

PROPOSED ROCKY HILL COAL MINE: SSD-5156

SUBMISSION BY THE BARRINGTON-GLOUCESTER-STROUD PRESERVATION ALLIANCE

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1 Overview

Introduction

The Barrington-Gloucester-Stroud Preservation Alliance (BGSPA) is an incorporated association of residents of the Gloucester Stroud Valley. It was established in 2006 in response to the announcement by several resource companies of planned developments that would result in the major expansion of coal mining and coal seam gas extraction in the valley. The objective of BGSPA is to preserve the rural character of the valley and to oppose developments that would damage that character.

Some BGSPA members participated (in a personal capacity) in the Working Group established by Gloucester Shire Council to review the information contained in the EIS and assist with the preparation of the Council's submission. The Council has developed a comprehensive submission to address its concerns and those of the local community. BGSPA welcomes and strongly supports the Council's submission, and the majority its recommendations and proposed conditions of consent.

In preparing this submission, BGSPA has focused on some matters that are of major concern to our members, and has aimed to avoid simply reiterating points that have been addressed in detail by the Council. There is nevertheless some overlap in parts of the respective submissions, however there are important differences in emphasis and in the detail of the discussion and recommendations presented.

BGSPA's Position

BGSPA is primarily concerned with the impacts the proposed Rocky Hill coal mine would have on local residents, the valley's essentially rural character, its natural environment and on other established industries including agriculture and tourism.

Having reviewed in detail the EIS, supporting consultants' reports and the advice of independent specialists, BGSPA has concluded that there would be significant negative social, economic and environmental impacts from the Rocky Hill project, and that those impacts greatly outweigh the limited benefits that might potentially accrue from the project.

Primarily for that reason, but also because of deficiencies in the EIS - including its failure to fully meet the Director General's Requirements – and lack of confidence that impacts of the project could be reduced to acceptable levels, BGSPA's view is that the project should not be approved.

Notwithstanding that position, we believe it is essential to set out what we consider to be critical issues to be addressed in conditions of consent in the event that the project is in fact approved.

We have attempted to deal with these matters in a constructive manner. Accordingly, we have provided detailed comments about specific issues and proposed alternative mitigations or recommended conditions of consent where appropriate. On some matters, we have suggested that the proponent be required to present additional information on certain critical aspects.

2 Mine Location

The development and operation of an open-cut coal mine at the location of the proposed Rocky Hill mine is an unsuitable land-use for that site.

Located within an area zoned for environmental conservation purposes, the proposed mine area is not (as its name implies) sited on a rocky hill –it is in fact on slightly undulating farmland that extends onto the floodplain of the Avon River.

Under the proposal set out in the EIS, the mine area would extend to within 1.2km of houses in the residential estates at the southern end of Gloucester.

Modelling presented in the EIS indicates that measures to mitigate the physical impacts of mining & associated activities can achieve compliance with relevant limiting criteria at all but a small number of homes – “privately owned receptors”. However community experience of the operation of the nearby Stratford mine since 1995 has demonstrated that intrusive impacts of such mining operations extend well beyond the area predicted by modelling. Prominent among those impacts are the effects of noise, vibration from blasting, and dust.

On the basis of the experience with the Stratford mine where, depending on operations, the intrusive noise “footprint” can extend some 4 or 5km from the mine, the noise footprint of the Rocky Hill mine could be expected to extend well into the main residential areas of Gloucester, with many receptors hearing mine-sourced noise for the first time.

If approved, the project would lead to a drop in the value of the many properties affected by noise, and would render the worst-affected of them essentially unsaleable. There is no compensation mechanism available to landowners – rural or residential – who find the value and saleability of their property greatly reduced as a consequence of their location near the mine.

In addition to the potential health impacts of noise and dust emissions from the mine, the physical and economic impacts of the mine would be of sufficient magnitude to have social impacts on Gloucester and its residents. As people would likely be forced to leave, albeit at significant financial loss because of reduced property values, the community that has been built around people who resided there because of shared values would be damaged or lost.

The cumulative impacts of mining in the valley would be compounded by the proposed concurrent development of the Stratford Extension Project, the Rocky Hill coal project and AGL’s coal seam gas project.

One of the community’s biggest concerns in this context is the impact on ground and surface water. As each of these projects falls within the Manning River catchment, the potential impacts of on ground and surface water extend beyond the Gloucester Valley. The downstream communities of the Manning Valley have a shared concern with local residents about those potential impacts.

BGSPA is greatly concerned about aspects of the proposed surface water management, and the potential impacts of the development on groundwater. However, as Gloucester Shire Council’s submission deals with those issues in some detail, that analysis is not duplicated in this submission. BGSPA endorses the Council’s comments and recommendations.

3 Future Stages of the Project

A basic shortcoming of the EIS is that it is confined to an analysis of Stage One of the Rocky Hill project. The proponent has undertaken extensive exploration in the Gloucester Valley in recent years and reportedly has identified significant coal reserves beyond the area that is the subject of the current application.

In addition, the proponent has purchased many properties in the valley, also extending well beyond the area immediately surrounding the location of the currently proposed Rocky Hill mine.

However there is no discussion in the EIS of the prospect of future extensions / expansion. The community is being asked to accept the development of a new mining complex without being presented the full picture. So that residents and other stakeholders can make informed judgments about the likely impacts the Rocky Hill development would have on them, greater transparency is required concerning the potential for the project to be extended - or other associated projects initiated in the area - following this project's conclusion.

The uncertainty caused by the piecemeal expansion of the nearby Stratford and Duralie mines was raised last year at a meeting with the Department's Director of Mining Projects, Mr David Kitto. Mr Kitto acknowledged the concerns and agreed that the practice should cease and that in future, Yancoal (owner of the Stratford Mine) would be required to present comprehensive development applications. The same should apply to this application from Gloucester Resources Ltd.

BGSPA acknowledges that only the immediate project can be the subject of this development application. However, it must be realistically set within a context that explains the proponent's future plans and the cumulative impacts of adjacent mining activity. We strongly hold the view that residents should not have to live with continuing uncertainty and that the EIS should go into some detail about issues such as the identified coal reserves and likely future mining projects.

It is important to note that this issue impacts on many aspects of the environmental assessment, including the mining operations plan, rehabilitation, noise and blasting impacts and biodiversity offsets.

Recommendation:

To assist the assessment of the project the applicant (GRL) should be required to provide supplementary information about possible future mining projects, and likely duration of mining and associated processing & handling activities associated with the Rocky Hill mine project and elsewhere within GRL's Gloucester Valley exploration licence areas. - The current application should not be determined until that information can be taken into account.

4 Socio-Economic Analysis

The socio-economic assessment for the project should clearly demonstrate to decision makers that the cost the local community must bear, in loss of amenity, damage to health and reduced financial values of properties, is justified by the benefit to the wider community, and why no other alternative is feasible. It has done neither.

The descriptions in the EIS of benefits that may accrue from the project appear to have been based on highly optimistic assumptions and have not had adequate regard to the entities – including local residents, the broader community and the natural environment – that would carry the burden of adverse impacts arising from the project.

Gloucester Shire Council commissioned an independent review of the Socio-Economic analysis presented in the EIS. We understand that a copy of the report of that review – which was undertaken by economic consultants *Economists at Large* – will be provided to the Department.

Highlighting the fact that the EIS does not include a cost-benefit analysis of the project, the independent review concluded that the information provided by the proponent does not present a strong economic case for the project. Economists at Large found that the benefits of the project as claimed by the proponent and its consultants seem heavily overstated – a view that concurs with that of BGSPA.

In terms of wider economic benefits, Economists at Large calculated that royalties to the State would amount to a present value of \$59.5m – which is vastly less than the figure of \$186m claimed by the proponent.

Similarly, in relation to the important issue of local employment, the review noted that the Rocky Hill development would lead to a loss of jobs in other industries due to factors such as crowding out in the labour market, reduced quantity of agricultural land and decline in tourism and “tree-change” residents. Taking that effect into account, Economists at Large found that the net employment effect of the project for Gloucester residents would be an increase of only fifteen to thirty jobs.

(Exacerbating the loss of jobs in other industries is the already high levels of loss of experienced staff and apprentices from small local businesses to higher paid positions in the existing mines).

These and other instances of apparent over-statement of the potential benefits of the project reinforce our view that if adequate account is taken of the adverse social, economic and environmental impacts of the project, it is clear that the costs outweigh the benefits.

In balancing the potential economic and social benefits of the project with all relevant matters including the likelihood of unacceptable impacts on residents, the community and the environment, the claimed benefits must, in light of the independent review undertaken by Economists at Large, be heavily discounted.

Recommendation:

In the absence of a cost-benefit analysis supporting claimed net-benefits, and consistent with the finding of the independent review that adverse social, economic and environmental impacts of the project outweigh the potential benefits, the project should not be approved.

5 Direct Impact Issues

BGSPA's view is that the EIS is deficient in that it has had inadequate regard for the experience of mining at Stratford, particularly in the modelling of impacts such as noise emissions and the effectiveness of mitigation measures, leading to underestimation of impacts of the project.

Comparison with the actual impacts of the Stratford mine is valid because of its closeness to the Rocky Hill site; its proximity to residential clusters; its location in the same valley and in similar topography; its similar scale; its use of similar mining technology; and its operation under essentially the same meteorological conditions.

Comments on several of the principal direct impacts that would result from development and operation of the mine are provided below. With respect to each of these, BGSP believes that on the basis of information provided in the EIS, and the experience of the Stratford operations, no confident conclusion can be drawn that the impacts will be acceptable in practice.

Noise and Blasting

If start-up activities that commence at 6am are included, the proposed mining operational hours would be 6am - 4am. That is, the proposal is essentially a round-the-clock operation. It is asserted that there would be no mining activities *per se* between 4am and 7am, but that short period would provide only token respite for residents that may have experienced intrusive noise through the night.

The proposal for 24-hour mining operations is strongly opposed within the community on the basis of predicted effects, current experience of noise from existing mining operations, and past experience of 24-hour mining that was discontinued following completion of mining in the Stratford main pit.

Gloucester Shire Council's policy is that mining operations within the Shire – whether at Stratford or Rocky Hill – must be restricted to the hours of 7.00am - 6.00pm.

BGSPA strongly supports that position.

The proponent's view evidently is that restricting mining operations to daytime hours is unwarranted. However the Director General's Requirements stipulate that the EIS must provide detailed information as to why other and further mitigation measures cannot be taken. This requirement has not been met in relation to the hours of operation.

If approved, the project would greatly affect the amenity of many more properties than has been indicated.

The EIS predicts that only 12 privately owned receptors would, at various stages of the project, experience operational noise above the PSN criteria, however a further 62 privately owned receptors are predicted to experience noise at different stages of the project that would be equal to or within 1dB(A) of the proposed noise limits. (It should be noted that even a small margin of error in the predictive modelling would mean that the number of affected receptors could be much higher still).

Taking into account annoying noise characteristics such as low frequency components and the effect of meteorological conditions, the noise impacts on those receptors are likely to be

significant, intrusive and reduce the amenity of their properties, yet those receptors would not have access to any at-receiver mitigation, and would not be entitled to any acquisition-on-request provision.

For those receptors acknowledged to be within the noise management or noise affectation zones, the identification of which of the several possible measures would be taken to address the noise affecting them must not be left to the preference of GRL. It must be up to the affected property owner to determine which of the options they want to have actioned.

There are two separate aspects to be considered in assessing the level of protection that would be afforded to residents affected by noise from the mine:

- Whether the project would lead to noise being experienced by residents that would exceed the noise criteria set using the approach generally applied by the Department of Planning; and
- Whether compliance with those noise criteria would avoid noise impacts on residents that a reasonable person experiencing that noise would find to be intrusive and injurious to their health and to the amenity of their property.

The answer to the first may be *no*, subject to implementation of a range of mitigation measures. However on the basis of experience with analogous projects in the local, regional and State context, the answer to the second question is almost certainly also *no*.

Much is made of the *stringency* of approval conditions applied to developments such as this, but the assessment and approval process pays insufficient attention to the question of their *adequacy*.

The *inadequacy* of criteria expected (and assumed) to limit noise impacts to acceptable levels is evidenced by complaints and other reports from affected receptors in areas near similar mining operations across NSW.

The expectation that no better environmental performance than that set out in the limiting criteria would be required of the project conflicts with the intent of the DG's requirement that other potential mitigations be identified and assessed.

It is apparent that other mitigations – such as limiting mining operations to day-time hours – exist, but no detail on those other and further mitigations has been provided, and no case made as to why they could not reasonably be expected to be applied.

The proponent's position presumably is that it would not be reasonable to expect the project to reduce impacts beyond the level required through application of the general approach to setting PSNLs and associated criteria – even if such better outcomes are achievable and would significantly reduce the adverse impacts on affected residents.

The predicted noise impacts have been calculated on a “10% exceedance basis”, and the consultant's report concludes that “it is possible to achieve the stringent criteria that are required for this project, on a 10% exceedance basis, at most receptors”. - That 10% exceedance is *additional* to the exceedances that would occur under unfavourable meteorological conditions such as the temperature inversions commonly experienced during winter.

No justification has been provided for a 10% exceedance allowance and that approach must be rejected because of its serious implications for noise-affected residences.

Despite the evidence based on eighteen years experience of the nearby mining operations at Stratford that low-frequency noise is a problem despite general compliance with the PSNL criteria, the proponent's noise consultants assert that "tonal, impulsive and low-frequency noise are unlikely to be a feature of the project given the management measures proposed, and hence no additional mitigation measures are required for those noise sources".

No evidence is provided in support of that view, and the proposal includes no measures specifically directed at minimising the low frequency component of the noise spectra.

In the absence of a comprehensive assessment of noise characteristics that would be generated by the project including presentation of C-weighted data and the noise signature of the fixed and mobile plant to be used there can be no confidence that intrusive low frequency noise would not be experienced well beyond the Rocky Hill mine area.

It is essential that all practicable measures be taken to reduce, at source, the low frequency component of noise created as a result of the mining and associated activities.

In relation to blasting, the EIS proposes that a ground vibration criterion of 5mm/s Peak Vector Sum vibration be applied to this project, and maintains that blasts would be "conservatively designed" so that the levels of air-blast pressure and ground vibration would meet compliance criteria at all potentially-affected privately owned receptors. However this does not mean that those residences will be unaffected by noise and vibration effects from blasting.

Australian Standard (AS2187: Part 2, 2006) recommends that a lower velocity of 2mm/s PVS be considered as the long term regulatory goal for the control of ground vibration. As the Rocky Hill mine would be a "greenfield development" which would lead to blast-induced vibration impacts at properties not currently affected by blasting, the 2mm/s criterion should be applied to this project.

This is particularly important if the intent of the criteria is the minimisation of annoyance and discomfort at noise sensitive sites (including residences) caused by blasting.

Recommendations:

Mining operations and earthmoving associated with mining and/or rehabilitation (including start-up activities) must not occur outside the hours of 7.00am to 6.00pm on any day.

Rail loading operations must not occur outside the hours of 7.00am to 6.00pm on any day.

All noise sources associated with the project must be assessed to identify noise characteristics of tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content. Both A- and C- weightings must be used to determine the low-frequency components.

Where analysis of noise sources identifies any of the characteristics listed above, the correction factors listed in the INP must be added to the predicted noise levels at the receiver before comparison with the criteria.

The method to be used to assess the extent of low frequency noise must be that set out in the INP, ie a 5dB correction is to be applied in the event of a >15dB difference between C and A weighted noise levels.

C-weighted measurements must be included in all noise monitoring. Where those measurements indicate a significant low-frequency component in noise at a receiver, the correction factors listed in the INP must be added to the measured noise levels at the receiver before comparison with the criteria.

All reasonable and feasible measures must be implemented to minimise, at source, the low-frequency component of noise created by fixed and mobile plant.

A 10% exceedance allowance should not form the basis of relevant conditions of consent and at-receiver mitigations must be offered at all private residences where the PSNL is exceeded.

The identification of which of the several possible measures would be taken to address noise affecting receptors in the noise management and acquisition zones must not be left to the preference of GRL. It must be up to the affected property owner to determine which of the options they want to have actioned.

Where the predicted noise levels at a receiver exceed the PSNL, the intrusive noise criteria must nevertheless be set at the PSNL – not at the predicted level.

The noise management plan for the expanded operation must include real-time noise monitoring that includes action triggers requiring immediate action to modify operations when overall noise levels are high or noise characteristics are likely to cause high levels of perceived noise nuisance at privately owned receptors.

The real-time noise monitoring sites must be located appropriately to enable full usage of the data recorded 24 hours per day.

The real-time noise monitoring must include C-weighted measurements to measure the low-frequency component of the noise profile.

Data from the real-time noise monitoring must supplement the quarterly attended noise monitoring used to assess compliance with noise criteria.

The real-time monitoring data must be used to inform the investigation of complaints made about noise from the mine operations.

Blasting must be confined to daytime hours and within a specified range of time to provide predictability.

Blast size must not exceed 414kg MIC.

Limits of 1 blast per day, and 3 blasts per week (averaged monthly) must apply.

Health

The effects of noise on individuals extend beyond simple annoyance and have well-documented impacts on health:

Auditory effects can include exacerbation of existing hearing difficulties and interference with communication.

Non-auditory effects can include frequent wakening, sleep deprivation, reduced sleep quality, stress effects from noise whilst asleep, and stress from annoyance during waking hours. Sleep impairment may lead to a variety of health problems including disturbances of emotional, behavioural and cognitive (learning, memory, concentration, judgement and decision making) functions. Cardiovascular stress effects include hypertension and increased risk of atherosclerosis leading to more strokes and heart attacks. The elderly have a cardiovascular system more sensitive to stress effects from noise. In this context the high median age of Gloucester residents (over 50 years) is a factor that indicates a high sensitivity to increases in environmental noise.

There is no acknowledgement in the EIS of the particular difficulties of those with existing noise sensitivity and/or hearing problems, nor of the special problems that would likely be experienced by those used to very quiet rural evening and night-time sound levels.

People at increased risk of health impacts from noise include those living closest to the noise sources (mine & rail loader), those with already damaged hearing and those with inherent noise sensitivity.

Forty nine residents living within 3 km of the proposed mine or rail loading facility have been assessed to date as part of a program of lung function testing being conducted by trained volunteer nurses and supported by BGSPA. This assessment includes questions about participants' hearing and sleep. Of the 49 people tested, 11 already have hearing problems and 8 have sleep problems. Those residents are at high risk of experiencing above average impacts from noise created by the proposed mining operations.

Waking from sleep usually occurs with sudden increases in background noise of 15dB(A). Background noise levels for receptors with evening and night-time readings below 30dB(A) are treated in the EIS as having a background noise of 30dB(A). Although the adoption of 30dB(A) as the default background noise level is consistent with the Industrial Noise Policy (INP) it is significant that Rating Background Noise Levels (RBLs) during the evening and night were below the adopted level of 30dB(A) at all but one of the 16 monitoring sites used for measurement of the ambient noise environment.

Physiological responses to noise vary with the characteristics of the noise as well as the sound pressure levels (loudness), but the EIS pays scant attention to this.

WHO Guidelines for Community Noise note in s3.4 that "sources with low frequency components require special attention. Disturbances may occur even if the sound pressure level during exposure is below 30dBA." And in s3.9 "The evidence on low frequency noise is sufficiently strong to warrant immediate concern. Health effects due to low frequency components in noise are estimated to be more severe than for community noise in general [see Berglund et al 1996].

The consequence of the adoption of the default background noise level of 30dB(A) and the lack of attention to at-receiver noise characteristics is that the number of residents that would likely experience sleep disruption and other health impacts due to noise from the Rocky Hill project is significantly understated in the EIS.

The second major vector for health impacts arising from mining operations is air pollution by particulate matter.

The adverse health impacts from air pollution can include impaired lung and other organ function and premature mortality.

Coal pollutants are known to affect all major body organ systems and contribute to four of the five leading causes of death - heart disease, cancer, stroke and chronic lower respiratory disease.

There are clear indications from the international health research that serious health impacts occur in communities associated with coal mining (see for example Colagiuri et al 2012).

Adults in coal mining communities have been found to have:

- Higher rates of death from lung cancer, chronic heart, respiratory and kidney diseases;
- Higher rates of cardiopulmonary disease, chronic obstructive pulmonary disease, and other lung diseases, hypertension, kidney disease, heart attack and
- stroke and asthma; and
- Poorer self-rated health and reduced quality of life.

Children and infants in coal mining communities have been found to have:

- Increased respiratory symptoms including wheeze, cough and absence from school;
- High blood levels of heavy metals such as lead and cadmium;
- Higher incidence of neural tube defects, a high prevalence of any birth defect and a greater chance of being of low birth-weight.

The critical importance of PM_{2.5} particles as a contributory factor in the etiology of these conditions was recognised twenty years ago and its measurement became mandatory in the US more than 10 years ago. However it is still not codified in planning practice in NSW.

PM 2.5 levels would increase in the vicinity of the Rocky Hill mine due to diesel emissions from the mining fleet as well as in dust from activities such as blasting.

While existing activities including farming in the proposed mine area are no doubt significant sources of airborne fine particulates, the effects on human health from PM 2.5 particles are determined not only by their concentration, but also their composition.

The EIS presents no information on the chemical composition of PM 2.5 particles likely to be created by the project. However it is expected that diesel combustion products will be a principal source of the PM_{2.5} 'incendiary' particles produced by the project, and diesel combustion products are recognised as a Group 1 carcinogen.

It is essential that if consent is to be contemplated, adequate baseline health monitoring of all those within the projected area of air pollution impact needs to be undertaken. Monitoring needs to occur at spatial and temporal resolutions that are meaningful for

sensitive receptors. For example, air pollution readings averaged over a 24 hour period obscure shorter lived peak levels which are known to precipitate health impacts.

Recommendations:

A baseline measurement must be undertaken of noise tolerance, sleep quality and hearing problems experienced by residents predicted to experience mine-generated noise at or above the level of PSNL minus 1dB(A).

Residents at high risk of experiencing above average impacts from noise created by the proposed mining operations – including those with existing hearing or sleep disturbance problems - should be offered regular monitoring and education about any protective strategies.

A comprehensive health audit of residents living within 5km of the proposal must be undertaken prior to commencement of the project. Particular attention must be paid to age groups that are at heightened risk of health damage, including young people and those aged over fifty.

A program of ongoing monitoring of those residents must be implemented, and a compensation assessment system for any with suspected mine-related health damage must be established.

Dust monitoring must including PM2.5 measurements and the results of that monitoring must be provided regularly for discussion at the CCC and made publicly available on the GRL website.

The annual average PM10 level should be set at 20 microgm/cubic metre, and the annual average annual PM2.5 levels should be set at 6 microgm/cubic metre.

All reasonable and feasible measures must be undertaken to minimise dust emission from the mine and associated activities, including watering or veneering of haul roads, and covering of rail wagons used for transport of coal – including empty wagons when they are moving along the rail corridor.

Stringent diesel emission standards must be applied to all non-road vehicles including mining plant, and exhaust filters fitted to minimise the particulate exhaust emissions.

Water quality in domestic rainwater tanks at private residences within 4km of the mine area must be monitored and tested regularly for the presence of heavy metals and hydrocarbons. Water filters must be supplied to residences where the monitoring detects elevated levels of those pollutants.

Flora, Fauna and Biodiversity Offsets

The incremental expansion of mining operations in the Gloucester Valley has also caused a progressive whittling away and increasing fragmentation of native vegetation. The resultant cumulative impacts on native fauna and flora are significant and have not been adequately recognised.

The effectiveness of attempting to mitigate these impacts by designating other areas as environmental offsets is highly questionable. Existing areas of native vegetation are likely to be “fully occupied” and unable to support the displaced populations.

Although the proposed area of ground disturbance in the proposed project area is largely confined to cleared pasture land, in places the project would have significant consequences for some elements of the local terrestrial ecology. Those affects could be reduced by the application of further avoidance, minimisation and mitigation measures that would be reasonably achievable.

It is evident from the report prepared by Ecotone Ecological Consultants that despite the proposed mitigation measures there is a very high risk that clearance and other disturbance associated with the project would lead to the complete loss of the small populations of the threatened Grey-crowned babbler and squirrel gliders that currently occupy habitat in the proposed mine area. - It is critical to note that there is no currently available habitat suitable for the Grey-crowned babbler in the proposed Biodiversity Offset Area.

In relation to the Squirrel gliders, the fauna surveys conducted for the proponent have failed to establish the extent of the local population, including the number of individuals in the area that would be removed as part of the Rocky Hill project. (The proposed project would remove up to 15.8ha of potential foraging, sheltering and breeding habitat for the Squirrel glider).

Furthermore, it has not been established whether another threatened species – the Brush-tailed phascogale – is present on the site. If a local population is present it too would very likely be lost as a consequence of clearing for the project.

The gaps in knowledge of the threatened species of terrestrial fauna that would be adversely affected by the proposed project are such that it is not possible to adequately assess those effects or the adequacy of proposed mitigation.

In addition to the impact on fauna, the project would also have an adverse impact on remnant areas of a Vulnerable Ecological Community – Lower Hunter Valley Dry Rainforest. Some 4.3ha of the dry rainforest VEC, which is largely confined to narrow areas along small rocky gullies running down from the line of hills & ridges along the eastern edge of the project area, would be completely cleared under the proposed mine plan.

Notwithstanding the observation that larger areas of the VEC would be included in the Biodiversity Offset Area, the EPA’s requirement that as well as detailing the measures that would be put in place to avoid or minimise ecological impacts, the EIS must include details of alternatives considered, has not been met in relation to the clearance of the VEC outliers. No justification for the clearance, or evaluation of alternatives, has been presented.

Clearly the permanent clearance of the affected outliers of this VEC would be inconsistent with the objectives of the NSW Office of Environment and Heritage to assist conservation and recovery of this community. If they are completely cleared, then all of the other measures / objectives set out by the OEH are rendered pointless in relation to those remnants.

It is proposed in the EIS that a Biodiversity Management Plan would be prepared and implemented within twelve months of the receipt of development consent. That delay is unacceptable because of the potential deterioration of environmental values due to inappropriate management in the interim, and because of the need to have the plan operational prior to commencement of any land disturbance.

Similarly the proposal to delay the establishment of the Biodiversity Offset Area until the second year of operations is not justified and is unacceptable.

It is proposed in the EIS that the Biodiversity Offset Area would be subject to a Voluntary Conservation Agreement under the National Parks and Wildlife Act, however much of the area concerned lies within the area that is subject to Mining Lease Application 446.

That is not an acceptable situation because of the potential conflict between obligations that may be placed on the landowner under the NPW Act and rights that may be granted under the Mining Act in relation to land-use and other activities within the Offset Area.

As the provisions of the Mining Act prevail over land-use restrictions in other regulatory instruments such as VCAs, the protections provided under a VCA would be rendered ineffective for the part of the offset area that lies inside MLA 446.

Recommendations:

The Biodiversity Management Plan must be developed and implemented prior to commencement of ground disturbance and clearing.

As the proposed Biodiversity Offset Area contains extensive areas of the dry rainforest VEC which is fire-sensitive, an appropriate fire management plan must form a key part of the Biodiversity Management Plan.

Establishment of the Biodiversity Offset Area and implementation of appropriate management practices must occur prior to the commencement of ground disturbance and clearing because of the potential for that disturbance to impact terrestrial fauna.

If the Biodiversity Offset Area is assessed as having insufficient conservation values to meet criteria for a VCA, then the alternative covenanting arrangement adopted must include provisions no weaker than would have applied under a VCA.

Prior to commencement of any clearing of native vegetation inside the project area a more extensive fauna survey must be undertaken to establish whether a Brush-tailed phascogale population occurs there. If a population is found, additional measures to avoid and mitigate impacts on that species, including reduced clearing of habitat, must be identified and implemented.

To minimise the risk of vehicles hitting and killing fauna utilising the remnant vegetation along McKinleys Lane a speed limit of 40km/h must be applied to the mine area access road where it approaches and crosses McKinleys Lane and traffic-slowing measures such as placement of speed humps must be installed to ensure compliance with that speed limit.

If monitoring of the surviving populations of Grey-crowned babbler and Squirrel gliders in the project area indicates adverse impacts on those populations are occurring, additional measures must be identified for immediate application to reduce those impacts to levels that would not jeopardise those populations.

Should there be no large mature trees available for retention on both sides of the new mine access road where it crosses McKinleys Lane near the intersection with Waukivory Road, glider poles must be erected just outside the road alignment on each side to aid the movement of gliders across the road at a height that would avoid their being hit by vehicles.

The mine plan must be amended to avoid clearance of the dry rainforest VEC remnants.

The portion of the proposed Biodiversity Offset Area that lies within the area of MLA 446 must be excised from the MLA, or an alternative offset area identified.

Landscape, Lighting & Visual impacts

The Director-General's Requirements issued by DP&I identified "Visibility" as one of the key issues requiring assessment.

The site of the proposed is located at the northern end of the Gloucester Valley, an area widely recognised for its high quality scenery.

The Gloucester Valley's landscape reflects its rural heritage and underpins its tourism industry. An understanding of the Valley's heritage significance, including its scenic qualities, is crucial to understanding its social and economic base and the potential for impacts on scenic quality to undermine other economic activities in the Valley.

The scale of the proposed Rocky Hill project - including some 800ha of open cut mining, 40m high piles of overburden, an extensive conveyor across the floodplain and significant rail loading facilities - is such that it would have a major visual impact on the Gloucester Valley and would be likely to significantly erode the local landscape values. The Valley's special significance would be permanently lost and its local economy and lifestyle irreparably damaged. The damage that could be inflicted on the local economy may potentially far exceed any potential short-term benefits from the mine project.

The visual impact of the proposed development would be progressive throughout the life of the mine, but it is unlikely that there would be any period during the mine's operation when the activity would not be visually conspicuous.

Recent experience with visibility barriers and rehabilitated waste emplacements at both the Duralie and Stratford Coal mines has highlighted the very limited effectiveness of attempts to mitigate the visual impact of mining activities.

Visual barriers can be as scenically aberrant as the features they are trying to screen. Given their spatial and temporal scale, method of construction and location the visibility barriers proposed for the Rocky Hill mine are unlikely to significantly ameliorate the visual impact of the mine.

The creation of “tree tunnels” through the mass planting of native trees and shrubs along roadways, including major access routes, to shield views of the mine area is likely to simply substitute one visibility impact for another. These features are as alien to the Gloucester Valley as is the visual impact of mining.

The tree tunnel effect now mars much of the Hunter Valley’s scenery. It appears set to have a similar effect on Gloucester Valley’s scenic landscape qualities through establishment of visually impenetrable tunnels of trees and shrubs that block the views of mining operations, but also block views across the valley floor to the foothills and mountain ranges that contain the Gloucester Valley.

The impact and unsuitability of this approach is demonstrated along the section of the Bucketts Way immediately north of Craven where young plantings on the eastern side of the road already obscure the view across the valley.

The valley’s landscape significance depends on substantially open views. The landscape requires proper assessment with due weight given to important views and viewing corridors before screening plantings can be considered as a suitable mitigating procedure.

The EIS fails to provide a detailed assessment of the potential lighting impacts of the project on private landowners in the surrounding area and a detailed description of the measures that would be taken to minimise the impacts.

The proposed development will have an unacceptable impact in terms of light pollution in the Gloucester Valley, with ambient light from the proposal likely to be intrusive for residents of the Gloucester community who current experience uninterrupted night skies set in a rural landscape. Along with noise and dust, light pollution will be one of the most extensive mine-sourced impacts on residents who live in close proximity to the mine.

The assessment of potential lighting impacts is very limited and insufficient for potentially affected landowners to judge the likely impact on their properties. Similarly, the descriptions of the proposed mitigation measures are not adequate to provide confidence in their likely effectiveness.

Site illumination for mine operations, rail loading and maintenance is intended to illuminate the various work areas through the night time work shifts. Lighting is proposed to be fixed installation, mobile vehicular lighting and personal work lighting, conveyor lighting and coal train lighting. There is no provision stated for security lighting.

Residents of properties overlooking the mine or with views towards the mine will see direct light emitted throughout the night and/or the glow that typically accompanies night operations at industrial developments. The glow will be amplified by suspended particulate matter generated by mining activities themselves and by low cloud events which are a feature of the enclosed valley.

The assessment of potential light pollution is deficient as the frequency of such low cloud events and light propagating atmospheric conditions, which is an indispensable factor in making an informed assessment of light pollution impacts, has not been provided.

In proposing that mining operations would continue through the night subject to relevant noise criteria being met, the proponent has had no regard for the potential intrusiveness of light emissions at night. As a restriction of mining operations to daytime hours would mitigate the impacts of light pollution on the surrounding area, the Director General's requirement that all potential mitigations be identified and assessed has not been met.

As with other emissions from the operation such as noise, the impacts of lighting must be limited by criteria linked to the location of so-called "private receptors".

In addition to the impact on residents, lighting for night operations would also impact movement and foraging by nocturnal fauna in the adjoining habitats.

Recommendations

The proponent should be required to acquire, upon the request of the owner any property impacted by loss of scenic amenity or night time light pollution as a result of the development and operation of the Rocky Hill mine.

The proponent should be required to negotiate a 'compensation agreement' with residents who are adversely affected by light emissions or are impacted by loss of scenic amenity but do not wish to sell their property.

Where tree plantings are used as visibility barriers they should be of suitable placement and design, rather than relying on all-obscuring walls of trees along roadsides. This may involve placing selective screen plantings closer to the sites that need to be screened and designing plantings so that distance views and vistas are retained by way of viewing corridors and open unplanted sections.

To determine the affected receptors, the proponent should be required to provide mapping of the area that would be impacted by light from night operations and provide predictions of the increase in night time light (direct and indirect) that would be experienced across that area.

To minimise the effect of direct and indirect light nuisance on properties in proximity to the project area and adverse impacts on nocturnal fauna in adjacent habitats, the conditions of consent should preclude night-time mining operations.

If approval is given for night-time activity, the following conditions should apply:-

- *Lighting systems must be designed to world's best practice for light minimisation and to prevent direct light from leaving the mine working areas.*
- *Mitigation measures must include quantitative thresholds above which pre-specified management action is mandated. Mitigation measures shall allow for the prevention of the use of lighting in areas of persistent complaint until an appropriate ameliorative solution can be developed and implemented.*

- *Light management shall include a continuous automatic light monitoring stations*
- *representative of all reasonable direct viewing positions.*

6 Post-Consent Management and Monitoring

Community Consultative Committee Input

Post-consent management and monitoring would be guided by a number of plans including a Noise Management Plan, Biodiversity Management Plan, and a Rehabilitation Management Plan - all of which are yet to be prepared.

Those plans, and the monitoring reports produced in relation to them, would form the basis of compliance management for the mining operations.

As the Plans must reflect the conditions of consent that would be attached to the project approval, they cannot be finalised until after the application has been assessed, with the effect that there is no opportunity for comment on their adequacy during the public consultation phase of the project assessment.

This could be remedied to some extent through greater use of the potential for community comment and feedback through the Community Consultative Committee (CCC) mechanism.

Should the Rocky Hill project be approved, the conditions of consent should expressly require that draft management plans be provided to the CCC for comment prior to their being submitted for approval, and also expressly require that the CCC's comments be provided to the Department at the time the plans are submitted for approval.

To strengthen the capacity of the CCC's to contribute to that process, an annual contribution should be made by the proponent to Gloucester Shire Council to establish a fund that could be drawn on to obtain expert advice that would assist community and council members of the CCC to more effectively fulfill their role on the Committee.

A similar arrangement exists in relation to the existing Bowens Road North open cut at Stratford, although to be effective the annual contribution to the fund would need to be raised from \$2,000 to at least \$5,000 pa, and the fund should be cumulative.

Complaints Management Process

An effective complaints management process is an essential element of post-consent management and monitoring, however there is widespread dissatisfaction with the complaints management process in place at the mines currently operating in the Gloucester area – at Stratford and Duralie. The dissatisfaction stems not from lack of prompt initial response to complaints, but rather from the lack of an eventual outcome that identifies and addresses the subject of the complaint.

This inadequacy in the complaints management process could be avoided in relation to the Rocky Hill project (if approved) through including in the conditions of consent a requirement that all complaints be rigorously monitored and analysed, with the results of that analysis used to guide ongoing improvements in mitigation of impacts.

Adaptive Management

The EIS proposes that an adaptive approach be applied to management of impacts such as noise and for biodiversity management.

An adaptive management approach implies capacity to relax or tighten conditions on the basis of experience, but tightening is generally not considered to be an available option if it has cost implications that would change the basis on which the company's investment decisions were made.

Adaptive environmental management cannot be employed if there is no scope to adjust subsequent actions on the basis of observations and results.

For this reason, where any uncertainty exists about the level at which constraints such as noise criteria need to be set in order to minimise adverse impact on residents or the environment, the constraints should be set conservatively.

Recommendations:

A Community Consultative Committee must be established through a transparent process prior to the commencement of site establishment and construction. Community representatives on the CCC should include nominees of the principal community organisations as well as local residents and landowners.

An annual contribution should be made by the proponent to a fund that could be drawn on to obtain expert advice that would assist community and council members of the CCC in their role on the Committee. Authority to approve expenditure from the fund should rest with the General Manager of GSC, acting on the advice of the council and community members of the CCC. The fund should be cumulative, with the first annual contribution being set at \$7,000 and indexed to the CPI.

A Complaints Record including particulars of the complaint (time, nature, location), results of investigation, and response must be maintained, provided for discussion by the CCC and made publicly available on the GRL website.

To provide for stakeholder input, all draft management plans and revisions must be presented to the CCC for input prior to submission for approval. The CCC's comments must be provided to the Department when the draft plan is submitted for approval.

All management & monitoring plans must be made available on the GRL website.

Annual reviews of environmental management must be undertaken and a report prepared. The reviews must include reports on the implementation of each management & monitoring plan, and details and analysis of complaints received during over the reporting period. The reviews must be made publicly available on the GRL website.

To enable an adaptive management approach in ongoing environmental management programs, the initial consent criteria relating to environmental impacts such as intrusive noise levels, blasting and land clearance must be set conservatively.

The conditions of consent should require the systematic analysis of complaints to establish underlying patterns relating to factors such as location and specific mine site operations. The outcomes of that analysis should be provided quarterly to the CCC, included in the Annual Review of the environmental management (accompanied by a summary of the CCC comment on the analysis), and made publicly available on the GRL website.

7 Consolidated List of Recommendations

1. *To assist the assessment of the project the applicant (GRL) should be required to provide supplementary information about possible future mining projects, and likely duration of mining and associated processing & handling activities associated with the Rocky Hill mine project and elsewhere within GRL's Gloucester Valley exploration licence areas. - The current application should not be determined until that information can be taken into account.*
2. *In the absence of a cost-benefit analysis supporting claimed net-benefits, and consistent with the finding of the independent review that adverse social, economic and environmental impacts of the project outweigh the potential benefits, the project should not be approved.*
3. *Mining operations and earthmoving associated with mining and/or rehabilitation (including start-up activities) must not occur outside the hours of 7.00am to 6.00pm on any day.*
4. *Rail loading operations must not occur outside the hours of 7.00am to 6.00pm on any day.*
5. *All noise sources associated with the project must be assessed to identify noise characteristics of tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content. Both A- and C- weightings must be used to determine the low-frequency components.*
6. *Where analysis of noise sources identifies any of the characteristics listed above, the correction factors listed in the INP must be added to the predicted noise levels at the receiver before comparison with the criteria.*
7. *The method to be used to assess the extent of low frequency noise must be that set out in the INP, ie a 5dB correction is to be applied in the event of a >15dB difference between C and A weighted noise levels.*
8. *C-weighted measurements must be included in all noise monitoring. Where those measurements indicate a significant low-frequency component in noise at a receiver, the correction factors listed in the INP must be added to the measured noise levels at the receiver before comparison with the criteria.*
9. *All reasonable and feasible measures must be implemented to minimise, at source, the low-frequency component of noise created by fixed and mobile plant.*
10. *A 10% exceedance allowance should not form the basis of relevant conditions of consent and at-receiver mitigations must be offered at all private residences where the PSNL is exceeded.*

11. *The identification of which of the several possible measures would be taken to address noise affecting receptors in the noise management and acquisition zones must not be left to the preference of GRL. It must be up to the affected property owner to determine which of the options they want to have actioned.*
12. *Where the predicted noise levels at a receiver exceed the PSNL, the intrusive noise criteria must nevertheless be set at the PSNL – not at the predicted level.*
13. *The noise management plan for the expanded operation must include real-time noise monitoring that includes action triggers requiring immediate action to modify operations when overall noise levels are high or noise characteristics are likely to cause high levels of perceived noise nuisance at privately owned receptors.*
14. *The real-time noise monitoring sites must be located appropriately to enable full usage of the data recorded 24 hours per day.*
15. *The real-time noise monitoring must include C-weighted measurements to measure the low-frequency component of the noise profile.*
16. *Data from the real-time noise monitoring must supplement the quarterly attended noise monitoring used to assess compliance with noise criteria.*
17. *The real-time monitoring data must be used to inform the investigation of complaints made about noise from the mine operations.*
18. *Blasting must be confined to daytime hours and within a specified range of time to provide predictability.*
19. *Blast size must not exceed 414kg MIC.*
20. *Limits of 1 blast per day, and 3 blasts per week (averaged monthly) must apply.*
21. *Mining operations and earthmoving associated with mining and/or rehabilitation (including start-up activities) must not occur outside the hours of 7.00am to 6.00pm on any day.*
22. *Rail loading operations must not occur outside the hours of 7.00am to 6.00pm on any day.*
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25. *The method to be used to assess the extent of low frequency noise must be that set out in the INP, ie a 5dB correction is to be applied in the event of a >15dB difference between C and A weighted noise levels.*
26. *C-weighted measurements must be included in all noise monitoring. Where those measurements indicate a significant low-frequency component in noise at a receiver, the correction factors listed in the INP must be added to the measured noise levels at the receiver before comparison with the criteria.*
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28. *A 10% exceedance allowance should not form the basis of relevant conditions of consent and at-receiver mitigations must be offered at all private residences where the PSNL is exceeded.*
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36. *Blasting must be confined to daytime hours and within a specified range of time to provide predictability.*
37. *Blast size must not exceed 414kg MIC.*
38. *Limits of 1 blast per day, and 3 blasts per week (averaged monthly) must apply.*
39. *The Biodiversity Management Plan must be developed and implemented prior to commencement of ground disturbance and clearing.*

40. *As the proposed Biodiversity Offset Area contains extensive areas of the dry rainforest VEC which is fire-sensitive, an appropriate fire management plan must form a key part of the Biodiversity Management Plan.*
41. *Establishment of the Biodiversity Offset Area and implementation of appropriate management practices must occur prior to the commencement of ground disturbance and clearing because of the potential for that disturbance to impact terrestrial fauna.*
42. *If the Biodiversity Offset Area is assessed as having insufficient conservation values to meet criteria for a VCA, then the alternative covenanting arrangement adopted must include provisions no weaker than would have applied under a VCA.*
43. *Prior to commencement of any clearing of native vegetation inside the project area a more extensive fauna survey must be undertaken to establish whether a Brush-tailed phascogale population occurs there. If a population is found, additional measures to avoid and mitigate impacts on that species, including reduced clearing of habitat, must be identified and implemented.*
44. *To minimise the risk of vehicles hitting and killing fauna utilising the remnant vegetation along McKinleys Lane a speed limit of 40km/h must be applied to the mine area access road where it approaches and crosses McKinleys Lane and traffic-slowing measures such as placement of speed humps must be installed to ensure compliance with that speed limit.*
45. *If monitoring of the surviving populations of Grey-crowned babblers and Squirrel gliders in the project area indicates adverse impacts on those populations are occurring, additional measures must be identified for immediate application to reduce those impacts to levels that would not jeopardise those populations.*
46. *Should there be no large mature trees available for retention on both sides of the new mine access road where it crosses McKinleys Lane near the intersection with Waukivory Road, glider poles must be erected just outside the road alignment on each side to aid the movement of gliders across the road at a height that would avoid their being hit by vehicles.*
47. *The mine plan must be amended to avoid clearance of the dry rainforest VEC remnants.*
48. *The portion of the proposed Biodiversity Offset Area that lies within the area of MLA 446 must be excised from the MLA, or an alternative offset area identified.*
49. *The proponent should be required to acquire, upon the request of the owner any property impacted by loss of scenic amenity or night-time light pollution as a result of the development and operation of the Rocky Hill mine.*
50. *The proponent should be required to negotiate a 'compensation agreement' with residents who are adversely affected by light emissions or are impacted by loss of scenic amenity but do not wish to sell their property.*

51. *Where tree plantings are used as visibility barriers they should be of suitable placement and design, rather than relying on all-obscuring walls of trees along roadsides. This may involve placing selective screen plantings closer to the sites that need to be screened and designing plantings so that distance views and vistas are retained by way of viewing corridors and open unplanted sections.*
52. *To determine the affected receptors, the proponent should be required to provide mapping of the area that would be impacted by light from night operations and provide predictions of the increase in night time light (direct and indirect) that would be experienced across that area.*
53. *To minimise the effect of direct and indirect light nuisance on properties in proximity to the project area and adverse impacts on nocturnal fauna in adjacent habitats, the conditions of consent should preclude night-time mining operations.*
54. *Lighting systems must be designed to world's best practice for light minimisation and to prevent direct light from leaving the mine working areas.*
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