.009
It is uncertain whether the studies that were done in terms of the detailed noise assessments for this development included the impacts on the proposed workers accommodation that will from part of the mining operation (and that will be in close proximity to it). It may be assumed (or not) that this is the case.
The study conducted for the development does not clearly indicate the effects of the noise resulting from the mining operations, construction noises, road traffic and aircraft noises (associated with the nearby landing strip in the latter case) and blasting impacts will have on the workers accommodation that forms part of this proposed development which is also a residential receptor). It is stated in the *Hazards and Risks* section that there will be no negative impacts in this regard on the workers accommodation. This will need to be clearly indicated as well, as well as mitigating.

In accordance with the Department of Environment and Heritage Protection (EHP) Model Mining Conditions, the on-site accommodation village is not considered to be a sensitive receptor and has, therefore, not been included in the assessment of residential amenity impacts (such as noise) described in the draft EIS.

However, as described in Section 22.3.3 of the draft EIS, the health and wellbeing of workers staying at the accommodation village has been considered. The accommodation village will house workers for the duration of their block shift and will primarily be used for workers to rest and sleep between shifts. At the end of their block shift, workers will return home to their normal place of residence. The accommodation village will therefore be mostly used for sleeping, eating and relaxation activities predominantly within air conditioned rooms with closed windows. The air conditioned nature of the accommodation village facilities will prevent any impacts on the village occupants due to noise from the mining operations. The installation of air-conditioning is a well-established and effective means of mitigating noise impacts due to external industrial noise levels

on the occupants of the village. In addition, it is noted that the predicted external noise levels at the accommodation village are well below accepted Occupational Health and Safety levels for hazardous exposure, which are more than an order of magnitude above the residential amenity criteria.

Submitter Issue Number 27.010
Modelling conducted in June 2014, Table 3 in Appendix N suggests coal price of A$93.50. Is that correct and if so, mine gate or FOB Abbot Point? According to World Bank, Newcastle Coal in June 2014 was US$76, Jul 2015 US$63. What is the basis of the coal price forecasts?
What is the impact of significantly lower coal prices over the project life?
The EIS relates only to the proposed mine. Please clarify if the operating costs used in the financial analysis include the costs of accessing the third party infrastructure

Refer to response to issue 27.002.

The draft EIS has assumed the income from the sale of coal is AUD$93.50 per metric ton and is FOB. This coal price is considered representative of the fluctuations that would be expected to occur across the 50 year project life and, as such, is not necessarily tied to the year the modelling was conducted. To further elaborate, the income from coal sales is also directly related to the exchange rate ($US/AUD) which adds to the complexity and uncertainty of future long term income predictions.

The operating costs used in the financial analysis included the costs of transport using third party infrastructure.

Submitter Issue Number 27.011
Project is FIFO, further consultation with IRC to determine how to maximise local and regional benefits

The proponent is committed to continuing consultation with key stakeholders, including the IRC in relation to the management of social impacts of the project. In particular, as discussed in Section 24, Attachment 24-2 of the draft EIS, the proponent will consult with local governments in the home base locations regarding project labour sourcing strategies and the management of project induced population growth. The proponent has also committed to developing a Local Content Plan in consultation with the IRC (and other relevant parties) which aims to assist local industry and businesses to develop appropriate capabilities to tender for procurement opportunities and inform local industry of opportunities.

Submitter Issue Number 27.012

The proposal identified only key Council roads used by project traffic in the phase of construction &operation. E.g. Elgin Moray Road &Moray Carmichael Road.

It appears that construction materials are hauled through various council maintained roads.

No Council maintained roads are used as haul routes without a prior approval of Council and consequently infrastructure maintenance agreement must be entered between Council and the Project Proponent.

Restricted to use only approved haul routes in the phase of construction and operation.

As indicated in Section 19.2.3 of the draft EIS, the delivery of construction materials are anticipated to be via Moray-Elgin Road and Moray-Carmichael Road. IRC approvals for use of these roads for the delivery of construction materials will be obtained, as necessary. The proponents intention to consult with the IRC in relation to Council road issues is stated in Section 19.2.11 of the draft EIS.

Submitter Issue Number 27.013

Overlap in the usage of Council roads between Adani & China Stone Project. Adani is in the process of design and construction of Council Roads (Elgin Moray Road &Moray Carmichael Road). The impact of China Stone Project also to be incorporated in design and construction.

Consultation must be taken place with Adani to incorporate the impact of China Stone Project on Council roads and this must be reflected in the infrastructure agreement.

As discussed in Section 19.2 of the draft EIS, a new mine access road will be constructed from the Moray-Carmichael Road which will require a separate IRC approval. As discussed in Section 19.2.11 of the draft EIS, the proponent is proposing further consultation with the IRC in relation to the new mine access road and the location and design of the intersection with Moray-Carmichael Road. As explained in Section 4.13.5 of the draft EIS, any work on Moray-Carmichael Road by Adani is likely to completed prior to the commencement of construction of the project.

Submitter Issue Number 27.014

The mine site will be accessed through proposed mine access road from Moray Carmichael Road. It is unclear about the alignment of the access road. The alignment might affect crossing local roads, drainage features, private properties, etc.

The alignment and detailed design of mine access road and intersection with Moray Carmichael Road must be provided to Council for approval.

The need for a separate approval for the new mine access road is acknowledged in Section 19.2 of the draft EIS. The detailed design of the road and intersection will be submitted to the IRC as required for the approval application.

Submitter Issue Number 27.015
Road impact assessment was done only for State Controlled Roads where as Council maintained roads will be used as haul routes including Elgin Moray Road &Moray Carmichael Road and has impact.
Be advised that Gregory Development Road/Elgin-Moray Road intersection must be upgraded with high turn treatments considering the impact of all activities undertaken by both Adani and China Stone Project.

The draft EIS Road Impact Assessment (RIA) (Appendix O) includes project traffic estimates for the Council Roads and assessments of the Council road intersections.

The assessment of the Gregory Developmental Road/Elgin Moray Road intersection presented in the RIA includes consideration of traffic generated by the Carmichael Coal Mine and Rail Project (CCM&RP) in addition to Project China Stone.

Submitter Issue Number 27.016
This analysis identifies that channelized right turn (CHR) and basic left turn (BAL) treatments are required at the Gregory Development Road/Elgin-Moray Road intersection prior to construction operations.
Be advised that Gregory Development Road/Elgin-Moray Road intersection must be upgraded with high turn treatments considering the impact of all activities undertaken by both Adani and China Stone Project.

As noted in Section 19.2.5 of the draft EIS, the upgrade of the intersection to include protected turn lane treatments is required as part of the development of the CCM&RP, which will precede the development of Project China Stone.

Submitter Issue Number 27.017
It is noted that future rail line from mine site to Abbot Point Coal Terminal will be constructed & subject to a separate environmental impact assessment and approval.
Rail Manager must undertake and obtain approval for ALL statutory requirements of the Transport (Rail Safety) Act 2010 and any other applicable legislation in relation to construction, use and management of crossings (road, major and minor drainages and occupational). Those requirements include the preparation of interface agreements for the management and maintenance of crossings.

The submitter correctly states that the future rail line from the mine site to the Abbott Point Coal Terminal is not part of this draft EIS and will be the subject of a separate environmental impact assessment and approval.

Submitter Issue Number 27.018

It is noted that a private airstrip will be constructed in the southern part of project site for the transport of the mine workforce and materials.

The airstrip and all associated and necessary navigational aids and operational infrastructure must be designed, constructed and maintained at all times to comply with all relevant and applicable Federal and State aviation legislation, regulations, guidelines and design standards. A development application must be lodged for approval along with the detailed design.

As stated in Section 24, Attachment 24-2 of the draft EIS, the private airstrip will be designed, constructed and operated in accordance with all relevant Civil Aviation Safety Authority regulations and guidelines. All necessary approvals will be obtained for the airstrip, as required by law.

Submitter Issue Number 27.019

It is identified that water supply to the project site is through water harvesting system from Cape River/Belyando River/Suttor River Systems.

Hydraulic analysis is to be carried out to determine the demand of project site. Detailed design of water harvesting system must be provided as part of Environmental Impact Assessment and obtain approval.

Detailed design drawings must include, but not limited to the following in accordance with WSA 03-2002 (Water -Note : words missing from submission)

The raw water demand for the project site is discussed in Section 13.5.5 of the draft EIS. Note that MacMines is not the proponent for the development of the off-site water supply and is not seeking approval for this infrastructure. Refer to response to issue 27.003.

Submitter Issue Number 27.020

"The field inspection team located one site which was identified during the desktop review and the initial consultation. The site was subject to an assessment of significance, and was assess as having no nation, state or local heritage significance."

It is suggested that the location that was initially deemed to have cultural significance been identified, as well as the methods and reasoning behind it no longer holding that classification.

This quote is from Section 20.3.5 of the draft EIS, which provides a high level summary of the results of the cultural heritage assessment undertaken for the project. Further detail is provided in Sections 4.3 and 5.2.1 of the draft EIS Non-Indigenous Cultural Heritage Report (Appendix P) which explain the nature of the site and the methods and reasoning behind the assessment of significance and the conclusion the site did not have national, state or local heritage significance.

Submitter Issue Number 27.021

"The health and wellbeing of workers staying at the accommodation village has been considered … primarily used for workers to rest and sleep". The proximity of the airstrip to the accommodation village poses a high risk to the village in terms of providing a quiet dust free area for workers to rest.

Vast mitigation techniques will need to be implemented to ensure that sound and dust are not detrimental to the main purpose of the accommodation village.

Please refer to response to issue 27.009.

Submitter Issue Number 27.022

"Providing an adequate an accessible water supply for firefighting purposes" Water supply is a massive issue in this region, how is this expected to be achieved, what amount of water would be deemed sufficient for this purpose.

Further information is to be provided to ensure the safety of the project.

As indicated in Section 13.5.5 of the draft EIS, the proponent is proposing to secure an external raw water supply of up to 12,500 MLpa. As is standard practice and as required by mine safety regulations, dedicated and suitably sized fire water tanks will be required to be installed at the various mine facility areas. These tanks will be filled from the project raw water supply.

PROJECT CHINA STONE
RESPONSE TO MACKAY CONSERVATION COUNCIL SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

28 MACKAY CONSERVATION COUNCIL SUBMISSION

The following responses are provided for issues that were identified by the Office of the Coordinator General as requiring a response. Other issues raised within the submission were identified by the Office of the Coordinator General as requiring noting by the proponent.

Submitter Issue Number 28.009

• Impacts on pollution of groundwater from the fly ash wastes from the conventional coal-fired power plant is said to be negligible even though heavy metals and radioactive contaminants "radionuclides" are in the waste.

A new Duke University-led study has revealed the presence of radioactive contaminants in coal ash from all three major U.S. coal-producing basins.

The study found that levels of radioactivity in the ash were up to five times higher than in normal soil, and up to 10 times higher than in the parent coal itself because of the way combustion concentrates radioactivity.

The finding raises concerns about the environmental and human health risks posed by coal ash, which is currently unregulated and is stored in coal-fired power plants' holding ponds and landfills nationwide.

"Until now, metals and contaminants such as selenium and arsenic have been the major known contaminants of concern in coal ash," said Avner Vengosh, professor of geochemistry and water quality at Duke's Nicholas School of the Environment. "This study raises the possibility we should also be looking for radioactive elements, such as radium isotopes and lead-210, and including them in our monitoring efforts."

Radium isotopes and lead-210 occur naturally in coal as chemical by-products of its uranium and thorium content. Vengosh's research team revealed that when the coal is burned, the radium isotopes become concentrated in the coal ash residues, and the lead-210 becomes chemically volatile and reattaches itself to tiny particles of fly ash. This causes additional enrichment of radioactivity in the fly ash.

"Radioactive radium and lead-210 ends up concentrated in these tiny particles of fly ash, which though individually small, collectively comprise the largest volume of coal ash waste going into holding ponds and landfills," said Nancy Lauer, a Ph.D. student in Vengosh's lab who was lead author of the study.

We note that a small set of fly ash samples were tested for thorium and uranium in the lab but not for other radioactive radium isotopes such as radium isotopes and lead-210 which are not proposed to be monitored nor modelled as to their downstream rates of movement in groundwater. As heavy metals do not biodegrade and radioactive contaminants can be extremely long-lived, stating that leakage rates from the burial sites are low is meaningless for a coal mine that will operate for many decades. What will the cumulative concentrations be in the groundwater

downstream from the in the Belyando River then the Burdekin River and finally the Great Barrier Reef be from the nine proposed Galilee Basin coal mines in 100 or more years? That is what needs to be known before approval of such massive mines proceeds.
Fly ash will be trucked to the PSWSF so there is likely to be a large amount of it deposited on soils between the power station and the temporary storage area then the PSWSF and finally the open cut mine overburden emplacement. Rainfall will allow this waste to percolate into the soil and groundwater or runoff into tributaries of the Belyando River then downstream.

The draft Environmental Impact Statement (EIS) Groundwater Report (Appendix I) includes an assessment of all potential sources of groundwater contamination. In addition, Section 6.5 of the draft EIS Geochemistry Report (Appendix D) considered the potential for radioactive elements to be present within coal ash. Screening level analysis was undertaken as part of the draft EIS and radionuclide activities for gross alpha and gross beta (and potassium-40 corrected beta) were found to be less than the laboratory limit of recording. These results were also supported by levels of soluble uranium and thorium concentrations in bottle leachate from the coal ash sample that were also below the laboratory limit of recording. As the screening levels are very low, it is not necessary to undertake a detailed radionuclide assessment for the coal ash sample or to further consider radioactive elements as a potential contaminant.

Submitter Issue Number 28.010
9.5.5 Groundwater-dependent Ecosystems (GDEs)
The potential for GDE to be present within the project site was reviewed, with the review consisting of:
• A search of the Queensland springs database
• A search of the BOMs GDE Atlas
• Groundwater field investigations as described in the Groundwater Report (Appendix 1)
A search of the Queensland springs database indicated that no springs are located within the project site. The nearest springs are approximately 22km south of the southern boundary of the project site (Figure 9-1). BOM GDE mapping show that there are several potential GDE's in the project site
Section 12 – Groundwater provides an overview of the regional hydrogeology and water bearing strata within the project site. As indicated in Section 12 – Groundwater, there is no shallow groundwater within the project site. In the elevated Darkies Range, groundwater is typically more than 100m below ground. In low lying areas, east of Darkies Range, groundwater is at least 25 m below ground level and disconnected from the surface water features. Given the lack of shallow ground water BOMs GDE mapping of the project does not appear consistent with the hydrogeological setting of the project site. In addition, the vegetation survey did not identify any areas of vegetation that would appear to be dependent on groundwater. Consequently it is concluded that there are no GDEs in the project site
Given the above information from the EIS why did BoM map the presence of groundwater dependent ecosystems within the project site? Are there shallow ephemeral groundwater systems that come and go in larger Wet Seasons that GDE's depend on? This is semi-arid country where some plant species only grow in major La Niña years and can take 200 years to reach maturity as

they 'hibernate' in between.
We know that bird species like the cotton pygmy goose prefer to nest in ephemeral wetlands created in large Wet Seasons along rivers.

Government mapping is based on general features of the landscape, not ground-truthed data. It is accepted practice that information from field surveys is used to provide verification (or otherwise) of Government mapping.

Please also refer to response to issue 41.030 which provides a detailed response regarding the groundwater investigations that confirmed a lack of shallow groundwater on the project site and provides further explanation of the basis for the assessment that GDEs are not present within the project site.

Submitter Issue Number 28.016 and 28.017
Semi-arid areas need at least 10 years of seasonal fauna surveys to cover the range of climate variability found among years and seasons if the intent is to provide a comprehensive and representative record of which species are present under the variety of conditions found in such landscapes. Much of that variability is due to rainfall.
The closest BoM rainfall station with long-term records is 80km to the east of the proposed China Stone mine site 1km from Belyando Crossing at Mt. Douglas. Monthly rainfall in May 2012 was above the average and median values (Fig.1) See Submission - Fig. 1: 2012 Monthly rainfall (mm) at Mt. Douglas compared to mean and median values. But there was no rain in May until May 25 the last day of the survey (Fig.2). See Submission - Fig. 2 Daily rainfall (mm) at Mt. Douglas in May 2012. Rainfall for preceding months January through April were above or at the average values indicating wetter conditions. Monthly rainfall in October and November 2012 was zero for both months so was well below the average and median values. Except for September the preceding months from June through August may have had little to no rain as well. There was no data for June and July. June through October 2013 had no rain (Fig. 3). See Submission - Fig. 3 2013 Monthly rainfall (mm) at Mt. Douglas compared to mean and median values.
Flora and fauna surveys for the 22nd October through 9th November in 2012 and 14th through 20th October 2013 were done under very dry conditions. There were no surveys Dec through April (Wet Season) or June through August (winter).

Field surveys were undertaken in accordance with the EIS Terms of Reference (TOR) and used appropriate survey methodologies. This methodology is conservative in that it doesn't rely solely on records from field surveys to assess likely presence of species.

It is noted the May 2012 surveys were undertaken following a period of substantial rainfall, which is considered likely to have prolonged the wet season in 2012. The site was inaccessible in the preceding period before the May 2012 surveys due to the substantial rainfall across the site.

Submitter Issue Number 28.020
The potential impact on habitat connectivity has also been considered in relation to the cumulative impacts from the project and the CCM&RP, located adjacent to the project site. Figure 9-8 shows the proposed location of clearing associated with open cut mining and mine infrastructure development for the project and the CCM&RP. Key factors to be considered in assessing this impact are that the open cut mining/mine infrastructure footprints for these two projects are approximately 10 km apart, leaving a large corridor of remnant vegetation between the cleared areas. This will allow for continued movement and dispersal opportunities.

Noted.

Submitter Issue Number 28.021
What is not addressed is the need for north south connectivity, especially in light of climate change when wildlife will need to move south as latitudes rise in temperature. The China Stone project in conjunction with other planned projects along the Belyando River, which runs from the south to the north, will have a massive impact on wildlife connectivity and the resilience of the native vegetation and communities in this river basin.

Section 9.6.2 and Figure 9-8 of the draft EIS include an assessment of the potential impact on habitat connectivity.

Submitter Issue Number 28.036
7. Air Quality
All we got was information about standards and total emissions. This does not explain the level of impacts which is what an EIS should do.

Section 15 of the draft EIS and Section 6 of the draft EIS Air Quality Report (Appendix L) provide a detailed assessment of air quality impacts from the project.

Submitter Issue Number 28.037
At present the site is 20,000ha of well vegetated land. The mine will produce 55 Mtpa of ROM coal with up to 38 Mtpa of that to be exported.
The Katestone report appendiced in the EIS states that nitrogen dioxide, fine dust particulates and greenhouse gases will be the main sources of emissions from the project. It appears that diesel emissions which generally are high because of the combustion of diesel fuels on mine sites are not addressed. This is of concern because diesel emissions are carcinogenic.
""Most of the data in the world relates to occupational exposure, such as diesel equipment in mines, or transport, particularly railway workers, exposed to diesel,""
Australian Cancer Council CEO, Professor Ian Olver (2012)
Current scientific evidence links short-term NO2 exposures, ranging from 30 minutes to 24 hours, with adverse respiratory effects including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Emissions that lead to the formation of NO2 generally also lead to the formation of other NOx. Ozone is formed when NOx and volatile organic

compounds react in the presence of heat and sunlight. NOx react with ammonia, moisture, and other compounds to form small particles. These small particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death.

The draft EIS Air Quality Report (Appendix L) predicts the maximum 1 hour and annual average ground–level concentrations of NO_2 (including background levels) will be well below the relevant air quality objectives at all sensitive receptors.

Submitter Issue Number 28.038
Current advisories and standards do not account for the impacts on health of temperature inversions that increase emission concentrations downwind of emission sources. These are more common in winter especially close to elevated areas such as nearby ranges and mountains. We know of at least one recurrent problem with this issue at Collinsville coal mine next to the township of Scottville where emissions meet state guidelines and standards from a burning coal seam at the source but where some residents of Scottville suffered respiratory distress because of high particulate concentrations at their homes during weather conditions likely to cause a temperature inversion and where north winds blow emissions from this burning seam into Scottville in winter.
North winds would similarly blow emissions from the coal-fired power station at China Stone (5.5 km) and the coal stockpiles (2 km) directly towards the accommodation village and under temperature inversion conditions these emission concentrations would rise.
The World Health Organisation and the Australian government acknowledge that there is no known threshold below which dust particulate concentrations cause no harm to human health.

The assessment was undertaken in accordance with the EIS TOR and applicable regulatory requirements. Both the TAPM and CALPUFF models used in the draft EIS Air Quality Report (Appendix L) include the effect of temperature inversions.

Submitter Issue Number 28.040
The scope of the Katestone consultant's report Air Quality and Greenhouse Gas assessment is restricted to activities within the project site and no off lease activities are considered. Fine dust particulates can travel hundreds to thousands of kilometres downwind of their emission sources, and data from NPI records we have analysed for Bowen Basin mines suggests there are possibly downstream impacts at least within a 20km and 10 km radius of those coal mines from fine particulate and heavier PM10 emissions respectively.

The modelling undertaken for the project predicted potential air quality impacts at sensitive receptors (i.e. beyond the project site boundaries). Any dust generating activities associated with off-lease infrastructure required for the project will be assessed in separate environmental assessment applications for the respective infrastructure.

Submitter Issue Number 28.042
The Katestone report focuses on PM10 emissions as these are generally in larger amounts from coal mining operations than finer < PM 2.5. But these sized particulates travel much farther than PM10 particulates, are more harmful and large amounts will be produced over the mine and power station's lifetime. So their impacts need monitoring and assessment within and well outside the mine's boundaries.

Section 15 of the draft EIS and the draft EIS Air Quality Report (Appendix L) includes predictions of the maximum 24 hour average and annual average ground-level concentrations of $PM_{2.5.}$

Submitter Issue Number 28.043
The PM2.5:PM10 ratio is much larger for particulate emissions from coal-fired power plants and this does not seem to have been taken into account in the EIS in terms of large impacts from fine particulates on health.

Emission rates of air pollutants associated with the power station were estimated using a combination of analysis of samples of the feed coal, accounting for the proposed emission control measures, relevant emissions limits and emissions factors published in the NPI EET handbook for fossil fuel electric power generation.

Submitter Issue Number 28.044
Residual combustion emissions from the coal-fired power plant including heavy metals, particulates, oxides of sulphur and nitrogen and carbon monoxide will be discharged via a tall smoke stack apparently in the belief that the solution to pollution will be dilution as the tall stacks spread the pollutants far and wide. Over time this approach in the Four Corners area of the United States has produced a toxic haze that has damaged ecosystems, impaired the health of indigenous Navajo and diminished air quality in the Grand Canyon.

Section 3.2 of the draft EIS Air Quality Report (Appendix L) includes an assessment of the relevant air quality parameters associated with emissions from the power station stacks.

Submitter Issue Number 28.048
Increase in sediment deposition in the Burdekin Falls Dam

Section 13.2.3 of the draft EIS describes the water use and environmental values downstream of the project site including the Burdekin Falls Dam. Section 13.6 of the draft EIS includes an assessment of potential impacts downstream, including sediment control.

Submitter Issue Number 28.049
Sediment deposition in the Burdekin Falls Dam impacting on fill time of dam

Refer response to issue 28.048.

Submitter Issue Number 28.050
Concentrations of toxic non-biodegradable contaminants occuring in sediments in the Burdekin Falls Dam

Refer response to issue 28.048.

Submitter Issue Number 28.052
The EIS is very sparse on how it can meet its rehabilitation objective. As many thousands of hectares of original native ecosystems providing habitat for many thousands of species will be cleared and permanently lost this project presents a great and unwanted loss to central Queensland at a time where its justification is unwarranted and its benefits to the state and its citizens appear dubious and unproven.

Rehabilitation of mines in Queensland is regulated by conditions outlined in an Environmental Authority (EA) that is approved by the Department of Environment and Heritage Protection (EHP). The draft EIS Attachment 24-3 includes rehabilitation goals, objectives, indicators and completion criteria that were developed in accordance with the EHP Guideline *Rehabilitation Requirements for Mine Resource Activities.* This table is typically used as a basis for the rehabilitation conditions in an EA and is refined, as necessary, prior to the finalisation of the EA, to the satisfaction of the EHP. The project mining lease cannot be relinquished until these agreed rehabilitation completion criteria are met to the satisfaction of the EHP.

PROJECT CHINA STONE
RESPONSE TO PROTECT THE BUSH ALLIANCE SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

29 PROTECT THE BUSH ALLIANCE SUBMISSION

The following responses are provided for issues that were identified by the Office of the Coordinator General as requiring a response. Other issues raised within the submission were identified by the Office of the Coordinator General as requiring noting by the proponent.

Submitter Issue Number 29.004
The damage to the landscape of Queensland will be irreversible and critically we note, the 'offsets' for China Stone are commercial in confidence.

Please refer to Section 4.2 – Response to Common Issues regarding the confidentiality of the Biodiversity Offset Strategy.

Submitter Issue Number 29.011
•From the Fauna Survey Guidelines page 28: Species behavioural ecology – wide-ranging species, such as those with large home areas e.g. Powerful Owl *Ninox strenua* or those that locally migrate with resource pulses, may be temporally absent from the survey site, even if it is within their home range area. Other species may be less likely to call, or respond to detection techniques such as call playback, at certain times of their breeding cycle. Call playbacks were used for nocturnal species which may have resulted in bias results.

Noted.

Submitter Issue Number 29.013
•Red Goshawk *Erythrotriorchis radiates*.
Appendix F, page F.2 birds – recommended survey effort is 50 hours over 8 days Surveys done were approximately 37 hours total over 3 survey periods – this is not in line with the recommended survey effort for this species. Further states that targeted searches for this species were conducted as per Appendix D. Appendix D, page D.1 – D.5, do not list this species as a targeted survey – Blackthroated Finch, Squatter Pigeon, Ornamental Snake and Yakka Skink are mentioned as specific surveys.

The survey effort was considered appropriate. Refer to Table H.5 of the draft EIS Terrestrial Ecology Report (Appendix F) which provides an assessment of the potential for this species to be present in the project site, including consideration of potential habitat.

Submitter Issue Number 29.015

Offsetts for the Project China Stone cannot be examined as they are held in 'commercial confidence'. It is therefore impossible to quantify those offsets as reliably providing the required values for all affected species of wildlife, flora and fauna affected by this mining development. Suitable alternative habitats across all species are currently held within the surrounding and approved MLA's. Weak ground truthing method, results in reporting low species richness and commensurate ecology in locations where, due to low historic survey incidence, key database searches such as WildLife Online under-report biodiversity.

Please refer to Section 4.2 – Response to Common Issues regarding the confidentiality of the Biodiversity Offset Strategy.

As required by legislation, offsets are designed to compensate for significant, residual impacts on Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES). The proposed offset properties have therefore been selected based on the availability of habitat for MNES and MSES within the offset properties. It should be noted that any offsets proposed for mine developments are required to be approved by the Federal Department of the Environment and Energy and/or the Queensland Department of Environment and Heritage Protection, based on their assessment of the necessary values of the offset areas. The general comments in this submission in relation to putative under-reporting of biodiversity are not relevant to the consideration of offsets for specific MNES or MSES. Please also note that in instances where a threatened species was not recorded during field surveys, but had the potential to occur based on available habitat, a conservative approach was adopted and the species was assessed in the same way as species that were recorded during field surveys.

Submitter Issue Number 29.016

Predictions about the potential impacts of the Project China Stone Mine, should be considered for its cumulative impact, particularly in neighbouring the Adani Carmichael Mine. The potential for interruption of the temporal availability, quality and abundance of water throughout the seasons is of critical concern for all birdlife and for all of nature.

Please refer to Section 5.8 of the draft EIS Terrestrial Ecology Report (Appendix F), which addresses cumulative impacts, including cumulative impacts with the proposed CCM&RP. This section explains that there are only very limited water sources within the project site. It acknowledges potential impacts on water sources and includes mitigation in the form of a commitment to create fauna watering points within the project site.

PROJECT STONE
RESPONSE TO COAST AND COUNTRY SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

35 & 36 LAND AND RURAL SERVICES OF COAST AND COUNTRY SUBMISSION

The following responses are provided for issues that were identified by the Office of the Coordinator General as requiring a response. Other issues raised within the submission were identified by the Office of the Coordinator General as requiring noting by the proponent. Please note the submissions from the Land Services of Coast and Country (Submitter 35) and the Rural Services of Coast and Country (Submitter 36) were an exact replica and therefore the proponent is providing a collective response to these submitters.

Submitter Issue Number 35.008 and 36.077
Potential impacts on Great Artesian Basin include the following:
The EIS is incredibly dismissive of the recognised impacts on the GAB. It is recognised in the Subsidence Report (Appendix A), and reported on p30 of the Appendix I that the "height of connective cracking would therefore intersect the overlying Clematis Sandstone", which is a GAB aquifer.
•Section 12 describes the GAB impacts at pp 12-9 to 12-10, noting predicted a maximum take of 9ML/day. It goes on to state: "The long-term take from GAB Management Unit 3 is below 0.5 ML/day. Post mining water take from the Ronlow Beds is less than 0.015 ML/day. This modelled take occurs indirectly a very slight reduction in flow from the Moolayember Formation to the Ronlow Beds and is considered negligible."
•Similarly, Appendix I states at p35: "Obviously the predicted peak water take of up to 9ML/day is inconsequential when compared to the estimated 65,000 million ML estimated to be stored within the GAB" (emphasis ours).

The groundwater assessment in the draft Environmental Impact Statement (EIS) included a groundwater model based on an extensive data set. Sensitivity analyses have been conducted for any areas of uncertainty in the model. The quoted sections of the draft EIS are a factual reporting of the project's potential to impact the Great Artesian Basin (GAB).

Submitter Issue Number 35.014 and 36.003
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•The proponent has failed to meet many requirements of the ToR. It is the duty of both the proponent and the assessing agency to ensure each and every ToR is properly responded to and addressed.

The draft EIS was subject to a rigorous adequacy review undertaken by the Office of the Coordinator General (OCG) prior to the public exhibition of the document. The primary purpose of

this review was to confirm that the draft EIS complied with the EIS TOR, to the satisfaction of the OCG.

Submitter Issue Number 35.015 and 36.009
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•Noise or vibration impacts on Matter of National Environmental Significance (MNES) is in the TOR but not mentioned in ecology chapter. Assessment should also include impacts from plane noise, including waterbird avoidance of noisy areas and reduced reproductive success.

Section 5.5.1 of the draft EIS Terrestrial Ecology Report (Appendix F) assesses noise and vibration impacts on fauna.

Submitter Issue Number 35.016 and 36.010
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•Short- and long-term predicted impacts on MNES (see ToR) is absent. Short and long-term isn't actually defined anywhere.

Section 5 of the draft EIS Terrestrial Ecology Report (Appendix F) discusses the full range of potential impacts on MNES, including short-term and long-term impacts. Where relevant, the discussion of individual impacts distinguishes between impacts expected to be short-term, long-term or residual.

Submitter Issue Number 35.017 and 36.011
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•Detailed assessment of the reliability, date and uncertainties of information used to determine impacts on MNES is missing (see TOR). For example when identifying MNES there is an error margin in geographic location of species, (excluding the general trend of giving the location of listed species in wildlife online the midpoint of a grid), it's a poorly surveyed area overall, some species may only be there in summer and that period wasn't surveyed, and not all Regional Ecosystems were surveyed.

The information described in this submission is provided in various places in the draft EIS Terrestrial Ecology Report (Appendix F). In particular, the date of the field surveys is clearly described in Section 3.2.1. Section 3.5 describes any limitations in the field survey methodology and habitat modelling, and the manner in which these limitations have been overcome. With respect to the issue of seasonality, field surveys were undertaken over multiple seasons in order to address the issue of seasonal movement of species. The assessment was also able to draw on the results of field surveys undertaken for the proposed Carmichael Coal Mine and Rail Project (CCM&RP) EIS. These included multiple surveys undertaken on land adjacent to (or overlapping) the project site. Finally, in instances where a threatened species was not recorded during field surveys, but had the potential to occur based on available habitat, a conservative approach was adopted and the species was assessed in the same way as species that were recorded during field surveys.

Submitter Issue Number 35.018 and 36.012
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•The comparative description of the impacts of project alternatives on MNES is missing (see ToR), and the analysis of how the project conforms to the objective of sustainable development (ToR) is missing.

Section 4.16 of the draft EIS describes project alternatives, including alternatives relevant to ecological impacts. As noted in this section, opportunities for alternative layouts are constrained by the location of the coal resources and the area available for construction of infrastructure on the project site.

Section 2.4 of the draft EIS includes a description of how the objectives and principles of ecologically sustainable development have been considered during the development of the project.

Submitter Issue Number 35.020 and 36.092
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•The proponent was required to do standard biocondition assessments for areas requiring offsets (see ToR), however no biocondition sites and assessment is provided for review.

Refer to response to issue 24.006.

Submitter Issue Number 35.022 and 36.094
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•The proponent failed to undertake proper survey work to meet the diversity of species and their habitat. Wide-ranging species likely to have been missed due to this reason and matters of daily and seasonal timing of survey. Little or no blossom during surveys thus influencing detected species. No locations had a repeat survey. A difference in bird survey effort between sites.

Ecological surveys for the draft EIS were undertaken in accordance with all relevant guidelines. Refer also to response to issue 35.017 regarding the limitations of the surveys.

Submitter Issue Number 35.023 and 36.069
Draft EIS of terms of reference (ToR) requirements fail to be met, for example:
•The proponent failed to undertake proper assessment in relation to the railway link as identified within the draft EIS. Further assessment and public submission will be required for this transport impact.

Section 4.13.2 of the draft EIS clearly explains the off-site rail infrastructure that is required for the project and the uncertainty around the location of off-site rail infrastructure. As such, the off-site rail infrastructure that the proponent will be responsible for will be subject to separate environmental impact assessment and approvals and is, therefore, not described in the draft EIS.

Submitter Issue Number 35.024 and 36.095

The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:

•Omission of one EPBC and State Vulnerable sp. Corymbia clandestina (Qld: Vulnerable under Nature Conservation Act (NCA) (Wildlife) Regs current 12/12/2014). Entirely absent from EIS. Known location is in centre of ML70517. The proponent relied upon Qld Wildlife Online Database but one record comes from the Atlas of Living Australia. It is apparent the proponent is aware of this resource (CHAH 2015 in references). Mining exploration is a threat for this species under Australian Government approved conservation advice.

The EIS TOR did not specifically require a search of the Atlas of Living Australia to be conducted. It is not typically the primary source of species records utilised for an EIS, given this database is known to contain unverified and inaccurate records. An EIS will typically preference records contained within verified databases such as Wildlife Online and the EPBC Act Protected Matters Search Tool. It should also be noted that this record is from 1978 (i.e. is 38 years old), and appears to be a single record of this species.

The EHP notes that *C. clandestina* is closely related to both *C. lamprophylla* and *C. arnhemensis* (both Least Concern species under the NC Act) and these species differ only slightly in some floristic characteristics (refer http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/components/species/?corymbia-clandestina). Furthermore, *C. lamprophylla* is common in the vicinity of the project site, and *C. lamprophylla* was identified in the project site during field surveys. It is therefore feasible that the single record of *C. clandestina* recorded in 1978 in the Atlas of Living Australia was misidentified.

Regardless, the record is within the northern limb of the project site, where project activities are limited to underground mining. In the unlikely event this species is present, the potential impacts from the project would be limited to disturbance associated with the subsidence crack rehabilitation program and clearing associated with minor remedial drainage earthworks due to subsidence. These impacts are discussed in Section 9.6.3 and 9.6.4 of the draft EIS. The draft EIS Subsidence Management Plan (Appendix B) also includes a vegetation monitoring program which will be undertaken to confirm that subsidence does not give rise to impacts greater than those listed in the draft EIS Terrestrial Ecology Report (Appendix F) and to identify additional mitigation measures in the event of unanticipated impacts.

Submitter Issue Number 35.025 and 36.096

The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:

•The Death Adder is Near Threatened under NCA. The integrity of natural processes of habitat of this species (see ToR) is missing. Such information may exist in Appendix H (offsets) however this information has been withheld from the public.

The draft EIS Terrestrial Ecology Report (Appendix F) contains a comprehensive assessment of threatened species, and all other Matters of National Environmental Significance (MNES) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Matters of State Environmental Significance (MSES) under the Queensland *Environmental Offsets Act 2014*. Near Threatened species are not MNES or MSES and offsets are not required for these species. The EIS TOR does not require a specific assessment of Near Threatened species.

Submitter Issue Number 35.026 and 36.097
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•Effect of broadscale clearing on daily/weekly/seasonal movement of nectivores not clearly assessed and explained. Some species may not have been recorded because only a couple of seasonal conditions were surveyed. Fragmentation is noted as an impact of the proposed mine. This ties into enunciation of impacts that need to be described under Environmental Protection Act, but we can't see precisely what the effects will be nor how they will be addressed.

Surveys were undertaken over several seasons, including the end of the wet season and the dry season. The assessment was also able to draw on the results of CCM&RP's field surveys, which included multiple surveys, over several years, on land adjacent to the project site. The effect of clearing, for all species (including nectivores) is addressed in Section 5.2.6 of the draft EIS Terrestrial Ecology Report (Appendix F).

Submitter Issue Number 35.027 and 36.098
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•Red goshawk (Endangered NCA) (solitary, secretive and silent) has large range with indications of seasonal movement from range country to lowlands. Large intact areas of rugged terrain (eg. of the nature of the patch of which these mines occurs) are required habitat. There may not be many individuals of the species utilising the area (thus a significant component of the total population). Red Goshawk (*Erythrotriorchis radiatus*) recommended survey effort inadequate as per guidelines.

The Red Goshawk was assessed in the draft EIS Terrestrial Ecology Report (Appendix H of Appendix F) and found to have a low potential to be present in the project site. This assessment took into account field survey results, the results of other studies undertaken in the region (e.g. CCM&RP EIS), a literature review and the availability of habitat within the project site.

Submitter Issue Number 35.029 and 36.014
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•Climate Change is a threatening process for the Australian breeding ground of *Rostratula australis* (Aust. Painted snipe) (amongst other species). This project is not consistent with approved conservation advice for this and other species which have climate change as a threatening process under recovery plans or other approved conservation advice.

Appendix L.3 of the draft EIS Terrestrial Ecology Report (Appendix F) assesses the impact of project activities on the Australian Painted Snipe, and includes a section which considers the consistency of the action with conservation advice for this species. Broader impacts of climate change on this, or any other species, are typically beyond the scope of an EIS. There is no requirement in the EIS TOR to assess the ecological impacts of climate change on the breeding grounds of the Australian Painted Snipe or any other species.

Submitter Issue Number 35.030 and 36.099
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•Proponent's sightings of the Black Throated Finch and other MSES should go in to an updated essential habitat map in the EIS to ensure clear and appropriate assessment.

The sightings of the Black-throated Finch (BTF) and other MSES are provided in the draft EIS (refer Figure 14 of the draft EIS Terrestrial Ecology Report (Appendix F)).

Submitter Issue Number 35.032 and 36.100
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•The groundwater Conceptual Model identifies potential impacts to the water table that affects Lake Buchanan. No assessment of Lake Buchanan related GDE (groundwater dependent ecosystem) has been made, including impacts to migratory bird species, their food, and the unique suite of endemic microfauna found there.

The draft EIS does not predict an impact on Lake Buchanan. Please refer to the draft EIS Groundwater Report (Appendix I) for further detail.

Submitter Issue Number 35.033 and 36.022
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•No assessment of air particulate matter and impacts to Lake Buchanan has been made.

Please note that Lake Buchanan is 17 km from the project site. As indicated in the draft EIS Air Quality Report (Appendix L), predicted particulate concentrations at Lake Buchanan are well within

the relevant air quality goals. Refer to response to issue 35.032 in relation to groundwater impacts on Lake Buchanan.

Submitter Issue Number 35.034 and 36.008
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•The proponent has failed to include multiple and historical bird surveys that have been done on Lake Buchanan and are not considered in the EIS.

A detailed desktop assessment was undertaken as part of the draft EIS Terrestrial Ecology Report (Appendix F), including a literature review. Species records from field surveys inform the databases that are available, and which were searched as part of the desktop assessment. The database search undertaken as part of the terrestrial ecology study included an area that extended beyond the project site. In the case of the Queensland Museum Database, the database search included a search area extending 25 km from the boundary of the project site. This search area includes Lake Buchanan.

.**Submitter Issue Number 35.035 and 36.023**
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•No assessment of air particulate matter has been undertaken to ensure impacts to local flora and fauna species are identified and addressed. For example it should be noted that in the Northern Territory that there is a reasonable link between the demise of Gouldian Finch in areas of increased dust. The proponent should further the assessment of PM205-10 impacts on the environment.

Section 5.5.4 of the draft EIS Terrestrial Ecology Report (Appendix F) includes discussion of the potential impacts to flora and fauna from dust.

Submitter Issue Number 35.036 and 36.101
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•Weed management strategies have to be included in the main body of the EIS (ToR requirement) yet are not. The proponent has only referred to a weed management plan that will be prepared.

As noted in the submission, the draft EIS contains a commitment to the preparation of a Feral Animal and Weed Management Plan (refer Section 9.7.3 of the draft EIS). This section outlines the matters that will be addressed in the plan, and includes a commitment to detailed weed mapping, monitoring for the presence and abundance of exotic species and the provision of information on weed control (including control strategies, timing and specification for follow up works). This level of information in relation to weed management is appropriate and not inconsistent with the EIS TOR.

Submitter Issue Number 35.037 and 36.102
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•The EIS failed to identify any member of the cactus family or rubber vine or Parkinsonia aculeata, all of which are within the project and nearby area; the latter appearing in their Herbrecs search and a class 2 declared weed in Qld and weed of national significance.

Please refer to response to submitter issue 35.036 in relation to weed management. As noted in this response, detailed weed mapping will be undertaken as part of the implementation of a Feral Animal and Weed Management Plan.

Submitter Issue Number 35.038 and 36.103
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•There's no climate change avoidance, mitigation or adaptation plan in the ecology section. The proponent is required to address climate change on other aspects of the project in other EIS sections (ToR). The proponent states that impacts of climate change on habitats in the study area are unclear. Such a statement does not remove the requirement to identify foreseen impacts on ecological communities and species elsewhere in the ToR.

Please refer to Section 5.7 of the draft EIS Terrestrial Ecology Report (Appendix F) which considers the potential impacts of climate change on terrestrial ecology values.

Submitter Issue Number 35.039 and 36.104
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•Assessment of 'indirect' impacts of the project on terrestrial ecology are lacking, particularly on localised off-site areas, eg. higher stream flow where its channelled, lower stream flow where it's cut off, changes in inundation regime, effect of subsidence on ephemeral waterholes. Further assessment needs to be made to ensure localised and downstream impacts are understood and properly assessed, including the quality and abundance of water throughout the seasons from impacted and overland water flows.

The impacts of the project on surface drainage are discussed in Section 13 of the draft EIS. There are no off-site surface water impacts that are likely to have a significant indirect impact on terrestrial ecology, as suggested in the submission. The impacts of subsidence on surface drainage and seasonal surface water are discussed in draft EIS Sections 13.6.4 and 10.6.3, respectively.

Submitter Issue Number 35.040 and 36.105
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•The proponent has failed to assess potential impacts of aircraft on any species.

Section 5.5.1 of the draft EIS Terrestrial Ecology Report (Appendix F) assesses noise and vibration impacts on fauna.

Submitter Issue Number 35.041 and 36.019
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•Release of materials from the mine area into watercourses – eventually residing in the Burdekin Dam and the Great Barrier Reef are not explicitly mentioned, modelled or assessed.

The impacts of the release of mine affected water on downstream aquatic biology, including the Belyando River, is discussed in Section 10.6.4 of the draft EIS.

Submitter Issue Number 35.042 and 36.070
The EIS has failed to identify known and listed species, and fails to properly assess known species, such as the following:
•An assessment of cumulative impacts of this project, along with other coordinated projects is required. The project is a threatening process of fragmentation and assessment of habitat destruction associated with Galilee Basin mining projects, including South Galilee, China First, Alpha, Kevin's Corner, and Carmichael in terms of endangering ecosystems or species is required.

Please refer to Section 5.8 of the draft EIS Terrestrial Ecology Report (Appendix F) which considers cumulative impacts of the project (and all of the other projects listed in the submission) on ecological values.

Submitter Issue Number 35.043 and 36.109
Important facts in relation to stygofauna found within the project area require further assessment, for example:
•The aquatic ecology chapter identified a mite at the bottom of a bore that had no pigment and no eyes. The fact of this discovery and the potential for this underground species has not been ruled out. The proponent is required to undertake a stygofauna assessment and failed to undertake the survey in an appropriate manner to enable non contaminated samples to be collected, as such a proper stygofauna assessment needs to be undertaken to ensure appropriate assessment, and community comment.

Section 12.4.10 of the draft EIS indicates that the mite is unlikely to be an obligate stygofauna taxon, given the depth from which the groundwater sample was collected. In particular, the sample was collected at a depth in excess of 80 m below ground level. This depth is typically inconsistent with stygofauna development, except in the presence of limestone caves and subterranean voids (which do not occur in this project site).

The entrainment of soil and vegetation during drilling and construction of a bore is not uncommon, particularly for deep bores. The bores in question are 91 m deep (MB08) and 110 m deep (MB26).

Having some surface material entrained in bores at this depth is a practical reality of fieldwork, not a deficiency in the survey methodology.

Submitter Issue Number 35.049 and 36.079
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
b) Further to the above and to support the need for a full mine closure plan provided for public submission and assessment of the draft EIS:
•figure 8-4 – does not provide vertical scale. It is expected a full digital terrain model of the post-mining landscapes which look like natural landscapes not rectilinear (30 years) be provided to ensure an understanding of the rehabilitated lands and closure needs.
•figure 8.5 - should show what the mine landforms will look like, to scale from different vantage points (using 3D conceptual images). There is no vertical scale on any of these figures - there are what appear to be contours but they are unlabelled.

This part of the submission raises a number of issues relating to the rehabilitation proposed in the draft EIS that are not required by the EIS TOR. The draft EIS provides information about decommissioning and rehabilitation that is consistent with the requirements of the EIS TOR. In addition, rehabilitation of mines in Queensland is regulated by conditions outlined in an Environmental Authority (EA) that is approved by the Department of Environment and Heritage Protection (EHP). The draft EIS Attachment 24-3 includes rehabilitation goals, objectives, indicators and completion criteria that were developed in accordance with the EHP Guideline *Rehabilitation Requirements for Mine Resource Activities.* This table is typically used as a basis for the rehabilitation conditions in an EA and is refined, as necessary, prior to the finalisation of the EA, to the satisfaction of the EHP. The project mining lease cannot be relinquished until these agreed rehabilitation completion criteria are met to the satisfaction of the EHP. The progressive rehabilitation to be undertaken during the life of the project is also documented in the project's Plan of Operations which is periodically submitted to the EHP for approval.

Submitter Issue Number 35.050 and 36.080
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
c) The Queensland Audit Office
•Following the 2013-2014 Queensland Audit Office assessment of environmental regulation, and compliance, within the context of mitigation of negative mining legacies, it is unclear how the proponent proposes to ensure this mine will meet the Queensland Governments expectation to ensure mining activity legacy is properly made.
See:https://www.qao.qld.gov.au/files/file/Reports%20and 20publications/Reports%20to%20Parliament%202013-14/RtP15Environmentalregulationoftheresourcesandwasteindustries.pdf
•As the proponent has not submitted a proper rehabilitation and mine closure plan, it is unclear how often are rehabilitation audits will be undertaken to check quality and quantify of rehabilitation and closure works.

Refer to response to issue 35.049.

Submitter Issue Number 35.051 and 36.081
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
d) Rehabilitation 'standard methods' not defined
•The draft EIS to rehabilitation provides many motherhood statements about rehabilitation and how it will be undertaken, through the use of the term 'standard methods'. However the proponent fails to identify what these are, including what studies have been undertaken to justify the assumptions provided in the EIS report.

Refer to response to issue 35.049.

Submitter Issue Number 35.053 and 36.083
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
d) Rehabilitation 'standard methods' not defined
•Best practice and fundamental industry standards, as outlined by the International Council on Mining and Metals have not be followed.

Refer to response to issue 35.049.

Submitter Issue Number 35.054 and 36.084
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
d) Rehabilitation 'standard methods' not defined
•The EIS presents a lot of data but what is missing is how all of that translates into effective management of soils, sympathetic design of landforms (curves/concave slopes, natural looking landforms which are stable and sustainable), post-mining land uses which the community has agreed all tied together with a rehabilitation schedule showing how the landforms will be built and progressively rehabilitated over the life of the project (with firm years… year 1, year 2 etc) and non-polluting landforms and water storages can be objectively evaluated.

Refer to response to issue 35.049.

Submitter Issue Number 35.055 and 36.106
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
d) Rehabilitation 'standard methods' not defined
•p6 appendix D needs to demonstrate that sufficient samples of each lithology have been gathered to be representative of the waste and ore (in line with GARD guide) industry standard. See here: http://www.gardguide.com/index.php?title=Main_Page

Refer to response to issue 35.049.

Submitter Issue Number 35.056 and 36.107
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
d) Rehabilitation 'standard methods' not defined
•The proponent needs to state how many lithologies and how the sampling ensures representativeness against a standard. These records should be reviewed by a specialist to interpret if there is a need to segregate net acid producing wastes. It is not clear from the available data that there are going to be any specific measures applied.

Refer to response to issue 35.049.

Submitter Issue Number 35.057 and 36.108
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
d) Rehabilitation 'standard methods' not defined
•Final pit void water quality should be provided - via limnological modelling and an understanding of groundwater and geochemistry of pit walls. This should be referencing numerous reports from ACARP (there are a number of research projects on voids)

Refer to response to issue 35.049.

Submitter Issue Number 35.060 and 36.087
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
e) Community Engagement and Closure Plan
•section 8.2.5 highlights that the proponent has not adequately address mine closure - this should be done up front to conform to the ToR.

Refer to response to issue 35.049.

Submitter Issue Number 35.061 and 36.088
The draft EIS fails to comply to the ToR 4.6. Decommissioning and rehabilitation, and 5.9. Waste, including through the following key points.
f) Assessment professionals
•It is unclear if the rehabilitation professionals working on EIS are AusIMM members and Chartered Professionals (CP status) under AusIMM as a minimum. Further work is required by properly accredited professionals on the rehabilitation and closure plan, and made available for public submissions.

Refer to response to issue 35.049.

Submitter Issue Number 35.062 and 36.024

The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:

a) The Project China Stone mine will exceed nationally regulated safe levels of PM10 and PM2.5 and place locals and workers at risk:

•Air quality standards are not aligned to current national and state government objectives. P.15-3 Table 15-2 lists the relevant air quality objectives. Australia's environment ministers are currently varying the PM10 and PM2.5 standards. At their 14 July meeting ministers agreed to move to a 24 hour average PM2.5 standard of 20µg/m3 and an annual average concentration of 7µg/m3 over time. These should be used as the objective for this assessment.

See http://www.environment.gov.au/minister/hunt/2015/pubs/mr20150717.pdf for details. The decision regarding new PM10 standards was deferred until December. A stricter standard for 24 hour average PM10 concentrations is proposed (either 40 or 30ug/m3) and a new standard for annual concentrations of PM10 (20µg/m3). These new standards should be set as the objectives for new coal mines, and this mine assessed as such.

Section 2.5 of the draft EIS Air Quality Report (Appendix L) adopted air quality criteria that are currently applied to mines or power stations in Queensland. It is not appropriate to adopt criteria that are speculative.

The submitter's statement that "*the Project China Stone mine will exceed nationally regulated safe levels of PM10 and PM2.5 and place locals and workers at risk"* is incorrect. The draft EIS predicted all air quality parameters to be below the applicable air quality objectives at all sensitive receptors.

Submitter Issue Number 35.063 and 36.025

The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:

a) The Project China Stone mine will exceed nationally regulated safe levels of PM10 and PM2.5 and place locals and workers at risk:

•p.15-7 PM10 concentrations attributable just to the China Stone project are predicted to increase from the background concentration of 18.8micrograms/m3 to as high as 37micrograms/m3 – an increase of 18.2micrograms/m3 (or 97%).

Refer to response to issue 35.062. The quoted predicted concentrations are factually correct for the closest sensitive receptor to the site. All other receptors are predicted to have lower concentrations of $PM_{10,}$ as shown in Table 15-5 of the draft EIS. It is noted that the predicted 24 hour average ground-level concentration of PM_{10} at the closest receptor remains well below the air quality objective of 50 $\mu g/m^3$.

Submitter Issue Number 35.064 and 36.026

The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:

a) The Project China Stone mine will exceed nationally regulated safe levels of PM10 and PM2.5 and place locals and workers at risk:
•p.15-13 (Table 15-10) When the cumulative impacts of CCM&RP and MPP are considered, PM10 concentrations will increase to as high as 65.6µg/m3 at Dooyne Outstation and 65.2µg/m3 at the proposed Carmichael Coal Mine Accommodation Village. These concentrations are well above the current NEPM standard of 50µg/m3. The proponents table is not clearly identifiable as it includes several 'Ambient background' concentrations, contrary to the one baseline concentration of 18.8µg/m3 in Table 15-4.

Refer to response to issue 35.062. As explained in Section 15.8.11 of the draft EIS, the project's contribution to the cumulative impact is minor at the Dooyne Outstation (11.4%) and the Accommodation Village (2.8%). At both of these receptors, the air quality objective was predicted to be exceeded due predominantly to the Carmichael Coal Mine.

Submitter Issue Number 35.065 and 36.027
The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:
a) The Project China Stone mine will exceed nationally regulated safe levels of PM10 and PM2.5 and place locals and workers at risk:
•24 hour average concentrations of PM2.5 will increase from a background of 3.3µg/m3 by as much as 5.2µg/m3 (150%). At Dooyne Outstation and Bowie Homestead, PM2.5 concentrations are predicted to exceed the current NEPM standard of 8µg/m3.

Refer to response to issue 35.062. The NEPM standard referenced refers to an annual average concentration of $PM_{2.5}$. As shown in Table 15-5 the predicted annual average ground-level concentrations of $PM_{2.5}$ are below the relevant air quality objective at all sensitive receptors, including Dooyne Outstation (3.4 µg/m^3) and Bowie Homestead (3.7 µg/m^3).

Submitter Issue Number 35.066 and 36.028
The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:
b) The proponent has not properly assessed and developed air quality management practices to enable submissions to be made to the impacts and mitigation:
•p.15-2 This section argues for a focus on PM2.5. The particle size most strongly associated with mining is PM10 and there is significant national and international literature describing a range of adverse health impacts from particles in the size range PM2.5-10.

Noted.

Submitter Issue Number 35.068 and 36.030
The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:
c) In the case of China Stone, just 14 lines of text are provided to describe the intended pollution

mitigation measures (pp.15-14; 15-15). The apparent justification for this is the 'considerable distance to the closest receptor."
The China Stone air quality assessment included the key mining activities:
•Trucking Run of Mine coal from the open cut mining areas to the ROM coal stockpiles
•Trucking overburden from the open cut mining areas to the overburden emplacement areas
•Transport of coal by conveyor
•Crushing and processing of coal at the Coal Handling and Preparation Plant
•Wind erosion of stockpiles
•Stacking and reclaiming of coal at stockpiles
•Loading coal onto trains
The air quality assessment proposes the following generic dust mitigation measures:
•Haul roads will be watered
•Progressive rehabilitation will be conducted on the open cut mine overburden emplacement areas.
•Inactive disturbed areas will be rehabilitated as soon as possible.
•Electrostatic precipitators will be installed on the power station to minimise emissions of particulate matter
•Compliance with the relevant requirements of the Aurizon Coal Dust Management Plan at the train loading facility

Noted.

Submitter Issue Number 35.069 and 36.031
The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:
d) The proponent has not developed publicly assessable strategies to ensure public safety is prioritised:
•There is no EHP air quality monitoring in the region (p.15-5). The proponent of the Project China Stone mine, along with its power station will contribute to and impact public safety through increased levels of PM10 and PM2.5 materials. By comparison, the NSWEPA along with mine developers has 14 monitoring sites in the Hunter Valley to protect the community. http://www.environment.nsw.gov.au/aqms/20090735upperhunterAQM.htm

The submitter's recommendation that the EHP install an air quality monitoring station in the region is noted.

Submitter Issue Number 35.070 and 36.032
The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:
e) The proponent has not properly assessed the cumulative impact of its development and that of the surrounding environment and other mine developments:
•A cumulative impact assessment (Appendix L) was undertaken that considers the impacts of the Carmichael Coal Mine and Rail Project (CCM&RP) and Moray Power Project (MPP). In each case,

the cumulative impact assessment only focused only on the two pollutants that were closest to the relevant regulatory objective – PM10 concentrations associated with Carmichael and NO2 concentrations associated with Moray (p.15-12).

Noted. These pollutants were selected for the cumulative assessment as they will have the most potential for significant cumulative impacts.

Submitter Issue Number 35.071 and 36.033
The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:
e) The proponent has not properly assessed the cumulative impact of its development and that of the surrounding environment and other mine developments:
•The CCM&RP doesn't reach the same conclusion as the China Stone EIS - that PM10 levels in the CCM&RP village will exceed the NEPM standard. There are two reasons for this. First, the modelling for Carmichael is based on a lower assumed baseline (pre-development) PM10 concentration of 11ug/m3 rather than the 18.8ug/m3 baseline concentration assumed for the China Stone EIS. Second, the impact assessment is specific to this project rather than a cumulative assessment that factors in China Stone. Such variation requires further assessment and the EIS updated accordingly.

By assuming a higher background air quality concentration for PM_{10}, Project China Stone is actually more conservative than the CCM&RP EIS air quality assessment. It is a standard approach for an impact assessment to consider the project in isolation and the cumulative assessment to consider other relevant projects that have the potential to have a cumulative impact.

Submitter Issue Number 35.072 and 36.034
"The assessment of air quality in the EIS has been inadequate and demonstrates unacceptable impacts for reasons including the following:
e) The proponent has not properly assessed the cumulative impact of its development and that of the surrounding environment and other mine developments:
•p.15-5, 15-6 Baseline ambient air quality is based on "air quality assessments from other coal mines in the region". It is not clear what the references for this assessment was based on, or how recently it was made. It is not clear what methodology was used or if this methodology was compliant to Qld, national or best practice standards, and thus can not be assessed properly. This baseline assessment does not include reference to an annual average PM10 concentration, and an annual average is currently being considered by Australia's environment ministers
(see http://www.environment.gov.au/protection/nepc/nepms/ambient-air-quality/variation-2014/impact-statement).

Section 4.4 of the draft EIS Air Quality Report (Appendix L) provides more detail on the methodology and references related to the determination of baseline ambient air quality in the absence of data from monitoring stations.

Refer to response to issue 35.062 regarding the consideration of speculative objectives.

Submitter Issue Number 35.078 and 36.042
Stated commitment to follow DSDIP SIA Guidelines 2013, but falls well short of best practice research methods and community engagement as part of SIA process on which a social license to operate could be achieved, as set out by the International Association for Impact Assessment:
•The SIA fails to consider socio-economic impacts that extend beyond the mine itself, but which are vital to the viability of the mine (ie. transport infrastructure). It is broadly accepted best practice in SIA and broader EIS to consider the whole of project impacts.

This part of the submission raises a number of issues relating to the methodology of the draft EIS Socio-Economic Impact Assessment (SIA) Report (Appendix N). The SIA was undertaken in accordance with the EIS TOR and relevant guidelines, including the DSDIP SIA Guideline 2013. The submitter's implications that the SIA is inadequate or contains omissions are not valid. Attachment H - Additional Information on SIA provides further clarification on SIA issues that were raised by the Department of State Development (DSD).

As stated in Section 4.13 the draft EIS was limited to the mine only and off-lease infrastructure required for the project will be subject to separate environmental impact assessments and approvals. These assessments will include consideration of socio-economic impacts of those projects.

Submitter Issue Number 35.079 and 36.043
Stated commitment to follow DSDIP SIA Guidelines 2013, but falls well short of best practice research methods and community engagement as part of SIA process on which a social license to operate could be achieved, as set out by the International Association for Impact Assessment:
•'Health' and 'change in rural character' impacts (eg. impacts to visual amenity) are not considered within the SIA, but relegated to other parts of the EIS, thereby overlooking consideration of the ways such impacts may affect quality of life in communities surrounding the project area. These should be considered in the SIA, thereby adopting a more holistic approach to analysis of impacts.

Section 6.6 of the draft EIS SIA Report (Appendix N) is titled Community Liveability and specifically considers the ways the project may affect the quality of life for residents, employees and visitors. The section includes discussion of accessibility, safety and health, local environmental conditions and the quality of social interactions.

Submitter Issue Number 35.080 and 36.044
Stated commitment to follow DSDIP SIA Guidelines 2013, but falls well short of best practice research methods and community engagement as part of SIA process on which a social license to operate could be achieved, as set out by the International Association for Impact Assessment:
•The SIA fails to consider impacts of a mine closure (p. 4 Appendix N). A mine closure could be expected to have 'high risk' impacts, and on this basis should be considered as part of the SIA. The SIA Report (p. 18) states it will address 'construction, operation and decommissioning' of the

proposed mine, yet omits the serious issue of a mine closure earlier than estimated decommission date.

The full quote from this part of the draft EIS SIA Report (Appendix N) is relevant to this response:

"*Consistent with advice from the Department of State Development (DSD), the SIA considers the impacts associated with the first 20 years of operation, acknowledging the limitations associated with predicting social impacts beyond this period. Mine closure and mine rehabilitation are therefore not considered in any detail in the SIA, however these elements have been described elsewhere in the EIS*."

Although mine closure was not considered in detail in the SIA, the social aspects of mine closure will be addressed in social impact management planning conducted during the 50 year mine life and as part of standard progressive mine closure planning over that time.

Submitter Issue Number 35.081 and 36.045
Stated commitment to follow DSDIP SIA Guidelines 2013, but falls well short of best practice research methods and community engagement as part of SIA process on which a social license to operate could be achieved, as set out by the International Association for Impact Assessment:
•The International Association for Impact Assessment (IAIA) is the global authority on best practice in the use of impact assessment for informed decision making regarding policies, programs, plans and projects. The IAIA provide International Principles for Social Impact Assessment that establishes minimum standards for SIA practices, and provides an articulation of best practice in SIA as a model to aspire to.

Noted.

Submitter Issue Number 35.082 and 36.046
Stated commitment to follow DSDIP SIA Guidelines 2013, but falls well short of best practice research methods and community engagement as part of SIA process on which a social license to operate could be achieved, as set out by the International Association for Impact Assessment:
•Firstly, the IAIA define SIA as including processes for analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions" (Vanclay, 2003, p. 6). This SIA falls well short in this regard, given its primary focus on positive impacts (ie. employment) and very limited focus on negative impacts (poor research methods reduce capacity of SIA to identify and document negative impacts, a theme we return to below).

The SIA was conducted in accordance with the EIS TOR, which do not require the project to address IAIA research methods for the SIA.

Submitter Issue Number 35.083 and 36.047

Key principles of SIA which the report falls short on in relation to IAIA principles (drawing from Vanclay, 2003):

1. Stakeholders should be included in the assessment of social impacts – on the basis of methods described and social impacts documented, there is no evidence that diverse stakeholder consultation was undertaken. For example, there is no evidence that women, indigenous or marginal groups were included in primary data collection. This stands counter to international principles of SIA, which should "encompass empowerment of local people, enhancement of the position of women, minority groups and other disadvantaged groups".
2. The improvement of social wellbeing of the wider community should be explicitly recognised as an objective, and as such should be an indicator considered by the assessment process. Here, the primary concern should be upon the differential distribution of impacts among different groups in society, and particularly the impact burden experienced by vulnerable groups in the community (p. 3). Again, no evidence that vulnerable groups (eg. women, indigenous) considered in data collection for base line study.
3. Identification of social impacts should include changes to peoples' way of life (for example how they live, work, play and interact with one another); their culture (including shared beliefs, customs and values), community (cohesion, stability and character), as well as fears and aspirations about the future of their community and for their children. Yet there is no evidence that data has been collected on these aspects.

Refer to response to issue 35.082 regarding IAIA research methods, and response to issue 35.079 regarding the consideration of social wellbeing and community liveability in the draft EIS SIA Report (Appendix N).

Section 3 of the draft EIS summarises the consultation undertaken for the project broadly and specifically for the SIA.

Submitter Issue Number 35.084 and 36.048

Shortcomings in SIA Research Methodology:

•An SIA is only as strong as the research methods on which it is based. There are some serious limitations to the methods employed in data collection for this SIA, which must be addressed to ensure the rigor and credibility of results presented.

•Firstly, there are significant limits in the methods by which knowledge of indigenous peoples was gathered, and failure to consider in proper detail the significance of Indigenous culture in this region.

•The SIA states that consultation with landholders in the project area was undertaken, and on this basis it was concluded there is "no contemporary use of the project site by indigenous people" (p. 102, Appendix N). There are a number of reasons why this method is problematic; including relying on a few landholders to speak for Indigenous people, including people who live remote to the land itself (2 of the 3 property owners do not live on the land in the project area – bizarre to expect them to speak for Indigenous connection to the land in question).

•In improving this method, direct engagement with the Indigenous community is required, so as to

address this current failing in the SIA. Additional data collection needed, including evidence talked to indigenous communities.
•The need for this is particularly acute, given the SIA identifies the Indigenous population to be above the state average, with an estimated 3% of the local community identified as Indigenous.
•It is also out of step with broader the broader values of the region to discount significance of indigenous communities. For example, in Charters Towers, the SIA acknowledges that community indigenous (and military) history is something community members are proud of, and part of the townships rural character, something to which they trade on in their tourism industry (p. 57 Appendix N). The SIA also acknowledges some tensions between mining industries and the town of Charters Towers, "impersonal communication also identified as major barrier to mining sector engagement in Charters Towers. (p. 59), as such, the industry would be wise to engage more effectively with diversity of community, especially if it seeks to obtain social license to operate.

As stated in Section 5.1 of the draft EIS SIA Report (Appendix N) there is no defined and separate Indigenous community (for example Woorabinda Aboriginal Shire) residing either within the project site or in proximity to the project site. In relation to consultation for the draft EIS, the legal representatives of the Wangan and Jagalingou People were contacted in relation to an offer to meet and discuss the draft EIS. The offer of a meeting was declined. Consultation with Indigenous training organisation, Jenagar Training, was also undertaken during preparation of the draft EIS SIA Report (Appendix N).

As discussed in Section 20.2.2 of the draft EIS, the proponent is required to prepare a Cultural Heritage Management Plan (CHMP) for the project in accordance with the *Aboriginal Cultural Heritage Act 2003*. The CHMP will be developed prior to commencement of construction in consultation with the relevant Aboriginal parties for the project and will address the management of Aboriginal cultural heritage on the project site. In addition, as stated in the draft EIS, the proponent will negotiate with the Wangan and Jagalingou People, as the registered Native Title claimants, in accordance with the requirements of the *Native Title Act 1993*.

Submitter Issue Number 35.085 and 36.049
Shortcomings in SIA Research Methodology:
•Secondly, clarification in terms of the assumptions that informed the process of data collection with landholders is required. The SIA reports local landholders saw China Stone has having 'low risk' in terms of affects on social values. Clarification is required as to whether discussion with landholders on this topic started from the assumption that CCM&RP was already going ahead, with its attendant impacts. It may be the case that landholders spoke about impacts of the project in terms of social values on the basis that the directly adjacent project was already established (or in construction). Given the SIA works from starting point that project established, it is imperative to get clarity on methodology around data collection with landholders.

The presence (or not) of the CCM&RP is largely irrelevant in the context of landholders that will be directly impacted by Project China Stone.

Submitter Issue Number 35.086 and 36.050

The assessment is based on a false assumption, and on this basis makes a series of improper assertions, and fails to collect required data on which a proper assessment can be made. The SIA builds from a false assumption; that the CCM&RP exists. On the basis of this false assumption, it makes a number of misleading statements:

•Firstly, the SIA states the CCM&RP will already have induced changes, and as such, China Stone will simply be a continuation of land use rather than a change in land use (eg. p. 134 Appendix N) – thus lowering the risks of any new changes brought about by China Stone.

It is a fact that the CCM&RP is significantly further advanced in the approval phase than Project China Stone, as the CCM&RP has received approvals from the State and Federal Governments. However, the CCM&RP has been, and continues to be, subject to repeated legal challenges from anti-mining environmental groups. As such, it is not possible to predict with any certainty the likely timing of the commencement of construction. However, it is noted that Adani are currently publicly indicating an intention to proceed with construction of the CCM&RP in 2017.

There are significant external factors that create uncertainty for the timing of the development of both projects. The proponent has committed to undertaking a review and revision of the SIA prior to the construction of the project. As such, in the event the project proceeds in the absence of the CCM&RP, the revised SIA will assess the change in land use solely from the project.

Submitter Issue Number 35.087 and 36.051

The assessment is based on a false assumption, and on this basis makes a series of improper assertions, and fails to collect required data on which a proper assessment can be made. The SIA builds from a false assumption; that the CCM&RP exists. On the basis of this false assumption, it makes a number of misleading statements:

•Secondly, the SIA states "it is worth noting that the CCM&RP to the south of the project site will likely have impacted the rural amenity of the region prior to the commencement of the CEW phase and as such the project would be a continuation of changes to amenity already occurring in the area." (p. 99 Appendix N).

Refer to response to issue 35.086.

Submitter Issue Number 35.088 and 36.052

The assessment is based on a false assumption, and on this basis makes a series of improper assertions, and fails to collect required data on which a proper assessment can be made. The SIA builds from a false assumption; that the CCM&RP exists. On the basis of this false assumption, it makes a number of misleading statements:

•The SIA is starting from the assumption that CCM&PR will already have caused an unknown and undefined level of impact to both land use and rural amenity, and China Stone's impacts are described as simply an extension of such impacts. Yet if CCM&RP does not go ahead – and it has had its license to operate withdrawn, and an additional two international funders have withdrawn financial support this month – then the scale of impacts is likely to be profound (and yet have not

been captured in the SIA). The SIA has failed to document these – particularly related to rural amenity.

Refer to response to issue 35.086. It is noted that Adani are currently publicly indicating an intention to commence development of the CCM&RP in 2017.

Submitter Issue Number 35.089 and 36.053
The assessment is based on a false assumption, and on this basis makes a series of improper assertions, and fails to collect required data on which a proper assessment can be made. The SIA builds from a false assumption; that the CCM&RP exists. On the basis of this false assumption, it makes a number of misleading statements:
•Thirdly, the SIA is based on the improper assertion that CCM&RP exists, and will collaborate with China Stone in the delivery of certain SIA compliance requirements.
Yet the SIA has failed to consider the viability of China Stone achieving these compliance requirements if CCM&RP does not go ahead. In particular, the SIA states the China Stone project will work with Adani to (1) ensure efficiencies in infrastructure upgrade (p. 104, Appendix N) and (2) to ensure regional emergency providers have adequate resources to respond to off-site project related incidents (p. 103, Appendix N).

In the event the project proceeds in the absence of the CCM&RP, the proponent for Project China Stone will continue to implement the commitments made in the draft EIS and would be solely responsible for the delivery of mitigation and management measures to address the environmental impacts of the project that are identified in the draft EIS.

Submitter Issue Number 35.090 and 36.054
The assessment is based on a false assumption, and on this basis makes a series of improper assertions, and fails to collect required data on which a proper assessment can be made. The SIA builds from a false assumption; that the CCM&RP exists. The current SIA has no contingency compliance requirements for China Stone as a sole operator in the northern Galilee.

Refer to response to issue 35.089.

Submitter Issue Number 35.091 and 36.055
There are omissions in findings presented, with outcomes that under-estimate the scale and types of socio-economic impacts:
•There is an under-estimate of the scale and types of impacts for those families, business and industries directly connected to the project site. The SIA states the project site covers 3 properties, and an additional property adjoining the southwestern boundary (p. 3, SIA report). It also states that only one couple resides within one of the three properties within the project area, and that the house itself is outside the project area. This description relegates people to the margins of the project area, thereby failing to capture anything of the story of these people or the scale of impact at the household, business and industry levels. A more detailed assessment across these scales – (household, private business and the livestock and tourism sectors) is urgently required.

The draft EIS SIA Report (Appendix N) factually reports the current structure of families, businesses and industries associated with the project site. The proponent is required to enter into land access agreements with the landholders within the project site.

The draft EIS Non-Indigenous Cultural Heritage Report (Appendix P) describes the non-Indigenous cultural heritage aspects of the project site.

Submitter Issue Number 35.092 and 36.056
There are omissions in findings presented, with outcomes that under-estimate the scale and types of socio-economic impacts:
•There is some important information that has been omitted, that must be considered as part of the SIA process to enable a fair assessment of household, private business and sector level impacts. For example, one of the three properties within the license area, Moray Downs, owned by Acton Land and Cattle, sold a controlling interest to Australian Country Choice (ACC) in July 2015. This joint venture between Acton Land and Cattle and ACC, represents one of the largest vertically integrated private beef operations in the country. An SIA must consider the impacts of the proposed mine for these large-scale livestock corporate actors, and for the livestock industry more broadly.
http://www.afr.com/business/agriculture/livestock/australian-country-choiceand-acton-join-to-boost-the-beef-supply-chain-20150712-giaheb

As indicated in Section 5 of the draft EIS, Moray Downs is owned by Adani Mining Pty Ltd.

Submitter Issue Number 35.093 and 36.057
There are omissions in findings presented, with outcomes that under-estimate the scale and types of socio-economic impacts:
•More detail should also be provided about the impacts of the proposed mine for property management, and the impacts of changes in property management for private business and the livestock industry. The SIA states the impacts for property management for 4 affected landholders are all protected by confidential negotiations. Yet it identifies at least one landholder will be required to change management approaches as a consequence of this project. The SIA fails to connect changes in property management (eg. transport costs to move livestock elsewhere for fattening) to impacts for private business and the industry. Questions such as – will changes in property management increase the cost of livestock handling, add new animal husbandry risks etc must be addressed within the SIA.

It is not appropriate to discuss commercial-in-confidence matters in a public document such as the draft EIS.

Submitter Issue Number 35.094 and 36.058
There are omissions in findings presented, with outcomes that under-estimate the scale and types of socio-economic impacts:
•The SIA is also misleading in stating that landholders see the project as having 'low risk' in terms

of affects for social values. An analysis of rural media indicates the Corbett family who own Hyde Park has deep concerns about the project and their engagement with the mining company. As it stands, the SIA downplays community concern and conflict, but it would do better to acknowledge and seek to deal with such concerns.
http://www.queenslandcountrylife.com.au/news/agriculture/agribusiness/generalnews/coal-mine-placing-so-much-at-stake/2482074.aspx?storypage=2"

Noted.

Submitter Issue Number 35.095 and 36.059
There are omissions in findings presented, with outcomes that under-estimate the scale and types of socio-economic impacts:
•The SIA concludes that due to the distance between the southern Galilee and this project area, significant cumulative social impacts are negligible. Yet this statement underestimates the culture of the livestock industry and related businesses. Further examination of impacts is needed.

The SIA conclusion is valid.

Submitter Issue Number 35.096 and 36.060
FIFO Employment model disconnected from local and regional planning and vision, yet no recommendations on how to manage the attendant problems:
•It is clear from the SIA that the employment model is FIFO. Yet what is also clearly reported is that most in affected areas do not like FIFO. FIFO is out of step with the local government agenda in Isaac. Eg. “Isaac continues to pursue sustainable growth outside of the FIFO mining industry”(p. 9 Appendix N). Similarly, Clermont “does not aspire to increase its non-resident workers population” p. 11 SIA). Added to this : the Isaac Region 2020 Vision 2009-2019 (IRC 2009), recognises mining as a major contributor to the economic development of the region, but focuses primarily on economic diversification and lifestyle improvements as major goals.” (p. 9)

Any employees residing within a 1 hour commute of the project site will be able to commute on a daily basis to the site. However, the project site is remote from any communities (the closest townships are Charters Towers, approximately 285 km by road to the north, and Clermont, approximately 260 km by road to the south-east). As such, the project requires a long-distance commuting workforce.

Submitter Issue Number 35.097 and 36.061
FIFO Employment model disconnected from local and regional planning and vision, yet no recommendations on how to manage the attendant problems:
•It is clear the employment plan for China Stone is out of step with the local government and regional agenda. As it stands, the SIA provides no recommendations to manage the expected tensions that will emerge.

Refer to response to issue 35.096. Section 7.3 of the draft EIS SIA Report (Appendix N) includes numerous measures to manage the proposed workforce accommodation arrangements that are required due to the remoteness of the project site.

Submitter Issue Number 35.098 and 36.062
FIFO Employment model disconnected from local and regional planning and vision, yet no recommendations on how to manage the attendant problems:
•A recent Federal Government FIFO Report charged the Australia Small Business Commissioner to ensure the capacity of small businesses to service the demands of the resource sector. There is no evidence in the SIA that the Commissioner been engaged, instead hollow statements about supporting local businesses, but a tangible plan is required.
http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_representatives_Committees?url=ra/fifodido/report.htm

Section 7.4 of the draft EIS SIA Report (Appendix N) describes the management strategies relating to regional development, which includes supporting local businesses. Attachment H – Additional Information on SIA also includes more information relating to these aspects.

Submitter Issue Number 35.099 and 36.063
As part of the traffic management plan – no detail is provided as to who will be paying for sealing the large section of Gregory Developmental Rd Road which is currently unsealed, as well as the cost of maintenance of this road.

The Gregory Developmental Road is sealed on the section that will potentially be impacted by the project, between Charters Towers and the Peak Downs Highway. The impacts of the project on the maintenance of the Gregory Developmental Road are addressed in the draft EIS Road Impact Assessment (Appendix O).

Submitter Issue Number 35.100 and 36.112
It is also not clear in Appendix N (p. 55) when it states “there is no defined and separate Indigenous community”. What does this mean?

There is no defined and separate Indigenous community (for example Woorabinda Aboriginal Shire) residing either within the project site or in proximity to the project site.

Submitter Issue Number 35.101 and 36.064
The Indigenous Participation Plan provides no detail about how indigenous inclusion will be achieved.

Attachment H – Additional Information on SIA provides more information relating to the Indigenous Participation Strategy.

Submitter Issue Number 35.102 and 36.065
The primary detail in the SIA relates to employment from the mine. A few issues require more information in this regard. The first relates to accommodation, where some details are simply not clear. For example, the SIA (p. 16) states 560 SPQs will be built in the first year. Yet the report also says accommodation can cater for up to 1,280 people. It is not clear; will workers be expected to share? As it stands, the data presented is unclear.

Section 4.3.5 of the draft EIS SIA Report (Appendix N) clarifies that the construction accommodation village will comprise approximately 560 rooms and operate on a motelling basis with a capacity of approximately 1,120 persons. Workers will not be expected to share rooms.

Submitter Issue Number 35.103 and 36.066
Feel good statements like "encourage the participation of local and under represented groups" (. P. 16, SIA) need to be matched with management plans. As it stands they are not, leaving these as hollow claims.

Attachment H – Additional Information on SIA provides more information on the proposed content of social management plans.

Submitter Issue Number 35.104 and 36.067
Northern Galilee Basin not a blank canvas waiting to be filled by China Stone; radical rework of SIA required to provide greater detail of the social relationships already at play in and around project area, with particular focus on Indigenous communities:
•As it stands, the SIA appears to present the project area as a blank canvas waiting to be filled by this mining project (eg. repeated claims "project will be located in a remote area, with limited direct impacts" (p. 134 Appendix N). Indeed, the project will invent a community through the FIFO employment model.
•Yet in a back flip, the SIA also acknowledges there are people living on the land within the project area, with businesses and international industries already tied to this land, or land directly adjacent to the project area. In repeatedly rolling out the blank canvas metaphor, the SIA is a tool that renders invisible the livelihoods of people, the business and industries that already exist. This is to say nothing of the complete absence, at least as I read the SIA, of engagement with Indigenous communities, instead defaulting to landholders to speak for Indigenous people.

It is a fact that the project site is remote from communities and is surrounded by grazing lands. The draft EIS SIA Report (Appendix N) does not attempt to "render invisible the livelihoods of people … that already exist". The assessment was undertaken in accordance with the EIS TOR and relevant guidelines and is appropriate in determining the potential social impacts of the project. Refer to response to issue 35.084 regarding consultation with Indigenous people.

Submitter Issue Number 35.105 and 36.068
The proponent has failed to assess impacts of air use on other air users, such as graziers for mustering.

The operation of the project air strip would be required to comply with the Civil Aviation Safety Authority requirements.

Submitter Issue Number 35.106 and 36.035
The proponent has failed to identify sensitive receptors to aircraft noise, and engage with locals to the appropriate flight path activity and noise limit scheduling.

Sensitive receptors are described in Section 16.2 of the draft EIS. Section 16.6.7 of the draft EIS includes consideration of aircraft movements and flight paths on receptors.

PROJECT CHINA STONE
RESPONSE TO SUBMITTER NUMBER 38 SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

38 SUBMISSION

Submitter Issue Number 38.001
Submission made by Emanate Legal on behalf of Corbett - Hyde Park Station (Lot 1 on Crown Plan AY31)/View Hills Station (Lot 2493 on Crown Plan PH771). Refer to submission attachments for location maps and direction and authority form.
Note: the cover letter, TOC, executive summary and dictionary submitted has been excluded from this register.

Noted. Detailed responses are provided to the specific issues as follows.

Submitter Issue Number 38.002
The adverse impacts which arise as a result of the Project are considered by Corbett to be detrimental to Corbett and Corbett's cattle grazing operation which are unacceptable. Greater emphasis, investigation and, where necessary, compensation to Corbett must be researched, considered and addressed.
The environmental, hydrological and economic/social impacts (amongst others) that Corbett will ensure as a result of the Project will lead to impacts which adversely and directly affect their livelihood.

The location of the landholder's two properties in relation to the project site (defined by the project Mining Lease Application (MLA) Areas) is shown in Figure 5-4 of the draft Environmental Impact Statement (EIS). Lot 1 on Crown Plan AY31 adjoins the northern boundary of the project site. Lot 2493 on Crown Plan PH 771 covers the northern portion of the project site and extends to the east and west of the project site. As indicated in Section 4.3.3 of the draft EIS, the proponent has commenced discussions with the landholder in relation to gaining access to the land within the proposed MLA areas. Appropriate compensation for the landholder will be addressed in the ongoing land access discussions.

Submitter Issue Number 38.003
Project China Stone - Land Use Section 5.
Section 5.3.2 of the EIS details the surrounding land use to include:
• Cattle grazing;
• A number of rural residences;
• Recreation facilities:
o Lake Buchanan located approximately twenty kilometres (20km) to the North-West of the Project;
o Wilandspey Conservation Park located approximately twenty five kilometres (25km) to the East of the Project;

o The Blackwood National Park and Nairana National Park located more than fifty kilometres (50km) to the East of the Project; and
• Commercial facilities:
o Belyando Crossing;
o Caravan park;
o Roadhouse; and
o Hotel.
The EIS does not give sufficient weight to the importance of current land use. The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the:
• Accessibility of grazing stock to dense, well vegetated land; and
• Reproduction, growth and behaviour of grazing stock.
There are a number of recreational facilities within close proximity to the proposed Project. Should the Project be approved, it will impact on:
• Water quality values of facilities used for water skiing, camping and picnics; and
• Use and enjoyment of facilities and tourism.
The proposed Project will change the rural character of the region and must be compatible with the current surrounding land uses.
All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on current land use. Failure to do so will result in losses to Corbett's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences and recreation areas.

As indicated in Section 4.3.3 of the draft EIS, the proponent has commenced discussions with the landholder in relation to gaining access to the land within the proposed MLA areas. Appropriate compensation for the landholder will be addressed in the ongoing land access discussions. The land access agreement will address the impact of the granting of the mining leases over the landholder's property and the associated effects on the landholder's cattle grazing business.

The project is not predicted to adversely impact on the water quality of any regional recreational or tourism areas or facilities.

The potential impacts of the project on the rural character of the region and associated mitigation measures are discussed in Section 6.6 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N).

Submitter Issue Number 38.004

Project China Stone – Land Use Section 5.

Section 5.4.4 Current Land Use: Stock Route

The proposed Project will affect one (1) stock route on the Land:

• Stock Route U388BELY01, which traverses the Southern part of the Project site from South-West to North-East.

The EIS states in section 5.4.4 that:

Macmines will liaise with DNRM, the Isaac Regional Council and affected landowners in relation to the management and possible realignment of the sock route, as necessary.

The EIS does not give sufficient weight to the importance of the SRN nor does the EIS provide sufficient detail as to whether it is likely that the stock route will be impacted, and if so, to what extent and in what capacity.

Macmines fails to state whether, in the event that the stock route is impacted as a result of the Project, alternatives will be investigated, and Macmines will seek to modify its mine plan.

To be clear, the SRN is primarily used by the pastoral industry as an alternative to transporting stock by rail or road, and for pasture for emergency agistment and long-term grazing. It is used by utility companies to provide power lines, pipelines and telecommunications; and by the community generally for road transport, and recreational and other purposes such as beekeeping.

The Queensland SRN is a highly valued land management tool in respect of its environmental and iconic cultural heritage values, which are recognised nationally as being of significance.

Recent (and continuing) droughts have also established the importance of management arrangements for the SRN as the stock route network during times of drought has accrued greater significance, for example in 2002-03.

The pattern of stock route use remains one of periodic grazing; relatively short, infrequent periods of intense grazing interspersed with long periods of light or no grazing. Stock cannot walk the stock routes unless both pasture and water are present.

The value of the stock route is understood. The Department of Natural Resources and Mines (DNRM) is responsible for the management of stock routes. The stock route is within the proposed open cut mining area and may require realignment, as indicated in Section 5.4.4 of the draft EIS. The proponent will be required to address the impacts of the project on the stock route, including any realignment, to the satisfaction of the DNRM and the Isaac Regional Council (IRC), as indicated in the draft EIS.

Submitter Issue Number 38.005

The EIS does not address nor does it consider the significance of a loss of the SRN (whether on a long term or temporary basis) as to impacts on the business of landholders who use the stock routes (or may in the future) including:

• Cultural and historical values associated with SRN activities such as sites of stock route facilities; family and personal connections to certain stock routes for both indigenous and non-indigenous peoples; and intrinsic cultural values associated with the simple existence of the stock route network and its linkage to exploration and settlement.

There were no significant historical values associated with the stock route identified in the draft EIS Non-Indigenous Cultural Heritage Report (Appendix P). Similarly, stock routes are not typically considered to have any significant indigenous cultural heritage value. If relevant, these issues would be addressed as part of the DNRM approval process for any realignment of the stock route.

Submitter Issue Number 38.006

• Economic values associated with providing employment to drovers and providing more economical alternatives for moving stock. The increased costs as a result of having to relocate stock routes including increased management costs to Corbett. Environmental values associated with the benefits to the environment from walking stock routes as opposed to trucking or transporting by rail (e.g. reduced emissions).

Refer to responses to issues 38.003 and 38.004.

Submitter Issue Number 38.007

• Social values associated with employment opportunities in the droving and pastoral industries as well as local governments.

Refer to responses to issues 38.003 and 38.004.

Submitter Issue Number 38.008

Macmines has not established that it has taken the necessary steps to establish the present use of the SRN and accordingly in the absence of such cannot reasonably have assessed the potential impacts in the same.

Accordingly Corbett submits:

• The CG should adhere to the principle of preservation of stock route in terms of access as part of the Project unless the loss is deemed unavoidable in which case the landholder must be properly and adequately compensated as a result.

• In the circumstances, should the loss of SRN be unavoidable, the mine plan must be relevantly conditioned such that affected stock routes are not to be closed until a suitable realignment of the stock route has been approved by DNRM to minimise delays and disruption to stock route use and the business operations of users of stock routes.

• Corbett's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.

Refer responses to issues 38.003 and 38.004.

Submitter Issue Number 38.009

Project China Stone – Tailings and Power Station Waste Storage Facilities Section 7.

The following Sections of the EIS are of concern to Corbett and addressed below:

- Section 7.3.5 management and monitoring;
- Section 7.4 conceptual design;
- Section 7.4.5 rehabilitation and decommissioning.

Corbett submits that, in respect of Tailings and Power Station Waste Storage Facilities, the EIS fails to:

- adequately assess the Project's environmental impacts;
- adequately propose measures to avoid or minimise any adverse impacts;
- propose environmental protection commitments to protect or enhance environmental values.

The environmental impacts of the Tailings Storage Facility (TSF) and Power Station Waste Storage Facility (PSWSF), including surface water, groundwater and ecology, are addressed in each of the relevant sections of the draft EIS.

Submitter Issue Number 38.010

Management and Monitoring

Section 7.3.5 relates to management and monitoring of tailings and power station waste.

Corbett submits Section 7.3.5 of the EIS does not give adequate consideration to:

- minimising the impact to the environment, safety and health and the steps to be taken to ensure harm will not be caused;
- control measures for routine operations to minimise likelihood of environmental harm.
- contingency plans and emergency procedures for non-routine situations.

Section 7.3 of the draft EIS relates only to the geochemistry of the tailings and power station waste material. Management and monitoring of other aspects of the TSF and PSWSF are addressed in the other sub sections of Section 7 of the draft EIS.

Submitter Issue Number 38.011

Macmines has not demonstrated procedures / processes to ensure tailings / power station waste is managed to:

- minimise waste generation;
- minimise environmental pollution;
- minimise the production of tailings and waste rock wherever possible
- prevent waste rock and tailings from contaminating the surrounding environment;
- manage and control disposal of all tailings and waste rock.

Refer to response to issue 38.010.

Submitter Issue Number 38.012

Macmines has not demonstrated adequate procedures in relation to potential hazards of tailings / power station waste facilities, including but not limited to:

- inadequate site security;
- structural failure;
- operational failure;
- equipment failure; and
- unforeseen circumstances or consequences.

Refer to response to issue 38.010. Hazards associated with mine waste storage are addressed in Section 22.6.2 of the draft EIS.

Submitter Issue Number 38.013

Conceptual Design of the Tailings and Power Station Waste

Section 7.4 relates to the conceptual design of tailings and power station waste storage facilities.

Corbett submits Section 7.4 of the EIS does not adequately address / consider the design of power station waste facilities to ensure:

- the safe and stable containment of tailings;
- the minimisation or control of seepage;
- a cost effective storage system; and
- a planned system for effective closure.

The design should be adequate for the proposed use, meet contemporary standards and have identified and addressed all the likely risks associated with the site, the nature of the containment materials, the nature, quantity and treatment of the tailings, construction process and closure.

The design of the TSF has been prepared by a leading geotechnical engineering consultancy in accordance with relevant standards. The environmental impacts of the TSF, including surface water, groundwater and ecology, are addressed in each of the relevant sections of the draft EIS.

Submitter Issue Number 38.014

Further, it is important for Macmines to demonstrate that the immediate and long-term risks associated with tailings handling and storage are acceptable and to justify the design and operational decisions using conventional risk management techniques.

Hazards associated with mine waste storage are addressed in Section 22.6.2 of the draft EIS.

Submitter Issue Number 38.015

Rehabilitation and Decommissioning

Section 7.4.5 relates to rehabilitation and decommissioning.

Corbett submits Macmines have not adequately considered / addressed:

- optimising the use of waste rock during rehabilitation;
- the views of landowners, surrounding community and interested stakeholders for rehabilitation;
- waste minimisation and reuse opportunities.

Corbett submits:
• Macmines should consult with landowners, surrounding community and interested stakeholders to exchange information and views in relation to the Project and its potential hazards and approaches to address them during rehabilitation.
• consultation before and during the design and operation of the tailings and power station waste facilities and further rehabilitation of same is an integral part of risk management and can provide benefits to all affected parties.

The design of the TSF has been prepared by a leading geotechnical engineering consultancy in accordance with relevant standards. Consultation was conducted with neighbouring landholders during the preparation of the draft EIS. Landholders did not raise any concerns with the TSF during consultation.

Submitter Issue Number 38.016
Corbett's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project. Deficiencies in design of power station waste facilities, management and monitoring, inadequate controls and the like will have serious impacts on the Land and Corbett. Macmines failure to adopt adequate measures for tailings and power station waste will have real and significant impacts on the Land, including but not limited to:
• threat to human life, health or infrastructure;
• short-term and long-term pollution of ground and/or surface waters;
• raised groundwater levels resulting in salinisation of the surface and streams;
• the release of a large volume of water and semi-fluid tailings which smother vegetation, blanket the land surface and restrict stream flow with sediment;
• threat to health or life of wildlife, livestock or domestic animals;
• loss of significant native vegetation; and
• generation of dust or odour.
In light of Corbett's concerns, Corbett submits:
• Macmines must further consider its proposed measures / strategies for tailings and power station waste storage facilities for the Project; and
• the CG should adhere to the principle of preservation of Land unless the loss is deemed unavoidable in which case the landholder (Corbett) must be properly and adequately compensated as a result.

Refer to responses to issues 38.003, 38.013 and 38.014.

Submitter Issue Number 38.017
Project China Stone – Rehabilitation Section 8.
The following Sections of the EIS are of concern to Corbett and addressed below:
• Section 8.2.1 Open cut mine overburden emplacements;
• Section 8.2.2 Underground mine subsidence areas;
• Section 8.2.3 Tailings and power station waste storage facilities;
• Section 8.2.5 Decommissioning and mine closure;

• Section 8.4.1 Post mining land suitability.
Corbett submits that, in respect of rehabilitation, the Draft EIS fails to:
• adequately assess the Project's environmental impacts;
• adequately propose measures to avoid or minimise any adverse impacts;
• address relevant requirements under the Code of Environmental Compliance for Mining Lease Projects;
• propose environmental protection commitments to protect or enhance environmental values.

The submitters concerns are noted. The proponent respectfully does not agree that the draft EIS does not adequately address issues associated with rehabilitation.

Submitter Issue Number 38.018
Open Cut Mine Overburden
Section 8.2.1 relates to open cut mine overburden. Corbett submits Section 8.2.1 of the EIS does not give adequate consideration to:
• the serious adverse long term effects of open cut mine overburden and potential for:
o impacts to water quality and proposed rehabilitation strategies; and
o acid mine drainage and proposed rehabilitation strategies;

Refer to response to issue 38.017.

Submitter Issue Number 38.019
• the quality and use of the Land after Macmines has proposed to have rehabilitated same;
Any impact on the Land, use of the Land, soil and grazing will have substantial impacts on Corbett's grazing operations by:
• lessening the palatability of the grazing Land, resulting in livestock losing weight thereby decreasing productivity and income to Corbett; and
• decreasing the quality of soil, meaning a decreased quality and quantity of grazing land.

Refer to response to issue 38.003.

Submitter Issue Number 38.020
Project activities at ground level will have significant long term impacts to not only Corbett and Corbett's quiet peace and enjoyment of the Land, but also to cattle, wildlife areas and the like.

The draft EIS addresses potential impacts on ecology and land use. Refer to response to issue 38.003.

Submitter Issue Number 38.021

Whilst Section 8.2.1 of the draft EIS does provide some measures in relation to revegetation, Corbett submits Macmines proposals do not adequately address the requirements imposed under the Code of Environmental Compliance.

In accordance with the Code of Environmental Compliance, Condition 35 provides:

The holder of the environmental authority must spread seeds or plant species that will promote vegetation of a similar species and Density of Cover to that of the surrounding undisturbed areas or vegetation that is appropriate for providing erosion control and stabilisation of the disturbed areas.

Note 49 - To revegetate disturbed areas the following measures or similar measures can be used:

• for areas which have become compacted during the project, break up the soil surface to a depth that is suitable for establishing vegetation;

• spread stockpiled topsoil over disturbed areas to a depth that is suitable as a rooting medium for the revegetation process;

• provide suitable nutrient conditions for planting by using fertiliser if necessary; and

• collect and store native seeds to be used in rehabilitation.

Note 50 - When revegetating disturbed areas, the holder of the environmental authority should plant native species endemic to the area and location in the landscape (e.g. if clearing has occurred in a riverine area, revegetate the disturbed area using local riverine species).

Note 51 - Vegetation used to stabilise disturbed areas in the short term should be comprised of sterile, short-lived species (e.g. a cover crop). However, the long term aim of revegetating any disturbed area is to establish a stable vegetation community that is similar to that of the surrounding undisturbed landscape.

Macmines failure to adopt adequate measures for revegetation will have real and significant impacts on the Land, including but not limited to:

• adverse impacts on soil structure;

• natural grasses will not regenerate as fast as other species which will result in a reduced carrying capacity on the Land;

• destruction of various vegetation species;

• irreversible damage to ecosystems.

The proposed revegetation is consistent with established rehabilitation methods and is considered to be adequate.

Submitter Issue Number 38.022

Subsidence

Section 8.2.2 of the EIS details Macmines proposed mitigation for tension cracking and buckling, in particular:

• A survey of potential subsidence cracking areas will be undertaken within six (6) months of subsidence to locate individual cracks and assess the level of treatment required to rehabilitate each crack. Six (6) months will allow sufficient time for the full effects of subsidence to take place…

• Subsidence crack treatment will involve:

o Ripping or ploughing minor cracks using a small tractor or dozer. These areas will be allowed to

regenerate naturally through inherent seed resources, vegetation propagation from rootstock and recruitment from adjoining undisturbed edges;
o Stripping large cracks of topsoil, excavating and backfilling the cracks…
• The subsidence crack rehabilitation work area will be clearly delineated in order to limit disturbance to the minimum area necessary and prevent unnecessary encroachment of disturbance.
Corbett considers Macmines proposed mitigation measures for subsidence is not adequate. Macmines has not considered the time of year, during wet or dry seasons the surveying will be undertaken.

The surveying will occur within six months of subsidence, regardless of the time of year.

Submitter Issue Number 38.023
Further, surveying potential subsidence cracks within six (6) months will not adequately assess the level of treatment required to rehabilitate each crack, accordingly Corbett questions the accuracy of any surveying results undertaken only within a six (6) month period. In failing to accurately assess the "before" state of the Land, Macmines are unable to demonstrate that the Land will be restored correctly after the completion of the Project.

Effective crack rehabilitation does not require an assessment of the land prior to subsidence, as suggested.

Submitter Issue Number 38.024
In relation to subsidence crack treatment, Macmines has not addressed / considered:
• Condition 35 of the Code of Environmental Compliance for Mining Lease Projects, in particular Note 49 to 51 (detailed above);

The proposed revegetation methods for crack rehabilitation are based on experience with effective crack rehabilitation from operating mines.

Submitter Issue Number 38.025
• The extent of vegetation clearing operations and identifying same on a plan to ensure clearing is avoided where necessary;

Clearing control procedures are described in Section 24.4.3 of the draft EIS.

Submitter Issue Number 38.026
• The impacts of Corbett's cattle and grazing operations on the Land, following the stripping of large cracks of topsoil and ripping or ploughing minor cracks using a small tractor or dozer;

Refer to response to issue 38.003.

Submitter Issue Number 38.027

• Vegetation clearing being undertaken in a sequential manner to allow more mobile fauna species the opportunity to disperse from cleared areas and clearing activities. Furthermore clearing within areas of high ecological value, must be undertaken with care and rehabilitated to restore connectivity to the highest realistic extent following the clearing.

The impacts of clearing, and proposed mitigation and management measures are discussed in Section 9 of the draft EIS.

Submitter Issue Number 38.028

Tailings

Section 8.2.3 of the draft EIS refers to Section 7 – Tailings and power station waste storage facilities.

In accordance with Section 7.4.5 of the draft EIS, Macmines provided:

… no special management measures or rehabilitation techniques are required for the tailings and power station waste material.

Corbett rejects this position.

Corbett notes Macmines geochemical assessment concluded the risk of potential environmental impacts are expected to be low. Notwithstanding, Macmines must have in place management measures / rehabilitation techniques to ensure no environmental impacts are caused should tailings / waste storage have unforeseen risks. The failure to adequately rehabilitate the Land presents a threat of serious and irreversible environmental damage.

The conclusions of the geochemical assessment of the mine waste materials are based on detailed geochemical testing conducted by a specialist geochemist. The rehabilitation methods proposed for the TSF and PSWSF are suitable for these types of facilities.

Submitter Issue Number 38.029

Decommissioning and Mine Closure

Section 8.2.5 of the draft EIS considers decommissioning and mine closure.

As the Project / coal production is proposed is unknown and will continue for a fifty (50) year operational mine life, the Draft EIS has not addressed:

• how Macmines rehabilitation and decommissioning strategies / plans and the like will updated;
• changing significance of impacts and hazards associated with the mining activity;
• changes in legal and other obligations; and
• learnings and corrective actions from monitoring activities.

Macmines must reconsider its decommissioning strategies and amend to include (*inter alia*) the foregoing concerns of Corbett.

Decommissioning and mine closure are required to be conducted in accordance with the Environmental Authority and to the satisfaction of the Department of Environment and Heritage Protection.

Submitter Issue Number 38.030

Post Mining Land Suitability

Section 8.4.1 of the draft EIS in relation underground mine areas provides:

Following underground mining surface subsidence effects will result in the development of a series of shallow troughs relative to natural topography with gentle slopes.

The Draft EIS fails to address fundamental rehabilitation criteria necessary for the type of activity and impact on the Land rehabilitation, specifically in relation to:

• impacts to Corbett and grazing operations in relation to timing of rehabilitation to restore the pre-mine land being suitable for grazing;

• restoring the surface level of the Land to its original condition;

• reinstating the natural contours and channel of every watercourse;

• shaping the area so that it conforms as far as reasonably practicable with the surrounding topography;

• reforming all drainage lines, waterways and creek beds to stable contours and as near as reasonably practicable to the situation existing prior to mining; and

• achieving a post mining land use capability across the lease area equal with that pre-existing the Lease, where this is technically feasible.

Refer to response to issue 38.003. The management of drainage in subsidence areas is addressed in Section 13.4.1 of the draft EIS. The impacts of subsidence on land suitability is addressed in Section 8.4 of the draft EIS.

Submitter Issue Number 38.031

Section 8.4.1 of the draft EIS provides:

Following open cut mining the overburden emplacement areas and final voids will not be able to be restored to their pre-mining land suitability for grazing.

In relation to Section 8.4.1, Macmines have not addressed the conflict of Land uses. The Project represents a conflict between competing land uses of agriculture, livestock grazing and other traditional land uses. The Project requires large amounts of land that could otherwise be used for agricultural production. This sets up a direct competition with small-scale agriculture for control and use of land.

As indicated in Section 8.3.3 of the draft EIS, the project site is low quality grazing and agricultural land. There is no small scale agriculture in the area and once landholder compensation agreements are in place, there is not likely to be any conflict of land use associated with the project.

Submitter Issue Number 38.032

Corbett's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.

It is in the Qld Government, Macmines and Corbett's benefit to ensure rehabilitation is completed successfully and to proper standards that ensure the long term sustainability to the traditional use of the Land, grazing. Poorly rehabilitated mines provide long term issues for governments,

communities and companies, and ultimately tarnish the reputation of the mining industry as a whole. Poor planning invariably increases the costs of rehabilitation and mine closure and decrease overall profitability.
A rehabilitation strategy should be reviewed annually throughout the life of the Project. As any operational plan changes or rehabilitation activities are completed, the strategy should be updated to reflect any changes.

Refer to response to issue 38.003. Rehabilitation is required to be conducted in accordance with the Environmental Authority conditions and to the satisfaction of the Department of Environment and Heritage Protection.

Submitter Issue Number 38.033
Macmines have not demonstrated how the Project will (*inter alia*):
• avoid and minimise future environmental harm;
• reinstate the original natural ecosystem; and
• reinstate previous land use (e.g. grazing).
In light of Corbett's concerns, Corbett submits:
• Macmines must further consider its proposed rehabilitation and decommissioning strategies for the Project;
• Macmines must ensure its proposed rehabilitation strategies are in accordance and promote the objectives and requirements of the Code of Environmental Compliance for Mining Lease Projects;
• the CG should adhere to the principle of preservation of Land and importance of rehabilitation unless the loss is deemed unavoidable in which case the landholder (Corbett) must be properly and adequately compensated as a result.

Rehabilitation and impacts on land suitability and ecology are adequately addressed in the draft EIS.

Submitter Issue Number 38.034
Project China Stone – Terrestrial Ecology Chapter 9.
Section 9.5.4 and the Terrestrial Ecology Report (Appendix F) of the EIS identifies threatened species listed under the *Nature Conservation Act* 1992 recorded during the field surveys to include:
• Squatter Pigeon;
• Black-throated Finch;
• Koala; and
• Short-beaked Echidna.

Noted.

Submitter Issue Number 38.035

Should the Project be approved, suitable high value habitat for these species within the Project area will be reduced, effecting the conservation of these species. The impact of the proposed activities on the terrestrial ecology within the Project area is detailed in the EIS to include impacts of:

• Vegetation clearing for the open cut mine and construction of mine infrastructure; and

• Disturbance from noise and vibration, lighting, dust, erosion and the introduction of invasive species; and

• Disturbance and removal of habitat features providing foraging, shelter and breeding opportunities.

Accordingly the proposed Project, if approved, will add further pressure on the threatened species within the Galilee Basin.

It is neither adequate nor sufficient for a Project of the scale proposed by Macmines to state with respect to the proposed clearing footprint of the mine at Section 9.6.2:

". . . it was not possible to design a layout that avoided significant vegetation clearing because of the numerous technical and environmental constraints of the project design".

The Project should be refused on this ground as the entire Project area is well vegetated with remnant vegetation comprising Eucalyptus and Acacia open woodland. There is no alternative Project layout that would avoid clearing remnant vegetation. A considerable percentage of high valuable habitat for the species listed in the NC Act will be removed and disturbed by the proposed activities which will cause irreversible and unavoidable impacts on the terrestrial ecology within the Project area.

Mitigation measures for the impacts of the project on ecological values are provided in Section 9 of the draft EIS.

Submitter Issue Number 38.036

Project China Stone – Groundwater Chapter 12 The EIS outlines in section 12.4.2 two distinct areas within which the groundwater regime will be affected by the proposed mining activities as follows:

• The Northern Underground where dual seam underground mining is proposed below the elevated ridgeline of Darkies Range, and subsidence cracking will potentially result in hydraulic connection between the underground mines and the overlying Clematis Sandstone; and

• The lower lying area in the south of the Project area where the open cut mining area and single seam Southern Underground are proposed, and the Clematis Sandstone is essentially absent.

Noted.

Submitter Issue Number 38.037

The impact of the proposed activities on the groundwater regime is detailed in the EIS to include:

• Dewatering by extracting coal by longwall mining and open cut mining and in so doing, lowering surrounding groundwater levels;

• Subsurface subsidence cracking of strava overlying the proposed longwall mines, changing the permeability of the overlying units and influencing surrounding groundwater levels;

• Construction of tailings storage facility and power station waste storage facility, which have the potential to generate leachate and give rise to groundwater contamination;

• Use of hydrocarbons and chemicals which have the potential to give rise to groundwater contamination; and

• Formation of a residual void in the final mine landform, that has the potential to influence surrounding groundwater levels and quality.

The proposed activity will cause groundwater contamination as a result of seepage from:

• Tailings storage facility;

• Power station waste storage facility;

• Overburden emplacement areas and the final void lake; and

• Hydrocarbon and chemical storage.

The groundwater modelling conducted for the EIS is insufficient to establish the true extent of associated subsidence cracking and is not an effective or accurate prediction of depressurisation and the associated impacts on groundwater. Consequently, the EIS does not address the magnitude of direct impacts on the groundwater levels and flow directions within the Project area.

The operation of the proposed Project must maintain, preserve and protect current groundwater values.

All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on current groundwater values.

The draft EIS Groundwater Report (Appendix I) includes a comprehensive groundwater assessment that describes the extent of groundwater impacts from the project and the proposed impact management measures.

Submitter Issue Number 38.038

Project China Stone – Surface Water Chapter 13

At 13.2.4, page 13-4 of the EIS Chapter in respect of surface water quality Macmines states:

". . . the project site is remote and is located at the head of the catchments. It has highly ephemeral, short duration, surface water flows. These factors severely limit the ability for any regular sampling of surface water flows from the project site. Site surface water quality was sampled from remnant surface water during the aquatic ecology field surveys in May and October/November 2012. . . As these water quality results are from remnant ponded surface water they are not representative of the quality of site surface water flows and therefore not presented in this section".

At 13.2.4, page 13-5 of the EIS Chapter in respect of baseline water quality assessment Macmines states:

"Natural background concentrations of aluminium, copper and zinc exceed the most conservative

of the quoted guidelines at all monitoring locations. Iron is also present in the Belyando and Sutton Rivers at concentrations above the most conservative quoted guidelines".
At 13.5.5, page 13-19 of the EIS Chapter in respect of water management system preformance Macmines states:
"The modelling results show the median water supply demands are variable over the life of the mine and are generally significantly greater than the amount of mine affected water that will be generated by the project. This indicates a significant overall water deficit for the project and the need for a significant external water supply"."

Noted.

Submitter Issue Number 38.039
The Project is located at the head of the catchments and as such all of the run-off, uncontrolled discharge and subsequent contamination and sedimentation caused by the proposed activities will impact on surface water quality as detailed in the EIS to include:
• Sedimentation of downstream waterways during construction and operations due to erosion from disturbed areas on the Project site and increased sediment loads in site drainage water;
• Mining disturbance and mine site drainage changing catchment areas, potentially resulting in downstream catchment yield impacts;
• Mining disturbance and mine site drainage altering downstream drainage, resulting in:
o Changes to flood behaviour including flow paths, flood inundations areas and flow velocities;
o Geomorphic impacts on watercourses and drainage lines including impact on channel bed and bank stability;
• Subsidence of the ground surface and surface drainage features as a result of underground longwall mining, resulting in;
o Surface drainage impacts including ponding of runoff in subsidence depressions; and
o Geomorphic impacts on subsided drain lines including impacts on channel bed and bank stability;
• Controlled discharge of mine-affected water resulting in downstream water quality impacts on environmental values and water users; and
• Impacts of the final landform and final void on surface drainage.

Noted.

Submitter Issue Number 38.040
The EIS did not include the water quality results obtained from the remnant ponded surface water on the basis they were not representative of the quality of site surface water flows. The EIS does not give sufficient weight to the importance of this data set and measures must be implemented to obtain accurate surface water samples during surface water flows to establish reliable surface water quality values within the Project area.

The statement that the water quality of remnant ponds is not representative of surface water flows is correct. Baseline water quality is discussed in Section 13.2.4 of the draft EIS. Further baseline

water quality monitoring is proposed as explained in Attachment E – Additional Information on Surface Water.

Submitter Issue Number 38.041
The Project is located within the Galilee Basin and as such is closely related to other projects currently under investigation or expected to commence investigations in the next five (5) years so the cumulative impact of contamination to surface waters from the proposed and surrounding activities and infrastructure will significantly affect already elevated surface water values as the run-off from mine infrastructure areas will include:
• Elevated levels of suspended solids;
• Hydrocarbons; and
• Elevated levels of metals.

The potential cumulative impacts on surface water are discussed in Section 23.7 of the draft EIS.

Submitter Issue Number 38.042
Should the Project be approved, the supply of water is of great concern as the mine water management system is predicted to have a water deficit over the life of the mine. The EIS modelling shows the annual external water requirement will range from 903 to 12,300ML pa over the life of the mine. At page 13-25 of the Chapter Macmines proposes to gain an allocation to harvest water from the Cape River or the Belyando/Sutton River. The harvesting of water from surrounding watercourses will have a significant impact on the availability and quality of water consumed by Corbett and surrounding users for domestic and recreational use and on the water consumed by Corbett's cattle.

As described in Section 4.13 of the draft EIS, the provision of the raw water supply required for the project is not within the scope of this EIS. It will be subject to separate environmental impact assessment and approval.

Submitter Issue Number 38.043
The proposed Project will impact on flood levels as a result of the redistribution of water and changes to flow velocities. The determination of the flood afflux in the EIS is insufficient to establish the true extent of flooding that will arise from the proposed mining activities. The EIS does not give sufficient weight to the importance of the determination of the flood afflux.
As such, the magnitude of any afflux and its impacts on the Project area have not been sufficiently investigated or established.
Reliable and representative baseline studies must be conducted to establish accurate surface water quality values within the Project area.
Further investigation needs to be undertaken in order to consider the true flood impacts. The Project must not proceed until known flooding potential and risk have been established using a reliable method of determination so that Corbett can understand the impacts of the Project in terms of flooding on Corbett's grazing business and domestic and recreational use.
All necessary and required mitigation measures must be put in place to eliminate all adverse

hydrological impacts of the Project on surface water values. Failure to do so will result in cumulative contamination of surface waters and result in cumulative losses to Corbett's cattle grazing and watering and surrounding irrigated agriculture.

Flood afflux and its impacts are discussed in Section 13.6.3 of the draft EIS. The assessment of flood afflux is based on a flood modelling assessment.

Submitter Issue Number 38.044
Project China Stone - Air Quality Section 15.
The TOR required Macmines to describe the existing air quality that may be affected by the Project, and detail the best practice mitigation measures together with proactive and predictive operational and maintenance strategies that could be used to prevent and mitigate the impacts of the predicted air quality.

Noted.

Submitter Issue Number 38.045
The EIS does not appropriately identify the existing air quality in the area of the Project.
The EIS states at section 15.6 that there are no DEHP air quality monitoring stations operating in the vicinity of the Project, and data has therefore been sourced from:
• Air quality assessments from other coal mines in the region; and
• Monitoring data from DEHP's monitoring stations at Toowoomba and Townsville.
The assumption made by Macmines that the data sourced with respect to existing air quality in the region of the Project is similar, or identical to, that at other projects, or to that at Toowoomba or Townsville, is flawed.
To be clear, the potential sources and types of dust in the region of the Project are highly likely to differ significantly from both Toowoomba and Townsville, as both areas are significantly larger, heavily populated centres, with limited farming and/ or grazing land located at their centre.

As indicated in Section 15.6 of the draft EIS, monitored levels of NO_2, CO and SO_2 in Toowoomba and Townsville have been used to characterise baseline levels for the project. Given the remote location of the project site and the lack of any significant sources of NO_2, CO and SO_2 in the project area, these levels are likely to be conservative.

Submitter Issue Number 38.046
The EIS's prediction methodology to determine whether any potential adverse impacts on health or amenity may occur is also flawed.
The EIS states at section 15.7.2 that "off-site project-generated traffic will access the project site via sealed roads and is therefore not a potentially significant dust emission source." The traffic from vehicles accessing the Project has not been included in the list of key mining activities that could contribute to dust generation.
To be clear, transport and traffic accessing the Project is likely to be considerable given the significant workforce (estimated at 3,300 employees at peak employment). Both the Moray-

Carmichael Road and the Elgin-Moray Road are unsealed roads which provide direct access to the Project from larger sealed roads.
Each of the five (5) key roads to be utilised by the Project traffic allow B-triples, Type 1 and 2 Road trains and B-Double vehicles, all guaranteeing significant traffic dust emissions onto the land adjacent to the roads.
Given the above, it is therefore clear that Macmines assessment that the predicted levels of each pollutant are below the relevant air quality objectives at all sensitive receptors is flawed.

The reference to sealed roads in Section 15.7.1 of the draft EIS relates to the status of the roads at the time the mine is operating rather than the current status, as suggested.

Submitter Issue Number 38.047
Further, Macmines have failed to describe existing air quality levels in areas other than sensitive receptors (such as grazing pasture, water points etc.). The Corbett's run a successful grazing operation, whereby the necessity of palatable grazing pasture and clean water for cattle is of significant importance. If, as a result in an increase in dust particles and an decrease in air quality results in a decrease in the quality of water or palatable grazing pasture, Corbett's farming operation will certainly be adversely affected by:
• Stock being less inclined to feed on the pasture available, thereby not increasing in weight and being less profitable for sale;
• Stock being less inclined to water at the available water resources, thereby not increasing in weight and potentially suffering health impacts, thereby being less profitable for sale;
• Corbett being required to cart in (at Corbett's additional time and expense) supplementary feed for stock to ensure usual weight increases and supplements gained; and
• Corbett being required to cart in (at Corbett's additional time and expense) clean quality drinking water for stock.

The potential for dust impacts on grazing are discussed in Section 2.2 of the draft EIS Air Quality Report (Appendix L).

Submitter Issue Number 38.048
The mitigation measures provided in section 15.8.12 of the EIS are insufficient in that they:
• Fail to detail the specific requirements for watering haul roads such as the number of times per day watering will be required and the location that the water will be resourced from;

The number of times per day a haul road needs to be watered will vary considerably dependent on the amount of traffic using the road and the weather conditions. The dust suppression water will be supplied from the mine water management system and the water truck fill point will also vary dependent on a range of factors.

Submitter Issue Number 38.049

• Fail to detail within what period the rehabilitation of inactive disturbed areas must be undertaken;

The progressive rehabilitation of the mine is illustrated in the conceptual staged mine layout plans (Figures 4-12 to 4-15 of the draft EIS).

Submitter Issue Number 38.050

• Fail to describe proactive and predictive operational and maintenance strategies that could be used by Macmines to prevent and mitigate the impacts to air quality.

Accordingly Corbett submits:

• The CG should require correct baseline monitoring to determine existing air quality levels.

• That Macmines must be required to include all mining proposed activities into its assessment in the establishment of estimated levels of air pollutants to determine whether any potential adverse impacts may occur.

• The CG should adhere to the principle of preservation of, or minimisation of impact on, Corbett's grazing land as a result of increased particulate matter, unless the adverse impacts is unavoidable in which case the landholder (Corbett) must be properly and adequately compensated as a result.

• Corbett's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarding in considering the merits of the Project.

Refer to responses to issues 38.045, 38.046 and 38.047.

Submitter Issue Number 38.051

Project China Stone – Air Quality Section 15.

Section 15.9 of the EIS provides that greenhouse gases will be produced by the Project as a result of the:

• combustion of coal for power generation;

• fuel consumption; and

• fugitive emission of coal seam gas.

Noted.

Submitter Issue Number 38.052

The EIS does not give sufficient weight to the importance of current land use and the potential for adverse impacts as a result of increased greenhouse gas emissions.

The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, and significant greenhouse gas emissions in the surrounding area increase, the following adverse impacts will be seen:

• An increase in health risks to surrounding landholders;

• An increase in health risks to grazing stock;

• An increase in pollution;

• Terrestrial and aquatic ecology; and

• Changes to plant growth and nutrition levels.

The proposed Project must adequately take into consideration the current greenhouse gas emissions and the current and anticipated land use. All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on current greenhouse gas emission levels. Failure to do so will result in losses to Corbett's cattle grazing business and to the livelihood and enjoyment of surrounding rural land.

The assessment of greenhouse gas emissions in the draft EIS has been conducted in accordance with the requirements of the EIS Terms of Reference.

Submitter Issue Number 38.053

Project China Coal – Noise and Vibration Section 16.

Section 16.3 of the EIS states that data is obtained from environmental noise monitors at two (2) monitoring locations.

In obtaining data from only two (2) monitoring locations, the EIS inadequately assesses the existing noise environment and fails to take into consideration the current land use in the Project area.

The two (2) monitoring locations are both located to the south west of the Project. No monitoring data has been obtained from any other direction from the Project.

Clearly noise data is likely to differ depending on:

- Terrain between the Project and the monitoring location;
- Wind directions;
- Proximity to different Project infrastructure; and
- Proximity to roads connecting to the Project

Noise monitoring conducted for the draft EIS confirmed that background noise levels are very low in the surrounding areas. Consequently, the noise criteria for the project are the most stringent possible. Any further noise monitoring at other locations would therefore have no effect on the outcomes and conclusions of the draft EIS noise assessment.

Submitter Issue Number 38.054

Further, the noise assessments which have been undertaken do not give sufficient weight to the current land use and the potential impact of noise on the land use.

The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the:

- Accessibility of grazing stock to dense, well vegetated land; and
- Reproduction, growth and behaviour of grazing stock.

The proposed Project will significantly alter the existing noise environment and must be compatible with the current surrounding land uses, including residential and grazing.

It is imperative that Macmines provides, and implements noise mitigation measures to eliminate the potential for adverse impacts of the Project on both sensitive receptors and current farming operations. Failure to do so will result in losses to Corbett's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences and recreation areas.

Mine noise is not known to have an adverse impact on grazing properties. There are numerous examples of mines that have active cattle grazing on fenced areas within operating mine sites.

Submitter Issue Number 38.055
Project China Coal – Noise and Vibration Section 16.
Section 16.6.8 of the EIS states that "Predicted ground vibration and blast overpressure levels are well within the criteria at the closest receptor for this MIC (Maximum Instantaneous Charge).
The EIS inadequately assesses the predicted ground vibration and blast overpressure and fails to take into consideration the current land use in the Project area.
Whilst the predicted levels are within the criteria at the closest receptor for this MIC, there is no certainty that predicted levels are within the criteria at other receptors.
Clearly ground vibration and blast overpressure data is likely to differ depending on:
• Terrain between the Project and the receptor;
• Infrastructure and/ or vegetation between the Project and the receptor.

The majority of Queensland coal mines are location in proximity to grazing properties. Ground vibration and overpressure are not proven to have any adverse impacts on neighbouring grazing properties. The assessment of impacts on receptors considered the worst case closest receptor. The impacts on any more distant receptors would be less than the closest receptor.

Submitter Issue Number 38.056
Further, the predicted ground vibration and blast overpressure assessments which have been undertaken do not give sufficient weight to the current land use and the potential impact of vibration and blasting on the land use. The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the:
• Accessibility of grazing stock to dense, well vegetated land; and
• Reproduction, growth and behaviour of grazing stock.
The proposed Project will significantly alter the existing environment and must be compatible with the current surrounding land uses, including residential and grazing. It is imperative that Macmines provides, and implements vibration and blasting mitigation measures to eliminate the potential for adverse impacts of the Project on both sensitive receptors and current farming operations. Failure to do so will result in losses to Corbett's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences and recreation areas.

Refer to response to issue 38.055.

Submitter Issue Number 38.057
Project China Stone – Visual Amenity Section 17.
Section 17.3.2 of the EIS states that "Visual receptors in the vicinity of the project site are limited to isolated rural residences and unsealed local government roads. The three closest residences were selected for the purposes of the visual impact assessment."
The EIS does not adequately assess the visual receptors in the vicinity of the project site by merely assessing the three (3) closest residences.

There are sixteen (16) residences within fifty (50) kilometres of the Project, located in all directions of the Project. The Three (3) residences which were assessed failed to provide an assessment of the visual impact on residences to the north, north-west, north-east and south east of the Project.
Two of the three (3) residences assessed have visual settings which are impeded by the Darkies Range. All residences in differing directions to the Project do not have visual settings which are impeded by the Darkies Range, thereby increasing the likelihood of a high visual impact at those residences.
Merely two (2) lines of sight were drawn for each receptor, failing to sufficiently address the whole impact on the receptors.

As discussed in Section 17.3.2 of the draft EIS, visual effects and impacts on areas beyond the closest residences will generally be less than those at the closest residences. The visual impact on the closest receptors was assessed as low. The visual assessment was based on worst case line of sight locations.

Submitter Issue Number 38.058
The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the farming operations of the surrounding landholders by:
• Cattle shying away from new, and abnormal, visual infrastructures in their surroundings; and
• Thereby altering the usual grazing and watering patterns of the stock (thereby impacting on reproduction, growth and behaviour of grazing stock).
The proposed Project will change the rural character and visual amenity of the region and must be limited so as to refrain from impacting on residences and the current surrounding land uses.
All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on nearby residences and current land use. Failure to do so will result in losses to Corbett's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences.

Coal mines are not known to create visual impacts that adversely impact cattle grazing. Visual impact mitigation measures are discussed in Section 17.4 of the draft EIS.

Submitter Issue Number 38.059
Project China Stone – Traffic and Transport Section 19.
Section 19.2 of the EIS identifies traffic and transport impacts as a result of the Project to include:
• Impacts on intersections;
• Impacts on road pavements;
• Impacts on road safety;
• Impacts on public transport; and
• Impacts on other modes of transportation.

Noted.

Submitter Issue Number 38.060

Should the Project be approved, suitable and necessary road networks within the Project area will be limited, affecting the safety of both drivers and the surrounding environment.

The proposed Project activities will impact on the current road network within and surrounding the Project including by:

• Considerably increasing traffic numbers during the construction and operation phases;

• Considerably altering vehicle types utilising the road network, ranging from standard vehicles up to multi-combination vehicles;

• Increasing disturbance to the current road networks and surrounding land as a result of the above, including disturbance to residences and grazing land from:

o noise and vibration;

o lighting and dust;

o erosion and subsidence; and

o the potential introduction of weed species.

A Road Impact Assessment (Appendix O) is presented in the draft EIS. Refer to responses to issues 38.047, 38.054, 38.055 and 38.058.

The mine is not predicted to impact neighbouring grazing properties due to erosion or subsidence. Proposed controls for the spread of weeds is discussed in Section 9.7.3 of the draft EIS.

Submitter Issue Number 38.061

The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the farming operations of the surrounding landholders by:

• Cattle shying away from new, and abnormal, increased traffic and vehicle types in their surroundings; and

• Thereby altering the usual grazing and watering patterns of the stock (thereby impacting on reproduction, growth and behaviour of grazing stock).

The proposed Project will change the rural character and rural road network currently seen in the region and must be restricted so as to ensure no adverse impacts are felt by residences and the current surrounding land uses (grazing).

All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on nearby residences and current land use. Failure to do so will result in losses to Corbett's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences.

There are many major roads in Queensland adjacent to cattle grazing properties and cattle are not known to be adversely impacted by road traffic.

Submitter Issue Number 38.062

Project China Stone – Cultural Heritage Section 20.

Section 20.2.2 provides that the Wangan and Jagalingou People "have been identified as the Aboriginal parties for the project, in accordance with the ACH Act. The proponent has put in place with its consultant, the process to initiate a CHMP with the Wangan ad Jagalingou People, in accordance with the ACH Act. The CHMP is required to be finalised prior to the commencement of construction.

The EIS fails to provide or require appropriate assessment of the potential impacts of a project on Aboriginal heritage prior to approval of the Project. By simply requiring that the CHMP be finalised prior to the commencement of construction, the potential impacts of the Project on Aboriginal heritage will possibly be missed, and or not given sufficient weight and their importance considered.

It is necessary that the CHMP be required to be finalised earlier in the approval stage for the Project to adequately assess the potential impacts of the Project on Aboriginal heritage and to enable appropriate mitigation measures to be investigated and put into place.

As explained in Section 20.2.2 of the draft EIS, the proposed management of Aboriginal cultural heritage is in accordance with the requirements of the *Aboriginal Cultural Heritage Act*.

Submitter Issue Number 38.063

Project China Stone – Non-Mining Waste Management Section 21.

Section 21.2.2 of the EIS identifies the legislative requirements for a waste management hierarchy where waste management options are considered in a structured order as follows:

- Waste avoidance (most preferred) (1);
- Waste reduction (2);
- Waste reuse (3);
- Waste recycling (4);
- Recover waste resources (5);
- Treat waste (6); and
- Waste disposal (least preferred) (7).

The EIS assesses each type of waste proposed by the Project taking into consideration the waste management hierarchy.

Not one (1) of the management strategies proposed by Macmines are assessed as a (1) in the waste management hierarchy (waste avoidance) or a two (2) in the waste management strategy (waste reduction). Conversely, numerous management strategies are assessed as a (7) in the waste management hierarchy (Waste disposal).

Should the Project be approved, significant waste will be generated within the Project area, and the removal and/ or disposal of that waste will fail to be dealt with in accordance with best practice management strategies, affecting the Project area.

The proposed management of waste is in accordance with the relevant regulatory requirements.

Submitter Issue Number 38.064
The limited waste management strategies for the Project activities will impact on the Project area, the surrounding land and the surrounding land by:
• Adversely impacting on the life, health and well-being of people in the vicinity of the Project and the surrounding lands;

Refer to response to issue 38.063.

Submitter Issue Number 38.065
• Adversely impacting on the life, health and well-being of livestock in the vicinity of the Project and the surrounding lands;

Refer to response to issue 38.063.

Submitter Issue Number 38.066
• Adversely impacting the ecological processes and associated ecosystems in the Project area and the surrounding area; and

Refer to response to issue 38.063.

Submitter Issue Number 38.067
• Adversely impacting the current land use and land use capability having regard to economic considerations.

Refer to response to issue 38.063.

Submitter Issue Number 38.068
Corbett's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.
It is in the Qld Government, Macmines and Corbett's benefit to ensure waste removal and/ or waste disposal is completed cleanly, effectively and in accordance with best management practices that ensure the long term sustainability to the traditional use of the Land, grazing.
The management of waste should be reviewed prior to the Project's approval, and thereafter annually throughout the life of the Project. As any planned activity is altered or activities are completed, the strategy should be updated to reflect any changes.

Refer to response to issue 38.063.

Submitter Issue Number 38.069

Macmines have not demonstrated how the Project will (*inter alia*):

• avoid and minimise current and future environmental harm; and

• minimise impacts on current and previous land use (e.g. grazing).

In light of Corbett's concerns, Corbett submits:

• Macmines must further consider its proposed waste management strategies for the Project;

• Macmines must ensure its proposed waste management strategies are in accordance with, and promote the environmental values as set out in section 21.2.3 of the EIS.

Refer to response to issue 38.063.

Submitter Issue Number 38.070

Project China Stone – Hazard and Risk Section 22.

Section 22.6 of the EIS states that the key potential hazards of the Projects are:

• Storage of mine-affected water in various mine water dams which could potentially be hazardous in the event of an unplanned or unmanaged release;

• Storage of tailings and other mine wastes which could potentially be hazardous in the event of an unplanned or unmanaged release;

• Operation of a coal-fired power station to provide electricity for the operation of the mine. The power station could be potentially hazardous in the event of an explosion;

• Operation of a private airstrip for the transport of mine workers;

• Transport, storage and use of a range of hazardous materials, including explosives that can create hazardous conditions if not appropriately managed.

Additionally, section 22.6 of the EIS also highlights potential hazards associated with:

• Natural events such as bushfires, floods and climate change;

• Malicious acts and terrorism;

• Incidents with the treatment of potable water or sewage; and

• Disease vectors including mosquitoes and communicable diseases.

The EIS states that:

"As far as practicable, project infrastructure has been located to maximise separate between potentially hazardous facilities and activities in order to minimise potentially hazardous conditions for workers, sensitive receptors and to address community safety values. The remoteness of the site from populated areas also limits the potential risks from the project. This remoteness also addresses the potential cumulative risks of the project interacting with off-site hazards."

Noted.

Submitter Issue Number 38.071

The EIS does not give sufficient weight to the dangers and risks posed by the Project, nor does the EIS provide sufficient detail and provision of management strategies to mitigate and limit the potential hazards raised.

To be clear, the Project area and surrounding land is primarily used by landholders for their farming operations – their businesses and their homes.

The grazing operations which take place on the Project area and on the surrounding lands are highly successful and valued land uses.
The EIS does not address, nor does it consider, the significance of a loss of, or significant impact to the current land use (whether on a long term or temporary basis) as a result of a hazardous outcome, as to impacts on the business of landholders who currently use the Land (or who may use the Land in the future).
Macmines has not established that it has taken the necessary steps to minimise the very real risks of hazards as a result of the Project and accordingly in the absence of such cannot reasonably have assessed the potential impacts in the same.
Corbett's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.

Section 22.5 of the draft EIS identifies the surrounding land use and sensitive receptors in proximity to the project site. A preliminary hazard analysis is presented in Table 22-5 of the draft EIS and Section 22.4 of the draft EIS explains that a more detailed re-appraisal of project hazards will be undertaken as part of the development of the project Safety and Health Management System, prior to the commencement of construction.

Submitter Issue Number 38.072
Macmines have not demonstrated how the Project will (*inter alia*):
• avoid and minimise current and future environmental harm; and
• minimise impacts on current and previous land use (e.g. grazing).
In light of Corbett's concerns, Corbett submits:
• Macmines must further consider its proposed hazard and risk management strategies for the Project;
• Macmines must ensure its proposed hazard and risk management strategies are in accordance with, and promote the safety and health management system that is put in place in accordance with section 22.3.2 of the EIS.

Refer to response to issue 38.071.

Submitter Issue Number 38.073
Project China Stone – Cumulative Impacts Section 23.
The TOR required Macmines to provide a summary of the Project's cumulative impacts and describe these cumulative impacts in combination with those of existing or proposed projects publicly known or advised by the Office of the Coordinator-General to be in the region.
Importantly, the CG required that cumulative impacts be assess with respect to:
• Both geographic location and environmental values.
• Address cumulative impacts in sensitive environmental areas.
• Explain the methodology used to determine the cumulative impacts of the Project, detailing the range of variables considered (including relevant baseline or other criteria upon which the cumulative aspects of the Project have been assessed).
Section 23 of the EIS details the cumulative impact assessments and the mitigation and

management measures for each of the relevant environmental aspects addressed in the EIS. Section 23.3 of the EIS states that: "The cumulative impact assessments have considered the impacts from the CCM& RP and the MPP, where relevant, with those predicted for the project."

Noted.

Submitter Issue Number 38.074

The EIS does not give sufficient weight to the mining industry (and proposed future mining industry) in the area of the Project. Whilst there are currently no operating coal mines in the Galilee Basin, the following six (6) projects are currently seeking approval or have recently gained approval:

- Carmichael Coal Mine and Rail Project (CCM&RP);
- Project China Stone;
- Alpha Coal;
- Galilee Coal;
- Kevin's Corner; and
- South Galilee Coal.

In addition, the Moray Powerlink Project (MPP) is also currently in the approval phase, for the construction and operation of a thermal and diesel power station with a generating capacity of 150 Mega Watts.

In merely considering the impacts from the CCM&RP and the MPP, where relevant, with those predicted for the Project, Macmines has failed to adequately consider the cumulative impacts with respect to geographic location.

As indicated in Section 23.2 of the draft EIS, the projects listed in this submission are not in the vicinity of the project site and are too far away to have any significant cumulative impacts.

Submitter Issue Number 38.075

Examples of biodiversity and environmental value loss are the potential significant impacts to both Commonwealth and State listed flora and fauna from the Project, including:

- Clearing of approximately 11,000 ha of remnant vegetation, including 24 ha of one of concern Regional Ecosystem.
- Clearing of habitat for the following species which were confirmed to be present in the Project site during field surveys:
  - o Squatter Pigeon (southern subspecies)(listed as vulnerable under the EPBC Act and NC Act);
  - o Black-throated Finch (white-rumped subspecies)(listed as endangered under the EPBC Act and NC Act);
  - o Koala (listed as vulnerable under the EPBC Act and special least concern under the NC Act); and
  - o Short-beaked Echidna (listed as special least concern under the NC Act).
- Clearing of habitat for the Australian Painted Snipe (listed as endangered under the EPBC Act and vulnerable under the NC Act), which was considered to have a moderate potential of occurring within the Project site.

An additional potential significant impact of the Project on flora and fauna is habitat fragmentation.
At section 23.5.2 of the EIS, Macmines states "The impacts of clearing of habitat on the project site will be mitigated through the provision of biodiversity offsets."
Further, Macmines states "As the clearing of vegetation is only in the southern portion of the project site, full east to west connectivity will remain in the northern portion of the project site…The open cut mining/ infrastructure footprints between the project and the CCM&RP are approximately 10km apart, leaving a large corridor of remnant vegetation between the cleared areas."
Accordingly, the present Project, if approved, would add to further pressure on endangered and vulnerable species of the Galilee Basin and habitations will be split. It is neither adequate nor sufficient for a Project the scale proposed by Macmines to not provide an alternative solution in respect of loss of environmental values and biodiversity other than providing that the Project will be required to provide biodiversity offsets. No reasonable measure has been provided in the EIS to address this fundamental issue.

The provision of biodiversity offsets for significant residual impacts on biodiversity values is a regulatory requirement for mining projects that is enforced by both the Queensland and Federal Governments.

Submitter Issue Number 38.076
The EIS should be refused on the grounds stated herein as the EIS has not had proper regard to the object as set out in section 3 of the EPA, as:
• The Project fails to protect Queensland's environment whilst simultaneously permitting development seeking to improve the quality of life now and into the future which would maintain ecological processes on which life depends.
• The Project is not consistent with the principles of ecologically sustainable development as:
o Long and short term economic, environmental, social and equity considerations must be effectively integrated in the decision making process.
o Threats of serious or irreversible environmental damage or a deficient outcome in respect of an environmental investigation is insufficient grounds to delay measures to prevent environmental degradation.
o The mine will cause serious environmental harm (i.e. dust, noise and vibration) to the character and values of the Land as a result of inter alia coal dust. This is not in the public interest.
The employment, royalties and other benefits that the mine will generate must be balanced against the impact on Corbett's Land and cattle grazing operations together with the impact on the biodiversity and environment. The outcome must be balanced in favour of public interest or consistent with the EPA.

The submitters view on the draft EIS is noted. The relevant Government will determine the adequacy of the draft EIS.

Submitter Issue Number 38.077

Project China Stone – Environmental Management Section 24.

Corbett is not satisfied of Macmines proposed environmental management measures to be developed and implemented to address the potential environmental impacts associated with the Project, detailed at Section 24.

Corbett submits that, in respect of environmental management, the Draft EIS fails to:

• adequately assess the Project's environmental impacts;

• adequately propose measures to avoid or minimise any adverse impacts; and

• propose environmental protection commitments to protect or enhance environmental values.

Refer to response to issue 38.076.

Submitter Issue Number 38.078

Corbett notes the EIS is intended to (*inter alia*):

• ensure Macmines assume primary responsibility for protection of any environmental values that may be affected by the Project;

• address environmental management for the expected life of the Project;

• contribute to statutory decisions on whether a proposal should proceed, and if so, decide what environmental management and monitoring conditions should apply; and

• where legislation allows, incorporate community and stakeholder views in assessment and decision-making processes.

In accordance with the EPA, Macmines has a general environmental duty and is responsible for the action that affect the environment. Macmines has not demonstrated all reasonable and practicable measures have been taken to prevent or minimise the harm caused by the proposed Project.

Refer to response to issue 38.076.

Submitter Issue Number 38.079

Macmines have a corporate and social responsibility to (inter alia):

• self-regulate and ensure its active compliance with the spirit of the law and ethical standards;

• engage in actions that further some social good, beyond the interests of Macmines;

• encourage a positive impact through its activities on the environment and all other members of the public; and

• co-exist with Landowners, including Corbett and operating in a spirit of mutual cooperation and trust.

Noted.

Submitter Issue Number 38.080

The Project and impacts will be long term and intergenerational. Corbett and Corbett's family (past and present) continues to improve the Land for following generations, whereas mining is extractive. The Project has long-term and unaddressed serious environmental impacts on (inter alia) the quality of the agricultural land, salinity, contamination, biosecurity and pest and weeds.

Where the Project is not properly or adequately managed (as is the present circumstances), real consequences to the environment will result, particularly where the Project does not protect the environment and surrounds.

Corbett has genuine concerns in relation to the environmental impacts of the Project on the Land, including but not limited to:

• there will be adverse impacts on soil structure (including erosion and soil compaction due to overuse);

• noise, air and odour impacts have not been appropriately investigated or conditioned in a way that would demonstrate or provide comfort that no environmental harm will arise as a result of the Project;

• destruction of various vegetation species;

• irreversible damage to ecosystems;

• contamination.

A legacy of inadequate environmental measures should not be carried forward given the scale and intensity of the disturbance on the Land which will cause profound environmental impacts.

In light of Corbett's concerns, Corbett submits:

• Macmines must further consider its proposed measures / strategies for tailings and power station waste storage facilities for the Project; and

• the CG should adhere to the principle of preservation of Land unless the loss is deemed unavoidable in which case the landholder (Corbett) must be properly and adequately compensated as a result.

Refer to response to issue 38.003.

Submitter Issue Number 38.081

Corbett has a statutory right under the SDPWO Act as an affected party to object to the Project and has made a 'properly made' submission, being;

• A submission made to the Coordinator-General in writing.

• Received on or before the last day of the submission period 7 September 2015

• Signed and stating the name and address of each person making the submission.

• States the grounds of the submission and facts and circumstances relied on.

Corbett will be adversely affected by the Project directly covering the Land namely through:

• Loss of Vegetation/Good Quality Agricultural Land;

• Loss of Stock Routes/Increased Management Costs;

• Flooding and Hydraulics Impacts; and

• Unacceptable Cumulative Impacts including adverse impacts on threatened Biodiversity.

Corbett's position is that Macmines have proposed an open-cut and underground coal mine that in its present form has unacceptable impacts for landowners and communities because of the

disruption it causes to cattle operations and the local environs.
Due to the long term and irreversible impacts that the Project will have on Corbett, Corbett's business and the environment the application for the Project should be refused.

Noted.

PROJECT CHINA STONE
RESPONSE TO SUBMITTER NUMBER 39 SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

39 SUBMISSION

Submitter Issue Number 39.001
Submission made by Emanate Legal on behalf of Coovin - Dooyne Station: Lot 3978 on Crown Plan PH772, County of Albany Parish of Dooyne. Refer to submission attachments for location maps and direction and authority form.
Note: the cover letter, TOC, executive summary and dictionary submitted has been excluded from this register.

Noted. Detailed responses are provided to the specific issues as follows.

Submitter Issue Number 39.002
The adverse impacts which arise as a result of the Project are considered by Coovin to be detrimental to Coovin and Coovin's cattle grazing operation which are unacceptable. Greater emphasis, investigation and, where necessary, compensation to Coovin must be researched, considered and addressed.
The environmental, hydrological and economic/social impacts (amongst others) that Coovin will ensure as a result of the Project will lead to impacts which adversely and directly affect their livelihood.

The location of the landholder's property in relation to the project site (defined by the project Mining Lease Application (MLA) Areas) is shown in Figure 5-4 of the draft Environmental Impact Statement (EIS). Lot 3978 on Crown Plan PH772 covers the eastern portion of the project site and extends to the north and east of the project site. As indicated in Section 4.3.3 of the draft EIS, the proponent has commenced discussions with the landholder in relation to gaining access to the land within the proposed MLA areas. Appropriate compensation for the landholder will be addressed in the ongoing land access discussions.

Submitter Issue Number 39.003
Project China Stone - Land Use Section 5.
Section 5.3.2 of the EIS details the surrounding land use to include:
• Cattle grazing;
• A number of rural residences;
• Recreation facilities:
o Lake Buchanan located approximately twenty kilometres (20km) to the North-West of the Project;
o Wilandspey Conservation Park located approximately twenty five kilometres (25km) to the East of the Project;
o The Blackwood National Park and Nairana National Park located more than fifty kilometres

(50km) to the East of the Project; and
• Commercial facilities:
o Belyando Crossing;
o Caravan park;
o Roadhouse; and
o Hotel.
The EIS does not give sufficient weight to the importance of current land use. The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the:
• Accessibility of grazing stock to dense, well vegetated land; and
• Reproduction, growth and behaviour of grazing stock.
There are a number of recreational facilities within close proximity to the proposed Project. Should the Project be approved, it will impact on:
• Water quality values of facilities used for water skiing, camping and picnics; and
• Use and enjoyment of facilities and tourism.
The proposed Project will change the rural character of the region and must be compatible with the current surrounding land uses.
All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on current land use. Failure to do so will result in losses to Coovin's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences and recreation areas.

As indicated in Section 4.3.3 of the draft EIS, the proponent has commenced discussions with the landholder in relation to gaining access to the land within the proposed MLA areas. Appropriate compensation for the landholder will be addressed in the ongoing land access discussions. The land access agreement will address the impact of the granting of the mining leases over the landholder's property and the associated effects on the landholder's cattle grazing business.

The project is not predicted to adversely impact on the water quality of any regional recreational or tourism areas or facilities.

The potential impacts of the project on the rural character of the region and associated mitigation measures are discussed in Section 6.6 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N).

Submitter Issue Number 39.004
Project China Stone – Land Use Section 5.
Section 5.4.4 Current Land Use: Stock Route
The proposed Project will affect one (1) stock route on the Land:
• Stock Route U398BELY01, which traverses the Southern part of the Project site from South-West to North-East.
The EIS states in section 5.4.4 that:
Macmines will liaise with DNRM, the Isaac Regional Council and affected landowners in relation to

the management and possible realignment of the sock route, as necessary.
The EIS does not give sufficient weight to the importance of the SRN nor does the EIS provide sufficient detail as to whether it is likely that the stock route will be impacted, and if so, to what extent and in what capacity.
Macmines fails to state whether, in the event that the stock route is impacted as a result of the Project, alternatives will be investigated, and Macmines will seek to modify its mine plan.
To be clear, the SRN is primarily used by the pastoral industry as an alternative to transporting stock by rail or road, and for pasture for emergency agistment and long-term grazing. It is used by utility companies to provide power lines, pipelines and telecommunications; and by the community generally for road transport, and recreational and other purposes such as beekeeping.
The Queensland SRN is a highly valued land management tool in respect of its environmental and iconic cultural heritage values, which are recognised nationally as being of significance.
Recent (and continuing) droughts have also established the importance of management arrangements for the SRN as the stock route network during times of drought has accrued greater significance, for example in 2002-03.
The pattern of stock route use remains one of periodic grazing; relatively short, infrequent periods of intense grazing interspersed with long periods of light or no grazing. Stock cannot walk the stock routes unless both pasture and water are present.

The value of the stock route is understood. The Department of Natural Resources and Mines (DNRM) is responsible for the management of stock routes. The stock route is within the proposed open cut mining area and may require realignment, as indicated in Section 5.4.4 of the draft EIS. The proponent will be required to address the impacts of the project on the stock route, including any realignment, to the satisfaction of the DNRM and the Isaac Regional Council (IRC), as indicated in the draft EIS.

Submitter Issue Number 39.005
The EIS does not address nor does it consider the significance of a loss of the SRN (whether on a long term or temporary basis) as to impacts on the business of landholders who use the stock routes (or may in the future) including:
• Cultural and historical values associated with SRN activities such as sites of stock route facilities; family and personal connections to certain stock routes for both indigenous and non-indigenous peoples; and intrinsic cultural values associated with the simple existence of the stock route network and its linkage to exploration and settlement.

There were no significant historical values associated with the stock route identified in the draft EIS Non-Indigenous Cultural Heritage Report (Appendix P). Similarly, stock routes are not typically considered to have any significant indigenous cultural heritage value. If relevant, these issues would be addressed as part of the DNRM approval process for any realignment of the stock route.

Submitter Issue Number 39.006

• Economic values associated with providing employment to drovers and providing more economical alternatives for moving stock. The increased costs as a result of having to relocate stock routes including increased management costs to Coovin. Environmental values associated with the benefits to the environment from walking stock routes as opposed to trucking or transporting by rail (e.g. reduced emissions).

Refer to responses to issues 39.003 and 39.004.

Submitter Issue Number 39.007

• Social values associated with employment opportunities in the droving and pastoral industries as well as local governments.

Refer to responses to issues 39.003 and 39.004.

Submitter Issue Number 39.008

Macmines has not established that it has taken the necessary steps to establish the present use of the SRN and accordingly in the absence of such cannot reasonably have assessed the potential impacts in the same.

Accordingly Coovin submits:

• The CG should adhere to the principle of preservation of stock route in terms of access as part of the Project unless the loss is deemed unavoidable in which case the landholder must be properly and adequately compensated as a result.

• In the circumstances, should the loss of SRN be unavoidable, the mine plan must be relevantly conditioned such that affected stock routes are not to be closed until a suitable realignment of the stock route has been approved by DNRM to minimise delays and disruption to stock route use and the business operations of users of stock routes.

• Coovin's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.

Refer responses to issues 39.003 and 39.004.

Submitter Issue Number 39.009

Project China Stone – Tailings and Power Station Waste Storage Facilities Section 7.

The following Sections of the EIS are of concern to Coovin and addressed below:

• Section 7.3.5 management and monitoring;

• Section 7.4 conceptual design;

• Section 7.4.5 rehabilitation and decommissioning.

Coovin submits that, in respect of Tailings and Power Station Waste Storage Facilities, the EIS fails to:

• adequately assess the Project's environmental impacts;

• adequately propose measures to avoid or minimise any adverse impacts;

• propose environmental protection commitments to protect or enhance environmental values.

The environmental impacts of the Tailings Storage Facility (TSF) and Power Station Waste Storage Facility (PSWSF), including surface water, groundwater and ecology, are addressed in each of the relevant sections of the draft EIS.

Submitter Issue Number 39.010
Management and Monitoring
Section 7.3.5 relates to management and monitoring of tailings and power station waste.
Coovin submits Section 7.3.5 of the EIS does not give adequate consideration to:
• minimising the impact to the environment, safety and health and the steps to be taken to ensure harm will not be caused;
• control measures for routine operations to minimise likelihood of environmental harm.
• contingency plans and emergency procedures for non-routine situations.

Section 7.3 of the draft EIS relates only to the geochemistry of the tailings and power station waste material. Management and monitoring of other aspects of the TSF and PSWSF are addressed in the other sub sections of Section 7 of the draft EIS.

Submitter Issue Number 39.011
Macmines has not demonstrated procedures / processes to ensure tailings / power station waste is managed to:
• minimise waste generation;
• minimise environmental pollution;
• minimise the production of tailings and waste rock wherever possible
• prevent waste rock and tailings from contaminating the surrounding environment;
• manage and control disposal of all tailings and waste rock.

Refer to response to issue 39.010.

Submitter Issue Number 39.012
Macmines has not demonstrated adequate procedures in relation to potential hazards of tailings / power station waste facilities, including but not limited to:
• inadequate site security;
• structural failure;
• operational failure;
• equipment failure; and
• unforeseen circumstances or consequences.

Refer to response to issue 39.010. Hazards associated with mine waste storage are addressed in Section 22.6.2 of the draft EIS.

Submitter Issue Number 39.013

Conceptual Design of the Tailings and Power Station Waste

Section 7.4 relates to the conceptual design of tailings and power station waste storage facilities.

Coovin submits Section 7.4 of the EIS does not adequately address / consider the design of power station waste facilities to ensure:

• the safe and stable containment of tailings;
• the minimisation or control of seepage;
• a cost effective storage system; and
• a planned system for effective closure.

The design should be adequate for the proposed use, meet contemporary standards and have identified and addressed all the likely risks associated with the site, the nature of the containment materials, the nature, quantity and treatment of the tailings, construction process and closure.

The design of the TSF has been prepared by a leading geotechnical engineering consultancy in accordance with relevant standards. The environmental impacts of the TSF, including surface water, groundwater and ecology, are addressed in each of the relevant sections of the draft EIS.

Submitter Issue Number 39.014

Further, it is important for Macmines to demonstrate that the immediate and long-term risks associated with tailings handling and storage are acceptable and to justify the design and operational decisions using conventional risk management techniques.

Hazards associated with mine waste storage are addressed in Section 22.6.2 of the draft EIS.

Submitter Issue Number 39.015

Rehabilitation and Decommissioning

Section 7.4.5 relates to rehabilitation and decommissioning.

Coovin submits Macmines have not adequately considered / addressed:

• optimising the use of waste rock during rehabilitation;
• the views of landowners, surrounding community and interested stakeholders for rehabilitation;
• waste minimisation and reuse opportunities.

Coovin submits:

• Macmines should consult with landowners, surrounding community and interested stakeholders to exchange information and views in relation to the Project and its potential hazards and approaches to address them during rehabilitation.
• consultation before and during the design and operation of the tailings and power station waste facilities and further rehabilitation of same is an integral part of risk management and can provide benefits to all affected parties.

The design of the TSF has been prepared by a leading geotechnical engineering consultancy in accordance with relevant standards. Consultation was conducted with neighbouring landholders during the preparation of the draft EIS. Landholders did not raise any concerns with the TSF during consultation.

Submitter Issue Number 39.016

Coovin's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project. Deficiencies in design of power station waste facilities, management and monitoring, inadequate controls and the like will have serious impacts on the Land and Coovin. Macmines failure to adopt adequate measures for tailings and power station waste will have real and significant impacts on the Land, including but not limited to:

• threat to human life, health or infrastructure;
• short-term and long-term pollution of ground and/or surface waters;
• raised groundwater levels resulting in salinisation of the surface and streams;
• the release of a large volume of water and semi-fluid tailings which smother vegetation, blanket the land surface and restrict stream flow with sediment;
• threat to health or life of wildlife, livestock or domestic animals;
• loss of significant native vegetation; and
• generation of dust or odour.

In light of Coovin's concerns, Coovin submits:

• Macmines must further consider its proposed measures / strategies for tailings and power station waste storage facilities for the Project; and
• the CG should adhere to the principle of preservation of Land unless the loss is deemed unavoidable in which case the landholder (Coovin) must be properly and adequately compensated as a result.

Refer to responses to issues 39.003, 39.013 and 39.014.

Submitter Issue Number 39.017

Project China Stone – Rehabilitation Section 8.

The following Sections of the EIS are of concern to Coovin and addressed below:

• Section 8.2.1 Open cut mine overburden emplacements;
• Section 8.2.2 Underground mine subsidence areas;
• Section 8.2.3 Tailings and power station waste storage facilities;
• Section 8.2.5 Decommissioning and mine closure;
• Section 8.4.1 Post mining land suitability.

Coovin submits that, in respect of rehabilitation, the Draft EIS fails to:

• adequately assess the Project's environmental impacts;
• adequately propose measures to avoid or minimise any adverse impacts;
• address relevant requirements under the Code of Environmental Compliance for Mining Lease Projects;
• propose environmental protection commitments to protect or enhance environmental values.

The submitters concerns are noted. The proponent respectfully does not agree that the draft EIS does not adequately address issues associated with rehabilitation.

Submitter Issue Number 39.018

Open Cut Mine Overburden

Section 8.2.1 relates to open cut mine overburden. Coovin submits Section 8.2.1 of the EIS does not give adequate consideration to:

• the serious adverse long term effects of open cut mine overburden and potential for:

o impacts to water quality and proposed rehabilitation strategies; and

o acid mine drainage and proposed rehabilitation strategies;

Refer to response to issue 39.017.

Submitter Issue Number 39.019

• the quality and use of the Land after Macmines has proposed to have rehabilitated same;

Any impact on the Land, use of the Land, soil and grazing will have substantial impacts on Coovin's grazing operations by:

• lessening the palatability of the grazing Land, resulting in livestock losing weight thereby decreasing productivity and income to Coovin; and

• decreasing the quality of soil, meaning a decreased quality and quantity of grazing land.

Refer to response to issue 39.003.

Submitter Issue Number 39.020

Open Cut Mine Overburden

Project activities at ground level will have significant long term impacts to not only Coovin and Coovin's quiet peace and enjoyment of the Land, but also to cattle, wildlife areas and the like.

The draft EIS addresses potential impacts on ecology and land use. Refer to response to issue 39.003.

Submitter Issue Number 39.021

Whilst Section 8.2.1 of the draft EIS does provide some measures in relation to revegetation, Coovin submits Macmines proposals do not adequately address the requirements imposed under the Code of Environmental Compliance.

In accordance with the Code of Environmental Compliance, Condition 35 provides:

The holder of the environmental authority must spread seeds or plant species that will promote vegetation of a similar species and Density of Cover to that of the surrounding undisturbed areas or vegetation that is appropriate for providing erosion control and stabilisation of the disturbed areas.

Note 49 - To revegetate disturbed areas the following measures or similar measures can be used:

• for areas which have become compacted during the project, break up the soil surface to a depth that is suitable for establishing vegetation;

• spread stockpiled topsoil over disturbed areas to a depth that is suitable as a rooting medium for the revegetation process;

• provide suitable nutrient conditions for planting by using fertiliser if necessary; and

• collect and store native seeds to be used in rehabilitation.
Note 50 - When revegetating disturbed areas, the holder of the environmental authority should plant native species endemic to the area and location in the landscape (e.g. if clearing has occurred in a riverine area, revegetate the disturbed area using local riverine species).
Note 51 - Vegetation used to stabilise disturbed areas in the short term should be comprised of sterile, short-lived species (e.g. a cover crop). However, the long term aim of revegetating any disturbed area is to establish a stable vegetation community that is similar to that of the surrounding undisturbed landscape.
Macmines failure to adopt adequate measures for revegetation will have real and significant impacts on the Land, including but not limited to:
• adverse impacts on soil structure;
• natural grasses will not regenerate as fast as other species which will result in a reduced carrying capacity on the Land;
• destruction of various vegetation species;
• irreversible damage to ecosystems.

The proposed revegetation is consistent with established rehabilitation methods and is considered to be adequate.

Submitter Issue Number 39.022
Subsidence
Section 8.2.2 of the EIS details Macmines proposed mitigation for tension cracking and buckling, in particular:
• A survey of potential subsidence cracking areas will be undertaken within six (6) months of subsidence to locate individual cracks and assess the level of treatment required to rehabilitate each crack. Six (6) months will allow sufficient time for the full effects of subsidence to take place…
• Subsidence crack treatment will involve:
o Ripping or ploughing minor cracks using a small tractor or dozer. These areas will be allowed to regenerate naturally through inherent seed resources, vegetation propagation from rootstock and recruitment from adjoining undisturbed edges;
o Stripping large cracks of topsoil, excavating and backfilling the cracks…
• The subsidence crack rehabilitation work area will be clearly delineated in order to limit disturbance to the minimum area necessary and prevent unnecessary encroachment of disturbance.
Coovin considers Macmines proposed mitigation measures for subsidence is not adequate. Macmines has not considered the time of year, during wet or dry seasons the surveying will be undertaken.

The surveying will occur within six months of subsidence, regardless of the time of year.

Submitter Issue Number 39.023
Further, surveying potential subsidence cracks within six (6) months will not adequately assess the level of treatment required to rehabilitate each crack, accordingly Coovin questions the accuracy of any surveying results undertaken only within a six (6) month period. In failing to accurately assess the "before" state of the Land, Macmines are unable to demonstrate that the Land will be restored correctly after the completion of the Project.

Effective crack rehabilitation does not require an assessment of the land prior to subsidence, as suggested.

Submitter Issue Number 39.024
In relation to subsidence crack treatment, Macmines has not addressed / considered:
• Condition 35 of the Code of Environmental Compliance for Mining Lease Projects, in particular Note 49 to 51 (detailed above);

The proposed revegetation methods for crack rehabilitation are based on experience with effective crack rehabilitation from operating mines.

Submitter Issue Number 39.025
• The extent of vegetation clearing operations and identifying same on a plan to ensure clearing is avoided where necessary;

Clearing control procedures are described in Section 24.4.3 of the draft EIS.

Submitter Issue Number 39.026
• The impacts of Coovin's cattle and grazing operations on the Land, following the stripping of large cracks of topsoil and ripping or ploughing minor cracks using a small tractor or dozer;

Refer to response to issue 39.003

Submitter Issue Number 39.027
• Vegetation clearing being undertaken in a sequential manner to allow more mobile fauna species the opportunity to disperse from cleared areas and clearing activities. Furthermore clearing within areas of high ecological value, must be undertaken with care and rehabilitated to restore connectivity to the highest realistic extent following the clearing.

The impacts of clearing, and proposed mitigation and management measures are discussed in Section 9 of the draft EIS.

Submitter Issue Number 39.028

Tailings

Section 8.2.3 of the draft EIS refers to Section 7 – Tailings and power station waste storage facilities.

In accordance with Section 7.4.5 of the draft EIS, Macmines provided:

… no special management measures or rehabilitation techniques are required for the tailings and power station waste material.

Coovin rejects this position.

Coovin notes Macmines geochemical assessment concluded the risk of potential environmental impacts are expected to be low. Notwithstanding, Macmines must have in place management measures / rehabilitation techniques to ensure no environmental impacts are caused should tailings / waste storage have unforeseen risks. The failure to adequately rehabilitate the Land presents a threat of serious and irreversible environmental damage.

The conclusions of the geochemical assessment of the mine waste materials are based on detailed geochemical testing conducted by a specialist geochemist. The rehabilitation methods proposed for the TSF and PSWSF are suitable for these types of facilities.

Submitter Issue Number 39.029

Decommissioning and Mine Closure

Section 8.2.5 of the draft EIS considers decommissioning and mine closure.

As the Project / coal production is proposed is unknown and will continue for a fifty (50) year operational mine life, the Draft EIS has not addressed:

- how Macmines rehabilitation and decommissioning strategies / plans and the like will updated;
- changing significance of impacts and hazards associated with the mining activity;
- changes in legal and other obligations; and
- learnings and corrective actions from monitoring activities.

Macmines must reconsider its decommissioning strategies and amend to include (*inter alia*) the foregoing concerns of Coovin.

Decommissioning and mine closure are required to be conducted in accordance with the Environmental Authority and to the satisfaction of the Department of Environment and Heritage Protection.

Submitter Issue Number 39.030

Post Mining Land Suitability

Section 8.4.1 of the draft EIS in relation underground mine areas provides:

Following underground mining surface subsidence effects will result in the development of a series of shallow troughs relative to natural topography with gentle slopes.

The Draft EIS fails to address fundamental rehabilitation criteria necessary for the type of activity and impact on the Land rehabilitation, specifically in relation to:

- impacts to Coovin and grazing operations in relation to timing of rehabilitation to restore the pre-mine land being suitable for grazing;

• restoring the surface level of the Land to its original condition;
• reinstating the natural contours and channel of every watercourse;
• shaping the area so that it conforms as far as reasonably practicable with the surrounding topography;
• reforming all drainage lines, waterways and creek beds to stable contours and as near as reasonably practicable to the situation existing prior to mining; and
• achieving a post mining land use capability across the lease area equal with that pre-existing the Lease, where this is technically feasible.

Refer to response to issue 39.003. The management of drainage in subsidence areas is addressed in Section 13.4.1 of the draft EIS. The impacts of subsidence on land suitability is addressed in Section 8.4 of the draft EIS.

Submitter Issue Number 39.031
Section 8.4.1 of the draft EIS provides:
Following open cut mining the overburden emplacement areas and final voids will not be able to be restored to their pre-mining land suitability for grazing.
In relation to Section 8.4.1, Macmines have not addressed the conflict of Land uses. The Project represents a conflict between competing land uses of agriculture, livestock grazing and other traditional land uses. The Project requires large amounts of land that could otherwise be used for agricultural production. This sets up a direct competition with small-scale agriculture for control and use of land.

As indicated in Section 8.3.3 of the draft EIS, the project site is low quality grazing and agricultural land. There is no small scale agriculture in the area and once landholder compensation agreements are in place, there is not likely to be any conflict of land use associated with the project.

Submitter Issue Number 39.032
Coovin's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.
It is in the Qld Government, Macmines and Coovin's benefit to ensure rehabilitation is completed successfully and to proper standards that ensure the long term sustainability to the traditional use of the Land, grazing. Poorly rehabilitated mines provide long term issues for governments, communities and companies, and ultimately tarnish the reputation of the mining industry as a whole. Poor planning invariably increases the costs of rehabilitation and mine closure and decrease overall profitability.
A rehabilitation strategy should be reviewed annually throughout the life of the Project. As any operational plan changes or rehabilitation activities are completed, the strategy should be updated to reflect any changes.

Refer to response to issue 39.003. Rehabilitation is required to be conducted in accordance with the Environmental Authority conditions and to the satisfaction of the Department of Environment and Heritage Protection.

Submitter Issue Number 39.033
Macmines have not demonstrated how the Project will (*inter alia*):
• avoid and minimise future environmental harm;
• reinstate the original natural ecosystem; and
• reinstate previous land use (e.g. grazing).
In light of Coovin's concerns, Coovin submits:
• Macmines must further consider its proposed rehabilitation and decommissioning strategies for the Project;
• Macmines must ensure its proposed rehabilitation strategies are in accordance and promote the objectives and requirements of the Code of Environmental Compliance for Mining Lease Projects;
• the CG should adhere to the principle of preservation of Land and importance of rehabilitation unless the loss is deemed unavoidable in which case the landholder (Coovin) must be properly and adequately compensated as a result.

Rehabilitation and impacts on land suitability and ecology are adequately addressed in the draft EIS.

Submitter Issue Number 39.034
Project China Stone – Terrestrial Ecology Chapter 9.
Section 9.5.4 and the Terrestrial Ecology Report (Appendix F) of the EIS identifies threatened species listed under the Nature Conservation Act 1992 recorded during the field surveys to include:
• Squatter Pigeon;
• Black-throated Finch;
• Koala; and
• Short-beaked Echidna.

Noted.

Submitter Issue Number 39.035
Should the Project be approved, suitable high value habitat for these species within the Project area will be reduced, effecting the conservation of these species. The impact of the proposed activities on the terrestrial ecology within the Project area is detailed in the EIS to include impacts of:
• Vegetation clearing for the open cut mine and construction of mine infrastructure; and
• Disturbance from noise and vibration, lighting, dust, erosion and the introduction of invasive species; and
• Disturbance and removal of habitat features providing foraging, shelter and breeding opportunities.
Accordingly the proposed Project, if approved, will add further pressure on the threatened species

within the Galilee Basin.
It is neither adequate nor sufficient for a Project of the scale proposed by Macmines to state with respect to the proposed clearing footprint of the mine at Section 9.6.2:
". . . it was not possible to design a layout that avoided significant vegetation clearing because of the numerous technical and environmental constraints of the project design".
The Project should be refused on this ground as the entire Project area is well vegetated with remnant vegetation comprising Eucalyptus and Acacia open woodland. There is no alternative Project layout that would avoid clearing remnant vegetation. A considerable percentage of high valuable habitat for the species listed in the NC Act will be removed and disturbed by the proposed activities which will cause irreversible and unavoidable impacts on the terrestrial ecology within the Project area.

Mitigation measures for the impacts of the project on ecological values are provided in Section 9 of the draft EIS.

Submitter Issue Number 39.036
Project China Stone – Groundwater Chapter 12 The EIS outlines in section 12.4.2 two distinct areas within which the groundwater regime will be affected by the proposed mining activities as follows:
• The Northern Underground where dual seam underground mining is proposed below the elevated ridgeline of Darkies Range, and subsidence cracking will potentially result in hydraulic connection between the underground mines and the overlying Clematis Sandstone; and
• The lower lying area in the south of the Project area where the open cut mining area and single seam Southern Underground are proposed, and the Clematis Sandstone is essentially absent.

Noted.

Submitter Issue Number 39.037
The impact of the proposed activities on the groundwater regime is detailed in the EIS to include:
• Dewatering by extracting coal by longwall mining and open cut mining and in so doing, lowering surrounding groundwater levels;
• Subsurface subsidence cracking of strava overlying the proposed longwall mines, changing the permeability of the overlying units and influencing surrounding groundwater levels;
• Construction of tailings storage facility and power station waste storage facility, which have the potential to generate leachate and give rise to groundwater contamination;
• Use of hydrocarbons and chemicals which have the potential to give rise to groundwater contamination; and
• Formation of a residual void in the final mine landform, that has the potential to influence surrounding groundwater levels and quality.
The proposed activity will cause groundwater contamination as a result of seepage from:
• Tailings storage facility;
• Power station waste storage facility;
• Overburden emplacement areas and the final void lake; and

• Hydrocarbon and chemical storage.
The groundwater modelling conducted for the EIS is insufficient to establish the true extent of associated subsidence cracking and is not an effective or accurate prediction of depressurisation and the associated impacts on groundwater. Consequently, the EIS does not address the magnitude of direct impacts on the groundwater levels and flow directions within the Project area.
The operation of the proposed Project must maintain, preserve and protect current groundwater values.
All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on current groundwater values.

The draft EIS Groundwater Report (Appendix I) includes a comprehensive groundwater assessment that describes the extent of groundwater impacts from the project and the proposed impact management measures.

Submitter Issue Number 39.038
Project China Stone – Surface Water Chapter 13
At 13.2.4, page 13-4 of the EIS Chapter in respect of surface water quality Macmines states:
". . . the project site is remote and is located at the head of the catchments. It has highly ephemeral, short duration, surface water flows. These factors severely limit the ability for any regular sampling of surface water flows from the project site. Site surface water quality was sampled from remnant surface water during the aquatic ecology field surveys in May and October/November 2012. . . As these water quality results are from remnant ponded surface water they are not representative of the quality of site surface water flows and therefore not presented in this section".
At 13.2.4, page 13-5 of the EIS Chapter in respect of baseline water quality assessment Macmines states:
"Natural background concentrations of aluminium, copper and zinc exceed the most conservative of the quoted guidelines at all monitoring locations. Iron is also present in the Belyando and Sutton Rivers at concentrations above the most conservative quoted guidelines".
At 13.5.5, page 13-19 of the EIS Chapter in respect of water management system preformance Macmines states:
"The modelling results show the median water supply demands are variable over the life of the mine and are generally significantly greater than the amount of mine affected water that will be generated by the project. This indicates a significant overall water deficit for the project and the need for a significant external water supply"."

Noted.

Submitter Issue Number 39.039
The Project is located at the head of the catchments and as such all of the run-off, uncontrolled discharge and subsequent contamination and sedimentation caused by the proposed activities will impact on surface water quality as detailed in the EIS to include:
• Sedimentation of downstream waterways during construction and operations due to erosion from

disturbed areas on the Project site and increased sediment loads in site drainage water;
• Mining disturbance and mine site drainage changing catchment areas, potentially resulting in downstream catchment yield impacts;
• Mining disturbance and mine site drainage altering downstream drainage, resulting in:
o Changes to flood behaviour including flow paths, flood inundations areas and flow velocities;
o Geomorphic impacts on watercourses and drainage lines including impact on channel bed and bank stability;
• Subsidence of the ground surface and surface drainage features as a result of underground longwall mining, resulting in;
o Surface drainage impacts including ponding of runoff in subsidence depressions; and
o Geomorphic impacts on subsided drain lines including impacts on channel bed and bank stability;
• Controlled discharge of mine-affected water resulting in downstream water quality impacts on environmental values and water users; and
• Impacts of the final landform and final void on surface drainage.

Noted.

Submitter Issue Number 39.040
The EIS did not include the water quality results obtained from the remnant ponded surface water on the basis they were not representative of the quality of site surface water flows. The EIS does not give sufficient weight to the importance of this data set and measures must be implemented to obtain accurate surface water samples during surface water flows to establish reliable surface water quality values within the Project area.

The statement that the water quality of remnant ponds is not representative of surface water flows is correct. Baseline water quality is discussed in Section 13.2.4 of the draft EIS. Further baseline water quality monitoring is proposed as explained in Attachment E – Additional Information on Surface Water.

Submitter Issue Number 39.041
The Project is located within the Galilee Basin and as such is closely related to other projects currently under investigation or expected to commence investigations in the next five (5) years so the cumulative impact of contamination to surface waters from the proposed and surrounding activities and infrastructure will significantly affect already elevated surface water values as the run-off from mine infrastructure areas will include:
• Elevated levels of suspended solids;
• Hydrocarbons; and
• Elevated levels of metals.

The potential cumulative impacts on surface water are discussed in Section 23.7 of the draft EIS.

Submitter Issue Number 39.042

Should the Project be approved, the supply of water is of great concern as the mine water management system is predicted to have a water deficit over the life of the mine. The EIS modelling shows the annual external water requirement will range from 903 to 12,300ML pa over the life of the mine. At page 13-25 of the Chapter Macmines proposes to gain an allocation to harvest water from the Cape River or the Belyando/Sutton River. The harvesting of water from surrounding watercourses will have a significant impact on the availability and quality of water consumed by Corbett and surrounding users for domestic and recreational use and on the water consumed by Corbett's cattle.

As described in Section 4.13 of the draft EIS, the provision of the raw water supply required for the project is not within the scope of this EIS. It will be subject to separate environmental impact assessment and approval.

Submitter Issue Number 39.043

The proposed Project will impact on flood levels as a result of the redistribution of water and changes to flow velocities. The determination of the flood afflux in the EIS is insufficient to establish the true extent of flooding that will arise from the proposed mining activities. The EIS does not give sufficient weight to the importance of the determination of the flood afflux.

As such, the magnitude of any afflux and its impacts on the Project area have not been sufficiently investigated or established.

Reliable and representative baseline studies must be conducted to establish accurate surface water quality values within the Project area.

Further investigation needs to be undertaken in order to consider the true flood impacts. The Project must not proceed until known flooding potential and risk have been established using a reliable method of determination so that Coovin can understand the impacts of the Project in terms of flooding on Coovin's grazing business and domestic and recreational use.

All necessary and required mitigation measures must be put in place to eliminate all adverse hydrological impacts of the Project on surface water values. Failure to do so will result in cumulative contamination of surface waters and result in cumulative losses to Coovin's cattle grazing and watering and surrounding irrigated agriculture.

Flood afflux and its impacts are discussed in Section 13.6.3 of the draft EIS. The assessment of flood afflux is based on a flood modelling assessment.

Submitter Issue Number 39.044

Project China Stone - Air Quality Section 15.

The TOR required Macmines to describe the existing air quality that may be affected by the Project, and detail the best practice mitigation measures together with proactive and predictive operational and maintenance strategies that could be used to prevent and mitigate the impacts of the predicted air quality.

Noted.

Submitter Issue Number 39.045

The EIS does not appropriately identify the existing air quality in the area of the Project.

The EIS states at section 15.6 that there are no DEHP air quality monitoring stations operating in the vicinity of the Project, and data has therefore been sourced from:

• Air quality assessments from other coal mines in the region; and

• Monitoring data from DEHP's monitoring stations at Toowoomba and Townsville.

The assumption made by Macmines that the data sourced with respect to existing air quality in the region of the Project is similar, or identical to, that at other projects, or to that at Toowoomba or Townsville, is flawed.

To be clear, the potential sources and types of dust in the region of the Project are highly likely to differ significantly from both Toowoomba and Townsville, as both areas are significantly larger, heavily populated centres, with limited farming and/ or grazing land located at their centre.

As indicated in Section 15.6 of the draft EIS, monitored levels of NO_2, CO and SO_2 in Toowoomba and Townsville have been used to characterise baseline levels for the project. Given the remote location of the project site and the lack of any significant sources of NO_2, CO and SO_2 in the project area, these levels are likely to be conservative.

Submitter Issue Number 39.046

The EIS's prediction methodology to determine whether any potential adverse impacts on health or amenity may occur is also flawed.

The EIS states at section 15.7.2 that "off-site project-generated traffic will access the project site via sealed roads and is therefore not a potentially significant dust emission source." The traffic from vehicles accessing the Project has not been included in the list of key mining activities that could contribute to dust generation.

To be clear, transport and traffic accessing the Project is likely to be considerable given the significant workforce (estimated at 3,300 employees at peak employment). Both the Moray-Carmichael Road and the Elgin-Moray Road are unsealed roads which provide direct access to the Project from larger sealed roads.

Each of the five (5) key roads to be utilised by the Project traffic allow B-triples, Type 1 and 2 Road trains and B-Double vehicles, all guaranteeing significant traffic dust emissions onto the land adjacent to the roads.

Given the above, it is therefore clear that Macmines assessment that the predicted levels of each pollutant are below the relevant air quality objectives at all sensitive receptors is flawed.

The reference to sealed roads in Section 15.7.1 of the draft EIS relates to the status of the roads at the time the mine is operating rather than the current status, as suggested.

Submitter Issue Number 39.047

Further, Macmines have failed to describe existing air quality levels in areas other than sensitive receptors (such as grazing pasture, water points etc.). The Coovin's run a successful grazing operation, whereby the necessity of palatable grazing pasture and clean water for cattle is of significant importance. If, as a result in an increase in dust particles and an decrease in air quality

results in a decrease in the quality of water or palatable grazing pasture, Coovin's farming operation will certainly be adversely affected by:
• Stock being less inclined to feed on the pasture available, thereby not increasing in weight and being less profitable for sale;
• Stock being less inclined to water at the available water resources, thereby not increasing in weight and potentially suffering health impacts, thereby being less profitable for sale;
• Coovin being required to cart in (at Coovin's additional time and expense) supplementary feed for stock to ensure usual weight increases and supplements gained; and
• Coovin being required to cart in (at Coovin's additional time and expense) clean quality drinking water for stock.

The potential for dust impacts on grazing are discussed in Section 2.2 of the draft EIS Air Quality Report (Appendix L).

Submitter Issue Number 39.048
The mitigation measures provided in section 15.8.12 of the EIS are insufficient in that they:
• Fail to detail the specific requirements for watering haul roads such as the number of times per day watering will be required and the location that the water will be resourced from;

The number of times per day a haul road needs to be watered will vary considerably dependent on the amount of traffic using the road and the weather conditions. The dust suppression water will be supplied from the mine water management system and the water truck fill point will also vary dependent on a range of factors.

Submitter Issue Number 39.049
• Fail to detail within what period the rehabilitation of inactive disturbed areas must be undertaken;

The progressive rehabilitation of the mine is illustrated in the conceptual staged mine layout plans (Figures 4-12 to 4-15 of the draft EIS)

Submitter Issue Number 39.050
• Fail to describe proactive and predictive operational and maintenance strategies that could be used by Macmines to prevent and mitigate the impacts to air quality.
Accordingly Coovin submits:
The CG should require correct baseline monitoring to determine existing air quality levels.
• That Macmines must be required to include all mining proposed activities into its assessment in the establishment of estimated levels of air pollutants to determine whether any potential adverse impacts may occur. • The CG should adhere to the principle of preservation of, or minimisation of impact on, Coovin's grazing land as a result of increased particulate matter, unless the adverse impacts is unavoidable in which case the landholder (Coovin) must be properly and adequately compensated as a result.
• Coovin's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarding in considering the merits of the Project.

Refer to responses to issues 39.045, 39.046 and 39.047.

Submitter Issue Number 39.051
Project China Stone – Air Quality Section 15.
Section 15.9 of the EIS provides that greenhouse gases will be produced by the Project as a result of the:
• combustion of coal for power generation;
• fuel consumption; and
• fugitive emission of coal seam gas.

Noted.

Submitter Issue Number 39.052
The EIS does not give sufficient weight to the importance of current land use and the potential for adverse impacts as a result of increased greenhouse gas emissions.
The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, and significant greenhouse gas emissions in the surrounding area increase, the following adverse impacts will be seen:
• An increase in health risks to surrounding landholders;
• An increase in health risks to grazing stock;
• An increase in pollution;
• Terrestrial and aquatic ecology; and
• Changes to plant growth and nutrition levels.
The proposed Project must adequately take into consideration the current greenhouse gas emissions and the current and anticipated land use. All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on current greenhouse gas emission levels. Failure to do so will result in losses to Coovin's cattle grazing business and to the livelihood and enjoyment of surrounding rural land.

The assessment of greenhouse gas emissions in the draft EIS has been conducted in accordance with the requirements of the EIS Terms of Reference.

Submitter Issue Number 39.053
Project China Coal – Noise and Vibration Section 16.
Section 16.3 of the EIS states that data is obtained from environmental noise monitors at two (2) monitoring locations.
In obtaining data from only two (2) monitoring locations, the EIS inadequately assesses the existing noise environment and fails to take into consideration the current land use in the Project area.
The two (2) monitoring locations are both located to the south west of the Project. No monitoring data has been obtained from any other direction from the Project.
Clearly noise data is likely to differ depending on:
• Terrain between the Project and the monitoring location;

• Wind directions;
• Proximity to different Project infrastructure; and
• Proximity to roads connecting to the Project

Noise monitoring conducted for the draft EIS confirmed that background noise levels are very low in the surrounding areas. Consequently the noise criteria for the project are the most stringent possible. Any further noise monitoring at other locations would therefore have no effect on the outcomes and conclusions of the draft EIS noise assessment.

Submitter Issue Number 39.054
Further, the noise assessments which have been undertaken do not give sufficient weight to the current land use and the potential impact of noise on the land use.
The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the:
• Accessibility of grazing stock to dense, well vegetated land; and
• Reproduction, growth and behaviour of grazing stock.
The proposed Project will significantly alter the existing noise environment and must be compatible with the current surrounding land uses, including residential and grazing.
It is imperative that Macmines provides, and implements noise mitigation measures to eliminate the potential for adverse impacts of the Project on both sensitive receptors and current farming operations. Failure to do so will result in losses to Coovin's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences and recreation areas.

Mine noise is not known to have an adverse impact on grazing properties. There are numerous examples of mines that have active cattle grazing on fenced areas within operating mine sites.

Submitter Issue Number 39.055
Project China Coal – Noise and Vibration Section 16.
Section 16.6.8 of the EIS states that "Predicted ground vibration and blast overpressure levels are well within the criteria at the closest receptor for this MIC (Maximum Instantaneous Charge).
The EIS inadequately assesses the predicted ground vibration and blast overpressure and fails to take into consideration the current land use in the Project area.
Whilst the predicted levels are within the criteria at the closest receptor for this MIC, there is no certainty that predicted levels are within the criteria at other receptors.
Clearly ground vibration and blast overpressure data is likely to differ depending on:
• Terrain between the Project and the receptor;
• Infrastructure and/ or vegetation between the Project and the receptor.

The majority of Queensland coal mines are location in proximity to grazing properties. Ground vibration and overpressure are not proven to have any adverse impacts on neighbouring grazing properties. The assessment of impacts on receptors considered the worst case closest receptor. The impacts on any more distant receptors would be less than the closest receptor.

Submitter Issue Number 39.056

Further, the predicted ground vibration and blast overpressure assessments which have been undertaken do not give sufficient weight to the current land use and the potential impact of vibration and blasting on the land use. The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the:

• Accessibility of grazing stock to dense, well vegetated land; and

• Reproduction, growth and behaviour of grazing stock.

The proposed Project will significantly alter the existing environment and must be compatible with the current surrounding land uses, including residential and grazing. It is imperative that Macmines provides, and implements vibration and blasting mitigation measures to eliminate the potential for adverse impacts of the Project on both sensitive receptors and current farming operations. Failure to do so will result in losses to Coovin's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences and recreation areas.

Refer to response to issue 39.055.

Submitter Issue Number 39.057

Project China Stone – Visual Amenity Section 17.

Section 17.3.2 of the EIS states that "Visual receptors in the vicinity of the project site are limited to isolated rural residences and unsealed local government roads. The three closest residences were selected for the purposes of the visual impact assessment."

The EIS does not adequately assess the visual receptors in the vicinity of the project site by merely assessing the three (3) closest residences.

There are sixteen (16) residences within fifty (50) kilometres of the Project, located in all directions of the Project. The Three (3) residences which were assessed failed to provide an assessment of the visual impact on residences to the north, north-west, north-east and south east of the Project.

Two of the three (3) residences assessed have visual settings which are impeded by the Darkies Range. All residences in differing directions to the Project do not have visual settings which are impeded by the Darkies Range, thereby increasing the likelihood of a high visual impact at those residences.

Merely two (2) lines of sight were drawn for each receptor, failing to sufficiently address the whole impact on the receptors.

As discussed in Section 17.3.2 of the draft EIS, visual effects and impacts on areas beyond the closest residences will generally be less than those at the closest residences. The visual impact on the closest receptors was assessed as low. The visual assessment was based on worst case line of sight locations.

Submitter Issue Number 39.058

The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the farming operations of the surrounding landholders by:

• Cattle shying away from new, and abnormal, visual infrastructures in their surroundings; and

• Thereby altering the usual grazing and watering patterns of the stock (thereby impacting on

reproduction, growth and behaviour of grazing stock).
The proposed Project will change the rural character and visual amenity of the region and must be limited so as to refrain from impacting on residences and the current surrounding land uses.
All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on nearby residences and current land use. Failure to do so will result in losses to Coovin's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences.

Coal mines are not known to create visual impacts that adversely impact cattle grazing. Visual impact mitigation measures are discussed in Section 17.4 of the draft EIS.

Submitter Issue Number 39.059
Project China Stone – Traffic and Transport Section 19.
Section 19.2 of the EIS identifies traffic and transport impacts as a result of the Project to include:
• Impacts on intersections;
• Impacts on road pavements;
• Impacts on road safety;
• Impacts on public transport; and
• Impacts on other modes of transportation.

Noted.

Submitter Issue Number 39.060
Should the Project be approved, suitable and necessary road networks within the Project area will be limited, affecting the safety of both drivers and the surrounding environment.
The proposed Project activities will impact on the current road network within and surrounding the Project including by:
• Considerably increasing traffic numbers during the construction and operation phases;
• Considerably altering vehicle types utilising the road network, ranging from standard vehicles up to multi-combination vehicles;
• Increasing disturbance to the current road networks and surrounding land as a result of the above, including disturbance to residences and grazing land from:
o noise and vibration;
o lighting and dust;
o erosion and subsidence; and
o the potential introduction of weed species.

A Road Impact Assessment (Appendix O) is presented in the draft EIS. Refer to responses to issues 39.047, 39.054, 39.055 and 39.058.

The mine is not predicted to impact neighbouring grazing properties due to erosion or subsidence. Proposed controls for the spread of weeds is discussed in Section 9.7.3 of the draft EIS.

Submitter Issue Number 39.061

The primary land use within the Project site and surrounding area is cattle grazing. Should the Project be approved, it will impact on the farming operations of the surrounding landholders by:

• Cattle shying away from new, and abnormal, increased traffic and vehicle types in their surroundings; and

• Thereby altering the usual grazing and watering patterns of the stock (thereby impacting on reproduction, growth and behaviour of grazing stock).

The proposed Project will change the rural character and rural road network currently seen in the region and must be restricted so as to ensure no adverse impacts are felt by residences and the current surrounding land uses (grazing).

All necessary and required mitigation measures must be put in place to eliminate all adverse impacts of the Project on nearby residences and current land use. Failure to do so will result in losses to Coovin's cattle grazing business and to the livelihood and enjoyment of surrounding rural residences.

There are many major roads in Queensland adjacent to cattle grazing properties and cattle are not known to be adversely impacted by road traffic.

Submitter Issue Number 39.062

Project China Stone – Cultural Heritage Section 20.

Section 20.2.2 provides that the Wangan and Jagalingou People "have been identified as the Aboriginal parties for the project, in accordance with the ACH Act. The proponent has put in place with its consultant, the process to initiate a CHMP with the Wangan ad Jagalingou People, in accordance with the ACH Act. The CHMP is required to be finalised prior to the commencement of construction.

The EIS fails to provide or require appropriate assessment of the potential impacts of a project on Aboriginal heritage prior to approval of the Project. By simply requiring that the CHMP be finalised prior to the commencement of construction, the potential impacts of the Project on Aboriginal heritage will possibly be missed, and or not given sufficient weight and their importance considered.

It is necessary that the CHMP be required to be finalised earlier in the approval stage for the Project to adequately assess the potential impacts of the Project on Aboriginal heritage and to enable appropriate mitigation measures to be investigated and put into place.

As explained in Section 20.2.2 of the draft EIS, the proposed management of Aboriginal cultural heritage is in accordance with the requirements of the *Aboriginal Cultural Heritage Act*.

Submitter Issue Number 39.063

Project China Stone – Non-Mining Waste Management Section 21.

Section 21.2.2 of the EIS identifies the legislative requirements for a waste management hierarchy where waste management options are considered in a structured order as follows:

• Waste avoidance (most preferred) (1);

• Waste reduction (2);

• Waste reuse (3);
• Waste recycling (4);
• Recover waste resources (5);
• Treat waste (6); and
• Waste disposal (least preferred) (7).

The EIS assesses each type of waste proposed by the Project taking into consideration the waste management hierarchy.

Not one (1) of the management strategies proposed by Macmines are assessed as a (1) in the waste management hierarchy (waste avoidance) or a two (2) in the waste management strategy (waste reduction). Conversely, numerous management strategies are assessed as a (7) in the waste management hierarchy (Waste disposal).

Should the Project be approved, significant waste will be generated within the Project area, and the removal and/ or disposal of that waste will fail to be dealt with in accordance with best practice management strategies, affecting the Project area.

The proposed management of waste is in accordance with the relevant regulatory requirements.

Submitter Issue Number 39.064

The limited waste management strategies for the Project activities will impact on the Project area, the surrounding land and the surrounding land by:

• Adversely impacting on the life, health and well-being of people in the vicinity of the Project and the surrounding lands;

Refer to response to issue 39.063

Submitter Issue Number 39.065

• Adversely impacting on the life, health and well-being of livestock in the vicinity of the Project and the surrounding lands;

Refer to response to issue 39.063.

Submitter Issue Number 39.066

• Adversely impacting the ecological processes and associated ecosystems in the Project area and the surrounding area; and

Refer to response to issue 39.063.

Submitter Issue Number 39.067

• Adversely impacting the current land use and land use capability having regard to economic considerations.

Refer to response to issue 39.063.

Submitter Issue Number 39.068

Coovin's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.

It is in the Qld Government, Macmines and Coovin's benefit to ensure waste removal and/ or waste disposal is completed cleanly, effectively and in accordance with best management practices that ensure the long term sustainability to the traditional use of the Land, grazing.

The management of waste should be reviewed prior to the Project's approval, and thereafter annually throughout the life of the Project. As any planned activity is altered or activities are completed, the strategy should be updated to reflect any changes.

Refer to response to issue 39.063.

Submitter Issue Number 39.069

Macmines have not demonstrated how the Project will (*inter alia*):

• avoid and minimise current and future environmental harm; and

• minimise impacts on current and previous land use (e.g. grazing).

In light of Coovin's concerns, Coovin submits:

• Macmines must further consider its proposed waste management strategies for the Project;

• Macmines must ensure its proposed waste management strategies are in accordance with, and promote the environmental values as set out in section 21.2.3 of the EIS.

Refer to response to issue 39.063.

Submitter Issue Number 39.070

Project China Stone – Hazard and Risk Section 22.

Section 22.6 of the EIS states that the key potential hazards of the Projects are:

• Storage of mine-affected water in various mine water dams which could potentially be hazardous in the event of an unplanned or unmanaged release;

• Storage of tailings and other mine wastes which could potentially be hazardous in the event of an unplanned or unmanaged release;

• Operation of a coal-fired power station to provide electricity for the operation of the mine. The power station could be potentially hazardous in the event of an explosion;

• Operation of a private airstrip for the transport of mine workers;

• Transport, storage and use of a range of hazardous materials, including explosives that can create hazardous conditions if not appropriately managed.

Additionally, section 22.6 of the EIS also highlights potential hazards associated with:

• Natural events such as bushfires, floods and climate change;

• Malicious acts and terrorism;

• Incidents with the treatment of potable water or sewage; and

• Disease vectors including mosquitoes and communicable diseases.

The EIS states that:

"As far as practicable, project infrastructure has been located to maximise separate between potentially hazardous facilities and activities in order to minimise potentially hazardous conditions

for workers, sensitive receptors and to address community safety values. The remoteness of the site from populated areas also limits the potential risks from the project. This remoteness also addresses the potential cumulative risks of the project interacting with off-site hazards."

Noted.

Submitter Issue Number 39.071
The EIS does not give sufficient weight to the dangers and risks posed by the Project, nor does the EIS provide sufficient detail and provision of management strategies to mitigate and limit the potential hazards raised.
To be clear, the Project area and surrounding land is primarily used by landholders for their farming operations – their businesses and their homes.
The grazing operations which take place on the Project area and on the surrounding lands are highly successful and valued land uses.
The EIS does not address, nor does it consider, the significance of a loss of, or significant impact to the current land use (whether on a long term or temporary basis) as a result of a hazardous outcome, as to impacts on the business of landholders who currently use the Land (or who may use the Land in the future).
Macmines has not established that it has taken the necessary steps to minimise the very real risks of hazards as a result of the Project and accordingly in the absence of such cannot reasonably have assessed the potential impacts in the same.
Coovin's livelihood (cattle grazing operations) will be detrimentally impacted and must not be disregarded in considering the merits of the Project.

Section 22.5 of the draft EIS identifies the surrounding land use and sensitive receptors in proximity to the project site. A preliminary hazard analysis is presented in Table 22-5 of the draft EIS and Section 22.4 of the draft EIS explains that a more detailed re-appraisal of project hazards will be undertaken as part of the development of the project Safety and Health Management System, prior to the commencement of construction.

Submitter Issue Number 39.072
Macmines have not demonstrated how the Project will (*inter alia*):
• avoid and minimise current and future environmental harm; and
• minimise impacts on current and previous land use (e.g. grazing).
In light of Coovin's concerns, Coovin submits:
• Macmines must further consider its proposed hazard and risk management strategies for the Project;
• Macmines must ensure its proposed hazard and risk management strategies are in accordance with, and promote the safety and health management system that is put in place in accordance with section 22.3.2 of the EIS.

Refer to response to issue 39.071.

Submitter Issue Number 39.073

Project China Stone – Cumulative Impacts Section 23.

The TOR required Macmines to provide a summary of the Project's cumulative impacts and describe these cumulative impacts in combination with those of existing or proposed projects publicly known or advised by the Office of the Coordinator-General to be in the region.

Importantly, the CG required that cumulative impacts be assess with respect to:

• Both geographic location and environmental values.

• Address cumulative impacts in sensitive environmental areas.

• Explain the methodology used to determine the cumulative impacts of the Project, detailing the range of variables considered (including relevant baseline or other criteria upon which the cumulative aspects of the Project have been assessed).

Section 23 of the EIS details the cumulative impact assessments and the mitigation and management measures for each of the relevant environmental aspects addressed in the EIS.

Section 23.3 of the EIS states that: "The cumulative impact assessments have considered the impacts from the CCM& RP and the MPP, where relevant, with those predicted for the project."

Noted.

Submitter Issue Number 39.074

The EIS does not give sufficient weight to the mining industry (and proposed future mining industry) in the area of the Project. Whilst there are currently no operating coal mines in the Galilee Basin, the following six (6) projects are currently seeking approval or have recently gained approval:

• Carmichael Coal Mine and Rail Project (CCM&RP);

• Project China Stone;

• Alpha Coal;

• Galilee Coal;

• Kevin's Corner; and

• South Galilee Coal.

In addition, the Moray Powerlink Project (MPP) is also currently in the approval phase, for the construction and operation of a thermal and diesel power station with a generating capacity of 150 Mega Watts.

In merely considering the impacts from the CCM&RP and the MPP, where relevant, with those predicted for the Project, Macmines has failed to adequately consider the cumulative impacts with respect to geographic location.

As indicated in Section 23.2 of the draft EIS, the projects listed in this submission are not in the vicinity of the project site and are too far away to have any significant cumulative impacts.

Submitter Issue Number 39.075

Examples of biodiversity and environmental value loss are the potential significant impacts to both Commonwealth and State listed flora and fauna from the Project, including:

• Clearing of approximately 11,000 ha of remnant vegetation, including 24 ha of one of concern

Regional Ecosystem.
• Clearing of habitat for the following species which were confirmed to be present in the Project site during field surveys:
o Squatter Pigeon (southern subspecies)(listed as vulnerable under the EPBC Act and NC Act);
o Black-throated Finch (white-rumped subspecies)(listed as endangered under the EPBC Act and NC Act);
o Koala (listed as vulnerable under the EPBC Act and special least concern under the NC Act); and
o Short-beaked Echidna (listed as special least concern under the NC Act).
• Clearing of habitat for the Australian Painted Snipe (listed as endangered under the EPBC Act and vulnerable under the NC Act), which was considered to have a moderate potential of occurring within the Project site.
An additional potential significant impact of the Project on flora and fauna is habitat fragmentation.
At section 23.5.2 of the EIS, Macmines states "The impacts of clearing of habitat on the project site will be mitigated through the provision of biodiversity offsets."
Further, Macmines states "As the clearing of vegetation is only in the southern portion of the project site, full east to west connectivity will remain in the northern portion of the project site…The open cut mining/ infrastructure footprints between the project and the CCM&RP are approximately 10km apart, leaving a large corridor of remnant vegetation between the cleared areas."
Accordingly, the present Project, if approved, would add to further pressure on endangered and vulnerable species of the Galilee Basin and habitations will be split. It is neither adequate nor sufficient for a Project the scale proposed by Macmines to not provide an alternative solution in respect of loss of environmental values and biodiversity other than providing that the Project will be required to provide biodiversity offsets. No reasonable measure has been provided in the EIS to address this fundamental issue.

The provision of biodiversity offsets for significant residual impacts on biodiversity values is a regulatory requirement for mining projects that is enforced by both the Queensland and Federal Governments.

Submitter Issue Number 39.076
The EIS should be refused on the grounds stated herein as the EIS has not had proper regard to the object as set out in section 3 of the EPA, as:
• The Project fails to protect Queensland's environment whilst simultaneously permitting development seeking to improve the quality of life now and into the future which would maintain ecological processes on which life depends.
• The Project is not consistent with the principles of ecologically sustainable development as:
o Long and short term economic, environmental, social and equity considerations must be effectively integrated in the decision making process.
o Threats of serious or irreversible environmental damage or a deficient outcome in respect of an environmental investigation is insufficient grounds to delay measures to prevent environmental degradation.
o The mine will cause serious environmental harm (i.e. dust, noise and vibration) to the character

and values of the Land as a result of inter alia coal dust. This is not in the public interest.
The employment, royalties and other benefits that the mine will generate must be balanced against the impact on Coovin's Land and cattle grazing operations together with the impact on the biodiversity and environment. The outcome must be balanced in favour of public interest or consistent with the EPA.

The submitters view on the draft EIS is noted. The relevant Government will determine the adequacy of the draft EIS.

Submitter Issue Number 39.077
Project China Stone – Environmental Management Section 24.
Coovin is not satisfied of Macmines proposed environmental management measures to be developed and implemented to address the potential environmental impacts associated with the Project, detailed at Section 24.
Coovin submits that, in respect of environmental management, the Draft EIS fails to:
• adequately assess the Project's environmental impacts;
• adequately propose measures to avoid or minimise any adverse impacts; and
• propose environmental protection commitments to protect or enhance environmental values.

Refer to response to issue 39.076.

Submitter Issue Number 39.078
Coovin notes the EIS is intended to (*inter alia*):
• ensure Macmines assume primary responsibility for protection of any environmental values that may be affected by the Project;
• address environmental management for the expected life of the Project;
• contribute to statutory decisions on whether a proposal should proceed, and if so, decide what environmental management and monitoring conditions should apply; and
• where legislation allows, incorporate community and stakeholder views in assessment and decision-making processes.
In accordance with the EPA, Macmines has a general environmental duty and is responsible for the action that affect the environment. Macmines has not demonstrated all reasonable and practicable measures have been taken to prevent or minimise the harm caused by the proposed Project.

Refer to response to issue 39.076.

Submitter Issue Number 39.079
Macmines have a corporate and social responsibility to (inter alia):
• self-regulate and ensure its active compliance with the spirit of the law and ethical standards;
• engage in actions that further some social good, beyond the interests of Macmines;
• encourage a positive impact through its activities on the environment and all other members of the public; and

• co-exist with Landowners, including Coovin and operating in a spirit of mutual cooperation and trust.

Noted.

Submitter Issue Number 39.080

The Project and impacts will be long term and intergenerational. Coovin and Coovin's family (past and present) continues to improve the Land for following generations, whereas mining is extractive.

The Project has long-term and unaddressed serious environmental impacts on (inter alia) the quality of the agricultural land, salinity, contamination, biosecurity and pest and weeds.

Where the Project is not properly or adequately managed (as is the present circumstances), real consequences to the environment will result, particularly where the Project does not protect the environment and surrounds.

Coovin has genuine concerns in relation to the environmental impacts of the Project on the Land, including but not limited to:

• there will be adverse impacts on soil structure (including erosion and soil compaction due to overuse);

• noise, air and odour impacts have not been appropriately investigated or conditioned in a way that would demonstrate or provide comfort that no environmental harm will arise as a result of the Project;

• destruction of various vegetation species;

• irreversible damage to ecosystems;

• contamination.

A legacy of inadequate environmental measures should not be carried forward given the scale and intensity of the disturbance on the Land which will cause profound environmental impacts.

In light of Coovin's concerns, Coovin submits:

• Macmines must further consider its proposed measures / strategies for tailings and power station waste storage facilities for the Project; and

• the CG should adhere to the principle of preservation of Land unless the loss is deemed unavoidable in which case the landholder (Coovin) must be properly and adequately compensated as a result.

Refer to response to issue 39.003.

Submitter Issue Number 39.081

Coovin has a statutory right under the SDPWO Act as an affected party to object to the Project and has made a 'properly made' submission, being;

• A submission made to the Coordinator-General in writing.

• Received on or before the last day of the submission period 7 September 2015

• Signed and stating the name and address of each person making the submission.

• States the grounds of the submission and facts and circumstances relied on.

Coovin will be adversely affected by the Project directly covering the Land namely through:

• Loss of Vegetation/Good Quality Agricultural Land;

• Loss of Stock Routes/Increased Management Costs;
• Flooding and Hydraulics Impacts; and
• Unacceptable Cumulative Impacts including adverse impacts on threatened Biodiversity.

Coovin's position is that Macmines have proposed an open-cut and underground coal mine that in its present form has unacceptable impacts for landowners and communities because of the disruption it causes to cattle operations and the local environs.

Due to the long term and irreversible impacts that the Project will have on Coovin, Coovin's business and the environment the application for the Project should be refused.

Noted.

PROJECT CHINA STONE
RESPONSE TO ADANI MINING SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

40 ADANI MINING SUBMISSION

Submitter Issue Number 40.001
Stakeholder engagement
Adani Mining Pty Ltd (Adani) has held the Moray Downs Pastoral Lease (Lot 662 on PH1491) since 2010. The China Stone project is proposed to be undertaken on parts of the Moray Downs property. Adani notes that MacMines Austasia Pty Ltd (MacMines) is required under the *Mineral Resources Act 1989* process to obtain written agreement from Adani, as the holder of Moray Downs, for the mining lease.
Adani and MacMines entered into an agreement which provided MacMines access to the portion of Moray Downs that overlapped with their exploration permit for coal to carry out exploration activities. The agreement included conditions of access.
The China Stone project is highly dependent on the Adani Carmichael Coal Mine and Rail Project, North Galilee Basin Rail Project (NGBR) and the development of Terminal 0 at Abbot Point Port.
Adani requests the Coordinator General ensure that MacMines are required to continue to meet their land access obligations, and engage with Adani regarding the project and potential changes, including agreements with respect to a future Mining Lease.
To date there has been limited stakeholder engagement with Adani regarding the proposed China Stone project with respect to baseline impact assessment matters such as the potential impacts to groundwater and surface water infrastructure which supports Adani's ongoing management of the Moray Downs Property.

Noted. The proponent will continue to comply with the legal requirements under the *Mineral Resources Act 1989* in relation to exploration and obtaining a mining lease over the Moray Downs property. The proponent will continue to consult with Adani, as the owner of the Moray Downs property, as necessary.

Submitter Issue Number 40.002
Cumulative impact assessment
Adani notes the requirement for the baseline impact assessment for the China Stone project is undertaken based on existing land use and infrastructure, exclusive of proposed and/or approved projects where these projects are yet to commence.
Additionally, Adani notes the requirement for cumulative impact assessment processes to describe additive impacts from separate baseline impact assessments.
The China Stone EIS has included the proposed and approved Carmichael Coal Mine and Rail Project within the baseline impact assessment rather than in the cumulative impact assessment. It is important that material from other project EIS's such as the Carmichael Coal Mine and Rail Project is not misused or misrepresented in baseline impact assessments. In the case of the

Carmichael Coal Mine and Rail Project, the EIS, SEIS and AEIS documentation was prepared specifically for this project. It is only appropriate that this material is used in the context of cumulative impact assessment.

The draft Environmental Impact Statement (EIS) supports an application for the approval of the China Stone Project regardless of whether the Carmichael Coal Mine and Rail Project (CCM&RP) proceeds. The claim in the submission that the CCM&RP has been considered as part of the baseline for the project is not correct. Where relevant, the draft EIS has addressed the cumulative impacts of the project with the CCM&RP, as required by the EIS Terms of Reference. Where relevant, the draft EIS also considers the impacts of Project China Stone on its own.

Submitter Issue Number 40.003

Project Description

The China Stone EIS would benefit from fully describing project description details related to enabling infrastructure. These include:

• location of the rail connection from the proposed mining lease to the proposed Carmichael Rail Network;

• location of the road connection from the proposed mining lease to existing road network (including the Moray-Carmichael Road);

• the source and type of quarry material required for , rail and road construction; and

• water supply for the construction and operation of the project.

In order to understand the potential impact of the project and its supporting infrastructure on Adani projects, Adani requests that these project elements be fully described through the EIS process, consistent with the requirements for similar recent projects. This is particularly important given the context and challenges for the development of the Galilee Basin and its supporting infrastructure.

As described in Section 4.13 of the draft EIS, these aspects of the project are off-lease infrastructure and approval for these aspects are not currently being sought as part of this EIS process. The current preferred options and status of the off-lease infrastructure components and interactions with other Galilee Basin Developments, including the CCM&RP, are discussed in Section 4.13.

Submitter Issue Number 40.004

Rail

The proposed China Stone EIS project description describes a rail corridor wholly within the Mining Lease area with an exit point in the most southern and eastern corner. It is highly likely with this location that the rail would continue through the Moray Downs Pastoral Lease. This has the potential to impact on areas of the property, including the area proposed to be legally secured under the Carmichael Project Biodiversity Offset Strategy. As a landholder and project proponent, Adani would welcome the opportunity to contribute to the location selection of the proposed rail corridor through the EIS process.

Noted. Refer to response to Issue 40.003.

Submitter Issue Number 40.005
Rail
Adani also notes that it is important to understand how a proposed rail corridor would align with the Galilee Basin State Development Area (SDA) and whether future amendments of the SDA may be required, inclusive of consultation processes.

Noted. Refer to response to Issue 40.003.

Submitter Issue Number 40.006
Road and traffic impacts
The proposed location of new road infrastructure linking the Moray-Carmichael Road to the proposed China Stone mining lease indicates travel through the Moray Downs pastoral lease and a proposed offset area.
The additional impacts from the new road and the existing network have not been assessed. Further, Adani is concerned there has been a lack of consultation with Adani who are currently negotiating an infrastructure agreement with Isaac Regional Council. The terms of the agreement also cover the upgrade of the Moray-Carmichael and Elgin-Moray Roads, and maintenance of said roads. The project would benefit from the engagement of Adani and Isaac Regional Council on these matters.

Please refer to response to Issue 40.003 regarding the assessment of off-lease infrastructure required for the project. The proponent is required to engage with the Isaac Regional Council (IRC) in relation to any works associated with the mine access road and would also engage with Adani during detailed project planning in relation to the joint use of IRC roads.

Submitter Issue Number 40.007
The China Stone Project relies on the Carmichael Coal Mine and Rail Project for the upgrade of the Moray-Carmichael Road, the Elgin-Moray Road and the upgrade of the intersection of the mine access road with the Gregory Developmental Road. Adani requests MacMines commence commercial negotiations about their financial contribution to these works.

The project does not rely on the CCM&RP for the upgrade of roads as suggested. The draft EIS merely explains that the upgrades are required for the CCM&RP which is anticipated to be developed some years ahead of the project.

Submitter Issue Number 40.008
Also, the China Stone EIS does not consider the NGBR project. Given that the traffic impact assessment considers the use of the Gregory Development Road North, the EIS should consider NGBR in assessing the cumulative traffic and road impacts of all projects.

The draft EIS Road Impact Assessment (Appendix O) considers the cumulative traffic impacts with the CCM&RP which includes the off-lease rail connection that was proposed at the time of the CCM&RP EIS. The NGBR project involves an alternative rail alignment, however it is noted that

the section of the off-lease rail line in the vicinity of the project site and Gregory Developmental Road is a similar alignment to the off-lease rail connection proposed in the CCM&RP EIS. Hence the road traffic generated by the construction of the NGBR on the Gregory Developmental Road will therefore be similar to the rail construction traffic in the CCM&RP EIS. In addition, the significant traffic generation from the NGBR project is limited to the two year construction phase and the timing of the NGBR project is currently uncertain. The NGBR EIS indicates that construction will start in late 2014 and we understand that construction has not commenced to date. Hence it is not possible to determine whether there will be any overlap in the timing of the NGBR project with Project China Stone or whether any potential cumulative traffic impacts will occur. However, as agreed with the TMR, the proponent has already committed to update the Road Impact Assessment (RIA) six months prior to the commencement of construction in order to address the current uncertainties in relation to the relative timing of Project China Stone and the CCM&RP, and the potential cumulative traffic impacts. At this time, any potential cumulative traffic impacts with the NGBR project could be confirmed and, if necessary, addressed in the updated RIA.

Submitter Issue Number 40.009

Water supply

Both the Carmichael Coal Mine and Rail and China Stone Projects require water for the construction and operation of mines. The China Stone EIS notes that water is critical to the project, however conceding that this will be assessed under another process, cumulative water demand and impacts should be included in the EIS process.

Refer to response to Issue 40.003.

Submitter Issue Number 40.010

Technical matters

Adani provides the following comments regarding the China Stone EIS methodology, particularly concerning consistency with the Carmichael Coal Mine and Rail Project work to date.

Groundwater

The China Stone EIS groundwater assessment (including monitoring and modelling) differs from the assessment completed for the Carmichael Coal Mine and Rail Project.

To ensure that the cumulative impacts to groundwater are understood, Adani requests that the all projects are assessed using similar criteria and conditioned accordingly. This approach will benefit the ongoing regional and cumulative studies being undertaken and/or proposed by Commonwealth and Queensland Governments.

The groundwater assessment in the draft EIS (Groundwater Report (Appendix I)) utilised all relevant groundwater bore information available from the CCM&RP EIS/SEIS/AEIS in addition to the project site groundwater field investigation data. The draft EIS groundwater assessment is based on a robust calibrated numerical groundwater model. The draft EIS groundwater assessment includes a cumulative impact assessment based on the CCM&RP groundwater drawdown predictions.

It is not the responsibility of the proponent, nor is it possible based on publically available information, to conduct a detailed comparative assessment with the CCM&RP groundwater assessment. However, it should be noted that the Project China Stone site and the Carmichael Mine site are located in distinctly different groundwater settings. The Project China Stone site is dominated by Darkies Range that is formed by an elevated and unsaturated outcrop of the Clematis sandstone. The site is also located at the top of the surface water catchment and has highly ephemeral drainage lines with no significant creeks or watercourses traversing the site. In contrast, the Carmichael Mine site is located in lower lying topography and is traversed by a major river and its floodplain. It is therefore not surprising that there are some differences in the groundwater impacts between the two projects. It is noted that this submission does not provide any specific areas of difference to enable a specific response.

Submitter Issue Number 40.011

Ecology

Black-throated Finch

Adani notes that the methodology used for determining high and low value habitat for the Black-throated Finch (BTF) differs from that of the Carmichael Coal Mine and Rail Project. As the projects are directly adjacent to another, it is critical that the ecological assessment is consistent.

To ensure that the cumulative impacts to BTF are understood, Adani requests that the all projects are assessed using similar criteria and conditioned accordingly. This approach will benefit in the ongoing regional and cumulative studies being undertaken and/or proposed by Commonwealth and Queensland Governments.

The submitter's intention to seek a similar approach to the assessment of Black-throated Finch (BTF) habitat is noted. The CCM&RP EIS definition of BTF habitat was reviewed, along with other Galilee Basin project habitat definitions available at the time, as part of the development of the BTF habitat definition adopted in the draft EIS Terrestrial Ecology Report (Appendix F). This review found the BTF habitat definition adopted for the CCM&RP to be highly specific to the CCM&RP site and was not able to be readily adopted for the project.

As discussed in Section 4.2 – Response to Common Issues, the BTF habitat modelling for the project site has been revised in response to submission on the draft EIS, in consultation with the Federal Department of the Environment and Energy (DoEE) and the Queensland Department of Environment and Heritage Protection (EHP). The agreed definition has been adopted from definitions used in two other Galilee Basin project approvals, which provide a readily transferable definition of BTF habitat.

Submitter Issue Number 40.012

Biodiversity Offsets Strategy

Adani lodged its Biodiversity Offset Strategy for the Carmichael Coal Mine and Rail Project with the Queensland Government in October 2014. It should be noted that Adani has since amended its proposed Biodiversity Offset Area to exclude the area where the proposed China Stone Project would overlap with Moray Downs. Adani had mapped this area as predominantly high quality BTF

habitat.
Adani's review of the EIS would benefit from the ability to review a non-confidential version of the MacMines Biodiversity Offset Strategy to fully understand how and where offsets are proposed. Adani notes the MacMines Biodiversity Offset Strategy was not available with the EIS and respectfully requests the Coordinator-General provide a copy of the MacMines Biodiversity Offset Strategy for review so feedback can be provided.

The proponent does not currently own any land nor currently have any agreements with any landowners regarding offset properties. The Biodiversity Offset Strategy is therefore not able to be released publicly in full as it contains commercially sensitive information. A redacted version of the draft EIS Biodiversity Offset Strategy (Appendix H) is provided in Attachment J.

Submitter Issue Number 40.013
Hazard and risk
The China Stone EIS shows a proposed Ammonium Nitrate Storage on the South Eastern Boundary (or Northern boundary of Carmichael Coal Mine). The safety buffer around this facility would potentially impact on Adani's management of the Moray Downs property and the Carmichael Coal Mine. Adani requests the EIS process includes risk assessment that consider impacts to stakeholders including adjacent landholders. Risk assessments should include measures to avoid or mitigate risks.

The ammonium nitrate storage area is located approximately 1.5 km from the Carmichael Mine site at the closest point and is adjacent to the project site boundary adjoining the Moray Downs cattle grazing property. It should be noted that the ammonium nitrate would be stored in a non-activated (non-explosive) form and would only be activated in the field prior to loading the blast holes.

The storage of explosives on the project site was identified as a key hazard in Section 22.6 of the draft EIS. The storage of explosives on mine sites is regulated under the *Explosives Act 1999* and the *Coal Mining Safety and Health Act 1999*. The storage areas are required to be located, designed, constructed and operated in accordance with all applicable legislative requirements. These requirements are designed to identify and manage any risks to neighbouring properties and land use.

Submitter Issue Number 40.014
Drainage and flood protection
The EIS describes, at a high level, the drainage and flood protection proposed for the China Stone project. Adani considers the EIS would benefit from further detail regarding the impacts of subsidence in underground mining areas on existing surface water values.

The draft EIS provides a detailed assessment of the subsidence of underground mining areas and the potential for subsidence impacts on surface water values in the following sections of the draft EIS: Section 6, Section 13.6.4, the Subsidence Report (Appendix A) and the Draft Subsidence Management Plan (Appendix B).

Submitter Issue Number 40.015
Further, with regards to surface water values, Adani notes a proposed mine affected water discharge location that is inconsistent with guidelines pertaining to the discharge to receiving environments.

As discussed in Section 4.2 – Response to Common Issues, the receiving waters for the discharge of mine affected water have been revised, in consultation with the EHP.

Submitter Issue Number 40.016
Adani notes the China Stone EIS is required to provide baseline and cumulative impact assessment with regards to potential impacts to downstream environmental values and water users. Adani was unable to locate this information in the EIS.

Refer draft EIS Section 13.2.3 that describes downstream water use and environmental values, Section 13.6 that describes surface water impacts, and Section 10.6.4 for assessment of the downstream aquatic ecology values, potential impacts and potential for cumulative impacts on aquatic ecology.

Submitter Issue Number 40.017
Air quality, noise and vibration
Adani notes that the China Stone EIS is required to assess impacts to sensitive receptors with respect to air quality, noise and vibration.
The EIS would be improved through the consistent inclusion of sensitive receptors across these areas and the application of relevant guidelines.

The draft EIS has assessed air quality and noise and vibration impacts consistently with regard to sensitive receptors. Table 15-1 of the draft EIS shows the receptors used in the air quality assessment which include receptors located as far as 51 km from the project site. Table 16-1 of the draft EIS shows the receptors used in the noise and vibration assessment which is a subset of the three closest receptors to the project site used in the air quality assessment. A subset of receptors was used for the noise and vibration assessment as, due to the remote, rural setting the three closest receptors are located up to 11.8 km from the project site. It should be noted that achieving compliance at the closest receptors would mean that compliance would also be achieved at more distant receptors and specific assessment of all receptors is therefore not necessary.

Submitter Issue Number 40.018
Adani notes that the China Stone EIS is required to assess impacts to sensitive receptors with respect to air quality, noise and vibration.
The EIS would be improved through the consistent inclusion of sensitive receptors across these areas and the application of relevant guidelines.

This is a duplication of issue 40.017. Refer to response to 40.017.

Submitter Issue Number 40.019
Aviation
Adani seeks additional assessment of the impacts from the proposed China Stone Airport on the Carmichael Coal Mine and Rail Airport, particularly in the following areas:
The impacts of a further proposed 40 flights per week the impact of a further proposed 40 flights per week (737, A320 and Bombardiers)

As stated in Attachment 24-2 of the draft EIS, the private airstrip will be designed, constructed and operated in accordance with all relevant Civil Aviation Safety Authority (CASA) regulations and guidelines. All necessary approvals will be obtained for the airstrip, as required by law.

It is unclear what specific additional assessment of impacts from the airstrip are being requested by the submitter. However, all relevant impacts will be addressed during the detailed planning phase. This process will involve consultation with Adani, as necessary.

Submitter Issue Number 40.020
increased dust from the China Stone project on the Adani airfield and operations

Section 15 of the draft EIS includes assessment of the potential air quality impacts from the project, including assessment of dust deposition and visibility issues which are relevant to the submitter's issue. As stated in Section 15.4 of the draft EIS, compliance with the air quality objectives (which are designed for health and amenity) will also protect against problems associated with visible dust because, at levels equivalent to the air quality objectives, dust is essentially not visible. As indicated in Table 15-10 of the draft EIS, the contribution of Total Suspended Particulates (TSP) to the total dust levels in the vicinity of the CCM&RP airstrip are relatively minor, in comparison to the air quality goals and the dust levels attributed to the CCM&RP. It is therefore not expected the project will lead to any significant dust impacts that would affect the operation of the CCM&RP airstrip.

Submitter Issue Number 40.021
additional air traffic from the China Stone project, where air safety must be carefully considered

As stated in Section 19 of the draft EIS, air traffic control at the project site will be coordinated with the CCM&RP airstrip and will be conducted in accordance with all CASA requirements.

PROJECT CHINA STONE
RESPONSE TO NRM SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

41 NRM SUBMISSION

The proponent, Hansen Bailey and the Office of the Coordinator General (OCG) met with the Department of Natural Resources and Mines (DNRM) on 10 November 2016, 29 November 2016 and 21 June 2017 to discuss the DNRM submission issues and the proponents proposed approach to responding to key issues.

Submitter Issue Number 41.001
Volume 1A, Chapter 2 – regulatory Framework Attachment 2-1: Other commonwealth and Queensland legislation; and Chapter 9 – Terrestrial Ecology Section 9.3 – Vegetation Management Act (page 9-1): Clearing of regulated vegetation in areas of the project which are not covered by a Mining Lease, and for activities that do not meet the definition of a "resource activity" as defined under the *Sustainable Planning Regulation 2009*, will be subject to assessment under the *Vegetation Management Act 1999* (VMA).

Until a Mining Lease is obtained, clearing of category B vegetation will not be permitted without a development approval under the *Sustainable Planning Act 2009* or an exemption listed under schedule 24 of the *Sustainable Planning Regulation 2009*. The EIS States: *"The VM Act does not apply to mining activities undertaken on Mining Leases (ML)"* This statement is incorrect.

General information for the applicant: The applicant should determine whether the clearing of native vegetation associated with the development is exempt under Schedule 24 of the *Sustainable Planning Regulation 2009*. Schedule 24 Part 1 states that clearing is not assessable for a resource activity, which is further defined under s107 of the *Environmental Protection Act 1994* as a geothermal activity, a GHG storage activity, a mining activity or a petroleum activity. Section 10 of the *Environmental Protection Act 1994* further states that a mining activity must be authorised under the *Mineral Resources Act 1989*. The department notes that a number of ancillary uses such as Accommodation village, power station, rail loop, train load out and airstrip are proposed on the mining lease area. It is understood that these are associated with the mining activity however unless they are specifically authorised under the Mineral Resources Act they will not meet the definition of a "mining activity" and therefore would not meet the exemption. Under Chapter 5, Section 110 of the *Environmental Protection Act 1994* A mining activity is defined as -
(a) an activity that is an authorised activity for a mining tenement under the Mineral Resources Act; or (b) another activity that is authorised under an approval under the Mineral Resources Act that grants rights over land. For areas that are not subject to an exemption under Schedule 24 of the *Sustainable Planning Regulation 2009* a Development Approval for the clearing of native vegetation will be required under the *Vegetation Management Act 1999* (VMA). A development approval will require an assessment against Module 8 of the State Development Assessment

Provisions. As part of assessment against Module 8 Table 8.1.4 of the SDAP, environmental offsets may be required for the following performance outcomes - PO2 Wetlands, PO5 connectivity, PO8 Conserving endangered and of concern regional ecosystems, PO9 Essential Habitat
Applications for development should identify whether there is likely to be a significant residual impact and a need for an environmental offset having regard for the relevant *Queensland Environmental Offsets Policy.*

The clearing of native vegetation, as described in the draft Environmental Impact Statement (EIS), is exempt under Schedule 24 of the *Sustainable Planning Regulation 2009*, based on the following:

- The mine and all associated mining activities, as described in the draft EIS, are wholly contained within the boundaries of the Mining Lease Application area (MLA). The project does not require clearing of vegetation beyond these boundaries.
- Ancillary infrastructure that is discussed in the draft EIS (i.e. accommodation village, power station, rail loop, train load out and airstrip that are located within the MLA boundaries) are all required for the operation of the mine and will not be used for any other purpose nor operated in isolation of the mine. Therefore, this infrastructure satisfies the definition of mining activity under the *Mineral Resources Act 1989* (MR Act).
- The proponent does not intend to commence clearing ahead of obtaining a mining lease.

Section 5.3 – Editorial Corrections includes clarification that the project is not subject to assessment under the *Vegetation Management Act 1999* (VM Act) as clearing of remnant vegetation for the project is exempt from approval under Part 1, Schedule 24 of the *Sustainable Planning Regulation 2009*.

Submitter Issue Number 41.002
Volume 4, Appendix I – Groundwater Report Section 4.2.5 Tertiary and Quaternary Sediments (page - 12); And Volume 3, Appendix f – Terrestrial Ecology Report Section 4.3 Regional Ecosystems (page 4.18): The Groundwater Report states that alluvium in the area is too shallow to support GDEs. The Terrestrial Ecology Impact Assessment identifies Regional Ecosystem 10.3.14d (conservation status: 'of concern'), with *Eucalyptus camaldulensis* as one of the dominant species. The Qld Government's "Groundwater Dependent Ecosystem Mapping and Classification Method" identifies the presence of *Acacia omalophylla* and/or *Eucalyptus camaldulensis* as indicative of terrestrial vegetation being to some degree dependent on groundwater and as a mapping rule for identifying GDEs associated with groundwater in alluvia. http://wetlandinfo.ehp.qld.gov.au/resources/static/pdf/facts-maps/gde/gde-mapping-classificationmethodology. pdf
E. camaldulensis is also a primary food tree of the koala, which is listed as 'vulnerable' under the Listed Threatened Species of the Matters of National Environmental Significance.
General Information for the applicant The applicant should be aware that clearing is defined by the *Vegetation Management Act 1999* as "remove, cut down, ringbark, push over, poison or destroy in

any way including by burning, flooding or draining;".
Dewatering GDEs constitutes 'draining'.
For areas that are not subject to an exemption under Schedule 24 of the *Sustainable Planning Regulation 2009* a Development Approval for the clearing of native vegetation will be required under the *Vegetation Management Act 1999* (VMA). A development approval will require an assessment against Module 8 of the State Development Assessment Provisions.
As part of assessment against Module 8 of the SDAP, environmental offsets may be required as per the Queensland Environmental offsets Policy.

The Qld Government's "*Groundwater Dependent Ecosystem Mapping and Classification Method*" ("GDE Guideline") does not indicate that the presence of *Acacia omalophylla* and/or *Eucalyptus camaldulensis* on its own is sufficient to confirm that vegetation is a GDE. Rather, it uses the presence of *Acacia omalophylla* and/or *Eucalyptus camaldulensis* as examples of "decision rules to identify GDEs". The GDE Guideline provides a number of other decision rules and a GDE is considered to be present if all of the decision rules are met. Other decision rules quoted in the example include vegetation being located on alluvia "where the groundwater table is less than five meters from the surface". As detailed in the draft EIS Groundwater Report (Appendix I), the depth to groundwater is more than 50 m from the surface within the areas of RE 10.3.14d within the project site. This groundwater level data is based on groundwater drilling, within and adjacent to the REs, that was conducted as part of the EIS groundwater study.

Please refer to the response to Issue 41.001 in relation to any requirement for approvals under the *Sustainable Planning Act 2009*.

Submitter Issue Number 41.003
Chapter 5 – Land Use Section 5.4.4 – Current Land Use – Stock Route (page 5-6) Stock route U398BRELY01) traverses the southern part of the project area. The EIS States: *"The proponent will liaise with the Department of Natural Resources and Mines, the Isaac Regional Council and affected landowners in relation to the management and possible realignment of the stock route, as necessary."* There is no time frame associated with this statement.
The Department understands that the China Stone Coal Project may impact the Queensland Stock Route network, administered by the Department of Natural Resources and Mines (DNRM) under the *Land Protection (Pest and Stock Route Management) Act 2002* (Land Protection Act).
All identified stock route impacts or realignment options must be negotiated, prior to the occupation, development or construction on any stock route, and before any operational works begin, with DNRM. It is recommended as a priority that the proponent arrange pre-lodgement discussions with DNRM (Isaac Regional Council) to develop a strategy to resolve all associated stock route issues.

The draft EIS included the proponent's commitment to consult with the DNRM and Isaac Regional Council regarding suitable arrangements for the management and realignment of the stock route. Section 5.3 – Editorial Corrections clarifies that this consultation will occur prior to the commencement of construction.

Submitter Issue Number 41.004 Chapter 3 – Consultation Section 3.8 - Future Consultation; and Volume 1A, Chapter 5 – Land Use Section 5.4.3 Land Ownership (page 5-6);
Access to state land parcels administered by the Department of Natural Resources and Mines. The Department understands the China Stone Coal Project may impact state land parcels administered by DNRM under the *Land Act 1994* (Land Act). The proponent is not entitled to undertake any activities or occupy any lands owned or managed by DNRM until such time as all land tenure requirements have been addressed.
It is recommended the proponent identify all land parcels administered by DNRM impacted by the project, and engage with DNRM to develop a strategy to resolve all associated tenure requirements. State land dealings may take an extended amount of time to resolve and early engagement is recommended to minimise the risk of any delays to the project.

The proponent acknowledges the need to address land tenure requirements within the Mining Lease Application (MLA) area with DNRM. The proponent is proposing to engage with the DNRM to resolve associated tenure requirements prior to the public notification of the MLA.

Submitter Issue Number 41.005
Chapter 5 – Land Use Section 5.4.5 Native Title (page 5-7)
Consideration must also be given to the resolution of native title over all the relevant lands
Native title must be addressed prior to alternative tenure being issued, which may require the proponent to resolve native title by way of a registered Indigenous Land Use Agreement (ILUA) or other method as required by the Land Act and *Native Title Act 1993* (Commonwealth).

Noted. As stated in Section 5.4.5 of the draft EIS, the proponent will negotiate with the Wangan and Jagalingou People, the registered Native Title claimants, in accordance with the requirements of the *Native Title Act 1993*.

Submitter Issue Number 41.006
Section 4.5.2 Exploration History (page 4-5) No historical petroleum boreholes have been identified. Petroleum boreholes located close to the proposed underground mine site may introduce oxygen into the coals and start fires.
Locate legacy petroleum holes on tenement so can assess impacts and risks

A search of historical petroleum and coal exploration boreholes will be conducted to identify and seal boreholes prior to the construction of the underground mines. This additional commitment has been included in the proponent's commitments list in Attachment I – Additional Commitments.

Submitter Issue Number 41.007
Section 4.5.2 Exploration History (page 4-5) None of the location data for the coal exploration boreholes drilled between 2008 and 2014 have been submitted to the Queensland Government (DNRM).
Submit borehole data

The proponent will supply any missing information in accordance with the requirements of the Exploration Licence. It is noted this issue is not related to the draft EIS.

Submitter Issue Number 41.008
Section 4.4 Coal, Mineral and Petroleum tenements (page 4-2) This section of the EIS does not discuss any testing of raw coal samples for Relative Ignition Temperature (Crossing Point Temperature determinations). This discussion should be included as coal of the Galilee Basin has a propensity to spontaneously combust. Include results from testing (and discuss what they mean) so propensity of coal to ignite is known and quantified

The EIS Terms of Reference (TOR) do not include testing of raw coal samples for Relative Ignition Temperature. It is also noted that most coal material has some propensity for spontaneous combustion and the potential for spontaneous combustion of coal cannot be confirmed categorically based on the properties of the coal alone. The potential for spontaneous combustion outbreaks is based on a range of factors including mine management procedures, and coal handling and storage methods. However, the proponent is intending to undertake coal testing in the future as part of detailed project development planning. An additional commitment to conduct coal spontaneous combustion propensity testing as part of the development of the Safety and Health Management System has been included in the proponent's commitments list in Attachment I – Additional Commitments.

The potential for spontaneous combustion is a key safety issue in all underground coal mines. The Principal Hazard Management Plan developed for the project under the site Safety and Health Management System (discussed in Section 22.3.2 of the draft EIS), and in accordance with mine safety regulations (refer Section 22.2 of the draft EIS), will be required to specifically address the risk of spontaneous combustion in the underground mines.

Similarly, management measures to address the potential for spontaneous combustion in surface activities including handling systems, and coal stockpiles in particular, are well established in the coal mining industry. As indicated in Table 22-5 of the draft EIS, the project operating procedures for coal stockpiling will include established management measures including methods to minimise the potential for outbreaks, monitoring for outbreaks and management procedures to extinguish any outbreaks.

Submitter Issue Number 41.009
Figure 21-1 (Page 569 (17 of 17)) Storage of petroleum and oil in close vicinity to raw coal stockpiles.
As Galilee Basin coal has a propensity to spontaneously combust, storage of combustible products near the stock piles may need further consideration.

Figure 21-1 of the draft EIS erroneously showed the storage of petroleum product or oil (NA 29) in the raw stockpile area and the product coal stockpile area. This should be considered to be

deleted from these areas and this clarification has been included in Section 5.3 – Editorial Corrections.

To clarify, petroleum products and oil will be stored at a number of locations on the project site including each of the Mine Industrial Areas (Northern Underground MIA, Southern Underground MIA and the Open Cut MIA), the Coal Handling and Preparation Plant and the power station. Figure 21-1 of the draft EIS shows the closest storage area to the raw coal stockpiles will be the Open Cut MIA which is located approximately 600 m away. Considering the proponent's commitment to managing the potential for spontaneous combustion of coal stockpiles (outlined in Table 22-5 of the draft EIS), it is unlikely that at this distance, the storage of combustible products would be affected by any potential spontaneous combustion of coal in the raw coal stockpiles.

Submitter Issue Number 41.010
Section 22.6 Hazard identification (page 22-8) This section of the EIS does not identify coal combustion fire as either a key potential hazard or as a key hazard from project activities.
Modify the EIS to take this into account

The preliminary hazard analysis for the project is presented in Table 22-5 of the draft EIS. Table 22-5 clearly identifies spontaneous combustion in coal stockpiles as a potential hazard, identifies fire as a possible consequence, and presents proposed risk control measures.

Section 5.3 – Editorial Corrections includes insertion of the outbreak of fire due to spontaneous combustion of coal in the list of key potential hazards in Section 22.6 of the draft EIS.

Submitter Issue Number 41.011
Table 22-5 Preliminary Hazard Analysis (page 22-28) The EIS mentions the risk of a spontaneous combustion coal fire in the ROM (run of mine) or in product stockpiles on page 22-28, but a spontaneous combustion or thermal ignition coal fire may also occur at any stage during mining, handling, processing or transporting.
Modify the EIS to show this has been taken into account.
Other potential issues related to spontaneous combustion coal fires that should be considered are:
• The location of legacy (abandoned) boreholes (from coal, petroleum and mineral exploration) on ML applications 70515, 70516, 70517 and 70518. Any of these boreholes may have been poorly completed or due to their age have started rusting and decomposing. This may allow oxygen to enter the coal seams in the underground mining areas or the open pit area.
• No mention of potential spontaneous combustion propensity in longwall or open cut mine, in trucks, in stock piles or on conveyors. Blending of this coal may increase or decrease its propensity to combust, depending on the seam characteristics being blended and the desired properties of the export contract.

Section 5.3 – Editorial Corrections includes clarification that the risk of spontaneous combustion of coal relates to any stage during mining, handling, processing or transporting coal and is not limited to stockpiling. A commitment to developing operating procedures for any surface activities that

have a significant risk of spontaneous combustion outbreaks is also included in Attachment I – Additional Commitments.

Refer to the response to issue 41.006 in relation to the proposed management of any legacy bore holes.

As discussed in the response to issue 41.008, potential for spontaneous combustion in the underground longwall mines is a key mine safety issue that is required to be managed in accordance with the mine safety regulations.

As discussed above, the proponent will develop operating procedures to manage any risks associated with spontaneous combustion in surface activities including open cut mining and coal handling. As discussed in Section 22.4 of the draft EIS, the hazards associated with the project will be subject to more detailed re-appraisal prior to the commencement of construction, as part of the development of the Safety Health Management System and based on detailed design and operating plans.

Submitter Issue Number 41.012
The terms of reference for this project required the assessment of potential impacts of subsidence on sediment load within watercourses and on any Quarry Material Allocation notice (QMAN) holders downstream of the subsidence areas and mitigation measures for any impacts.
The proponent needs to provide an assessment of the impacts of subsidence on the supply of sediment load to watercourses downstream of the project area and on any Quarry Material Allocation Notice (QMAN) holders downstream of the subsidence areas. This requirement is about the impacts, if any, that panels (created due to subsidence) can cause by trapping sediment and impacting on downstream entitlements to extract quarry material in a watercourse. A search of QMANs can be performed by contacting DNRM. If any impacts are evident, mitigation measures should be proposed to address these impacts.

The project site is located at the headwaters of the North Creek and Tomahawk Creek catchments. There are no watercourses traversing the project site. The closest watercourse is Pigeonhole Creek which is located approximately 10 km downstream of the project site. As discussed in Section 13.4.1 and 13.6.4 of the draft EIS and Section 5.2.2 of the draft EIS Subsidence Management Plan (Appendix B), remedial drains will be installed at any residual ponding areas due to mine subsidence to re-establish free drainage. Consequently, there will be no loss of mobile sediment from the surface drainage system due to subsidence on the project site and no potential loss of sediment from any downstream QMAN resources in the North Creek and Tomahawk Creek catchments. Any QMAN resources further downstream of the project site on the Belyando River would not potentially be affected by the project as the project site forms a very small proportion (0.09%) of the total contributing catchment in these areas.

Submitter Issue Number 41.013

Executive Summary Section 6 – Subsidence (page 19) The executive summary states: *"minor remedial drainage earthworks will be installed to re-establish free drainage in any ponding areas" and there will be "no significant residual ponding impacts and no significant changes to the existing surface drainage regime."*

No information is provided in the EIS to support this statement.

The Executive Summary estimates that 4950Ha will experience subsidence to some extent.

1.The EIS should provide estimates of the volumes of surface water that will be collected in each panel and the total volume collected by subsided panels for the project.

2.The EIS should also estimate the effectiveness of the proposed drainage works to mitigate impacts (especially whether any surface water collected in the panels can be completely drained using minor remedial drainage earthworks to re-establish free drainage at the eastern boundary of the northern underground mining section).

3.The volume of water that would be remaining in panels after drainage has been re-established should also be estimated.

4.The proponent should note that any capture of overland flow in the panels must be accordance with the provisions of the Water Resource (Burdekin Basin) Plan 2007.

Section 13.4.1 of the draft EIS provides an explanation of the potential for subsidence ponding and proposed remedial drainage. This section also refers to Figure 13-8 of the draft EIS that shows the location of potential ponding areas based on surface subsidence predictions. This figure also shows the indicative locations of remedial drainage channels. Section 13.4.1 also refers to the draft EIS Draft Subsidence Management Plan (Appendix B) for further details of the remedial works. Section 5.2.3 of the draft EIS Draft Subsidence Management Plan (Appendix B) explains the management approach for the identification of ponding areas and installation of remedial drains.

As explained in Section 13.4.1 of the draft EIS, following installation of remedial drainage works, there will be no surface water collected above the longwall panels. A conceptual remedial drainage plan is presented in Figure 13-8 of the draft EIS. The plan addresses all subsidence areas including the eastern boundary of the northern underground mining area. Due to the simple nature of the remedial drains, there is a high level of confidence in the effectiveness of the remedial drainage plan.

Submitter Issue Number 41.014

Section 4.13.4 – Raw Water Supply (page 4- 20)The proponent states that the preferred raw water supply option is from either of two proposed schemes but does not provide any alternative sources should the proposed schemes not be available when water is required.

The proponent should contact DNRM as a priority to indicate interest in Unallocated Water in the Burdekin Basin available from the Strategic Reserve and to discuss the process to make an application if the water to be sourced for the project is not currently accounted for. For example, unallocated water will not need to be accessed if the water is going to be sourced from either a managed water supply scheme (operated by a water manager such as SunWater) or through the purchasing of existing water allocations through water trading.

Noted. The proponent will consult with DNRM in relation to water allocation, if necessary.

Submitter Issue Number 41.015

Section 13.5.5 Water Management System Performance (page 13-24) Water Supply Reliability – The proponent states the need to secure an annual external water supply of 12.5GL for the project. However, the proponent has only identified proposed water supply schemes as the source for this supply.

The proponent should provide more detail about prospective schemes and also other alternative sources of raw water supply including consideration of the timeliness of these schemes in meeting project water demands. The proponent should identify any likely water requirements that are subject to water reservation provisions of the Water Resource (Burdekin Basin) Plan 2007

As explained in Section 4.13.4 of the draft EIS, the proponent is proposing to access the external raw water supply for the project from a water supply scheme to be developed by others. The proponent is therefore not in a position to provide additional detail on the potential water supply schemes that are being developed by other parties within a public EIS process.

The proponent will ensure that a suitable water supply is available for the project and will obviously consider the timing of the development of the water supply, as well as other off-lease infrastructure components, as part of future project development scheduling.

As discussed above, the proponent will conduct further consultation with DNRM in relation to water supply matters, as necessary.

Submitter Issue Number 41.016

Section 7.3.3 – Clematis Recharge, flow and discharge (Page 24 & 27) This section and the conceptual model state that *"Lake Buchanan is an inferred discharge zone for the Clematis Sandstone via the Moolayember Formation."* This has been based on the peiziometric levels in bores surrounding the Lake. No additional information has been provided to substantiate actual discharge via this mechanism. Discussion at the Advisory Agency Briefing on 21 August 2015 indicated that the conceptual discharge represents a conservative stance in identifying any potential impacts to Lake Buchanan, rather than being based on detailed evidence.

As little information has been presented which verifies the discharge conceptualisation, the EIS should be re-worded outlining these limitations, and also outline that the assumption provides a conservative stance in relation to potential impacts.

As discussed in Section 13.2.3 of the draft EIS, Lake Buchanan is a shallow semi-arid lake located approximately 17 km west of the project site. Lake Buchanan lies within an elevated, internally draining catchment that is bounded to the east by Darkies Range and elevated ridgelines to the north, west and south.

As discussed in Section 12 of the draft EIS, the elevated ridgelines in the vicinity of Lake Buchanan represent groundwater recharge zones. Groundwater flow will follow hydraulic gradients from these recharge zones to discharge zones. Groundwater discharge zones are likely to form in low-lying areas that intersect the groundwater table, including rivers or other low lying areas. Secondary recharge may occur within the Lake Buchanan catchment during highly ephemeral surface water flow events that temporarily inundate the lake bed following sustained rainfall.

The conceptualisation of Lake Buchanan as a groundwater discharge zone presented in the draft EIS is supported by:

- Groundwater levels within bores adjacent to Lake Buchanan (Figure B1 of Attachment D – Additional Information on Groundwater) which show that the groundwater table is typically located 2 to 11 m above the lake bed elevation to the west of the lake and within 2 to 5 m below the lake bed to the east of the lake. This data supports the draft EIS conceptualisation of Lake Buchanan.
- The elevation of the lake bed is approximately 290 m AHD and is at least 50 to 100 m below Darkies Range and the surrounding ridgelines. Lake Buchanan is the lowest topographic feature within a radius of approximately 50 km. This elevation difference promotes groundwater connection.
- Historical imagery (Google Earth Engine, 2016) which indicates that water is present in the lake during prolonged dry periods and drought conditions when no surface water runoff occurs.
- The Bureau of Meteorology Groundwater Dependent Ecosystem (GDE) Atlas which indicates that:
  - Previous studies have confirmed that the western part of the lake contains ecosystems that are reliant on the surface expression of groundwater;
  - Ecosystems in the eastern part of the lake have a high potential for interaction with surface expression of groundwater; and
  - Ecosystems in the lake have a high potential for interaction with subsurface groundwater.
- Published studies including Lorimer (2005) and DIWA (undated) state that Lake Buchanan is a discharge zone.

- Published Queensland GDE mapping which indicates that 'expert knowledge' has concluded there is a high confidence in the prediction that ecosystems in 80 to 100% of Lake Buchanan have some degree of groundwater dependence.
- Published limnology (Timms, 1987) and aerial photography (1984 to present) which indicates that salts tend to accumulate at the surface (as is typical of groundwater discharge zones) rather than being flushed through the superficial materials to the underlying bedrock (as is typical of recharge zones).

The conceptualisation of Lake Buchanan as a likely groundwater discharge zone is therefore consistent with available desktop information and field data.

As noted in the submission, by adopting this conceptualisation any drawdown on the regional groundwater regime would result in impacts on Lake Buchanan. This conceptualisation therefore represents a conservative approach to impact assessment. Despite this conservative approach, the project is not predicted to result in any significant adverse impacts on Lake Buchanan.

Alternative conceptualisations would involve Lake Buchanan being perched above the regional groundwater table or functioning as a source of sustained groundwater recharge. These conceptualisations are poorly supported by the available information. In addition, these alternative conceptualisations would result in a less conservative impact assessment for the following reasons:

- A perched lake would be hydraulically disconnected from the underlying groundwater regime and any associated effects from the project.
- Modelling Lake Buchanan as a recharge zone would necessarily involve increasing the amount of recharge entering the model cells used to represent Lake Buchanan. This would have the effect of buffering any groundwater drawdown associated with the project in the vicinity of Lake Buchanan.

On this basis, adopting an alternative conceptualisation for Lake Buchanan would further reduce the potential for the project to impact Lake Buchanan.

The information provided indicates with a high level of confidence that Lake Buchanan is a discharge zone (rather than an 'inferred discharge zone'). Section 5.3 – Editorial Corrections includes clarification that representing Lake Buchanan as a discharge zone in the groundwater model provides a conservative basis for the assessment of potential impacts on Lake Buchanan due to groundwater drawdown.

Submitter Issue Number 41.017
Section 12.4.3 Impact on the Great Artesian Basin (page 12-9) Take of groundwater from the GAB. The GAB represents an important source of water for many users and supports multi billion dollar agricultural and mining industries.
A commitment to offsetting impacts on the GAB should be given.

It is noted that this issue was not included in the DNRM submission.

Regardless, the take of groundwater from the GAB is fully regulated under the Queensland *Environmental Protection Act 1994* and Queensland *Water Act 2000*. The proponent will be required to obtain an associated water licence under the Queensland *Water Act 2000* for the take of groundwater from the GAB. In order to obtain an associated water licence, the proponent will be required to demonstrate that the impacts of groundwater take from the GAB have been fully assessed and adequate management measures are proposed. The associated water licence will include conditions that specifically regulate the impacts of groundwater take on the GAB and ensure that any potential impacts are appropriately managed in accordance with the licence.

The suggested requirement for an offset for impacts on the GAB is therefore inconsistent with the existing regulations and unjustified given the existing regulatory requirements.

Submitter Issue Number 41.018
Appendix I – Groundwater Report: Section 8.6 – Cumulative mining and coal seam gas impacts (page 39-40); and Volume 1A, Chapter 12 Groundwater Section 12.4.11 Cumulative impacts (page 12-14, 12-15)
In response to DNRMs comment on the draft EIS (March 2015), MacMines advised that *"As discussed in EIS Section 12 – Groundwater, the Project China Stone proponent proposes to make good all landholder bore impacts arising from the project alone. Where the project is predicted to contribute to cumulative bore impacts, the proponent will liaise with Carmichael Coal Mine to negotiate make good requirements, proportionate to the predicted project contribution to these impacts"*. The second part of this statement is not included in the EIS.
As per the draft-EIS (March 2015) comments, the report does not identify what water sources may be available to a landholder as an alternative supply.
The EIS should be updated to include the proponents undertaking that: *Where the project is predicted to contribute to cumulative bore impacts, the proponent will liaise with Carmichael Coal Mine to negotiate make good requirements, proportionate to the predicted project contribution to these impacts.* The EIS should provide discussion on mitigation measures and potential alternative water sources for those potentially impacted by dewatering.

Section 5.3 – Editorial Corrections includes clarification that where the project is predicted to contribute to cumulative water supply bore impacts, the proponent will liaise with Carmichael Coal Mine to negotiate make good requirements, proportionate to the predicted project contribution to these impacts.

Section 5.3 – Editorial Corrections includes further clarification that potential options for alternative landholder water supplies may include modifying or deepening existing bores or the installation of new bores.

Submitter Issue Number 41.019
Volume 4, Appendix I –Groundwater Report Section 9 – Groundwater monitoring and management plan (page 43); Also Volume 1A, Chapter 12 Groundwater Section 12.5 - Monitoring (page 12-15)
Given the extent of predicted drawdowns, DNRM have concerns that the existing network does not monitor the
• Betts Creek in the north or the south of the lease area.
• Clematis Sandstone (Fig 29) and Betts Creek Beds, off lease to the west, and
• Tertiary Formations (Fig 27) off lease to the east of the lease.
Additional monitoring sites should be considered in the areas discussed.

As discussed in the draft EIS Attachment 24-4, the proponent has proposed a groundwater monitoring network that comprises 36 groundwater monitoring points located within the project site and 20 additional groundwater monitoring locations within the surrounding area.

Contrary to the submission, the groundwater monitoring network specifically includes:

- Eight monitoring locations east of the project site in the Tertiary sediments; and
- Two monitoring locations west of the project site in the Clematis Sandstone.

As noted in the submission, the proposed monitoring network does not include bores targeting the Betts Creek Beds in the north or south of the project site, or west of the project site.

In the north of the project site and offsite to the west, the Betts Creek Beds are located at significant depths below the Tertiary sediments (where present), the Rewan Formation and the Clematis Sandstone (and the Moolayember Formation further west). The depth to the top of the Betts Creek Beds is typically 200 to 450 m at the western boundary of the project site and the Betts Creek Beds dip steeply to the west. The Betts Creek Beds are typically 350 m deep in the north of the project site. The target coal seams (which form the aquifers within the Betts Creek Beds) are located at greater depths. Due to the significant depth of these strata and presence of a groundwater table in the overlying sediments there are currently no groundwater supply bores targeting the Betts Creek Beds or the target coal seams in these areas. Groundwater monitoring bores targeting these overlying formations are proposed at five locations in the north of the project site and offsite to the west. These bores will provide sufficient information on the groundwater regime in these areas and the potential impacts of the project.

Similarly, in the south of the project site the Betts Creek Beds are located below the Tertiary sediments and typically also the Rewan Formation. The groundwater table is located in the Tertiary sediments. The proponent has therefore proposed four groundwater monitoring bores

targeting these overlying formations within the south of the project site. In addition, the proponent has proposed a further four groundwater monitoring bores within the Betts Creek Beds and overlying formations to the south and east of the project site to provide additional monitoring of the potential impacts of project activities in the south of the project site and the surrounding groundwater regime in the vicinity of the Carmichael Mine.

Overall the groundwater monitoring program described in the draft EIS is considered adequate to monitor the impacts of the project and additional monitoring bores are not considered to be necessary.

Submitter Issue Number 41.020
Appendix B Section B1.3.1 – Calibration heads (page 15)
DNRMs comment on the draft-EIS (March 2015) was: *In Figure B-7 there are heads of 310 – 320 m AHD in the Clematis Sandstone and AU seam on the middle of the western boundary of the model. It is not clear how this is conceptualised. It is not clear why heads are higher in this area than in surrounding areas given the depths of these geologic units below ground level at this location, and the impacts that would have on potential recharge. DNRM is not aware of any data that supports these heads."*
MacMines response was that *"the elevated heads at the western extent of the model domain coincide with the elevated ridgelines and outcropping basement units that form the southwest Lake Buchanan catchment divide."*
Noting that the top of the Clematis Sandstones are about 600m below ground level in that area, is the conceptual model suggesting that recharge is occurring through all the overlying formations down to the Clematis Sandstone in just that area? The response from MacMines appears to be incorrect in that the basement units do not outcrop in that area, rather more likely the Ronlow Beds.
Clarification is required in regard to the high heads on the western boundary of the model in Figure B-7 and conceptualised processes.

The conceptual groundwater model presented in Section 12 of the draft EIS considers the elevated ridgelines located to the west of the project site represent groundwater recharge zones. Groundwater flow will follow hydraulic gradients from these recharge zones to discharge zones. Groundwater discharge zones are likely to form in low-lying areas that intersect the groundwater table, including rivers and other low lying areas.

It is acknowledged that the geological units dip to the west, however groundwater flow is ultimately from areas of high pressure to low pressure, and catchment properties therefore play a significant role in influencing groundwater pressures. This concept is consistent with Darcy's Law and the well-established pattern of regional groundwater flow (Toth, 1963). It is also consistent with the conceptualisation of groundwater flow presented in the Carmichael Coal Mine Project EIS, and the findings of the subsequent reviews conducted by URS (2013), Dr Noel Merrick (2014) and DNRM (2014) as part of the approval process for the Carmichael Coal Mine Project.

These reviews specifically confirmed that:

- Elevated ridgelines west of the Carmichael Coal Mine Project site and the Project China Stone site are groundwater recharge zones that form a regional groundwater divide in the Colinlea Sandstone (equivalent to the Betts Creek Beds); and
- Groundwater levels in shallow bores and groundwater flow in the Clematis Sandstone are both strongly influenced by local topographical high and low points.

The submission refers specifically to an area located approximately 40 km west of the project site at the south-western extent of the Lake Buchanan catchment divide. In this area, the Moolayember Formation dips beneath the Ronlow Beds. The Tertiary sediments are also absent at this location and the outcropping Ronlow Beds form an elevated ridgeline at the surface. This is part of the elevated ridgeline that forms a regional groundwater divide below the coal seams in the Betts Creek Beds (Merrick, 2014; DNRM, 2014).

At the time the draft EIS was prepared, several groundwater bores were screened within the outcropping bedrock and the surrounding area in the western part of the model domain. These groundwater bores and the recorded groundwater elevations are shown in Appendix B of the draft EIS Groundwater Report (Appendix I). Data collected from these bores shows that:

- The groundwater elevation in bore RN32980 is approximately 50 m above the surrounding groundwater regime and is therefore an outlier that most likely reflects an erroneous measurement or a localised perched groundwater table at this location.
- The groundwater elevation in bore RN16371 is 315 m AHD and this represents a local highpoint in the groundwater regime that coincides with an elevated area of outcropping bedrock and known groundwater divide.
- The groundwater elevation decreases by 11 m along the western extent of the model between bores RN16371 and RN153632 consistent with the local topography.
- The groundwater elevation also decreases to the east of bore RN16371 consistent with local topography.

This information confirms that there is a high groundwater head in the regional groundwater regime in the vicinity of bore RN32980 as presented in the draft EIS.

Bore RN54627 is located east of this highpoint. This bore is in excess of 400 m deep and is screened within the Clematis Sandstone. This bore is adjacent to Bore 118213 which is screened in the overlying formations. The groundwater elevations in the adjacent bores RN54627 and 118213 show comparable levels indicating that there is negligible vertical gradient between the shallower and deeper aquifers at this location. This indicates that there is no significant difference in heads between these aquifers and further supports the conceptualisation of a high head in the

deeper formations based upon the high recorded head in the shallower formations (such as in the vicinity of RN32980).

The draft EIS groundwater model produced calibrated groundwater heads for the shallow bedrock and deeper formations that are consistent with these measured levels (Figure B6 to B8 of the draft EIS Groundwater Report (Appendix I)). The data and modelled heads also indicate that there is a local hydraulic gradient in the shallow bedrock from the catchment boundary (at RN16371) towards the Carmichael River in the south-east and Lake Buchanan to the north-east (Figure B6 to B8 of the draft EIS Groundwater Report (Appendix I)). This is consistent with Merrick (2014) and DNRM (2014) which confirm that local groundwater flow reflects catchment boundaries and topography.

The conceptualisation of the groundwater regime to the west of the project site is therefore considered to be robust and justifiable based upon the best available data, and is supported by the robust model calibration results.

Submitter Issue Number 41.021
Appendix I – Groundwater Report Appendix B Section B1.3.4 – Hydraulic Parameters (page 20-21)
DNRMs comment on the draft-EIS (March 2015) noted that clarification was required for the range of hydraulic conductivity values in table B5 for some layers in the model (e.g. layer 10 K_{xy} = $4.20x10^{-4}$ - $4.21x10^{-2}$). Macmines advised that this range was varied spatially as the coal seams decreased with depth. At the recent Advice Agency Briefing, the proponent agreed to supply information/mapping showing where these variable parameters were applied in the model. Such maps have since been supplied to DNRM.
It appears from the mapping that the horizontal hydraulic conductivities decrease to the minimum of between 2.7 x 10^{-4} and 5 x 10^{-5}, depending on the seams, immediately west of the mines. This is presumably because of the increased depth. It is also noted that the field testing, and in particular packer tests, tested seams as deep as 400 metres and returned a minimum horizontal hydraulic conductivity of 2 x 10^{-3} m/day. It is also noted in the sensitivity analysis of the Clematis that increasing the horizontal K value increases the drawdown zone to the west.
Unfortunately a similar sensitivity analysis has not been carried out for the Betts Creek Beds including the seams but it would be assumed that similar increases in the drawdown zone would be noted. Given that the value for the minimum horizontal hydraulic conductivities used in the seams is not supported by field data adequate sensitivity analysis of the impacts to the Betts Creek seams should be carried out.
The proponent should further address the low horizontal hydraulic conductivity values used to represent the Betts Creek coal seams to the immediate west of the mine and provide a sensitivity analysis of the impacts of increasing these values.

This submission on the draft EIS has raised a number of issues broadly related to the permeability of the coal seams, including:

- The conceptualisation of coal seam permeability;

- The supporting data and modelled values for coal seam permeability; and
- Sensitivity analysis of coal seam permeability.

These issues are addressed under the following sub-headings.

Conceptualisation

Extensive studies of coal seam hydrogeology (including the peer reviewed OGIA, 2016 and Mackie, 2009) have demonstrated a strong correlation between hydraulic conductivity and depth. These studies have shown that horizontal groundwater movement in coal seams is dominated by fractures and cleats. They have also shown that the horizontal hydraulic conductivity of coal seams reduces with depth as the fractures and cleats are closed by the increasing weight of overlying material. Mackie (2009) reported a log linear relationship between depth and hydraulic conductivity based upon extensive test data. The empirical trend reported that hydraulic conductivity decreases by an order of magnitude for each increase of 55 to 180 m of depth.

This relationship was reflected in the conceptual and numerical groundwater models developed for the project. The coal seams subcrop within the project site at relatively shallow depths and dip steeply to the west reaching depths in excess of 1,000 m at the western boundary of the model. Conceptually, the coal seams at the project site would therefore be relatively permeable and become less permeable as they dip to the west.

As noted in the submission, the maps provided following the Advice Agency Briefing reflect this relationship and illustrate a decrease in hydraulic conductivity as the depth of the coal seams increases to the west of the project site. The figures illustrate this decrease occurring over lateral distances of up to 35 km as the coal seam depths increase. Additional figures are provided in Attachment D – Additional Information on Groundwater (Appendix C – Figures C1 to C4) that show the modelled hydraulic conductivity of the coal seams in relation to the depth of cover.

Supporting Data and Modelled Values

On the basis of this conceptualisation, a log linear relationship between depth and hydraulic conductivity has been applied to the model layers representing the coal seams (i.e. A to D seams) in the draft EIS groundwater model. The applied ranges of hydraulic conductivity values are shown in Table B5 of the draft EIS Groundwater Report (Appendix I).

An extensive dataset of hydraulic conductivity values was collected from the A to D seams at the project site and Carmichael Coal Mine site. The collected dataset is described in Section 6.2 of the draft EIS Groundwater Report (Appendix I) and includes 154 rising/falling head and packer tests conducted between depths of approximately 100 and 400 m at the project site and the Carmichael Coal Mine site. The hydraulic conductivity values range from 2 m/day at less than 100 m depth to approximately 1 x 10^{-4} m/day at a depth of 400 m in the Carmichael Coal Mine site. This dataset shows that coal seam hydraulic conductivity varies by almost four orders of magnitude over this depth range.

Hydraulic conductivity data collected from coal seam gas wells within the wider Galilee Basin indicates that permeability within deeper coal seams is commonly as low as 1 x 10^{-6} at depths between 500 and 1,300 m. In some cases the permeability has been recorded as 'low' or 'tight' and the investigators could not derive an actual permeability, which is assumed to be in the order of 1 x 10^{-6} m/day or lower.

A log linear relationship between depth and hydraulic conductivity was developed from Mackie (2009) using the extensive dataset. This relationship was extrapolated to estimate hydraulic conductivity at the significant depths that occur down dip and west of the project site. A lower bound hydraulic conductivity of 7 x 10^{-5} was conservatively adopted for the draft EIS groundwater model. This lower bound is within the bounds of regionally measured hydraulic conductivity values and is high enough to allow some movement of groundwater. A more detailed description of the modelled relationship between coal seam hydraulic conductivity and depth is provided in Appendix C2 of Attachment D – Additional Information on Groundwater.

The model results provided to DNRM in January 2016 as part of the draft EIS adequacy assessment show a relatively high permeability within the project site where the coal seams subcrop and are relatively shallow. This high permeability is consistent with the field dataset presented in the draft EIS Groundwater Report (Appendix I) and the permeability of coal seams within coal project sites in the southern Galilee Basin (e.g. the Alpha Coal Project, the Kevin's Corner Coal Project) which are typically located at shallow depths (typically less than 100 to 200 m).

Sensitivity Analysis

As discussed in Section B3 of the draft EIS Groundwater Report (Appendix I), the sensitivity of the modelled drawdown predictions to changes in model parameters was investigated.

The sensitivity analysis investigated the effect of changing:

- The horizontal and vertical hydraulic conductivities by +1 order of magnitude across all model layers; and
- The horizontal and vertical hydraulic conductivities by -1 order of magnitude across all model layers.

The purpose of these scenarios was to determine the sensitivity of the predictions to changes in key parameters. The changes have been applied to all layers simultaneously in order to determine the sensitivity of the overall model to these parameters. The sensitivity analysis therefore included changes to the hydraulic conductivity of the coal seams.

Due to the depth and hydraulic conductivity relationship applied to the model layers, the lower seams (B to D seams) actually experienced up to +1.5 orders of magnitude increase in hydraulic conductivity during the sensitivity analysis.

As discussed in Section B3 of the draft EIS Groundwater Report (Appendix I), as expected, each of these scenarios increased the overall model error and reduced the ability of the model to match measured groundwater levels showing that they are less appropriate than the range of values adopted in the model. Nonetheless, as discussed in Section B3 of the draft EIS Groundwater Report (Appendix I), the combined effect of each of these two extreme scenarios was marginal in terms of the model predictions. Figures illustrating this point are shown in Section B3 of the draft EIS Groundwater Report (Appendix I).

Adequate sensitivity analysis has therefore been conducted on each layer of the groundwater model, including the coal seams.

It is not the purpose of sensitivity analysis to provide alternative depressurisation predictions upon which to base an impact assessment. The impact assessment presented in the draft EIS is based on the best available data and robust modelling. Nonetheless, the draft EIS Groundwater Report (Appendix I) presented figures showing the effect of the sensitivity analysis on groundwater levels in the Tertiary sediments, as this is the key resource for groundwater users to the east of the project site, and the Clematis Sandstone, as this is the key aquifer of interest in relation to sensitive environmental receptors (i.e. GAB springs).

There are no specific impacts associated with depressurisation of the coal seams (i.e. no groundwater supply bores target the coal seams, no springs are fed directly by the expression of artesian coal seam groundwater and there is no surface water connectivity with the coal seams. Additional figures showing changes in coal seam groundwater levels arising from the sensitivity analyses were therefore not presented.

Figures showing the effect of the sensitivity analysis on groundwater levels in the coal seams have been provided in Attachment D – Additional Information on Groundwater. As noted in the submission, these figures show that increasing and decreasing the hydraulic conductivity of all model layers increases and decreases the depressurisation extents in the coal seams. The response observed is similar to that of the overlying model layers.

In order to address the specific request provided in this submission, an additional sensitivity analysis has been undertaken to consider the effects of increasing only the coal seam hydraulic conductivity values on groundwater levels in the coal seams. The results are also presented in Attachment D – Additional Information on Groundwater. These results are consistent with the results of the broader sensitivity analysis presented in the draft EIS (i.e. increasing the hydraulic conductivity of the coal seams increases the depressurisation extents in the coal seams and surrounding geology) and the sensitivity response in each model layer is similar to that of the draft EIS sensitivity analysis. The results do not show any additional risk of depressurisation extending to sensitive environmental receptors.

Within the proposed open cut mine the coal seams will only form a small proportion of the strata exposed within the pit. This means the coal seams contribute only a portion of the ability to

transmit groundwater and generate depressurisation. Therefore whilst it is important to assign appropriate values of hydraulic conductivity to the coal seams, the effect of varying this value is limited.

At the request of DNRM, further sensitivity analysis of the hydraulic conductivity of the coal seams and the relationship between decreasing conductivity and depth has also been conducted (refer Appendix C2 and Appendix D of Attachment D – Additional Information on Groundwater). The results indicate that the model is not sensitive to more conservative representations of the relationship between coal seam hydraulic conductivity and depth, and do not indicate any significant risk of depressurisation extending to sensitive environmental receptors.

In conclusion, the modelled horizontal hydraulic conductivity values presented in the draft EIS reflect the known characteristics of coal seams in relation to depth and are supported by an extensive local and regional dataset. These values are therefore considered appropriate and justified. Nonetheless, a detailed sensitivity analysis of the effects of increased horizontal hydraulic conductivity and a more conservative hydraulic conductivity versus depth relationship have been provided as requested in the submission and associated DNRM consultation, and these sensitivity analysis results reinforce the conclusions presented in the draft EIS.

Submitter Issue Number 41.022
Appendix B Section B1.3.4 – Hydraulic Parameters (page 20)
DNRM's comment on the draft-EIS (March 2015) regarding the horizontal hydraulic conductivity value of 5 x 10^{-2} for layer 5 (Clematis) appearing to be low in comparison to known values for the Clematis has not been addressed. Discussion should include the initial range in which the model calibrated.
Discuss how the hydraulic conductivity values (and initial calibration range) was decided upon including that for the Clematis Sandstone.

The range of horizontal hydraulic conductivity values measured in the Clematis Sandstone at the project site is between 5x10^{-3} and 9x10^{-2} m/d. This range reflects the weathered and clay-bound characteristics of the Clematis Sandstone encountered at the project site.

In addition, hydraulic conductivity data was collected from the Clematis Sandstone within the surrounding area as part of the Carmichael Coal Mine Project EIS. This conductivity data was therefore considered in setting the initial calibration range.

The initial calibration range adopted for the hydraulic conductivity of the Clematis Sandstone was as follows:

- -1 order of magnitude on the lowest recorded value; and
- +2 orders of magnitude on the highest recorded value (this reflects the high permeability of these sediments within surrounding areas).

The calibrated horizontal hydraulic conductivity value (i.e. $5x10^{-2}$) is:

- In the middle of the measured range from the project site;
- Within the middle quartiles from all collated field data and well within the maximum and minimum measured values; and
- Well within the calibration bounds.

The modelled values adopted are therefore appropriate given the range of measured values and within the context of the local geological setting. The Clematis Sandstone can be up to 200 m in thickness and when the moderate hydraulic conductivity of 5 x 10^{-2} m/day is applied to this thickness is results in a significant ability to transmit groundwater.

As discussed in Section B3 of the draft EIS Groundwater Report (Appendix I), a sensitivity analysis was undertaken that included increasing the hydraulic conductivity of all model layers (including the Clematis Sandstone) by an order of magnitude. This sensitivity analysis therefore considered a hydraulic conductivity of up to 0.5 m/d in the Clematis Sandstone, which is equivalent to a transmissivity of 100 m^2/day where the formation is 200 m in thickness. This represents a hydraulic conductivity that is significantly higher than the highest measured value at the project site and is higher than both the median and geometric mean of all measured values. The results of the sensitivity are presented in Section B3 of the draft EIS Groundwater Report (Appendix I).

Figure B16 of the draft EIS Groundwater Report (Appendix I) shows the effect of the sensitivity analysis on groundwater levels in the Clematis Sandstone. Figure B16 shows that, even in a scenario where the hydraulic conductivity of the Clematis Sandstone and all other layers are simultaneously increased by an order of magnitude, the predicted zone of depressurisation within the Clematis Sandstone does not extend to any sensitive environmental features (including Lake Buchanan or any GAB springs).

A sensitivity scenario that involved increasing the hydraulic conductivity of only the Clematis Sandstone would have a significantly smaller effect on depressurisation in the model and would therefore produce a smaller zone of depressurisation than the sensitivity analysis presented in the draft EIS (as shown on Figure B16).

Submitter Issue Number 41.023
Appendix B Section B1.3.8 – Model Confidence Level Classification (page-24)
The groundwater model has not been reviewed.
In line with previous pre-EIS comments, it is recommended that a peer review be undertaken on the model.

There is no requirement for a peer review of the groundwater model in the EIS TOR nor is it standard practice for mining EISs. The draft TOR for the project prepared by the OCG did not include a requirement for a groundwater model peer review. The draft TOR were publicly exhibited

and EHP, DNRM and DoEE were provided an opportunity to comment on the draft TOR prior to its finalisation. EHP, DNRM and DoEE's submissions on the draft TOR did not request the need for a peer review of the groundwater model for the project. In addition, all specific submission issues that were raised in relation to the draft EIS groundwater model have been responded to as part of the preparation of the Supplement. This has included discussions with the key regulatory agencies, including EHP, DNRM and DoEE. It is not reasonable to now require a peer review of the groundwater model at this stage, given that it is not a requirement of the TOR, the groundwater study has addressed the project's TOR and all specific groundwater issues that were raised by regulatory agencies have been addressed, in consultation with the agencies.

Submitter Issue Number 41.024
Appendix B Section B2.2 – Underground Mining (page-26)
Table B8 has some differing base Kz values to Table B5. Some fall outside of the calibrated range given in Table B5.
• Kz for layer 10 in Table B8 ($5.00x10^{-5}$) is outside of the range given for layer 10 in Table B5 ($4.20 \times 10^{-4} – 4.21 \times 10^{-2}$)
• Kz for layer 12 in Table B8 ($8.72x10^{-5}$) is outside of the range given for layer 12 in Table B5 ($2.38 \times 10^{-4} – 2.00 \times 10^{-2}$)
DNRM's comment on the draft-EIS (March 2015) noted that the factors applied to differing layers to model fracturing appeared out of sync. The model Layer 9 (interburden) fractured factors (x1000, x5000) appear to be out of sync compared to the underlying A seam (x50, x500) and overlying Rewan (x10, x50). At the Agency advice briefing on 21 August 2015, the proponent advised that this was to produce an overly conservative scenario that would allow drainage.
Clarification to be provided on the differing base Kz values used in Table B5 and B8 the model.
The EIS documentation should discuss the rationale as described at the Agency Briefing regarding the use of multiplying factors to model fracturing.

This submission on the draft EIS raises a number of issues broadly related to vertical hydraulic conductivity, including:

- Clarification of the vertical hydraulic conductivity values presented in Appendix B of the draft EIS Groundwater Report (Appendix I); and
- The rationale for the modelled approach to subsurface subsidence cracking.

These issues are addressed under the following sub-headings.

Clarification of Vertical Hydraulic Conductivity Values
The modelled vertical hydraulic conductivity is discussed in Tables B5 and B8 of the draft EIS Groundwater Report (Appendix I).

Table B5 shows the calibrated vertical hydraulic conductivity of each model layer within the project site. The non-coal seam model layers are represented by a single calibrated vertical hydraulic

conductivity value. The coal seam layers (i.e. layers 10, 12, 14 and 16) are represented by a range of calibrated vertical hydraulic conductivity values.

The purpose of Table B8 of the draft EIS Groundwater Report (Appendix I) is to show how the calibrated vertical hydraulic conductivity has been changed to reflect sub-surface subsidence cracking in each model layer. Table B8 shows a base vertical hydraulic conductivity, the changes to the base value and the final value to give an indication of the magnitude of the modelled change due to subsidence. For the examples shown in Table B8, the base vertical hydraulic conductivity is represented by a vertical hydraulic conductivity selected from a nominal location within the model domain (in this instance the centre point of the model domain).

All base vertical hydraulic conductivity values presented in Table B8 are within the calibrated range.

Rationale for the Modelled Approach to Subsurface Subsidence Fracturing

As discussed in Section 6 of the draft EIS, longwall mining results in subsidence as the roof strata above the coal seam progressively collapse to fill the void created by the extraction of coal in the area behind the longwall. Subsurface fracturing occurs in the strata overlying the area from which the coal has been extracted (i.e. the goaf).

Fracturing increases the vertical hydraulic conductivity of strata within the fractured zone, and therefore the vertical hydraulic conductivity of strata within the fractured zone is typically higher than the corresponding undisturbed strata located beyond or above the fractured zone.

Within the fractured zone, the fracture density and connectivity is greatest immediately above the goaf and decreases with increasing height above the goaf. A corresponding decrease in the effects of fracturing on vertical hydraulic conductivity occurs with increasing height above the goaf.

As discussed in Section 12.4.2 of the draft EIS, the prediction of subsurface subsidence cracking effects on vertical hydraulic conductivity carries inherent uncertainties. In order to address this uncertainty, the groundwater model was designed to create a fully drainable fracture network within each of the predicted fractured zones.

Conceptually, the vertical hydraulic conductivity of fractured rock must be between that of the undisturbed rock and the permeability of a fully drainable open fracture. The vertical hydraulic conductivity of an open fracture has been determined through geotechnical modelling to be approximately 1×10^{-1} m/day (SCT, 2003). The actual vertical hydraulic conductivity of fully drainable fractured strata is necessarily lower than this value because a portion of groundwater movement will occur as non-fracture flow towards the fracture network.

The model was developed from this conceptual understanding, as follows:

- The vertical hydraulic conductivity of each model layer in the fractured zone was calculated to remain between the vertical hydraulic conductivity of the undisturbed rock and the hydraulic conductivity of a fully drainable open fracture. The adopted value was weighted towards the permeability of an open fracture to ensure the predictions from the model were conservative.
- The vertical hydraulic conductivity of each model layer in the fractured zone was reduced with height above the goaf while still maintaining a fully drainable fracture network.
- The model results were reviewed to confirm that all model layers in the fracture zone were essentially desaturated using this approach.

Table B8 of the draft EIS Groundwater Report (Appendix I) provides an example of the undisturbed vertical hydraulic conductivity of each model layer, the fully drainable fractured vertical hydraulic permeability of that model layer and the ratio of these values (shown as a multiplication factor). Attachment D – Additional Information on Groundwater, illustrates this example. As shown in this example, the factor applied to each layer is determined by the undisturbed vertical hydraulic conductivity of each model layer. A large multiplication factor is applied to low permeability strata close to the goaf (i.e. interburden within the coal measures), while a smaller multiplication factor is applied to higher permeability strata and strata located in the upper fractured zone. The multiplication factors presented in Table B8 are therefore correct for each model layer in the example location provided.

This modelling approach creates a highly permeable fracture zone that does not unduly restrict drainage to the mine workings or the propagation of groundwater depressurisation. This provides a conservative basis for the assessment of the project's groundwater impacts.

In addition, the model has been designed to extend the fracture zone to include the full thickness of all model layers that are within the predicted height of subsidence cracking. This modelling approach is intended to ensure that the predicted groundwater depressurisation effects and groundwater impacts of the project are not reliant on the mitigating effects of either the aquitard properties of the Rewan Formation or the partial fracturing of an aquifer. This modelling approach provides an additional level of conservatism to the predicted groundwater depressurisation effects and groundwater impacts of the project. Section 12.4.1 and B2.2 of the draft EIS provides an example of how this approach has been applied. In this example, the lower 20 to 65 m of the Clematis Sandstone is within the predicted 180 m high fracture zone associated with the Northern Underground. The fracture zone has therefore been extended to the full thickness of the Clematis Sandstone (i.e. approximately 150 m). This means that the fractured zone characteristics extend to a height of more than 265 m above the Northern Underground.

A review of groundwater studies for other mining projects in the Galilee Basin and other coal mining regions was undertaken as part of the scoping phase of the draft EIS groundwater study.

The review showed that subsidence effects on permeability changes are typically modelled by applying a uniform factor to all layers or a series of factors relating to the height of cracking above the goaf, for example:

- The Carmichael Coal Project EIS adopted a uniform factor of x50 permeability up to 75 m above the goaf and a uniform factor of x10 above this height.
- The China First Coal Project EIS adopted a uniform factor of $x10^6$ for a height of 2 m (i.e. the caved goaf) and a uniform factor of x10 above this height.

This approach provides a straightforward modelling approach but maintains the presence of low and high permeability layers within the fractured zone. The presence of low permeability layers may have the effect of impeding groundwater drainage from relatively high permeability formations to the mine workings. This can result in buffering of the drawdown effects of mining in the overlying formations.

In conclusion, the vertical hydraulic conductivity values and subsidence factors presented in Appendix B of the draft EIS Groundwater Report (Appendix I) are correct and the rationale for the modelled approach to subsurface subsidence cracking represents a suitably conservative scenario for the assessment of project impacts on groundwater.

Submitter Issue Number 41.025
Appendix B Section B3.2 – Zone of depressurisation (page-30) T
DNRM's comment on the draft-EIS (March 2015) noted that there are no figures showing the sensitivity of the coal seams to changes in parameters (similar to B14- B17).
MacMines responded in that *"The sensitivity of the extent of depressurisation associated with the coal seams does not materially affect the assessment of impacts or proposed mitigation measures outlined in the EIS. No additional figures are therefore proposed in response to this recommendation".*
Given that the coal seams are the main source of water extraction; these formations are of significant interest. Additionally it is important to understand the potential area of impact to these layers as they indirectly underlie the Clematis Sandstone and potentially can draw water from that GAB aquifer via the Rewan. DNRM consider the extent of dewatering in the Betts Creek to be very important.
As the coal seams are the source aquifer for dewatering, and given the need to understand the impacts to the coal seams and any associated impacts with overlying GAB sediments, it is recommended additional figures representing sensitivity for the coal seams be included.

The draft EIS acknowledges that groundwater take from the coal seams forms the bulk of the total groundwater take from the project and is therefore of interest. The draft EIS Groundwater Report (Appendix I) therefore provides a detailed breakdown of groundwater extraction rates in each of the proposed mining areas and a further breakdown of groundwater extraction rates from the GAB and non-GAB aquifers. As discussed in Section B3.1 of the draft EIS Groundwater Report (Appendix I), analysis of the sensitivity of groundwater inflow rates to changes in the modelling

parameters has been completed. The results of the sensitivity analysis are presented in Figures B12 to B14 of the draft EIS Groundwater Report (Appendix I).

The draft EIS Groundwater Report (Appendix I) also provides a detailed assessment of the 'potential area of impact' associated with the coal seams. Figures 31 to 33, Figures 39 to 41 and 46 to 49 of the draft EIS provide mapping that clearly show the predicted extent of depressurisation within the Betts Creek Beds and coal seams during mining, post closure and cumulatively with the Carmichael Mine. The draft EIS Groundwater Report (Appendix I) therefore provides a clear understanding of the potential area of depressurisation in the Betts Creek Beds and coal seams.
In addition, the draft EIS Groundwater Report (Appendix I) provides a detailed assessment of the potential for depressurisation of the coal seams to induce depressurisation in the overlying strata including the Clematis Sandstone. These effects are included in the predictions of Clematis Sandstone depressurisation presented in Figures 29 and 37 of the draft EIS Groundwater Report (Appendix I).

As noted in the response to issue 41.021, it is not the purpose of sensitivity analysis to provide alternative depressurisation predictions upon which to base an impact assessment. Interpretation of the sensitivity analysis in this way is technically incorrect and unsupported by the available data or the model verification process. The impact assessment presented in the draft EIS is based on the best available data and robust modelling and provides a justified basis for the assessment of project impacts on groundwater.

The draft EIS Groundwater Report (Appendix I) provides figures (Figures B14 - B17) showing the response of the zone of depressurisation in the Tertiary Sediments and Clematis Sandstone to the sensitivity analyses described in Section B3 of the draft EIS Groundwater Report (Appendix I). Nonetheless, the Tertiary sediments and the Clematis Sandstone are shown as these are the key resource for groundwater users to the east of the project site and the key aquifer of interest in relation to sensitive environmental receptors (i.e. GAB springs), respectively. There are no specific direct impacts associated with depressurisation of the coal seams (i.e. no groundwater supply bores target the coal seams, no springs are fed directly by the expression of artesian coal seam groundwater and there is no surface water connectivity with the coal seams. Additional figures showing changes in coal seam groundwater levels arising from the sensitivity analyses were therefore not presented in the draft EIS.

New figures showing the effect of the sensitivity analysis on groundwater levels in the coal seams have been provided in Attachment D – Additional Information on Groundwater. The sensitivity analysis is fully described in Appendix B3 of the draft EIS Groundwater Report (Appendix I) and with additional clarification provided in the response to issue 41.021. These figures show that increasing and decreasing the hydraulic parameters in the model (to the extent that the model falls out of calibration) increases and decreases the depressurisation extents in the coal seams. The extent of depressurisation in the coal seams is most sensitive to changes in aquifer storage. This response is consistent with the sensitivity analysis results for the overlying Tertiary Sediments and Clematis Sandstone (as presented in Figures B14 – B17 of the draft EIS Groundwater Report

(Appendix I)). The sensitivity analysis shows that the predicted zone of depressurisation within the coal seams is typically within zone of depressurisation of the overlying formations and does not extend to any sensitive environmental features (including Lake Buchanan or any GAB springs).

As discussed in the response to issue 41.021, the new figures also show an additional sensitivity analysis that considers the effects of increasing only the coal seam hydraulic conductivity values on groundwater levels in the coal seams. The results are also presented in Attachment D – Additional Information on Groundwater. These results are consistent with the results of the broader sensitivity analysis presented in the draft EIS (i.e. increasing the hydraulic conductivity of the coal seams increases the depressurisation extents in the coal seams and surrounding geology) and the sensitivity response in each model layer is similar to that of the draft EIS sensitivity analysis. The results do not indicate any additional risk of depressurisation extending to sensitive environmental receptors.

Submitter Issue Number 41.026

Chapter 12 Groundwater and; Volume 4, Appendix I - Groundwater Report:

The EIS makes the assumption that groundwater recharge rates are very low. Groundwater recharge rates are an important driver of the groundwater model which is used to determine impacts of dewatering on other users and the environment. There are a number of assertions in Chapter 12 about low recharge rates, but no quantification of recharge. The mine will have major impacts on the recharge zone of the GAB which will be underlain by the proponents long wall mines. The proponent should therefore make proper quantitative calculations of pre-mining groundwater recharge.

The assertion in section 12.3.3 that because watertables are at 100 m in the Clematis Sandstone means that recharge rates are low, is invalid. The watertables could be at that level purely because of the elevated topography of the Darkies Range. Higher rates of groundwater flow away from an area will also result in lower watertable levels.

There is no quantification of recharge rates in the Clematis sandstone GAB intake zone, around Darkies Range. This needs to be undertaken (probably through chloride mass balance). Recharge rates used in the model appear to be 0.3% for the Clematis Sandstone (CS) (1.8 mm/y). However, the CS has good quality groundwater (as stated by the proponent) and this is indicative of higher rates of recharge than those assumed by the proponent. For example, in some bores in the CS a groundwater chloride concentration of 40 mg/l is quoted by the proponent. If a chloride mass balance is used to calculate recharge from this value, a recharge value of 16 mm/y results. This would represent a good recharge estimate at the site of that bore and it is almost an order of magnitude higher than the value of 1.8 mm/y used by the proponent. If a groundwater concentration of 100 mg/l is seen to be closer to a median concentration (as indicated in the proponents data) then this would imply a recharge rate of 6 mm/y results. The proponent's values of 1.8 mm/y are inconsistent with work by Kellett et al. and inconsistent with modelling by Merrick at the Galilee Coal Project (Warratah) and inconsistent with recent Galilee Basin modelling undertaken by Merrick.

It is notable that the proponent in the Groundwater Report uses modelled recharge rates from between 0.1-0.000056 mm/y in Appendix 1, B3. The full range should include such values as

suggested above. Recharge values adopted for the tertiary also appear to be too low.

This submission on the draft EIS has raised a number of issues broadly related to groundwater recharge, including:

- Clarification of the conceptualised low recharge conditions, specifically associated with Darkies Range;
- The approach to quantification of recharge rates;
- Comparison with previously reported recharge rates; and
- The impacts on the 'recharge zone' of the GAB.

These issues are addressed under the following sub-headings.

Clarification of the conceptualised low recharge conditions, specifically associated with Darkies Range

Section 12.3.3 of the draft EIS states that the relatively deep localised water table in the vicinity of Darkies Range is indicative of a low rate of recharge in this area.

The groundwater levels remain at depth in the low lying areas in the project site adjacent to Darkies Range (up to a depth of approximately 70 m). Groundwater discharge does not occur in the vicinity of Darkies Range. Therefore, the significant depth of groundwater in the vicinity of Darkies Range is attributable to either a low rate of recharge or rapid dissipation of high recharge via lateral groundwater flow.

Data presented in Section 6 of the draft EIS Groundwater Report (Appendix I) shows that Darkies Range comprises relatively low to moderate permeability bedrock and hence the rate of lateral groundwater flow or vertical dissipation of recharge in the vicinity of Darkies Range is also low.

Section 5.3 – Editorial Corrections includes clarification that the relatively deep localised water table in the vicinity of Darkies Range, together with the low permeability and lack of groundwater discharge, are indicative of a low rate of recharge in this area.

Quantification of Recharge

Recharge is not directly measurable and must be inferred from available data. Common methods of inference include modelling, water fluctuation method, and chloride mass balance.

The draft EIS groundwater assessment calculated recharge using the modelling approach as described in Section B1.2 of the draft EIS Groundwater Report (Appendix I). The diffuse (background) recharge rates have been calculated by applying the calibrated recharge percentage by the adjusted annual rainfall. The calculated diffuse recharge rate has been refined by the inclusion of enhanced recharge zones based on surface geology and topography.

This approach was used as it provides a robust calibration result that reflected the available monitoring data. The modelling approach is commonly used in groundwater studies for coal mining projects and has been used to calculate the rate of recharge in groundwater studies undertaken for previous Galilee Basin mining projects.

Section 5.3 – Editorial Corrections includes the following clarifications in relation to the description of recharge presented in Section B1.2 of the draft EIS Groundwater Report (Appendix I):

- Figure B3 of the draft EIS Groundwater Report (Appendix I) shows the variation in modelled recharge rates applied in the groundwater model. The figure legend has been amended to correctly reflect the content of the figure in mm/year.
- Table B2 has been amended to align with Figure B3 and correctly reflect the applied recharge rates in mm per year.
- The description of the recharge calculation method presented in Section B1.2 has been clarified.

Figure B3 and Table B2 of the draft EIS Groundwater Report (Appendix I) show that the calculated rate of diffuse (background) recharge is between approximately 0.1 to 1.8 mm/year, with enhanced recharge of up to approximately 19 mm/year in the vicinity of Darkies Range.

In order to provide a further level of confidence in the recharge rate, rainfall and groundwater monitoring data has been analysed to identify potential recharge events and calculate the rate of recharge.

Groundwater level data collected over the period of 37 months between December 2012 and January 2016 is presented in Attachment D – Additional Information on Groundwater. Rainfall data over this period has been analysed to identify potential recharge events. The rate of recharge over the monitoring period has been estimated using the water table fluctuation method. This method provides an estimate of recharge based upon detailed measurements of site-specific changes in the groundwater levels. In this instance, due to the high frequency of the groundwater monitoring data (i.e. 6 hourly intervals), this method is considered likely to provide a reasonably accurate estimate of recharge.

This data shows that, despite several significant rainfall events with the potential to generate recharge, groundwater levels remain relatively uniform with no significant seasonal recharge response. This data therefore provides supporting evidence for the low recharge rate conceptualised within the draft EIS groundwater assessment.

The data show minor groundwater level increases in the order of 0.1 m following rainfall events. The rate of recharge calculated from these responses is approximately 2 mm over the monitoring period, corresponding to less than 1 mm/year. The groundwater monitoring data presented in

Attachment D – Additional Information on Groundwater therefore supports the diffuse recharge rates presented in the draft EIS.

The application of chloride mass balance (as discussed in the submission) is an alternative approach to estimating recharge. Due to the high variability of water quality within the project site, recharge rates calculated using this approach range from less than 1 mm/year to approximately 31 mm/year.

For clarity, the chloride concentrations in bores screened over the Clematis Sandstone and Rewan Formation at the project site range between 46 mg/L and 124 mg/L. Recharge rates calculated using this approach range from approximately 9 to 23 mm/year. This range is significantly larger than previously reported values (see below), is inconsistent with the weathered, claybound nature of the Clematis Sandstone at the project site and is an order of magnitude greater than the rate calculated from modelling and water table fluctuations. These values may represent zones of higher recharge at the base of Darkies Range where runoff collects and enhances recharge. These zones are represented within the model.

Section B3 of the draft EIS Groundwater Report (Appendix I) presents a sensitivity analysis that considered an increase in the model recharge rate by an order of magnitude. This corresponded to recharge rates of up to 180 mm/year being considered, and therefore encompassed the range of recharge rates calculated from chloride mass balance. The results presented in Section B3 confirm that the model is relatively insensitive to changes in recharge rate. Furthermore, the maximum predicted extent of depressurisation associated with the sensitivity analysis of recharge rates does not extend to any springs or other groundwater dependent features. It can therefore be concluded with a high degree of confidence that changes in recharge in the order of those assessed will not give rise to any significant impacts at these features.

Comparison with Previously Reported Values

A review of recharge rates presented in other relevant groundwater studies shows that:

- A recharge rate of 1 to 5 mm/year was calculated as part of the Carmichael Coal Mine Project EIS based upon water level and quality data.
- A recharge rate of less than 1 mm/year to 10 mm/year was derived from transient modelling undertaken by Dr N. Merrick as part of EIS groundwater studies in the Galilee Coal Project. This provided recharge rates of approximately 0.1 to 1.8% of average annual rainfall.
- A recharge rate of less 2 and 4 mm/year was inferred by Kellet et. al. (2003) for the GAB intake beds (comprising the Hooray Sandstone) west of Lake Buchanan. This rate does not include the Clematis Sandstone in the vicinity of the project site. Kellet et. al. (2003) indicates that the recharge rate is likely to be lower further east (i.e. in the vicinity of the project site).

The recharge rates presented in previous groundwater studies are therefore consistent with the diffuse recharge rates presented in the Project China Stone draft EIS. On this basis, the rates adopted in the Project China Stone draft EIS are considered a reasonable basis for modelling predictions.

Recharge Rates in the Tertiary Sediments

The modelled rate of recharge in the Tertiary sediments is less than 1 mm/year. This low rate of recharge reflects the highly weathered claystone characteristics of this formation and the arid setting of the project. This value is comparable to the recharge rates presented in previous groundwater studies (as discussed above) and on this basis, the rates adopted in the draft EIS are considered a reasonable basis for modelling predictions.

As discussed above, Section B3 of the draft EIS Groundwater Report (Appendix I) presents a sensitivity analysis that considered an increase in the model recharge rate by an order of magnitude and confirmed that the model is relatively insensitive to changes in the rate of recharge to the Tertiary sediments.

Impacts on GAB Recharge Zone

The GAB recharge zone extends for several thousand kilometres and covers a significant area. The project will occupy a minor proportion of the GAB recharge zone and is predicted to result in localised depressurisation of the GAB sediments. On this basis, there is no evidence to support the conclusion that the project is likely to result in significant impacts on the GAB recharge zone.

Conclusion

In conclusion, the conceptualised low recharge conditions and the adopted recharge rates are well supported by available data and are consistent with previously reported groundwater studies in the Galilee Basin. Furthermore, it has been demonstrated that the project is not likely to result in significant impacts on the GAB recharge zone.

Submitter Issue Number 41.027

Chapter 12 Groundwater and Appendix I - Groundwater Report:

The proponent needs to confirm that the groundwater recharge values used are correct, as adopted recharge rates appear to be assumed rather than calculated by the proponent. The model scenario runs need to be undertaken with higher values of recharge to ensure that the plausible range of recharge values have been assessed.

Chloride concentrations are available as presented by the proponent and these need to be used to quantify recharge rates. Model runs can then be undertaken with more realistic recharge values adopted.

Refer to the response to issue 41.026 for clarification on recharge rates adopted in the groundwater model.

Submitter Issue Number 41.028

There is no up-front commitment to reducing post mine impacts on groundwater. Currently the proponent has estimated that the pits will result in a long term take of GAB groundwater of more than 0.5 ML/d (183 ML/y), and an operational take of up to 9 ML/d (3,285 ML/y).

A commitment to reducing post mining impacts on the GAB groundwater needs to be given.

A possible consideration is the partial backfilling of open cut pits to minimize any post mine loss of groundwater through evaporation from final voids.

Partial backfilling of pits would eliminate the mined out pits behaving as a groundwater sink after mine closure because of the evaporation of groundwater from them which occurs in the current mine plan. Given the open cut mining finishes well before longwall mining, partial pit backfilling would also reduce GAB groundwater take during the operational phase.

It is noted that this issue was not included in the DNRM submission.

As discussed in the response to issue 41.017, the take of groundwater from the GAB is fully regulated under the Queensland *Environmental Protection Act 1994* and Queensland *Water Act 2000*. The proponent will be required to obtain an associated water licence under the Queensland *Water Act 2000* for the take of groundwater from the GAB. In order to obtain an associated water licence, the proponent will be required to demonstrate that the impacts of groundwater take from the GAB have been fully assessed and adequate management measures are proposed. The associated water licence will include conditions that specifically regulate the impacts of groundwater take on the GAB and ensure that any potential impacts are appropriately managed in accordance with the licence. This will include operations phase and post mining groundwater take.

Any additional requirement related to groundwater take, over and above the Queensland regulatory framework, are therefore unnecessary and unjustified.

The post mining groundwater take of 183 ML/year represents a minor volume of groundwater within the context of the GAB aquifers and is not a significant proportion of the sustainable yield of the GAB. Post mining groundwater take is therefore not likely to result in any significant adverse effects on the GAB groundwater resource or significant impacts on sensitive environmental features. The proponent will be required to mitigate impacts on water or any associated bores as a condition of its associated water licence.

In order to prevent post mining groundwater take it would be necessary to backfill the final void to a level that is above the pre-mining groundwater level (i.e. a backfilling depth of up to approximately 300 m).

On this basis, it is not economically feasible for this mine (or any other Galilee Basin open cut mine) to backfill the final void to the extent necessary to prevent post mining groundwater take, and a commitment of this nature would be unprecedented for a coal mining project in the Galilee Basin or elsewhere.

In conclusion, the post mining groundwater take and any associated impacts are subject to existing regulations. The suggested additional commitment to backfilling the void in order to manage impact is inconsistent with existing regulations and unjustified. The suggestion is also not economically feasible.

Submitter Issue Number 41.029
Tailings storage facility needs reconsideration. The tailings storage facility is expected to erode back into the system of creek and eventually to the Belyando River over time. The best way to manage this problem is to return all tailings to the Pits. If this is not done, the rate of erosion of the storage facility will determine the environmental impact, so that this should be calculated if tailings are not returned to the pits. The current design is 34 m high with embankment slopes of 6:1. These embankments will erode relatively quickly.

Changes have been made to the conceptual final landform of the TSF and PSWSF in response to the EHP submission (issue 24.016). The changes involve reshaping the plateau area of the TSF final landform, extending the landform to the north and joining the final plateau of the PSWSF with the TSF. A revised conceptual final landform figure for the PSWSF and TSF is included in Attachment E – Additional Information on Surface Water.

These changes will enable the plateau area of the TSF/PSWSF final landform to drain to the natural ground surface via internal drains with gentle slope (maximum of 1%) that can be stabilised from erosion. This change will also mean that the 6:1 external batter slopes of the final landform will not have any contributing catchment area above the slope. Without any contributing catchment area, 6:1 slopes up to 34 m high can be readily rehabilitated and stabilised from erosion.

As discussed in Section 4.16.1 of the draft EIS:

- The option of in-pit storage of tailings and rejects material was not progressed for the purposes of the draft EIS as it is not feasible in the initial years of operations due to a lack of available in-pit storage area; and
- This option may be considered again in the future, subject to the completion of favourable feasibility studies and gaining the necessary approvals.

Submitter Issue Number 41.030
Appendix I – Groundwater Report Section 4.2.5 Tertiary and Quaternary Sediments (page - 12); and Appendix f – Terrestrial Ecology Report Section 4.3 Regional Ecosystems (page 4.18)
DNRM's comment on the Draft EIS (March 2015) noted some inconsistencies with the groundwater and terrestrial ecology reports, in relation to the projects discussion of Groundwater Dependant Ecosystems (GDE). DNRM's recommendation at this time was that the proponent should discuss the presence of GDEs in the project area, using RE 10.3.14d as a proxy for shallow groundwater and GDE mapping, as well as the addition of two monitoring bores in the alluvium.
MacMines responded in that *"the conclusions of the EIS in relation to the presence of GDEs is*

therefore based on appropriate holistic assessment of all relevant factors, including confirmed hydrogeology based on field investigations, rather than just the presence of indicative REs. These investigations confirmed that the extensive, deep alluvial deposits are absent from the project site and surrounding area. Section 12 – Groundwater (subsection 12.3.1) provides a detailed explanation of the project setting in relation to known alluvial groundwater systems".

The proponent has not identified GDEs in the project area. While it may not be the task of the Groundwater Report to identify GDEs, if evidence for the potential GDEs appear in other assessments (the identification of RE 10.3.14d, the presence of *Eucalyptus camaldulensis* and photographic evidence of what appears to be the developed alluvium), the onus is on the proponent to properly investigate, identify and satisfactorily provide detailed supporting evidence for the presence or absence of GDEs.

DNRM recommendations made during the draft-EIS (March 2015) agency consultation period will remain relevant for this issue:

"Discuss the presence of GDEs in the project area, and should use RE 10.3.14d as a proxy for shallow groundwater and GDE mapping.

Monitoring bores should be placed in the alluvium at approximately 413271 m E 7589093 m S and 414001 m E, 7592151 m S."

Groundwater Dependent Ecosystems

The draft EIS includes a detailed assessment of the presence of GDEs as part of the terrestrial ecology study. This GDE assessment is presented in Section 4.4 of the draft EIS Terrestrial Ecology Report (Appendix F). This assessment considered the potential groundwater dependence of ground-truthed ecological communities based upon all available information including (but not limited to) the recorded groundwater levels within the project site. The draft EIS Groundwater Report (Appendix I) provides a cross reference to this assessment.

The submission cites the following as evidence for the potential presence of GDEs:

- The identification of RE 10.3.14d;
- The presence of *Eucalyptus camaldulensis*; and
- Photographic evidence of what appears to be the developed alluvium.

In addition, DNRM has previously requested that RE 10.3.14d is used as a proxy for shallow groundwater and GDE mapping.

These suggested lines of evidence are discussed below.

RE10.3.14d

The distribution of RE10.3.14d is shown on Figure 11 of the draft EIS Terrestrial Ecology Report (Appendix F). RE10.3.14d is present:

- In the northern part of the northern mining area, associated with the headwaters of Pigeonhole Creek; and
- In the southern part of the northern mining area, associated with the headwaters of Tomahawk Creek.

Groundwater drilling has been undertaken at several locations within (i.e. MB13) and immediately adjacent (MB23, MB24, MB25, MB21 and MB33) to the mapped extents of this vegetation community.

MB13 was drilled in March 2013 at the end of the wet season. The groundwater table at MB13 within RE10.3.14d is approximately 67 m below ground level at this location. No shallow groundwater was encountered during drilling. This site-specific data conclusively demonstrates that the presence of RE10.3.14d is not a proxy for shallow groundwater nor is RE10.3.14d representative of vegetation that is groundwater dependent within the project site.

The groundwater table within the adjacent bores was similarly deep, ranging from approximately 90 m to greater than 130 m below ground level. On this basis, groundwater drilling provides further confirmation of the lack of shallow groundwater in the vicinity of mapped RE10.3.14d.

Eucalyptus camaldulensis

The response to issue 41.002 contains a discussion of *Eucalyptus camaldulensis* and explains that, in this instance, the presence of this tree species is not indicative of shallow groundwater or an alluvial aquifer.

Photographic evidence of developed alluvium

As discussed in Section 4.2.5 of the draft EIS Groundwater Report (Appendix I) regional scale geological mapping indicates the inferred presence of Quaternary sediments based upon aerial photography.

A stream geomorphology survey was undertaken to investigate the characteristics of drainage features within the project site and its surrounds, including the presence of alluvial deposits.

As discussed in Section 13 of the draft EIS, the drainage over the plateau of Darkies Range is typically via sheet flow and preferential flowpaths that are incised into the exposed, highly weathered bedrock and Tertiary sediments. Alluvial deposition is highly unlikely under these circumstances. Cascades and steeply sloping gullies have formed on the slopes of Darkies Range. These drainage features exhibit fast, high energy ephemeral flows that are not conducive

to alluvial deposition. Colluvial deposits (i.e. e.g. hillslope sheetwash) are present within these drainage features and at the footslopes of Darkies Range.

Drainage over the low lying areas east of Darkies Range is characterised by minor drainage flowpaths that are locally incised into the Tertiary sediments and exposed bedrock. The surrounding areas exhibit sheet erosion. There is no evidence of a depositional environment and drainage features in this area typically lack riverine characteristics (such as defined bed and banks) and/or a developed floodplain.

The stream geomorphology field survey undertaken as part of the draft EIS therefore concluded that there is no evidence for the presence of alluvium within the project site. In addition, no expression of shallow groundwater within drainage features was recorded.

Additional information on the surface geology within the project site was collected as part of the aquatic ecology survey, terrestrial ecology survey and groundwater drilling program. The information collected includes:

- Bore logs presented in Appendix A of the draft EIS Groundwater Report (Appendix I) which show that no alluvium was encountered within any of the 31 groundwater bores or 4 vibrating wire piezometer drill holes undertaken within the project site.
- Photographs collected from aquatic ecology survey sites,as shown in the draft EIS Aquatic Ecology Report (Appendix G) show that the shallow geological profile typically comprises a thin soil horizon directly overlying weathered bedrock, with occasional colluvial sheetwash deposits comprising cobbles, gravels and occasional sands. No alluvium or shallow groundwater was encountered within these survey locations.
- Photographs collected from terrestrial ecology survey sites,as shown in the draft EIS Terrestrial Ecology Report (Appendix F) show that the shallow geological profile typically comprises a thin soil horizon directly overlying weathered bedrock, with occasional colluvial sheetwash deposits comprising cobbles, gravels and occasional sands. No alluvium or shallow groundwater was encountered within these survey locations.

The information presented in the draft EIS clearly demonstrates that neither developed alluvium nor an alluvial aquifer are present in the vicinity of the project site.

It should be noted that for the purposes of vegetation mapping, the ecological land zone describing recent Quaternary alluvial systems encompasses a diverse range of soil types, and can include thin sandy soils derived from weathered sandstone and incised drainage features in Tertiary sediments. This is not inconsistent with the findings of the other studies presented in the draft EIS nor does it indicate the presence of developed alluvium in geological terms or constitute an alluvial aquifer in a hydrogeological context.

Conclusion

The submission suggests that potential evidence for the presence of GDEs is present at the project site. This potential evidence has been considered and found to support the draft EIS's conclusion that GDEs are not present within the project site.

Groundwater Monitoring Bores

The submission has recommended the installation of alluvial monitoring bores at the following two locations:

- Adjacent to a drainage feature that is part of the headwaters of Tomahawk Creek in the southern part of the project site. Regional geology mapping (at 1:100,000 scale) indicates the inferred presence of Quaternary sediments on this drainage feature.
- Adjacent to a drainage feature that is part of the headwaters of North Creek in the southern part of the project site. Regional geology mapping (at 1:100,000 scale) indicates the inferred presence of Tertiary sediments overlying bedrock at this location.

As discussed above, the studies undertaken as part of the draft EIS found that alluvium is not present within these drainage features.

In addition, a landholder bore (Camp Bore) is located within the extent of inferred Quaternary sediments (as shown on the regional geology mapping) on the headwaters of Tomahawk Creek, in close proximity to the DNRM recommended alluvial bore. Figure 12-6 of the draft EIS shows the location of Camp Bore. The Camp Bore log (available from the DNRM Groundwater Database) indicates that the geology at this location comprises Tertiary sediments overlying the Betts Creek Beds. Groundwater was encountered at 52 m below ground level within the upper Betts Creek Beds. No shallow groundwater was recorded within the upper profile of the Tertiary sediments.

Further monitoring bores (Roo Bore and MB03) are installed within and adjacent to the extent of inferred Quaternary sediments (as shown on the regional geology mapping) associated with the headwaters of North Creek (downstream of the DNRM recommended alluvial bore). The Roo Bore log (available from the DNRM Groundwater Database) and MB03 bore log (presented in the draft EIS Groundwater Report (Appendix I)) show that no alluvium or shallow groundwater was encountered within these bores.

The site-specific data therefore support the draft EIS's conclusions that regional scale mapping of alluvium is an unreliable basis for establishing the presence of shallow groundwater and groundwater dependent ecosystems. On this basis, the installation of additional shallow groundwater monitoring bores at the proposed locations is not justified.

Submitter Issue Number 41.031

Section 3.4.2 Aquatic and Stygofauna Report - Stygofauna investigation (Page - 3.20)

DNRM's comment on the draft-EIS (March 2015) noted that no alluvium was sampled for the

stygofauna report, and suggested that the proponent conduct a second sampling in a different season to meet the requirements of the WA guidance material.
MacMines responded that *"the stygofauna assessment presented in the EIS was conducted in accordance with the recommendations for pilot studies described in the WA Guidelines"*. Alluvium has been identified and confirmed in the RE mapping in Volume 3, Appendix f - Terrestrial Ecology Report as containing RE10.3.14d and the presence of *Eucalyptus camaldulensis*, however no alluvium has been sampled for the Stygofauna assessment as presented in the EIS.
In order to meet the Western Australian guidance sampling of the alluvium must occur. A second round of sampling of stygofauna is recommended to provide enough supporting evidence for any conclusions in the stygofauna report.

Refer to response to issue 41.030 in relation to the suggestion that either RE 10.3.14d or *Eucalyptus camaldulensis* confirm the presence of alluvium on the project site, contrary to the findings of the draft EIS.

The conclusions of the draft EIS remain valid, in that there is no shallow groundwater on the project site and sampling of superficial sediments for stygofauna is not feasible and not justified in accordance with the WA Guidelines.

PROJECT CHINA STONE
RESPONSE TO THE DEPARTMENT OF THE ENVIRONMENT AND ENERGY SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

42 DoEE SUBMISSION

The proponent, Hansen Bailey and the Office of the Coordinator General (OCG) met with representatives from the Department of Environment and Energy (DoEE) on 21 December 2015, 29 November 2016 and 21 June 2017 to discuss their submission issues and the proponents proposed approach to resolving their issues.

Submitter Issue Number 42.001
Sections 6 - Subsidence, 12 Groundwater and 13 - Surface Water :
Please note that a request for advice regarding this project has been sent to the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (IESC) for their consideration at their October 2015 meeting.
Comments from the IESC will need to be addressed as part of the Supplementary Environmental Impact Statement in regards to impacts on water resources (including impacts on the Great Artesian Basin).

Noted. IESC comments are responded to in Attachment C – Response to IESC Advice.

Submitter Issue Number 42.002
For your advice, on 30 June 2015, the list of migratory species under section 209 of the EPBC Act was amended to remove the Australian Painted Snipe (*Rostratula australis*, formerly known as *Rostratula benghalensis*) as a migratory species.
The Supplementary Environment Impact Statement will no longer need to discuss the Australian Painted Snipe when considering impacts on listed migratory species, however the Australian Painted Snipe (listed as endangered) will still need to be considered in relation to impacts on threatened species.

Noted. This has been clarified in Section 5.3 – Editorial Corrections.

Submitter Issue Number 42.003
Black-throated Finch (southern) habitat mapping
Further information and justification of 'high value habitat' is required for this species - noting that there are records of this species in the southern/central areas of the project site in proximity to water sources (see figure 11-5, records for May and October 2012 and October 2013). These records indicate that there is potentially habitat critical to the survival of the species which is not accounted for in the EIS. The EPBC Act Significant Impact Guidelines for the species indicate that the character and quality of habitat may be significantly diminished if an action results in a net loss

or degradation of water sources (either permanent or seasonal) and/or the degradation of foraging habitat where known records exist, amongst others. The EPBC Act Significant Impact Guidelines indicate that habitat critical to the survival of the species can include habitat that is necessary for activity such as foraging, breeding, roosting or dispersal. The Department notes that the broader area surrounding the project may potentially support an important population.

The Black-Throated Finch (BTF) habitat modelling for the project site has been revised in consultation with the Federal DoEE and the Queensland Department of Environment and Heritage Protection (EHP). The revised habitat modelling is provided in Attachment F - Additional Information on Ecology.

In response to the specific issues raised in this submission:

- The revised habitat modelling includes habitat around seasonal sources of water (the habitat modelling contained in the draft Environmental Impact Statement (EIS) was based on permanent water sources only); and
- The revised habitat modelling incorporates the south/central areas of the project site. The majority of BTF records that are referred to in this submission fall in an area mapped as BTF habitat (using the revised BTF habitat modelling).

Submitter Issue Number 42.004
"Squatter Pigeon
Further information and justification of 'high value habitat' within 1 km of permanent water is required for this species –

a) noting that there are records of this species in the southern/central areas of the project site in proximity to water sources (see figure 11-5, records for May and October/November 2012 and October 2013). These records indicate that there is potentially habitat critical to the survival of the species which is not accounted for in the EIS.
b) The EPBC Act Species Profile and Threats Database for the species indicates that foraging and breeding habitat is within 3km of a suitable permanent or seasonal waterbody. The EPBC Act Significant Impact Guidelines indicate that habitat critical to the survival of the species can include habitat that is necessary for activities such as foraging, breeding, roosting or dispersal.

The Squatter Pigeon habitat modelling for the project site has been revised in consultation with the DoEE and the EHP. The revised habitat modelling is provided in Attachment F - Additional Information on Ecology. The revised habitat definition is as per the definition provided in the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approvals for the Galilee Coal & Rail Project EPBC approval (EPBC 2009/4737), granted in December 2013 and the Red Hill EPBC approval (EPBC 2013/6865), granted in September 2015. This definition has been adopted for Project China Stone because it is a recent definition (September 2015) and the definition relates to general habitat features (e.g. land zones, distances to water etc.) that are applicable to other projects in the same bioregions.

The revised habitat modelling expands the area of habitat in the southern and central part of the project site, and provides a good match with records of the species in this area.

Submitter Issue Number 42.005
Further information is required on the condition/quality of relevant habitat on the offset sites/s.

The condition of the habitat on the potential offset properties is likely to be similar to the condition of the habitat on the project site, given that the offset properties are in the same region and are subject to the same historical land use. Further detail on the condition will be available once habitat condition surveys have been undertaken as part of the development of the Offset Management Plan. The survey work to be undertaken will:

- Address all species Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES) that require offsets;
- Include survey of the land proposed to be used for offsets (i.e. offset property/properties); and
- Include survey of the areas that require offsets (i.e. sections of the project site proposed to be cleared).

Sections 4.4 and 4.6 of the draft EIS Biodiversity Offset Strategy (BOS) (Appendix H) explain that the field surveys will be undertaken as part of the development of the Offset Management Plan. These surveys and their timing as part of the development of the Offset Management Plan can be included as an approval condition for the project. The proponent is unable to undertake the surveys at this point in time, given that it is currently undertaking commercially sensitive land access negotiations with the owner of the most prospective property. Surveys of the properties cannot be undertaken until negotiations are concluded.

Submitter Issue Number 42.006
Further discussion is required on the suitability and effectiveness of the offset site/s to compensate for significant residual impacts.

The draft EIS has demonstrated that the potential offset sites have large areas of potential habitat available that will be more than sufficient to account for the offsets that will be required for the project. Further assessment of the suitability and effectiveness of the offset site/s to compensate for significant residual impacts will be undertaken during the development of the project's Offset Management Plan, following the EIS process, once the EPBC Act approval has been obtained for the project. This will include undertaking detailed field surveys of the offset properties and project site and using the EPBC Act Offsets Calculator.

Submitter Issue Number 42.007
Further information is also required about how the offsets meet the EPBC Act Offsets Policy.

The draft EIS BOS (Appendix H) describes the offsets proposed to be provided for the project. It notes that in keeping with the EPBC Act Offsets Policy, the majority of offsets (at least 90%) will be land based. The BOS notes that an Offset Management Plan will be prepared for the project, and will be submitted to the DoEE for approval. The plan will describe the management measures to be adopted for offset properties and a program to monitor and report on the effectiveness of the management measures. As per the requirements of the EPBC Act Offsets Policy and as stated in Section 6 of the draft EIS BOS (Appendix H), these management measures will be designed to ensure that offsets deliver an overall conservation outcome that improves or maintains the viability of the protected matter. In addition, as per the requirements of the EPBC Act Offsets Policy, the Offset Management Plan will describe contingency measures to manage the risks of the offset not succeeding. This additional commitment has been included in Attachment I – Additional Commitments.

PROJECT CHINA STONE
RESPONSE TO SUBMITTER NUMBER 43 SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

43 SUBMISSION

The following responses are provided for issues that were identified by the Office of the Coordinator General as requiring a response. Other issues raised within the submission were identified by the Office of the Coordinator General as requiring noting by the proponent.

Submitter Issue Number 43.004
It is disappointing that this document makes a scanty contribution to a real understanding of the projects impacts.

The submitter's opinions are noted. However, the proponent disagrees with these opinions as the draft Environmental Impact Statement (EIS) was undertaken by appropriately qualified and experienced scientists, in accordance with the project's EIS Terms of Reference (TOR) requirements and in line with accepted environmental assessment standards.

Submitter Issue Number 43.005
Field surveys were inadequate. The proponent describes this area as remote and therefore it might have been assumed that information available would be largely speculative and extensive field surveys would be required and greater effort to consider for instance the spectacled hare wallaby.
Not enough surveys were done and in some sites only one survey was done (May 2013). Ironically the area that was too wet in May 2012 was not surveyed yet surface water even if ephemeral is the time to see birds which like…….pools and water-logged ground and sedges!

Field surveys for the draft EIS were undertaken in accordance with the project's EIS TOR and relevant regulatory guidelines.

Submitter Issue Number 43.011
Workers accommodation appears to be sandwiched between the runway of the airport and the open cut area…and the coal washing area. Obviously the site has been prospectively situated by someone who doesn't expect to occupy this accommodation. Coal dust from the mining activity

Please refer to Section 4.2 – Response to Common Issues.

Submitter Issue Number 43.012
Workers accommodation appears to be sandwiched between the runway of the airport and the open cut area…and the coal washing area. Obviously the site has been prospectively situated by someone who doesn't expect to occupy this accommodation. Noise from the mining activity and runway traffic to pose a further noise problem.

Please refer to Section 4.2 – Response to Common Issues.

Submitter Issue Number 43.013
there doesn't seem to be any assessment of risk posed by aeroplanes landing so close to the village.

Please refer to Section 4.2 – Response to Common Issues.

Submitter Issue Number 43.014
Contamination to groundwater including radionuclides and heavy metals from the proposed power plant is not seriously considered since all this is assessed as low risk. Possibly this is due to the lack of real experience in coal extraction activity because there is no coal mine in Queensland that hasn't had issues with contamination due to unexpected circumstances and this project is considerably larger so it would be reassuring to see proper assessment carried out here.

The draft EIS Groundwater Report (Appendix I) includes an assessment of all potential sources of groundwater contamination.

Submitter Issue Number 43.015
Groundwater includes GAB and is seriously under assessed and risks not only of contamination above but drawdown effects are not covered credibly. IESC has made it clear that a much greater understanding of the groundwater needs to underpin any approvals of projects in the Galilee Basin.

Please refer to Attachment C – Response to IESC Advice.

Submitter Issue Number 43.018
Energy source and demand is changing. Electricity is a convoluted way of achieving cooling; warmth and light. This project seems wasteful.

The submitter's opinions are noted. The proponent respectfully disagrees.

PROJECT CHINA STONE
RESPONSE TO AUSTRALIAN YOUTH CLIMATE COALITION SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

44 AUSTRALIAN YOUTH CLIMATE COALITION SUBMISSION

The following responses are provided for issues that were identified by the Office of the Coordinator General as requiring a response. Other issues raised within the submission were identified by the Office of the Coordinator General as requiring noting by the proponent.

Submitter Issue Number 44.003
4. AYCC strongly opposes the approval and development of another coal mine in Australia because of the contribution that it will make to climate change, which already threatens the natural environment, young people and future generations.

Noted.

Submitter Issue Number 44.006
7. The EIS for the Project states that "anticipated initiatives that may mitigate, reduce, control or manage greenhouse gas emissions through energy efficiency include:
A. regular assessment, review and evaluation of greenhouse gas reduction opportunities;
B. procurement policies that require the selection of energy efficient equipment and vehicles;
C. monitoring and maintenance of equipment in accordance with manufacturer recommendations;
D. optimisation of diesel consumption through logisitics analysis and planning; and
E. progressive rehabilitation of land areas to manage and limit the cumulative loss of carbon storage associated with land clearing." (emphasis added).
8. The Project does not commit to implementing these measures, and simply lists them as anticipated mitigation measures to adopt to reduce energy consumption and increase financial incentive for the Project. This lack of commitment is not sufficient for the purposes of section 2.5.2 of the *Galilee Basin State Development Area Development Scheme*, which requires that development is "designed to avoid or otherwise minimise emissions that will adversely affect the health and safety, wellbeing, and amenity of communities and individuals.

Section 5.3 – Editorial Corrections confirms the proponent will implement these measures.

Submitter Issue Number 44.011
13. The EIS states the emissions of particulate matter, nitrogen dioxide, sulfur dioxide and carbon monoxide are "well below" or "comply with" the Air EPP. However, the EIS does not consider the overall impact from emissions from this Project and the eight other coal mine projects planned for the Galilee Basin.

Refer to Section 23 of the draft Environmental Impact Statement which explains the projects potential for cumulative impacts.

Submitter Issue Number 44.013
14. The EIS recognises that subsidence from the longwall mining will cause "connective cracking" the Clematis Sandstone, an aquifer of the Great Artesian Basin (GAB), leading to permanent 'take' of groundwater from the GAB, yet the impacts on the GAB are dismissed as "inconsequential" or "negligible".

Please refer to Attachment B – Response to Non-specific Submissions which addresses this issue.

Submitter Issue Number 44.017
15. (part)No Biodiversity Offset Strategy is provided in the EIS, and where assessments of the impact on threatened species have been conducted they have demonstrated that impacts will be unacceptably adverse.

Please refer to Attachment B – Response to Non-specific Submissions which addresses this issue.

PROJECT CHINA STONE
RESPONSE TO TRADITIONAL OWNERS SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

45 TRADITIONAL OWNERS SUBMISSION

Submitter Issue Number 45.001

We Wangan & Jagalingou people are the Indigenous traditional owners of the land on which the China Stone Mine is proposed to be built, and we have a registered native title claim over the area. Our land and everything on it has significance to us and a place in our culture, law and custom. Indeed, our land and waters are our culture, and we exist as people of our land; our lands and waters are who we are, and show us how to be and how to belong. Our ancestral homelands are the starting point of our lives and are inseparable from our culture, and we maintain a deep connection to our lands, where our ancestors dwell indefinitely and to where we return when we die. The sacred beliefs of our culture are based on where our songlines run through our country, and these songlines connect us to Mother Earth. Each member of our people has a specific plant or animal dreaming totem. Our totems protect us and maintain our social order: we cannot kill our totems, and they inform our land interests and associated decision-making and ceremonial responsibilities. When we die, we return to the spirit dreaming and our connection to our totems remains.

We want to continue practising our culture, and to preserve it and our lands and waters for future generations. We are stewards of our lands and waters: we have a sacred responsibility to protect them. Consequently, we are deeply concerned about the development of this mine, and its impacts on our land, waters and culture. This mine will tear huge chunks out of our land, forever destroying vast swathes of it. The project will involve the development of coal handling and preparation plants, stockpiles, conveyors, a rail loop, dams, and a tailings storage facility, among other things, on our land. This will render our land unrecognisable, destroying our songlines and the animals and plants that are so special to us.

We are also deeply concerned about the cumulative impacts of this mine and the other mines proposed on our lands, including the Carmichael mine, the Alpha mine, the Galilee Coal Project, Kevin's Corner, and the South Galilee Coal Project.

(Submission issue continued in next row)

As discussed in Section 5.4.5 of the draft Environmental Impact Statement (EIS), the proponent will negotiate with the Wangan and Jagalingou People, as the registered Native Title claimants, in accordance with the requirements of the *Native Title Act 1993*.

As discussed in Section 20.2.2 of the draft EIS, the proponent is required to prepare a Cultural Heritage Management Plan (CHMP) for the project in accordance with the *Aboriginal Cultural Heritage Act 2003*. The CHMP will be developed in consultation with the relevant Aboriginal parties for the project and will address the management of Aboriginal cultural heritage on the project site.

In relation to consultation for the draft EIS, the legal representatives of the Wangan and Jagalingou People were contacted on 30 July 2015 in relation to an offer to meet and discuss the draft EIS. The offer of a meeting was declined. Consultation with Indigenous training organisation, Jenagar Training, was also undertaken during preparation of the draft EIS Socio-Economic Impact Assessment Report (Appendix N).

Submitter Issue Number 45.002

(Issue continued from previous row)

Our culture and the direct and cumulative impacts of this project on our culture have not been addressed in the Draft EIS, despite these matters falling squarely within the matters that the EIS should address. For example, the Terms of Reference ("ToR") requires the EIS to address indigenous cultural heritage, land use, nature conservation, water resources, and impacts on social values (among other matters). In particular, the Draft EIS does not address the Indigenous social and cultural values of the area and our cultural heritage, how the project will impact those values and heritage, and how such impacts can be avoided or mitigated. The failure to address these matters must result, at least partly, from the failure of the proponent to consult with us about the project's impacts on our people. Our specific concerns with the Draft EIS are identified below (in the submission)."

To comply with both the ToR and good practice, prior to the finalisation of the EIS, the proponent must consult and engage with us to inform its EIS, particularly in relation to identification of the Indigenous social and cultural values of the region and cultural heritage, the project's impacts on these matters, how they may be avoided or mitigated, and the cumulative impacts of so many coal mines on our traditional lands.

Please refer to response to issue 45.001.

Submitter Issue Number 45.003

Section 6 of the ToR requires the preparation of a social impact assessment ("SIA") that describes existing social values, identifies social impacts, and presents mitigation measures and management strategies. Section 6 contains a number of requirements specific to Indigenous peoples.

For the reasons set out below, the proponent has completely failed to fulfil these requirements in relation to our people.

Our people were not consulted or engaged by the proponent in the preparing of the SIA and we are invisible in the Draft EIS. This is despite the requirements in section 6.1.2 of the ToR that the proponent undertake a "community engagement strategy to engage at the earliest practicable stage" with affected parties to "explain the project, and to identify and respond to issues and concerns regarding social impacts." This engagement should be "[c]onsistent with national and international good practice, be "open and transparent," and "consider social and cultural factors, customs and values, and, where relevant, linkages between environmental, economic, and social impact issues.

Instead of consulting with us as directly affected Indigenous peoples, the proponent's representative consulted only with non-Indigenous landowners in the area and used this

consultation to conclude that our people do not use the project area: "The findings of consultation conducted with landowners for the EIS suggests that there is no contemporary use of the project site or the surrounding area by Indigenous people. The project site is not actively utilised by Indigenous people for the collection of flora and/or fauna." (See Socio-Economic Impact Assessment Report (Appendix N to the Draft EIS), page 46; see also pages 18, 101, 102). The Socio-Economic Impact Assessment Report then concluded that, based on the findings of consultation with the non- Indigenous landowners, "[t]he project therefore has a low risk of impacting Indigenous use of the project site" (page 102).
(Submission issue continued in next row)

Please refer to response to issue 45.001.

Submitter Issue Number 45.004
(Issue continued from previous row)
These conclusions are wrong and misguided for a number of reasons. First, our people remain connected to our lands and everything on and in them at all times, and our native title claim is to ensure that our right to use the land to use the project area for cultural and ceremonial purposes is recognised. The presentation of the project area as "located in a remote area, with limited direct impacts" presents the project area as a blank canvas, but this is incorrect (see Appendix N, page 134).
Second, we are extremely concerned that the conclusions are based on the observations of a very small number of non-Indigenous landowners who do not, and cannot speak for us. There are only three landowners in the project area, of whom only one resides on the directly affected land, and an additional two landowners adjoining the project area. This is a blatant failure to engage at all with affected Indigenous peoples. The failure to consult with us as the recognised traditional owners of the land is inconsistent with state, national and international law and best practice, and represents a failure to understand that we retain a strong cultural connection to our lands, despite being forcibly removed from them in the preceding decades as a result of discriminatory policies.
Third, the conclusions address only the direct use of land by Indigenous peoples; they do not address our social and cultural factors, customs and values more generally, as required by the ToR, nor our native title rights and interests. This demonstrates a fatally flawed understanding of our culture and our relationship to our lands: our land and everything on and in it is our culture and has value to us, whether or not we are currently directly using the land. It also demonstrates a failure to recognise to us as Indigenous peoples, there is a "strong linkage between environment, economic and social impact issues" because harms to our lands and the environment are harms to our culture (see section 6.1.2 of the ToR).
(Submission issue continued in next row)

Please refer to response to issue 45.001.

Submitter Issue Number 45.005
(Issue continued from previous row)
The proponent's failure to consult and engage with us renders its description of existing social

values and its social baseline study (required by sections 6.1.1 and 6.1.3 of the ToR) invalid. Section 6.1.1 requires the proponent to "[d]efine the project's social and cultural area of influence, … taking into account the …potential for social and cultural impacts to occur," "location of other relevant proposals or projects," "social values that might be affected by the project," and "Indigenous social and cultural characteristics such as native title rights and interests, and cultural heritage." Section 6.1.3 requires a "targeted baseline study" that must take account of "the identity, values, lifestyles, vitality, characteristics and aspirations of communities in the social and cultural area, including Indigenous communities," "land use and land ownership patterns … including the number of families directly and indirectly affected by the project including Indigenous traditional owners and their families," and the "Indigenous cultural use of flora and fauna." None of these matters has been addressed in the Socio-Economic Impact Assessment Report in relation to our people.

Furthermore, the proponent has failed to fulfil the requirements of section 6.2 of the ToR in relation to our people. Section 6.2 requires the proponent to "[a]ssess and describe the … project's social impacts … based on outcomes of community engagement processes," to "describe the outcomes of community engagement processes including the likely response of affected Indigenous communities," to address the direct and cumulative impacts of the project in relation to Indigenous peoples "including cultural property issues." In particular, the Socio-Economic Impact Report proceeds on the assumption that the Carmichael project will have already caused impacts, thereby lowering the impacts that this mine will cause (see for example Appendix N, pages 99, 134). The failure to fulfil the requirements of section 6.2 results from the proponent's failure to consult and engage with us as required by section 6.1 of the ToR. The proponent has also failed to fulfil the requirements of section 6.3 of the ToR, which requires identification of social impact mitigation strategies and preparation of a social impact management plan. Given that the proponent failed to consider impacts upon our people, it cannot identify mitigation strategies. Finally, our people are not identified in the Stakeholder Communication Strategy outlined in the Socio-Economic Impact Assessment Report as stakeholders to be engaged with as the project progresses (pages 124-128).

Prior to finalisation of the EIS, to comply with the ToR and best practice the proponent must overcome the serious and significant limits in the methods by which knowledge of our people was gathered. It must also overcome the failure to consider our culture and the impacts of the project on our culture.

Accordingly, the proponent must consult with us to identify, among other things, our cultural and social values, the direct and cumulative impacts of the project on our cultural and social values, and strategies to avoid, minimise or mitigate these impacts. In so doing, the proponent must take into account the very strong linkage in our culture between environmental, economic, social and cultural impacts. The proponent must also ensure that it respects our internal systems of representation and decision-making when consulting with us.

The proponent must revise the Draft EIS to take into account the results of this consultation.

In addition, the proponent must commit to ongoing consultation with our people, including by ensuring we are identified in the Stakeholder Communication Strategy.

Please refer to response to issue 45.001.

Submitter Issue Number 45.006

Section 3.7 of the Terms of Reference sets out requirements for consultation, which include preparation of a Public Consultation Report. This report is to include a list of stakeholders. Stakeholders are to include the affected parties (as defined by the Environmental Protection Act 1994). Section 38 of the Environmental Protection Act 1994 lists both registered native title claimants and representatives Aboriginal/Torres Strait Islander bodies as affected parties. This indicates that the coordinator-general intended that we be consulted in relation to this project's impacts. This has not occurred. Furthermore, under international law, States have a duty to consult with Indigenous peoples in good faith about resource exploitation on their traditional lands, and Indigenous peoples have the right to be consulted in good faith. This consultation obligation is expressed in the United Nations Declaration on the Rights of Indigenous Peoples (see especially Article 32), to which Australia has given its support:

States should consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.

The consultation obligation is also grounded in core human rights treaties of the United Nations, including the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, and the Convention on the Elimination of All Forms of Racial Discrimination (all of which Australia is party to).

(Submission issue continued in next row)

Please refer to response to issue 45.001.

Submitter Issue Number 45.007

(Issue continued from previous row)

There are many factors to contribute to proper consultation. Among other matters, where a measure will affect a particular Indigenous community, such as resource extraction on their traditional lands, consultation procedures that focus on the interests of, and engagement with, those affected communities is required. Effective consultation must respect the systems of representation and decision-making of Indigenous peoples, and allow Indigenous peoples sufficient time to engage in their own decision-making processes and participate in decision-making in a manner consistent with their cultural and social practices. A State cannot avoid its duty to consult with affected indigenous peoples through delegation to a private company; it remains responsible for ensuring adequate consultation has been carried out. Direct negotiations between companies and indigenous peoples must meet the same standards governing State consultations.

As described above, the proponent has failed to engage in consultations with our people in relation to this project. Instead, the findings in the Socio-Economic Impact Assessment Report (Appendix N to the Draft EIS) rely on consultations with the small number of landowners in the area to conclude that there is no Indigenous use of the project area. There has been no consultation that focuses on engagement with us as affected Indigenous peoples, and we have been denied the opportunity to participate in the assessment of the impacts of this project. Accordingly, the proponent has denied us our right to be consulted in (wording missing from submission received- submittor notified by

OCG and offered to resubmit)
Prior to finalisation of the EIS, the proponent must engage in good faith consultation with us that complies with the requirements of international law in relation to the direct and cumulative impacts of the project on our culture, society, lands, and waters. The proponent must use the results of this consultation to revise the Draft EIS.

Please refer to response to issue 45.001.

Submitter Issue Number 45.008
As indigenous peoples, under international law we have the right to enjoy our culture, to maintain and strengthen our relationship with our traditional lands and waters, to uphold our responsibilities to future generations in this regard, and to have our culture protected. These rights are recognised by the United Nations Declaration on the Rights of Indigenous Peoples (Articles 8, 11, 12, 13, 31), the Universal Declaration on Human Rights (Article 27(1)), the International Covenant on Civil and Political Rights (Article 27(1)), and the International Covenant on Economic, Social and Cultural Rights (Article 15(1)(a)). These rights have been recognised by the UN Committed on Economic, Social and Cultural Rights and other international human rights bodies as an integral part of the human rights of Indigenous peoples.
The direct and cumulative impacts of this project will destroy our culture, in violation of our right to culture protected under international law. As described above, our land and everything on and in it has significance to us, is sacred to us, and we are connected to it. Our lands and waters are our culture. If this mine proceeds, it will cut huge open pits in our land, and include significant associated infrastructure. It will forever destroy vast swathes of our land, and is likely to devastate sites, objects, plants and animals that are of particular significance to us.
The impacts of the mine on our culture, and the potential violation of our internationally protected right to culture, are not addressed in the Draft EIS. This is despite the ToR requiring assessment of the project's impacts on Indigenous peoples and our cultural heritage (sections 5.11, 6), and requiring identification of species of cultural significance and involvement of Indigenous peoples in surveys to identify such species (section 5.3).
Prior to finalisation of the EIS, the proponent must consult with us to identify how the direct and cumulative impacts of the project will impact our culture and our internationally protected cultural rights, and must propose strategies to avoid, minimise or mitigate the impacts of the project on our culture. It must also involve us in surveys of our lands to identify animals, plants, sites and objects and landscape connections of cultural significance. It must use the resulting findings to revise the Draft EIS.

Please refer to response to issue 45.001.

Submitter Issue Number 45.009
Section 5.11.1 of the ToR requires preparation of a Cultural Heritage Management Plan ("CHMP"), which should be initiated during the EIS process. If the CHMP has not been approved when the EIS is submitted to the Coordinator-General, "details of the proposed steps and timeframes for finalising the CHMP must be provided.

Although the Draft EIS refers to the need for a CHMP and states that "the proponent has put in place with its consultant the process to initiate a CHMP," it does not provide any further details or identify the proposed steps and timeframes for finalising the CHMP (see Section 20, pages 1-2). In addition, our people have not yet been contacted through any proper channel by the proponent or the proponent's representative in relation to a CHMP" or other wording as relevant and accurate.
The proponent must commence preparation of a CHMP, including by formally negotiating with us about the development of the CHMP, and must amend the EIS to identify any issues in the negotiations and include details of proposed steps and timeframes for finalising the CHMP.

Please refer to response to issue 45.001.

Submitter Issue Number 45.010
Section 5.11.2 of the ToR requires that the EIS "identify areas covered by applications for native title claims…, providing boundary descriptions of native title representative body(ies), and whether it is necessary to notify the representative body(ies) or if there is evidence that native title does not exist. The EIS must also "identify the potential for native title rights and interests likely to be impacted upon by the project and the potential for managing those impacts by an Indigenous land use agreement or other native title compliance outcomes." The Draft EIS fails to address this requirement. At Section 5, page 7, it simply states that the project site includes land that may be subject to native title and is within our registered native title claim, and that "[t]he proponent will negotiate with the Wangan and Jagalingou People … in accordance with the requirements of the Native Title Act 1993." It does not even identify how much of the project will fall within our native title claim.
Accordingly, the Draft EIS fails to identify the potential for our native title rights and interests to be impacted, and does not address whether those impacts can be managed through the native title processes.
Prior to finalisation of the EIS, to comply with the specific requirements of the ToR, the proponent must revise the Draft EIS, including by identifying how our native title rights and interests will be impacted by the project and whether those impacts can be managed through the native title processes. In so doing, the proponent should consult with us to identify our views on the potential for managing the project's impacts on our native title rights and interests through native title processes.

Please refer to response to issue 45.001.

Submitter Issue Number 45.011
Section 5.2.1 of the ToR requires the EIS to describe the existing land uses in the area, the potential changes to those land uses that will result from the project including the impact on human activities in the area, and strategies to mitigate such impacts.
The Draft EIS fails to comply with these requirements of the ToR, because it does not address Indigenous use of the area, does not identify how the project will impact Indigenous use of the area, and does not identify strategies to mitigate such impacts (see Section 5).
Instead, Appendix N to the Draft EIS (Socio-Economic Impact Assessment Report) relies on

statements of a very small number of non-Indigenous landowners, most of whom do not reside at the project area, to conclude that "there is no contemporary use of the project site" by Indigenous peoples (pages 18, 46, 101, 102). These landowners cannot and do not speak for us, and we were never consulted about our use of the project area or the impacts that the project will cause to our use of the area. In any event, such a conclusion represents a failure to understand that, as Indigenous peoples, we use our traditional lands as the focal point of our spiritual and cultural lives – our lands are where we come from and they teach us who we are and how we should live– even when we are not present on the land.

While contemporary land use has been limited by tenure exclusion and historical dispersal of our people, our connection to country remains and we intend to exercise our rights in the future as our native title claim comes to fruition. The outcome of this EIS process and any mine approval will affect the ability of current and future Wangan & Jagalingou people to have an ongoing relationship with our ancestral lands arising from our intrinsic rights in country.

The project will harm this use. In our culture, the land and everything on and in it has a place and is connected to our law and culture, and we use our traditional lands to practice our culture. If this mine proceeds, it will destroy vast swathes of our land and everything on it, and we will be unable to use our land to practice our culture. By cutting open pits in our traditional lands, the project will change the topography, and in so doing will destroy our songlines, which describe the path through the landscape of our Dreaming totems and tell us how to move through our lands. We will never again be able to use the land to practice our culture. This matter should have been assessed in the Draft EIS.

Prior to finalisation of the EIS, to comply with the specific requirements of the ToR, the proponent must revise the Draft EIS including by identifying how our people intend to use the project area, how the project will impact that use, and how those impacts will be mitigated. In making this revision, the proponent must consult with and engage us to understand our use of the project area.

Please refer to response to issue 45.001.

Submitter Issue Number 45.012

Section 5.3 of the ToR requires a description of the nature conservation values that may be affected by the project and requires the proponent to, "[w]herever possible, seek the involvement of the local Indigenous community in conducting field observations and survey activities, to identify the traditional and contemporary Indigenous uses of species." In addition, section 5.3.1 of the ToR requires identification of sites that contain populations of "species of special cultural significance," and section 5.3.2 requires identification of any plant communities of cultural significance. The Draft EIS must identify measures to avoid, minimise or mitigate the impact of the project of such species.

The Draft EIS does not comply with these requirements of the ToR. First, our people were not involved in any field observations or survey activities or in identifying our use of species. Second, the Draft EIS states that "[n]o plant communities of cultural … significance" have been recorded on the project site (Section 9, page 7). Instead, the Draft EIS simply states that there "are no local Indigenous communities located near the project site" but that "extensive consultation will be undertaken with Indigenous stakeholders as part of the development of the Cultural Heritage Management Plan" (Section 30, page 37).

It is completely inaccurate to state that there is no flora or fauna of cultural significance on the project area. In our culture, the land and everything on and in it has a special place and is connected to our law and customs. Each member of our people has a specific animal and plant totem, which represent the original form of an animal or plant as it was in the dreaming period, and many places on our lands are associated with our dreaming totems. We cannot overstate the significance of our totems to us: they protect and maintain our social order, we cannot kill them, and they inform our land interests and decision-making.
(Submission issue continued on next row)

Please refer to response to issue 45.001.

Submitter Issue Number 45.013
(Issue continued from previous row)
The project involves clearing large amounts of native vegetation, which means it is likely to affect some matters of cultural significance. In addition, we note that the species listed under the EPBC Act that may be affected by the project include –
Lizards -- Yakka Skink; Ornamental Snake
Birds -- Magpie Goose; Fork-tailed Swift ; Cattle Egret ; Eastern Great Egret ; Red Goshawk : Latham's Snipe ; Squatter Pigeon (southern subspecies) ; Whitebellied Sea-Eagle ; Rainbow Bee-eater ; Star Finch (eastern) ; Black-throated Finch (white-rumped subspecies) : Australian Painted Snipe
Mammals -- Greater Bilby ; Koala
The threatened Flora Species on the Queensland Wildlife Online Database include – Salt Pipwort ; Blue Devil ; Waxy Cabbage Palm
It is also incorrect to state that there is no Indigenous community located near the project site. Members of our people, who are the Indigenous traditional owners of the project area, reside in the region including Emerald and Clermont.
In any event, such a statement represents a failure to understand that, as Indigenous peoples, our land and everything on and in it has significance to us, whether or not we reside locally. Further, as the proponent is aware that we are the traditional owners and registered native title claimants, it should have complied with section 5.3 of the ToR and involved us in identification of species that we use and/or that have cultural significance to us.
To comply with the specific requirements of the ToR, prior to finalisation of the EIS the proponent must conduct field observations and survey activities with our involvement to identify our use of species, it must engage with us to identify species of special cultural significance, and it must identify measures to avoid, minimise or mitigate the impact of the project on such species.

Please refer to response to issue 45.001.

Submitter Issue Number 45.014
Section 5.4 of the ToR requires the EIS to describe the existing environmental values of water that may be affected by the project, and assess the project's potential impacts on water resource environmental values. This must include an assessment of how the project will change the site and

regional water balances, including the usage of the surface water and aquifers. The EIS must also assess the cumulative impacts of this project with other existing and planned developments in the region, and propose avoidance, mitigation or remediation measures.
Our people use water in the area of the proposed project for a number of purposes, including for ceremonial purposes and to practise our culture. We are very concerned about the impact of this project on water resources in the region. One of our most sacred places is Doongmabulla Springs, located only 22 kilometres south of the mining area. We hold Doongmabulla Springs sacred as the starting point of our life. It is here that our dreaming totem, the *Mundunjudra* (also known as the Rainbow Serpent) travelled to form the shape of our land.
The Draft EIS has failed to acknowledge the vital cultural importance of Doongmabulla Springs, stating instead that the springs "could support significant cultural and environmental values" (Section 12, page 11).
(submission issue continued next row)

Please refer to response to issue 45.001.

Submitter Issue Number 45.015
(Issue continued from previous row)
In addition, we are particularly concerned that the Draft EIS has not accurately characterised and assessed the impacts of this project on water resources, and has instead taken only a very cursory look at impacts to water resources. For example, although the EIS concludes predicts that the mine will not impact the Doongmabulla Springs, this is based on the statement that Clematis Sandstone is the source aquifer for the springs (see Appendix I to Draft EIS, page 38).
However, the source of the Doongmabulla Springs was a matter of significant dispute in the expert evidence adduced under oath in the recent Carmichael litigation in the Land Court of Queensland *(Adani Mining Pty Ltd v Land Services of Coast and Country Inc.).*
In relation to cumulative impacts, the Draft EIS indicates that this mine could add between 1 metre to 50 metre to the drawdown of water predicted for the Carmichael mine (Appendix I, page 40). Given that the expert evidence presented in the Carmichael litigation in the Land Court indicated that the Carmichael mine could result in the Doongmabulla Springs drying up, it is particularly troubling that the Draft EIS dismisses concerns about cumulative impacts on the springs by simply stating that "the springs are beyond any zone of cumulative influence," without adequately justifying this conclusion (Appendix I, page 40).
To comply with the requirements of the ToR, prior to the finalisation of the EIS, the proponent must revise the Draft EIS to adequately justify its conclusion whether or not there will be direct or cumulative impacts on the Doongmabulla Springs and other water resources in the area, taking into account the significant disputes between the experts in the Carmichael litigation about the source of the Doongmabulla Springs and taking into account the vital cultural significance to us of the Springs and other water resources in the region. In so doing, the proponent should consult with us in relation to water resources of significance to us.

Please refer to response to issue 45.001.

Submitter Issue Number 45.016

Section 5.2.2 of the ToR requires the EIS to detail the scenic and landscape values of the area, the potential impacts of the project on landscape character and visual qualities of the area, and measures to mitigate adverse impacts.

As described throughout this submission, the project area overlays our traditional lands and waters. Our lands and waters are our culture and despoiling them ruins our relationship to our lands – we are connected to them – and we use our lands and waters for cultural purposes. However, the visual assessment in Section 17 of the Draft EIS does not consider our people and our use of the land, and the impacts that the mine will have on our landscape values. It takes no account of an Indigenous perspective.

To comply with the specific requirements of section 5.2.2 of the ToR, prior to the finalisation of the EIS the proponent must revise Section 17 of the Draft EIS to consider the landscape and scenic value of the project area to our people as traditional owners, the cultural value we place on visual amenity, how the project will harm our visual amenity, and measures that may mitigate those adverse impacts. In making such a revision, the proponent should consult with us to identify our views on these matters.

Please refer to response to issue 45.001.

PROJECT CHINA STONE
RESPONSE TO DATSIP SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

63 DATSIP SUBMISSION

Submitter Issue Number 63.001
DATSIMA has reviewed the Draft Environmental Impact Statement (EIS) for the China Stone Coal project and offers the following comments in relation to the source of the workforce and employment opportunities in particular for Aboriginal and Torres Strait Islander peoples.
It is our understanding that the intention of the Stone Coal Project was to utilise a FIFO business model to resourcing staff. This position was derived in a time when the operating on a business model was to source the workforce from SE Queensland - Brisbane, Sunshine Coast, Gold Coast and Cairns on a Fly In, Fly Out (FIFO) basis and this was reflected in the previous EIS.
DATSIP requests that this position be reviewed and the EIS amended to reflect the shift in the labour market away from the 'boom' period in the Townsville and Mackay regions in favour of targeting employment opportunities for local Aboriginal and Torres Strait Islanders.

The proponent proposes to utilise a non-resident, long-distance commuting workforce due to the remote location of the project site, the condition of the surrounding regional road network and the size of the workforce required for the project. These workforce travel arrangements are necessary, predominantly due to the remote location of the project site. There is no 'local' host community, in contrast to many southern Galilee Basin and Bowen Basin mines and/or mining projects which are located within proximity of established communities such as Moranbah, Blackwater and Emerald. The nearest sizeable population base to the project is Charters Towers which is located approximately 285 km by road (approximately 3-4 hours) from the project site. It is, therefore, not feasible for workers to commute to work at the project site via road on a daily basis, and thus it is necessary for the project to have a non-resident, long-distance commuting workforce.

The Labour Market Study undertaken for the draft EIS assessed a worst case labour market scenario i.e. a tight labour market in the 'boom' period. To clarify, the draft EIS assessed potential home base locations not only from the SEQ and Cairns Regions, but also from Townsville, Mackay, Fitzroy and Wide Bay Regions. As stated in Section 4.4.1 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), it was acknowledged that there had been a significant downturn in the coal mining industry since the Labour Market Study was completed and labour (particularly with mining experience) was now more available. In order to account for these and any future changing labour market conditions, the proponent has committed to reviewing the project's Labour Market Study prior to the commencement of construction of the project. It is considered unnecessary to conduct further evaluation of recent changes in the labour market as part of the draft EIS as any softening of the labour market will have the effect of reducing potential impacts i.e. labour draw, real wage increases etc.

As stated in Section 4.4.1 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), the proponent is committed to considering recruitment from the nearest regional centres including Clermont and Charters Towers. This recruitment would consider any suitably, qualified and experienced candidates including Aboriginal and Torres Strait Islanders. The proponent has also committed to developing an Indigenous Participation Plan in consultation with DATSIP and a broader Training and Skilling Program which will include strategies aimed at increasing Indigenous participation on the project and training initiatives targeting Indigenous people (Section 7.2.2 and 7.2.4 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N)).

Submitter Issue Number 63.002
DATSIP understands that the local Industry peak body is making representation to the company operating China Stone regarding the capacity for a local workforce to meet the workforce needs for project and is seeking to ensure an appropriate level of local housing be available to support an influx of workers.

Noted.

PROJECT CHINA STONE
RESPONSE TO SUBMITTER NUMBER 64 SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

64 SUBMISSION

Submitter Issue Number 64.001

My name is Neil Angus from Dawson Vale Station and I am writing this letter to you in regards to The China Stone Project currently underway on Hyde Park Station, South of Charters Towers.

Firstly I would like to say it is not my intention to stop the mine; however I have some concerns in relation to the underground water supply on our property Bingeringo, which joins the eastern side of Hyde Park.

Bingeringo relies on underground stream water for the majority of its water supply. I am concerned that as the mine progresses, the quantity of water will slowly diminish, putting our business at great risk and under unnecessary stress. It is for the above reasons I ask your company for some sort of security such as a 'make good agreement' to be put in place in the off chance of the underground water supply being affected by the operating mine in the coming future.

I would very much appreciate if you could either get into contact with myself, or provide me with the relevant contact details in order to discuss a strategy that we could work collaboratively on.

MacMines will have a general make-good requirement for any bores that are impacted by the mine. This requirement will come from the Water Licence that Macmines will need to obtain once the project is approved and prior to the commencement of any mining. In addition to this general requirement, based on the approval requirements for the Carmichael Project, they will also be required to enter into make-good agreements with the owners of all potentially unduly affected water bores. These agreements are required to include the specific monitoring and make-good requirements for a specific bore or other arrangements agreed with the bore owner. The agreements are required to be in place at least 5 years prior to the time a bore is predicted to be impacted by the mine (by the latest version of the groundwater model at the time). Based on the draft Environmental Impact Statement assessment there are no bores predicted to be significantly impacted during the 50 year mine life and based on a conservative assessment there are a number of bores that could be impacted post mining after the mine is decommissioned. This would mean that make good agreements for these bores would need to be in place prior to mine closure, assuming the bores are still expected to be impacted at that time, considering the 50 years of monitoring data that would be available to update the draw down predictions at that time.

In addition to formal make good agreements, mining companies typically monitor the closest private bores to the mine site as part of the mine groundwater monitoring program, with the agreement of the landholder. This monitoring also provides a mechanism to detect any adverse impacts on bores during mining operations and triggering of the make-good requirement.

PROJECT CHINA STONE
RESPONSE TO DEPARTMENT OF COMMUNITIES SUBMISSION ON DRAFT EIS
for
MacMines Austasia Pty Ltd

65 DEPARTMENT OF COMMUNITIES SUBMISSION

Submitter Issue Number 65.001
DCCSDS commends the proponent on its commitment to making employment opportunities accessible to those groups traditionally under-represented in mining workforces; e.g. women, Aboriginal and Torres Strait Islander people and people with disability (p.18-16). The Proponent may also need to consider transport options within BIBO and FIFO to enable people with disability to access transport options en-route to the accommodation village and work facilities.

Noted. The proponent is an equal opportunity employer and recognises the issue raised in relation to ensuring appropriate transport options for people with a disability.

Submitter Issue Number 65.002
The Proponent is expecting to employ predominantly a non-resident long distance commuting workforce, and will re-evaluate the feasibility of bus-in/bus-out from Clermont and Charters Towers in order to increase the employment opportunities for residents in the Local Area. This is to be encouraged: there is definite interest in Mackay, Clermont and Charters Towers in being local/regional sources for labour, mining services, training of staff, procurement and infrastructure to support the development (pages 18-13 to 18-15).

Noted.

Submitter Issue Number 65.003
Peak operations employment at the China Stone Coal mine will be 3,391 workers. With the Carmichael Coal Mine which is intended to proceed in a similar timeframe but slightly ahead of China Stone, the combined non-residential workforce at peak will be 7,191 workers. With the South Galilee projects, the combined non-residential workforces number in excess of 14,000 workers. This is a lot of people – with families, they represent a probable population of some 30,000 to 40,000, spread across various communities from Cairns to South East Queensland. The possibility exists for a substantive percentage of these workers/families to be living in one location – e.g. Cairns or Wide Bay which currently have higher numbers of unemployed people, or Mackay/Townsville/Rockhampton if the current mining downturn persists until the commencement of these mines.

Noted.

Submitter Issue Number 65.004

The EIS is cognisant of this possible social impact (page 18-17): "Where significant project induced permanent resident population growth is identified, the Proponent will support the affected local government in responding to any demand generated by the population." The EIS does not state how to differentiate the impact of China Stone separate from other projects, nor how the support will be provided – which is understandable at the present time. The Coordinator-General may need to write into its report some way to substantiate and enforce this undertaking, and to share the provision of support to local government, given its cumulative nature across numerous projects.

It is anticipated the proponent will be able to determine potential project induced population growth in home base locations from human resources records of employee residential addresses. This will assist in informing impact management, where appropriate.

As the submitter correctly confirms, it is not currently possible to predict the impact of the project in home base locations or the way in which support will be provided, as this will be driven by the level and type of impacts. However, as stated in Section 6.2.4 of the draft EIS Socio-Economic Impact Assessment Report (Appendix N), the proponent has committed to monitoring potential impacts and engaging with local governments in the home base locations regarding project labour sourcing strategies in order to address potential impacts, should they arise.