Submission

Opposing the development outlined in development application SSD-5156

Of

The Rocky Hill Coal Project

Gloucester NSW

Prepared by

GRIP GLOUCESTER RESIDENTS in PARTNERSHIP

"Bucketts of Contemplation"

October 2013

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"Bucketts of Joy"

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October 2013

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Preamble

This submission is presented to the Director General of the Department of Planning and Infrastructure for his consideration in determining the merits and deficiencies of application SSD-5156 by Gloucester Resources Limited.

Gloucester Residents in Partnership does this on behalf of the members of its organisation and the local community of Gloucester and the surrounding region.

Gloucester Residents in Partnership was founded in response to overwhelming community opposition to the intent of Gloucester Resources Limited to explore for coal on exploration leases surrounding the town of Gloucester and if found, develop an open cut mine.

The community response to the despoiliation of their valley and the loss of their lifestyle is as strong today as it was when Gloucester Resources Limited's intent first became public knowledge.

Gloucester Residents in Partnership have been opposing this development, on behalf of their members, for over four years. We do not have any political affiliations nor do we gain any financial benefit from this opposition. We are just local people wanting the best for the community of Gloucester.

We have as an organisation only one mandate, to stop the development of the Rocky Hill Coal Project and to that end

- We bear no malice to those businesses or individuals who currently derive income and benefit from the mining industry or who would wish to if the application were to be approved.
- We fully understand the often heartbreaking decisions to sell their properties that many of our friends have had to make.
- We recognise the right of all individuals and groups within the town to have opposing viewpoints to ours and to pursue them as they wish.
- We acknowledge the right of Gloucester Resources Limited to pursue its application as it is only doing what is permitted under existing legislation.

The Director General is charged by the people of New South Wales with the responsibility of ensuring that the proposed development of the Rocky Hill Coal Project is for the good of New South Wales and not the shareholders of Gloucester Resources Limited.

This submission will present detailed evidence that this is indeed not the case.

The Gloucester Resources Limited application provides no substance on which to make the assumption that it represents the blueprint for an operational open cut mine. Rather it represents an agglomeration of concepts, of wrongly selected and manipulated economic data and flawed engineering designs to mask its lack of plausibility and commercial viability, thereby increasing its appeal and chances of approval.

Granting of this application will be of no benefit to the people of New South Wales It will come at a cost to the State of New South Wales of millions of dollars and to the people of Gloucester health, their lifestyle and their town.

Gloucester Residents in Partnership requests therefore that the Director General carries out that responsibility with which he is charged and recommends that application SSD-5156 be refused unconditionally.

The committee of Gloucester Residents in Partnership would like to recognise and thank all those individuals and organisations that gave so freely of their time and support in the compilation of this submission.

The need for this Submission

In 2009 over 850 residents, 50% of the total adult population of the Gloucester area, packed the local recreation centre. They were alerted to the fact that a new open cut coal mine was proposed less than 6km from where they stood.

That community meeting lead to the formation of Gloucester Residents in Partnership (GRIP) to provide a voice on behalf of the Gloucester Community in its opposition to the concept of that mine.

That mine is no longer a concept but a proposed reality, with an identity, the Rocky Hill Coal Project. It is located at Forbesdale on the floor of the lush Avon Valley. Some five years later that anger and concern of the residents still remains with 85% of the community responding that they do not want another mine in the valley.

Gloucester Residents in Partnership has prepared this submission to the Director General of the NSW Department of Planning and Infrastructure on behalf of the residents, and visitors to Gloucester who do not want this mine.

It has done so with the intent of preventing the community of Gloucester from suffering a loss of place and identity and from having the stunning visual aspect of the valley, formed between the Bucketts and Mograni Ranges, scared forever by the mine's operation.

It has done so with the intent of preventing the community of Gloucester from suffering the burden of health issues, both physical and mental. Health impacts will be caused by particulate and noise emissions from mining operations located within 5km of its schools, hospital, residences and businesses.

It has done so with the intent of preventing the community of Gloucester from experiencing increased unemployment and economic loss due to the mine's impact on the existing tourism, agricultural industries and industries not utilised by the mine.

It has done so with the intent of preventing the community of Gloucester from suffering the rapid deterioration of the main access routes to the town and the potential for traffic accidents causing death and injury.

It has done so with the intent of preventing the people of New South Wales from bearing the financial cost for years to come, as a result of the mine's operation and the potential cost due to the mines failure, or closure, because of falling world coal prices.

Gloucester Resources Limited, in accordance with the Director General's Environmental Assessment Requirements, has submitted for the Department's consideration, on behalf of the people of New South Wales, an Environmental Impact Statement for the Rocky Hill Coal Project.

The importance of this document cannot be understated.

On the information provided, in the several thousand pages including appendices and attached 4 volume Specialist Consultant Studies Compendium, the Department will make decisions that will impact on the lives of thousands. Their decision will extend well beyond the term of any government, well beyond several political changes of government and beyond the lives of many upon which they have impacted.

The information it contains therefore must be accurate beyond question, all possible frailties explored, the designs and methodologies proven, the costing detailed and accurate and the conclusions drawn fair and balanced, regardless of the outcome that they may favour.

In this regard the Gloucester Resources Limited EIS is an abject failure!

GRL have presented nothing more than a poorly plagiarised compilation of other works, presented many time previously by others, veiled only by changes in location and times. Only those sections referring to the subject's location and ownership and those of direct benefit to GRL have been shown to have any legitimacy.

Conceptual engineering designs, at best fanciful and incredibly expensive to produce, at worst impossible, appear as the panacea to all problems. These concepts are then assumed to be reality by Specialist Consultants, in their assessments. From a mining production perspective the consultants then provide solutions to close proximity overburden placement and transportation. From a health perspective the consultants then provide solutions to particulate and noise pollution affecting Gloucester residents. From a social perspective the consultants then propose to retain the visual amenity of the area, giving the impression that the mine does not, nor ever, existed at all. Far greater evidence, than the conceptual drawings contained in the EIS, is required before they can be used as the solution basis for so many critical issues.

Meteorological data is gathered from locations remote from the Avon Valley, where the mine is situated. It is then used in the prediction of particulate and noise transmission and its subsequent effect on the surrounding population. This is then

compounded by the illegitimate use of statistical averaging, resulting in determinations that are totally flawed.

The economic viability of the Rocky Hill Coal Project itself is also in doubt. This casts doubt over Gloucester Resources Limited's ability to ensure that the expensive designs and methodologies outlined in the EIS will be developed and operated. This in turn raises the possibility of economic failure and closure of the mine, leaving not only a black hole for the residents of Gloucester, but a financial black hole for the people of New South Wales.

The Director General in his requirements asks specifically for "a detailed description of the development....."

Including "the need for the proposed development." GRL's response: 3 paragraphs outlining the quality of the coal, the high price it would achieve and the availability of transport to the Port of Newcastle, all to the benefit of the applicant.

Including "the interaction between the Stratford Mine operation and AGL's coal seam gas project." GRL's response: a detailed description of the location and extent of these operations and proposals. With regards to the interaction and cumulative impact only a couple of paragraphs regarding the Stratford operation interspersed within the EIS.

Including "the interaction between the Gloucester aircraft landing ground." GRL's response: 2 paragraphs outlining the location of the landing ground and the applicant's willingness to solve a problem if needed. No detail on the obvious issues created by the visibility barrier and any potential relocation of the landing ground.

Including "plans of any proposed building works." GRL's response: only conceptual sketches and designs of no substance or detail.

If the EIS was not of such critical importance these responses to a direct request from the Director General could be considered laughable, with respect to its importance they are totally inadequate in every respect.

This submission, presented by Gloucester Residents in Partnership, is intended to highlight the areas of concern of the residents of the community. It is intended to highlight the engineering failures, the meteorological anomalies and the economic frailty of the proposal and their impacts if the proposal were to be approved. It is intended to highlight the economic impacts and costs to be borne by the community, the State and the Nation that have been ignored or based on manifestly wrong assumptions in their calculation as part of the EIS.

The Rocky Hill Coal Project will destroy one of the most visually stunning areas of New South Wales.

The Rocky Hill Coal Project will impact the health, both physical and mental, of the residents of Gloucester and the surrounding areas, from both the pollution it generates and the loss of place it creates.

The Rocky Hill Coal Project will create financial hardship for many, from its impact on the tourism, agricultural and non mining industries of Gloucester, whilst benefiting only a select few. The Rocky Hill Coal Project will negatively cost the people of New South Wales and be of only marginal financial benefit at best to the Nation as a whole.

The Rocky Hill Coal Project exists only to benefit, through its operation or subsequent sale, the stakeholders in the largely overseas owned Gloucester Resources Limited. The EIS is presented with only that objective in mind and all arguments and evidence presented are done so to achieve only that end.

The Department of Planning and Infrastructure, on behalf of the people of New South Wales, must determine whether the destruction of the Gloucester Valley, the devastation of the town's economy, the heath impacts on the town's residents and the economic impact on the State are worth the benefits it will supposedly bring.

This submission shows that they clearly are not.

Development application SSD 5156 by Gloucester Resources Limited to develop the Rocky Hill Coal Project at Gloucester should be denied in its entirety as it exists only to provide succour to the applicant and would be of no immediate or enduring benefit to New South Wales or its people.

Submission Format

This submission is presented in three sections

Section 1

Assessment of Impact

On the Community and Environment

Section 2

Engineering, Financial and Meteorological

Deficiencies, Anomalies and Concerns

Section 3

Economic

The Economic Cost to the State, the Country and the Local Community

Section 1

Assessment of Impact

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Preamble

This section concerns itself with the impact of the Rocky Hill Coal Project on the community of Gloucester and the surrounding area and the environmental impact of the area, in particular the Avon River Valley.

Community opposition is strong and is reflected in these key areas of the proposal

- The impact of the proposal on the surface and ground water resources of the Avon River, Waukivory Creek and the Avon River Floodplain.
- The impact on the physical and psychological health of the people of Gloucester caused by emissions produced by the Rocky Hill Mine notably particulate matter and noise from operational activities and blasting.
- The loss of the visual amenity of the area, both by day and by night, and the ensuing impact on the tourism potential of the area.
- The impact on current and potential agricultural pursuits and the possibility of any return to pre mine conditions in the Avon Valley.
- The loss of local character as the town changes from a thriving rural community with a long term future based in tourism and agriculture to a short term mining town.

These community concerns are supported by the unanimous opposition of the Rocky Hill Project by the Gloucester Shire Council and the more than 3000 signatories to the petition presented to the NSW Parliament by the Hon. George Souris MP on behalf of the community.

The Department of Planning and Infrastructure, on behalf of the people of New South Wales, must ensure that the failures by Gloucester Resources Limited to

- **Adequately take into consideration the community's legitimate concerns.**
- **Provide adequate and substantial evidence to support its claims in the EIS**
- **Respond to direct requests by the Director General by other than casual reference**
- **Address the cumulative impact of the Rocky Hill Mine, Yancoal's potentially expanded Stratford operation and AGL's coal seam gas wells immediately adjacent to the mine extraction area**.

Are not tolerated and refuse application SSD-5156 unconditionally.

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Table of Contents

Table of Contents 19
1. Introduction and Submission Summary 23
1.1 General 23
1.1.1 Location of the proposed Rocky Hill Coal Project. 23
1.1.2 The Community of Gloucester's Opposition to the Rocky Hill Mine 24
1.1.3 Community Concern Over the Renewal of Exploration Licences 24
1.1.4 The Renewal Debacle 25
1.1.5 The Community and Social Licence 25
1.2 Community Concerns: Physical, Social, Economic and Environmental 26
1.2.1 The Impact on Water due to the Rocky Hill Mine 26
1.2.1.1 Surface Water 26
1.2.1.2 Flooding 26
1.2.2 The Impact on Health due to the Rocky Hill Mine 27
1.2.2.1 Who will be impacted? 27
1.2.2.2 Causes of Health Impacts 28
1.2.2.3 Potential Health Impacts 28
1.2.2.4 Lack of Compensation for the Community 29
1.2.2.5 Grounds for Refusal 29
1.2.3 The Impact on Visual Amenity due to the Rocky Hill Mine 30
1.2.3.1 The Existing Visual Amenity 31
1.2.3.2 Loss of Visual Amenity 31
1.2.3.3 Viewing Categories Redefined 31
1.2.3.4 What Can Be Seen From Where? 32
1.2.3.5 Visual Amenity Lost or Stolen 36
1.2.3.6 Cautionary Note 36
1.2.4 The Impact on Agriculture due to the Rocky Hill Mine 37
1.2.4.1 Current Agricultural Land Use 37
1.2.4.2 Agricultural Impacts 37
1.2.4.3 Inadequacy of Information 38
1.2.5 The Impact on the Local Character of the area due to the Rocky Hill Mine 38
1.2.5.1 Recognition of the Valley's Scenic-heritage Significance 39
1.2.5.2 The Impact of Increased Traffic due to the Rocky Hill Mine 39
1.2.5.3 The Impact of more trains on the Rail Network due to the Rocky Hill Mine 40
1.3 Cumulative Impacts from the Interaction with AGL & Yancoal 40
1.3.1 Cumulative Impact on Visual Amenity 41
1.4 Conclusion and Alternative 42

1.4.1 The Gloucester Shire Major Development Project (GSMD) 43
2. General 45
2.1 Location of the proposed Rocky Hill Coal Project. 45
2.2 The Community of Gloucester's Opposition to the Rocky Hill Mine. 46
2.3 Community Concern Over the Renewal of Exploration Licences 48
2.4 The Renewal Debacle 49
2.5 The Community and Social Licence 50
3. Community Concerns: Physical, Social, Economic and Environmental 51
3.1 The Impact on Water due to the Rocky Hill Mine 51
3.1.1 Surface Water 51
3.1.1.1 Risk - Sediment 52
3.1.1.2 Risk - Erosion 53
3.1.1.3 Risk – Saline Water 54
3.1.1.4 Risk – Chemical Contamination 55
3.1.1.5 Risk – Post Mining Water 55
3.1.1.6 Mitigation Failures 56
3.1.1.7 Conclusion 57
3.1.2 Flooding 57
3.2 The Impact on Health due the Rocky Hill Mine 58
3.2.1 Who will be impacted? 58
3.2.2 Causes of Health Impacts 60
3.2.2.1 Particulate matter and Dust 60
3.2.2.2 Noise and Blasting 63
3.2.3 Potential Health Impacts 66
3.2.4 Lack of Compensation for Community 69
3.2.5 Grounds for Refusal of the Application 69
3.3 The Impact on Visual Amenity due to the Rocky Hill Mine 71
3.3.1 The Existing Visual Amenity 71
3.3.2 Loss of Visual Amenity 73
3.3.3 Viewing Categories Redefined 74
3.3.4 What can be seen from where? 76
3.3.5 Visual Amenity Lost or Stolen 90
3.3.6 Cautionary Note 91
3.4 The Impact on Agriculture due to the Rocky Hill Mine 91
3.4.1 Current Agricultural Land Use 91
3.4.2 Agricultural Impacts 92
3.4.3 Inadequacy of Information 93
3.5 The Impact on the Local Character of the area due to the Rocky Hill Mine 93

3.5.1 Recognition of the Valley's Scenic-heritage Significance 95
3.5.2 The Impact of Increased Traffic due to the Rocky Hill Mine 95
3.5.3 The Impact of more trains on the Rail Network due to the Rocky Hill Mine 97
4 Cumulative Impacts from the Interaction with AGL & Yancoal 97
4.1 Cumulative Impact on Visual Amenity 98
5 Conclusion and Alternative 99

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Assessment of the Impact of the Rocky Hill Mine on the Community and the Environment

1. Introduction and Submission Summary

Gloucester Shire is a thriving community of approximately 5000 people. The bulk of the population reside in the township of Gloucester, which includes the rural residential housing estates to the north and south. The remainder of the population reside in the rural villages of the shire and on rural properties.

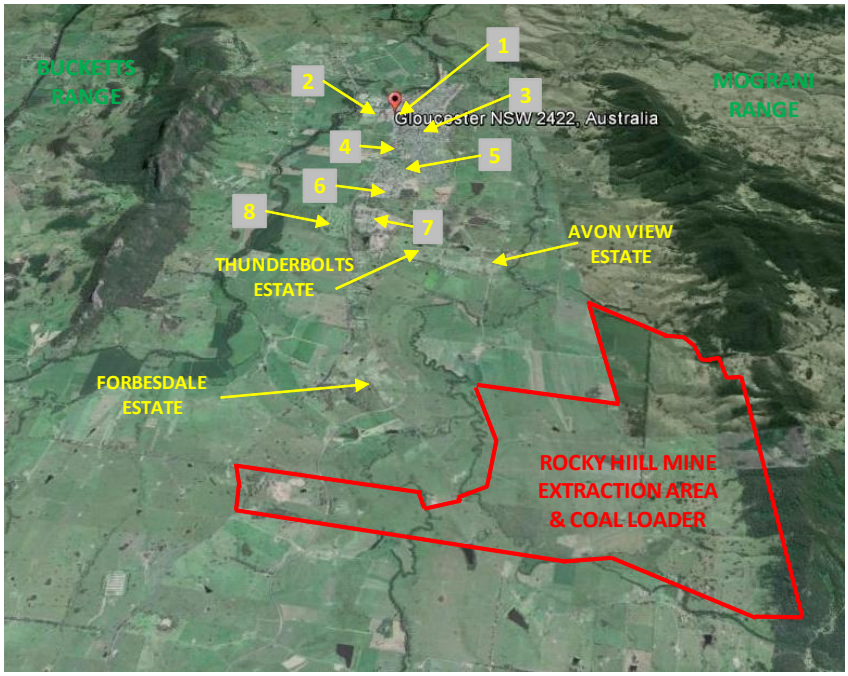
The township lies between the Bucketts Range to the west and the Mograni Range to the east at the northern end of a valley system that extends from north of Stroud some 45km to the south. The town lies on an elevated ridge line between the flood plain of the Gloucester River, running alongside the Bucketts Range, and the floodplain of the Avon River that runs alongside the Mograni Range.

It is the Departments responsibility, on behalf of the people of New South Wales, to ensure that the project is to their benefit and not at the expense of the States environment, its economy or the health and wellbeing of its people.

1.1 General

1.1.1 Location of the proposed Rocky Hill Coal Project.

The Rocky Hill Mine is proposed to be located 5.5km south of the main street of Gloucester. Between the main street and the Mine are the town's primary and high schools and the St Joseph's Catholic School. The town's hospital and key aged care facilities are within 4.6km of the proposed mine and the industrial area 3.2km.



1.1.2 The Community of Gloucester's Opposition to the Rocky Hill Mine

When the community first became aware of the desire of Gloucester Resources Limited to explore land close to Gloucester, with the intent to later develop an open cut mine on that land, 850 residents attended a public meeting to voice their opposition. This figure represented almost 50% of the adult population of the town. This highlights the level of concern felt by the community for such a proposal.

The Gloucester Shire Council, on behalf of the residents of the Shire, conducted a survey of the community to determine the level of approval or disapproval in relation to the Gloucester Resources Limited proposal to develop the Rocky Hill Mine. The result of that survey was overwhelming opposition to the proposal. Over 85% of the respondents to the survey indicated they did not want the proposed development to proceed.

The Gloucester Shire Council unanimously voted to support the community's position and remains resolute in its opposition to the proposed Rocky Hill Mine

In May 2013 the Hon. George Souris presented to the NSW Parliament a petition of over 3000 signatures opposing the Rock Hill Mine.

The Community of Gloucester overwhelmingly opposes the development of the Rocky Hill Mine.

Community surveys were conducted the Gloucester Shire Council and Gloucester Resources Limited through their consultant Key Insights.

Both the Gloucester Resources Limited community perception survey and the Gloucester Shire Council survey show overwhelming community opposition to the Rocky Hill Mine proposal.

1.1.3 Community Concern Over the Renewal of Exploration Licences

In 2009 exploration licences EL6523, EL6524 and EL6563 were renewed. GRIP on behalf of the Gloucester Community opposed the renewal of the licences.

On the 24th June 2007 GRL reported to the Community Consultative Committee

"That within six weeks (GRL will) complete all the data gathering work necessary for GRL to conduct its exploration program with minimal landowner occupation time."

There was no material progress after almost thirty months or nearly 85% of their tenure. You would question how GRL could submit its compulsory 6 monthly report to the DPI if it didn't do anything for almost thirty months. Holders of coal exploration titles are required under the Mining Act (1992) to lodge, at six monthly intervals, reports on exploration activities, expenditure and the proposed exploration program for the following six months.

Coal Exploration Licences were used under false pretences to purchase land**.**

In February 2009 GRL claimed in the CCC minutes, to have spent ten million dollars purchasing several non-contiguous parcels of land (in the exploration license area) on which,

they propose to pursue pastoral interests as a separate line of business to their coal mining interests.

GRIP claims that this is an abuse of the exploration licence and therefore the licences should not have been renewed.

1.1.4 The Renewal Debacle

There has been constant speculation surrounding the renewal of the exploration licences. Mr Brian Wingett,, a disbarred solicitor who at the time headed GRL's local operation, claimed 2 months prior to it being officially announced that the exploration licences had been renewed. He claimed

"I will own all the valley one day and know people in high places"

Given the events that have transpired since that date at ICAC one can only ponder over who Mr Wingett's people in high places were.

GRIP questioned this at the time with the DPI and the Govt. and it was never answered as to why Wingett knew two months before the official renewal that the licences had been renewed.

1.1.5 The Community and Social Licence.

The Social License has been defined as existing when a project has the ongoing approval within the local community and other stakeholders, broad social acceptance and, most frequently, as ongoing acceptance.

GRL have constantly asserted that they are concerned with the views of the community and want to be a model citizen in the Gloucester area. Quote from GRL's Community Newsletter February 2012,

"GRL and the Rocky Hill Project Team understand that open and honest community consultation is an imperative if they are to understand and address the community's and individuals' concerns about the Project and, in turn, for the Project to be accepted as an important part of Gloucester's future."

Yet, they, GRL, are completely disregarding Gloucester Shire Council's Local Environment Plan by proposing that an open-cut mine operate within the Zone E3, scenic protection area.

Gloucester Shire Council is elected by the people of the shire to represent the people of the shire. Much time and effort is executed to produce a Local Environment Plan. This plan has been accepted by the residents.

Where is their desire to "understand and address the community's concerns?"

GRL do not have a "Social Licence" to develop and operate the Rocky Hill Mine.
The community when surveyed declared that they do not want this mine in their valley so close to their town yet here we are on the verge of approval.

Are we, the people of Gloucester, simply to be considered "collateral damage" by the Department of Planning and Infrastructure as the assessment of the Rocky Hill Mine is undertaken or will the community's concerns by listened to and approval be denied.

" See 2. "General" in this section of this submission for details"

1.2 Community Concerns: Physical, Social, Economic and Environmental

Gloucester Residents in Partnership has prepared this submission to oppose the Rocky Hill Coal Project keeping in mind the areas of concern highlighted by Key Insights "Community Perception Survey".

The community's concerns over the impact of the development and operation of the Rocky Hill Coal Mine cover not only the physical impacts but also how those impacts in turn will affect the environment and the social and economic wellbeing of the community itself.

1.2.1 The Impact on Water due to the Rocky Hill Mine

1.2.1.1 Surface Water

The Rocky Hill Mine proposal plans to divert a substantial quantity of surface water from its natural sub-catchment flows for up to 21 years. The landscape of these sub-catchments will be totally destroyed by open cut coal mining and then replaced with an artificial landscape, for which there are no quantifiable parameters for surface water quality or quantity. The diversion flow characteristics have been modelled and deemed to have only a minor negative impact. This assessment is incorrect and unacceptable.

Risks have been identified as being caused by:

- Sediment
- Erosion
- Saline Water
- Chemical Contamination
- Post Mining Water

The EIS provides no detail on mitigation measures for these identified risks. It is not acceptable simply to state that these issues will be detailed in the Mining Operations Plan that will be submitted to DRE after development consent.

A lack of a "detailed site water balance inclusive of volume and frequency of any water discharges" as requested in the DGR's and a totally inadequate rehabilitation plan is entirely unacceptable.

1.2.1.2 Flooding

While a detailed flood assessment has been undertaken, the design has used a 1;100 AEP for flooding and this is inadequate given the information available in the modelling for larger floods. This is particularly pertinent because of the very limited

data available for the modelling, that the study was not conducted with local stakeholder consultation.

- The construction of visibility barriers and sediments dams on the Avon River and Waukivory Creek floodplain is entirely unacceptable.
- The environmental impact of the visibility barriers is inadequately addressed.
- The issue of floodwaters entering and leaving the mine has not been adequately addressed.
- The height of the conveyor above the floodplain is not adequately evaluated.
- Section 2.1.3 of the EIS should contain the need for approval under the Water Management Act 2000 to construct structures on the floodplain. This has not been considered.
- Pollution by dissolved solids, salinity and heavy metals due to visibility and sediment dam failures is not considered.

Unacceptability, inadequacy, lack of evaluation and lack of consideration of key aspects of the impact of flooding is entirely unacceptable.

"See 3.1"The Impact on Water due to the Rocky Hill Mine" in this section of the submission"

1.2.2 The Impact on Health due to the Rocky Hill Mine

The adverse health impacts of the Rocky Hill coal mine is one of the major concerns of the community. This is largely, but not entirely due to the close proximity of the mine to residences.

1.2.2.1 Who will be impacted?

The EIS identifies 193 properties listed under the heading of "Sensitive Receptors". Of these 173 are not owned by GRL. In the same area there are 51 vacant lots, potentially to be sold and occupied as are the 173, giving a total of 224 "sensitive receptors" who are at significant health risk due to their proximity to the Rocky Hill Mine. The 224 represents households or 515 individuals when multiplied by 2011 Census figure of 2.3 persons per household for Gloucester.

The health danger for these 515 people is unacceptable.

But it doesn't end there. Studies identify the young and the elderly and persons with existing respiratory and pulmonary conditions to be in the highest at risk categories. Gloucester with a median population age nearly 22% higher than the national average will be dramatically affected.

1.2.2.2 Causes of Health Impacts

The causes of health impacts broadly fall into two areas

- **Particulate Matter and Dust Emissions caused by**
  - mechanical processes
    - Dust-totally suspended particles PM_{30} to $PM_{2.5}$
  - incendiary processes
    - Diesel Emissions $PM_{2.5}$ and smaller.

- **Noise and Blasting emissions caused by**
  - Mine Vehicles, Processing and Trains
    - Noise
    - Low frequency noise
  - Blasting events

1.2.2.3 Potential Health Impacts

Health impacts can be either physical, psychological or both.

The effect and type of typical physical impacts varies between adults and children

Adults in coal mining communities have been found to have:

- Higher rates of mortality from lung cancer, chronic heart, respiratory and kidney disease
- Higher rates of cardiopulmonary disease, chronic obstructive pulmonary disease (COPD) and other lung disease, hypertension, kidney disease, heart attack and stroke and asthma.
- Increased probability of hospitalisation for COPD and for hypertension
- 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 and cough and increased absence from school respiratory symptoms although not all studies reported this effect.
- 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 low birth weight.

These findings are supported by every NSW Government Departments published literature on health and coal mining including "**Mine Dust and You**" a factsheet published by the NSW Department of Health developed in conjunction with the NSW Minerals Council, the representative advocate for the mining industry.

In the World Health Organisation (WHO) Guidelines for Community Noise, “The primary sleep disturbance effects are:

- a reduction in the proportion of REM sleep(Hobson 1989).
- increased blood pressure; increased heart rate;
- increased finger pulse amplitude;
- vasoconstriction;
- changes in respiration;
- cardiac arrhythmia;
- and an increase in body movements (Berglund & Lindvall 1995).

The psychological effects may not be as obvious as are the physical impacts but they are no less real.

People feel overwhelmed and powerless at the hands of enormous mining companies.

They feel helpless and hopeless.

They have to abandon plans they made for the future.

This leads to both anxiety and depressive illnesses. Research into the psychological pain caused to individuals, who are attached to their landscape and grieve for the loss of that loved landscape (which gave them solace), has been given the label ‘Solastalgia’. Indigenous persons are particularly distressed by disturbance of their country. This contributes to feelings of depression.

1.2.2.4 Lack of Compensation for the Community

Community members living close to a mine are not examined initially to see if they are in a high risk group. They may be in that high risk zone for 168 hours of the week. No compensation tribunal exists for them. Many suffer chronic health damage. Some die. Very few ever receive compensation for damaged health.

1.2.2.5 Grounds for Refusal

We know from several studies on school children in the UK that asthma rates start to escalate above the background rate if you live within 5km of a mine and at 1.5km the rate has tripled.

With Gloucester, the geography of the narrow valley, with mountains rising to 565 meters, cause this to be a partially enclosed valley that holds the dust particles (and noise) within the valley. Meteorologist, Martin Babakhan, would expect the walls of the valley to redirect much of the dust back to the centre of the valley multiplying the impact of the particles and also increasing the temperature inversions.

This project should be refused on these grounds:

- It will make life unliveable on many properties.
- it will make a greater number of properties unsaleable and all property valuations to drop significantly.
- it is far too close to all properties in the valley for a distance, In particular those within 5km of the mine.
- it will cause illness, learning difficulties in children, depression in adults and have an undeniable impact on the hospital.

The grounds for refusal are supported by:

- **Senate Enquiry into Air Quality**
  On August 16th 2013 the Federal Government Senate Enquiry made thirteen recommendations which included that a health impact assessment should be part of every new development, coal wagons should be covered, there should be a buffer zone around mines, diesel emissions should be legislated and constant dust monitoring should be available on line for affected communities. The State Government has yet to comment.

- **Planned Regulation Review**
  Plans are for a National Clean Air Policy in 2014. The USA have had regulations for PM 2.5 levels for 15 years and they have had dramatic improvements in health impacts as a result, but Australia prefers to ignore this evidence.

The physical and psychological health impacts of the mine will not only be felt by the residents of Gloucester. The huge financial burden that it will bring, in particular to the State but also the Federal health budgets, will ensure that all Australians will share the impact.

"See 3.2 "Impact on Health due to the Rocky Hill Mine" in this section of the submission"

1.2.3 The Impact on Visual Amenity due to the Rocky Hill Mine

Over 800ha of open cut mine, up to 40m high piles of overburden, conveyors and rail loading facilities will have a significant impact visually on the Gloucester Valley.

The Rocky Hill Mine will dramatically change the Visual Amenity of the Gloucester Valley.

Vi-su-al attained or maintained by sight
Ame-ni-ty the quality of being pleasant or agreeable[1]

[1] *Definitions from Webster's Dictionary*

Visual amenity then, by the definition, concerns what can be seen and what is pleasant or agreeable.

1.2.3.1 The Existing Visual Amenity

The loss of visual amenity can only be understood if there is an appreciation of what is to be lost.

1.2.3.2 Loss of Visual Amenity

In the Visibility Assessment of the proposal, undertaken by Richard Lamb and Associates on behalf of Gloucester Resources Limited, it states:

"The prime aim of mitigation of the visual impacts should be to minimise the effect of the final landform on the scenic quality of the site. This should be the main concern in terms of visual impacts, other than visibility which is a secondary aim"

Thankfully the final landform is in the "godlike hands" of Gloucester Resources and their consultants as the Richard Lamb and Associates assessment goes on to state"

"The final landform will be distinguishable from the existing landform for those who are familiar with it. The proposed rehabilitation to woodland may be perceived by the contemporary population as an improvement in scenic quality."

Are we the community of Gloucester to believe, as is implied from the above statements of Richard Lamb and Associates, that the at least 15 years of loss of visual amenity during the mine's construction, operation and rehabilitation will be worth it for our new and improved scenic landscape?

This is particularly significant as shown in *Part 2 Engineering Section 6 Final Landform* the much flaunted final landform is an impossibility due to the insufficiency of available material

The primary solution to prevent these eyesores on the landscape, as is always the case with open cut mines, is to hide them away from the community's view behind barriers of earth, trees or man-made visibility screens.

In terms of the solution to the problem of "Loss of Visual Amenity"

The solution to the problem is the problem!

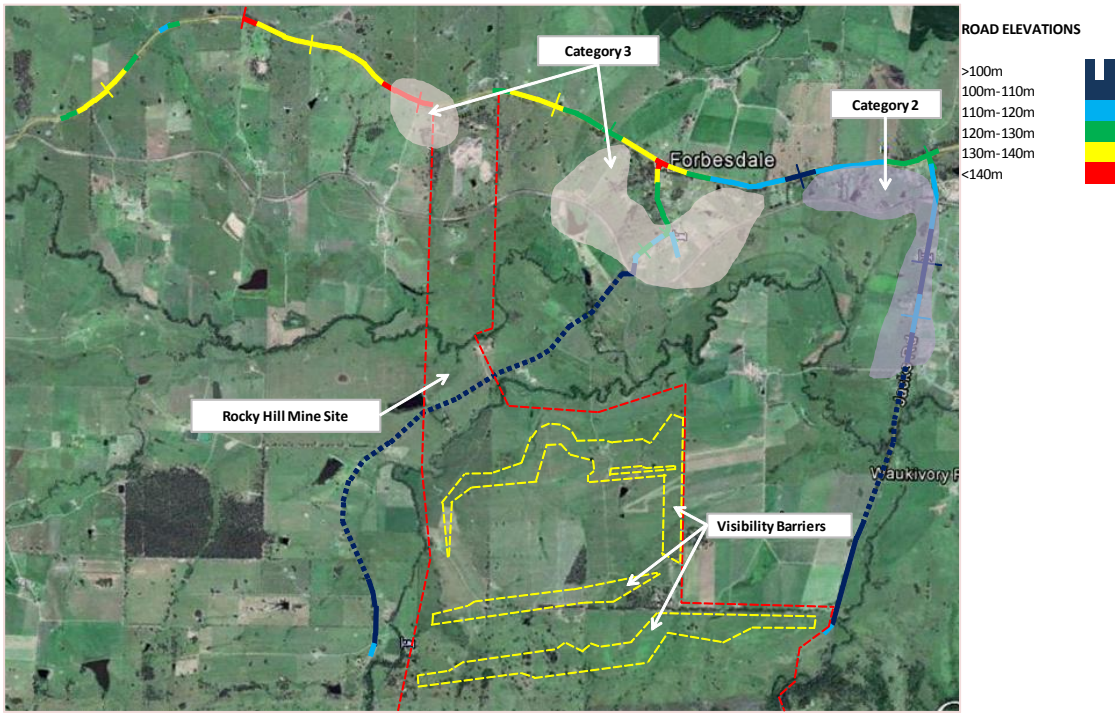
The visual amenity of the area is not a scene or one view. It is the perception one has of the whole. It is not stated or commented on or for much of the time even consciously noticed but forms the background to a moment, an experience or one's daily life.

Impacts on visual amenity cannot be hidden behind a barrier or screen when it is those very barriers and screens that are the cause of the impact.

1.2.3.3 Viewing Categories Redefined

Extensive comment is made in the EIS (4.5.4.3 Daytime Mitigation Measures) on the construction of the Western / Northern, the Central and the Eastern visibility barriers and their ability to shield operations at the Rocky Hill Mine site.

Figure 1.2 Rocky Hill Mine road viewpoints and elevations



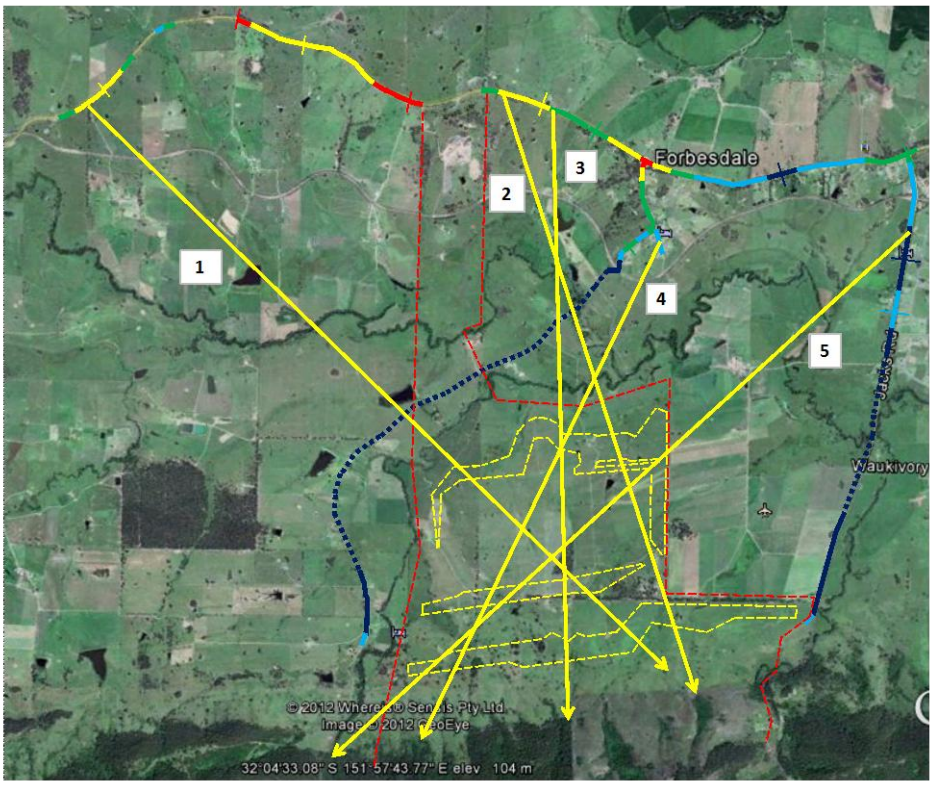
Gloucester Residents in Partnership would suggest that a visual impact from a viewpoint at any of the areas shown along the public roads would be significant. The impact from the private residences between the roadways and the Rocky Hill Mine site even more so.

1.2.3.4 What Can Be Seen From Where?

The view of the Rocky Hill Mine from any location can be defined mathematically by angular measurements taken from the point of observation. Figure 4.3.1 of the EIS shows the shielding impact of the visibility barriers from various locations. The scale of the diagrams however does not allow the reader to clearly appreciate the compounding effect of the appearance of the barriers.

Five viewpoints were selected from the affected roadways discussed previously and cross sections drawn from those locations to the Rocky Hill Mine site.

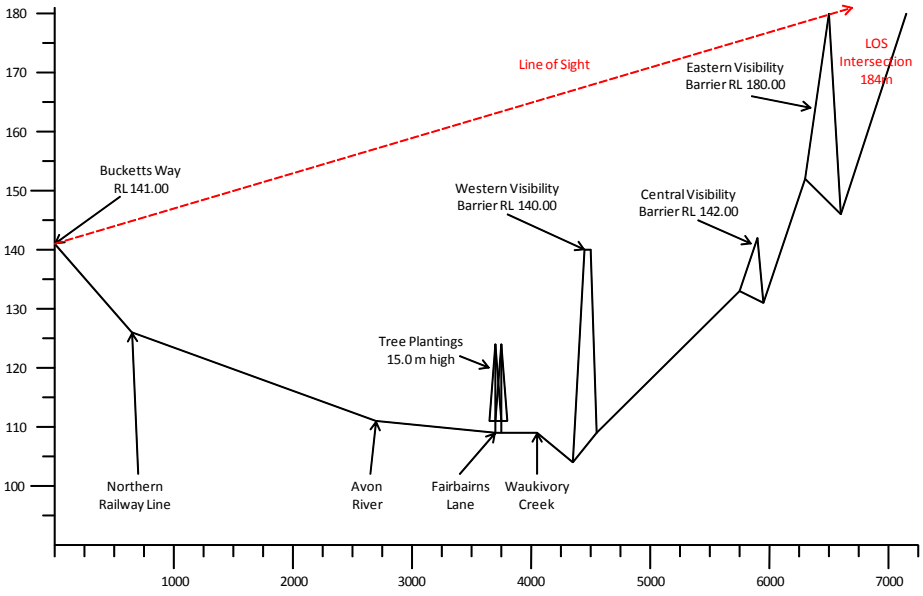
Figure 1.3 Cross Section Locations



Cross sections were drawn and analysed to give an accurate interpretation of the apparent compounded height and then expressed as percentage of the human central field of vision. (as an example section 1 is shown below)

Cross section 1 is located on The Bucketts Way at an elevation of 141m AHD.
It is the first view of the Rocky Hill Mine site that residents or visitors to the area will have as they crest the central ridge line approaching from the south.

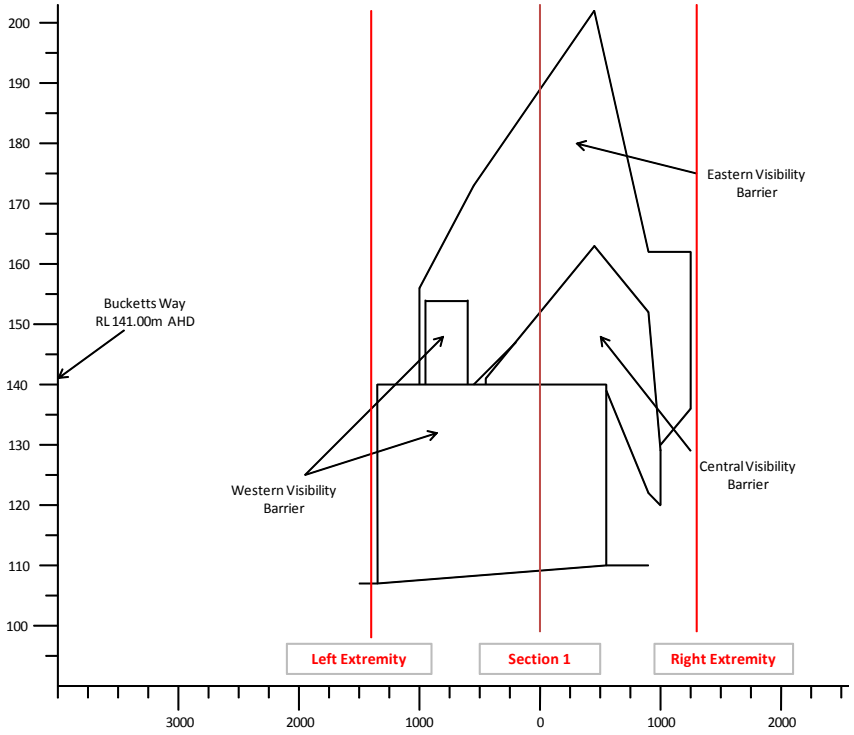
Figure 1.4 Section 1 Vertical Compounding Effect



The compounding effect of the barriers increases the apparent height of the barrier wall to 167AHD, an increase of 27m giving a total perceived barrier height of 60m. This represents 1.6% vertically of the human central field of vision[1] when looking at the view from this location.

The horizontal compounding effect was also calculated. (section 1 again shown)

Figure 1.9 Section 1 Horizontal Compounding Effect



The extent of this impact can be seen in the photograph below taken from the Bucketts Way as shown in **Figure 1.3**. The extremities represent a 34 degree separation. This represents 57% horizontally of the human central field of vision[1] when looking at the view from this location.

Figure 1.10 Section 1 photograph from The Bucketts Way.

These are then combined to show the compounded impact as would be seen by the observer. The Barriers have been coloured, as near as is practicable, to represent the barriers at the adjoining Yancoal mine as there is no reason to assume any great difference in appearance of those at the Rocky Hill Mine.

Figure 1.18 Section 1 Compounded Visual Impact

At nightfall the ugly scar of the visibility barriers on the landscape disappears into the shadows. Under a cloudless sky with a full moon the features of the landscape are completely visible but muted, as in a black and white photograph, with the colour drained and only shades of grey remaining.

The impact on the areas visual amenity however does not disappear, as do the barriers, with the coming of nightfall.

The following image, created from the section photographs, depict the view on a cloudless night with a partial moon.

Figure 1.25 Section Photograph 1 Night View

EIS 4.5.5.5, 'After Dusk Impacts', suggests an internal view that there will be no night glow on occasions ('...when present, ...'). Surprisingly it suggests that the residents surrounding the site might actually like the glow - particularly if their homes have outlooks in that direction!

The EIS assessment applies more weight to transient viewers than to those who are captive to the views. "... greater weight is placed on public domain viewing places ... (than residents)... in the overall assessment." This approach plays down those impacts that are nightly left to the GRL's lights and that may generate greater issues than a passing offensive view - ie emotional and relationship disquiet leading to permanent impacts in some people/families.

There is room within the EIS stated hours of operations for conditions in which the mine can be operated 24hours. Additionally, security lighting is highly likely to be an overlay on the lighting considerations described.

Thus we should expect that light emission will be a close to constant impact - especially for residents within hearing of the mine and therefore potentially suffering sleep disturbances that combine with all night lighting to adversely impact on their well-being.

The proposed mitigation actions are peppered with escape words.

It will then act on the 'practical opportunities' but would implement 'as soon as possible'. Whereas this presents an even, pro-active stance, the words themselves allow considerable wriggle room.

1.2.3.5 Visual Amenity Lost or Stolen

Vi-su-al attained or maintained by sight
Ame-ni-ty the quality of being pleasant or agreeable

The visual amenity of the Gloucester Valley, the background to people's lives, the reason that many have come here to live and the reason that many stay will dramatically change, if not forever, then certainly for the duration of the Rocky Hill Mine.

1.2.3.6 Cautionary Note

The diagrams used to indicate the compounding effect of the visibility barriers and the images depicting the visual impact, both by day and night, have been produced using the information given in the EIS. This is the same information that has been used by Lamb and Associates in their determinations and as such can be used as a comparison between the two.

Such comparisons however would prove of little worth.

In this submission,

Section 2: Engineering, Financial and Meteorological deficiencies, anomalies and concerns.

Part 3.2.1: The Western Visibility Barrier

Shows in detail the flawed design of the western visibility barrier and the impossibility of construction to the heights indicated in the EIS.

Part 6: The Final Landform

Shows in detail the significant lack of material availability to produce the final landform as detailed in the EIS.

As a result of these failings within the EIS all discussion based on either the Western Visibility Barrier or the Final Landform must take into account that neither will be produced to the designs outlined.

It remains however completely valid that regardless of the final design of barriers and landforms Gloucester Resources Limited may come up with they will be responsible for the theft of the visual amenity of the Gloucester Valley.

"See 3.3"The Impact on Visual Amenity due to the Rocky Hill Mine" in this section of the submission"

1.2.4 The Impact on Agriculture due to the Rocky Hill Mine

The agricultural impacts addressed in the EIS mainly relate to the footprint of the mine area. They do not adequately address the impacts on water resources. They do not address the impacts that are already occurring as a result of the extraordinary purchasing of land in the whole district by the proponent over the last 5 years.

1.2.4.1 Current Agricultural Land Use

In the EIS much fanfare is given to the the fact that GRL have purchased the land of one major dairy enterprise and leased it back to the operators plus enabled this operator to lease other land purchased by the proponent over recent years. This is not a benefit at all as it does not include any of the land associated with the mine area and is an activity that could have been undertaken without the mine proposal or the EIS. This dairy, handed down through generations, has been highly successful for many years. It is visited by tourists. To suggest that it is an economic benefit associated with the mine is absurd.

1.2.4.2 Agricultural Impacts

GRL has purchased a total area of at least 3,000 ha in about 40 properties in the vicinity of the mine of which only about 856 ha will be used directly for mining. The previously existing agriculture on at least 2000 ha and at least 30 family farms has been terminated and in many cases not replaced.

There are 2 key agricultural impacts

- **Impact on Land Value**
  Section 4.17.5.3 states "agricultural land values both within and adjacent to the site are unlikely to change", this is not correct. GRL has purchased a large area of agricultural land at above market value over recent years. This has raised the expectation for future land sales in the district to levels that are unsustainable for agricultural production.

  At the same time, land, in the vicinity of the mine, that has not been purchased by GRL cannot be sold. Prospective buyers are not prepared to accept the potential risks to this land by the mine impact and definitely do not want to live next door to a coal mine.

- Impact on Water Resources

There will be impacts on water resources that will affect surrounding agriculture but these are dismissed in the EIS.

In section 4.17.4.1 of the EIS it states, “all land in the mine area will be returned to its pre-mining land capability.” The only detail provided is that this land capability will be achieved by simply placing an 80 cm soil profile (undefined top soil and sub-soil depths) on top of the mine voids that have been filled with mine waste material.

There is absolutely no confidence that the objective can be achieved.

Section 4.17.5.1 even goes as far as to say that the productivity of the rehabilitated land will be higher than that of the original area before mining, but there is no data provided to support this unbelievable claim.

1.2.4.3 Inadequacy of Information

There is inadequate information presented to consider the impacts on the agricultural situation as it existed before GRL started purchasing farm land at inflated prices and then not managing the land to its full potential. There is also inadequate information to assess the likely potential of the site for agriculture after the mine ceases and therefore GRL’s claim that the land capability will be improved is refuted.

“See 3.1”The Impact on Agriculture due to the Rocky Hill Mine” in this section of the submission”

1.2.5 The Impact on the Local Character of the area due to the Rocky Hill Mine

Gloucester is unique. It retains its distinctly rural identity even though it’s reasonably close to the coastal fringe.

The town of 2,500 people is still a big country town, even though it boasts six cafes, an art gallery and boutique shops. The people are friendly and inviting, with a mix of ‘locals’, residents with ancestry from the town and ‘newcomers’, mainly tree changers. The exodus of self funded retirees from Sydney has continued to gain momentum which brings added financial benefit to the area. Not needing employment themselves they contribute by using the local industries and trades for house construction and maintenance and small acreage activities. Gloucester also has the largest volunteer force in NSW. Over 190 volunteer organisations operate out of the town, which enhances the sense of community.

All the reasons above are given in evidence as to why the Rocky Hill coal mine will destroy the local character of the area and reduce Gloucester to just another mining town, surviving on one unsustainable industry.

The tree changers will not be attracted to Gloucester as a means of getting away from their previous harried city lifestyle.

The tourists will not be able to ‘get away from it all’ in Gloucester. The noise, dust and traffic will be here.

The small country town, with diverse industries, will be a small mining town depending on its survival from one industry.

There will be an exodus from the region of people choosing not to live in an area impacted by mining. They will take with them the much needed incomes for industries not involved in mining.

The sense of community will be shattered by 'drive-in-drive-out' mine workers.

The volunteers will dwindle in number due to the exodus of retirees and the time poor shift workers.

The sense of community will be lost due to less involvement from drive-in-drive-out workers and shift workers.

The local cafes, shops, industries and farms will find it difficult to attract workers, so the town will be at risk of closure.

The vacant lots in the housing estates surrounding the mine will remain vacant, denying the Council and the town much needed funds.

The visual amenity will be lost forever. The Stroud-Gloucester Valley's heritage landscape significance underpins the Valley's way of life, its agriculture and its tourism industry.

1.2.5.1 Recognition of the Valley's Scenic-heritage Significance

The Vale of Gloucester was among the first cultural landscapes to be formally identified in Australia when it was listed by the National Trust of Australia (NSW) in 1975 and was nominated for entry on the Register of the National Estate in 1976.

This nomination was supported by Gloucester Shire Council but, for unknown reasons, the Australian heritage Commission failed to assess the nomination and it remains as an Indicative Listing on the now discontinued Register of the National Estate. The Gloucester Local Environmental Plan 2010 Zone E3, Environmental Management, specifically addresses the significance of this area.

The Stroud-Gloucester Valley and for the purposes of this submission, the northern end of the valley have been acknowledged as having heritage significance for historical, scenic, scientific and social reasons since 1952.

Gloucester does not just **have** scenic beauty, its identity **is** its scenic beauty.

The GRL, Rocky Hill coal mine will change completely Gloucester's local character. It has impacted and will continue to impact on the lives of residents and visitors to the valley.

1.2.5.2 The Impact of Increased Traffic due to the Rocky Hill Mine

The Rocky Hill Mine will generate over 300 cement trucks, over 400 semi trailers and fuel tankers, over 1700 tipper and quad dog trailer combinations, over 3000

contractor trucks and vehicles and over 100 ultra heavy escorted loads during the construction year. Yet, GRL claim that this will not have a serious impact on the area.

The Bucketts Way is the main artery in and out of town. It is a single lane road with no sections for overtaking. The traffic on this road has increased dramatically, mainly because of mining vehicles. GRL asserts that it will employ local workers wherever possible but the definition of local includes Taree Shire and Great Lakes Shire.

Yancoal has admitted that half of its employees live outside the shire. The question begs to be answered, how will GRL employ local workers when Yancoal has to resource workers outside the shire?

This means that the number of drive in, drive out workers will increase. It is common knowledge that coal mines employ people who have to travel to the mine.

The mine will cause noise, pollution and dangerous driving conditions.

It is stated that: "approximately 186 to 294 light traffic movements and 4 to 16 heavy vehicle movements will be occurring per day.

To assert that these roads will, on approval, have constant vehicles, many heavy vehicles, and it will not have severe consequences for the town begs belief. Traffic generated from the Rocky Hill mine will have severe impacts for the Gloucester area.

1.2.5.3 The Impact of more trains on the Rail Network due to the Rocky Hill Mine

EIS 2.8.3 "Each train would be loaded within a period of approximately 1.5hrs. Once loaded, the train would remain stationary, and idling, until its allocated time to leave the rail loop and return to the Port of Newcastle" "....with trains typically despatched between one and three times per day." "It should be noted, however, that the timetable for the arrival and departure of trains would be dictated by ARTC....."

The statement above indicates that for up to three times a day trains will take 1.5hrs to load and then sit idling until they are given permission to leave. The important point to stress is that this could happen any time of the day or night. Even with mitigation this will have a large noise and dust impact on the residents.

"See 3.5"The Impact on The Local Character of the Area due to the Rocky Hill Mine" in this section of the submission"

1.3 Cumulative Impacts from the Interaction with AGL & Yancoal

Cumulative Impacts are ignored

This proposal cannot be assessed in isolation. The valley has three extraction industries wanting to exploit its resources.

- AGL have approval for 110 coal seam gas wells and plan for at least 300.

- Yancoal have two operating mines and are currently awaiting approval for extensions
- GRL want approval for an open-cut coal mine close to town.

All these projects are within the same area of the Avon Valley.

AGL have been drilling within the GRL mine site area. Both projects cover the same area of land. Who will be the victor? How can the Department even consider approving GRL's mine proposal while AGL has an approval on the same land? This is a conflict of uses and serves to put doubt on the credibility of the approval process.

Open-cut coal mines and coal seam gas cannot co-exist successfully on the same area of land.

1.3.1 Cumulative Impact on Visual Amenity

Richard Lamb & Associates Non-indigenous Heritage Assessment fails to assess cumulative impact.

The practice of dismissing the cumulative impact of other development for the reason that the impact is claimed to be small is contrary to assessment procedure. All impacts should be given due consideration, even those of apparently minimal impact, for two fundamental reasons.

- Cumulative impact assessment should consider the cumulative impact of ALL developments because it is the total impact that is being assessed. Individual developments may each have a low level of impact but a high level of combined impact.
- A particular development may have a low level of impact on its own but may combine with other development in a multiplying or reactionary manner to produce a greatly increased impact

The Lamb Visibility Assessment goes to some length to justify the visual impact, which it notes has the potential to create an excessive cumulative impact. However, it then attempts to justify that by lengthy criticism of the Barrington, Gloucester, Stroud Preservation Alliance assessment.

Lamb makes unconvincing assertions that the various developments are not situated within the same view and makes sweeping claims that rows of eucalypt trees and extensive earth mounding are the panacea for all visual ills. At no point are these assertions convincing and at no point is the cumulative impact properly assessed. At no point is assessment of the visual impact caused by the earth mounds incorporated into the overall assessment.

The Lamb Visibility Assessment leads the Visibility Environmental Impact Statement by R.W. Corkery & Co. Pty. Limited to a number of unsubstantiated conclusions.

- Firstly, it notes that 'the proposed activities to be undertaken by AGL would be of a scale that would not contribute to any noticeable visual impacts. An inspection of the area shows that this claim cannot be substantiated.

- Secondly, it notes that the Stratford Coal mine lies within some common view catchments to the proposal area but excuses this by the claim that for most of the

viewing locations that are to the north-west and west of the mine area the two mines would not be in the same view. The logic of this is unclear and it can only amount to another method to dismiss cumulative impact.

- Thirdly, the last paragraph in that section, page 4-136, concludes by claiming 'Lamb (2013a) concludes that, on balance, it is considered that while minor cumulative impacts would occur, given the short life span of the Proposal, the cumulative impacts would not be significantly increased as a result of the combines presence of the Stratford Coal Mine and the Applicant's proposal'. This conclusion is not supportable by inspection of the site and area and cannot be justified. It is narrow and selective, it diminishes the cumulative impact of the existing and planned mining projects, fails to acknowledge the combined visual impact and the extent that both will be visible, and completely omits the AGL project from the assessment.

The AGL project will have a significant visual impact when all aspects of that project are considered, yet this has been ignored. The AGL project will include gas wells, connecting roads and necessary infrastructure. Coal seam gas projects have a high visual impact and failure to consider the AGL project is a serious omission.

The continued reference to the 'short' life span of the project is regularly used throughout the Non-indigenous Heritage and Visual Assessments and the Environmental Impact Statements. That lifespan is acknowledged as being around 21 years which can hardly be classified as a small duration. If the existing mines in the area and elsewhere are to be examples, it will almost certainly exceed that period considerably. The mine, if approved, will expand into subsequent stages. GRL are currently seeking from the Planning Department approval to explore in Stage two, which is north of stage one, The Rocky Hill proposal. The project should be classified as having a long term impact.

"See 4.1"Cumulative Impacts from the Interaction with AGL and Yancoal" in this section of the submission"

1.4 Conclusion and Alternative

This submission by Gloucester Residents in Partnership contains countless reasons why Gloucester Resources Limited should not get approval to build the Rocky Hill coal mine.

- **Flawed and Impossible Designs of critical mine infrastructure.**
- **Lack of Financial Viability and the impact of failure or long term closure.**
- **The use of manipulated or inappropriate date to mask deficiencies or to highlight benefits**
- **Negative impacts on health, both physical and psychological**
- **Negative impacts on the local, State and National economies**
- **The impact on the visual and cultural heritage of the Gloucester Valley.**
- **Unsubstantiated claims.**
- **Lack of indigenous consultation.**
- **Lack of a comprehensive response to specific Director Generals Requirements.**
- **Community outrage.**

GRL have brought nothing but negative impacts to the community and the mine has not even been approved. Their only arguments for their existence are money and jobs and they are being challenged successfully on those points.

From GRIP's conversations with locals, visitors, members of local, state and federal government and people who are pro mining, no one believes this mine should be built in the Avon Valley so close to homes and farms.

The Rocky Hill Mine project is small by Hunter Valley standards but it is large when compared with the area of the town. It is a completely unsuitable industry for this beautiful heritage valley.

Gloucester Residents in Partnership have been opposing this development, on behalf of their members, for over four years. We do not have any political affiliations nor do we gain any financial benefit from this opposition. We are local people wanting the best for the community of Gloucester. Over the years we have witnessed and been part of the havoc GRL has afflicted on the people, mainly in the Fairbairns Road and Forbesdale areas of the valley. We have watched people give up their beloved homes and farms, selling to GRL, because they have seen that as the only option. We have watched people leave the Gloucester area because they want to get away from the nightmare they have suffered at the hands of GRL. We have known many people who have abandoned their dream of living in Gloucester because they do not want to live so close to a coal mine.

Gloucester Residents in Partnership, on behalf of the residents of Gloucester and the surrounding region, oppose in its entirety the GRL Rocky Hill coal project and request in the strongest terms that the Director General and the Department of Planning refuse application SSD-5156 unconditionally.

There is an existing alternative.

1.4.1 The Gloucester Shire Major Development Project (GSMD)

Gloucester Shire is a continuing major project. By its diversity, it has attracted or produced a population 5,000 people living in more than 2,000 dwellings and has generated all the essential businesses to support and grow Gloucester.

The cornerstone of the GSMD project has been organic growth based on exploiting, valuing and sustaining the environment. Today businesses are attracted to the Shire for its beauty and healthy lifestyle.

Its stakeholders reject the intrusive damaging Rocky Hill project. The GSMD's current Board of Management, the Shire Council, has rejected the proposition that GRL can 'coexist' and contribute to the project. In arriving at their position they have noted the immense damage to be inflicted, and the potential for GRL to permanently disfigure the economy, the environment and the community for which the Council is directly responsible.

GRL's proposal is insignificant from any economic comparison. But it carries enormous deleterious impacts because of its technology, its need to inflict permanent damage, to expand, take and damage more land, its lack of long term

loyalty to the community, its potential to create shockwaves with its responses to the coal price, its continued contamination of all that the GSMD project and its people and businesses rely on, and its eventual exit which should be expected to be unplanned and under-resourced - particularly if it coincides with poor profitability.

Essentially we have in conflict two 'significant' projects. One is major, pre-exists and has a vibrant healthy future. The other is comparatively insignificant and demonstrably brings no economic benefit to the Shire Project or the State. But the nature of its business is anything but insignificant - because its intent is precisely opposite GSMD's. It undermines the cornerstone of the larger project and for this reason it has the potential to cripple the major project. Already this has started. Already there are negative business impacts. These will deepen.

"See 5"Conclusion and Alternative" in this section of the submission"

2. General

Gloucester Shire is a thriving community of approximately 5000 people. The bulk of the population reside in the township of Gloucester, which includes the rural residential housing estates to the north and south. The remainder of the population reside in the rural villages of the shire and on rural properties.

The township lies between the Bucketts Range to the west and the Mograni Range to the east at the northern end of a valley system that extends from north of Stroud some 45km to the south. The town lies on an elevated ridge line between the flood plain of the Gloucester River, running alongside the Bucketts Range, and the floodplain of the Avon River that runs alongside the Mograni Range.

2.1 Location of the proposed Rocky Hill Coal Project.

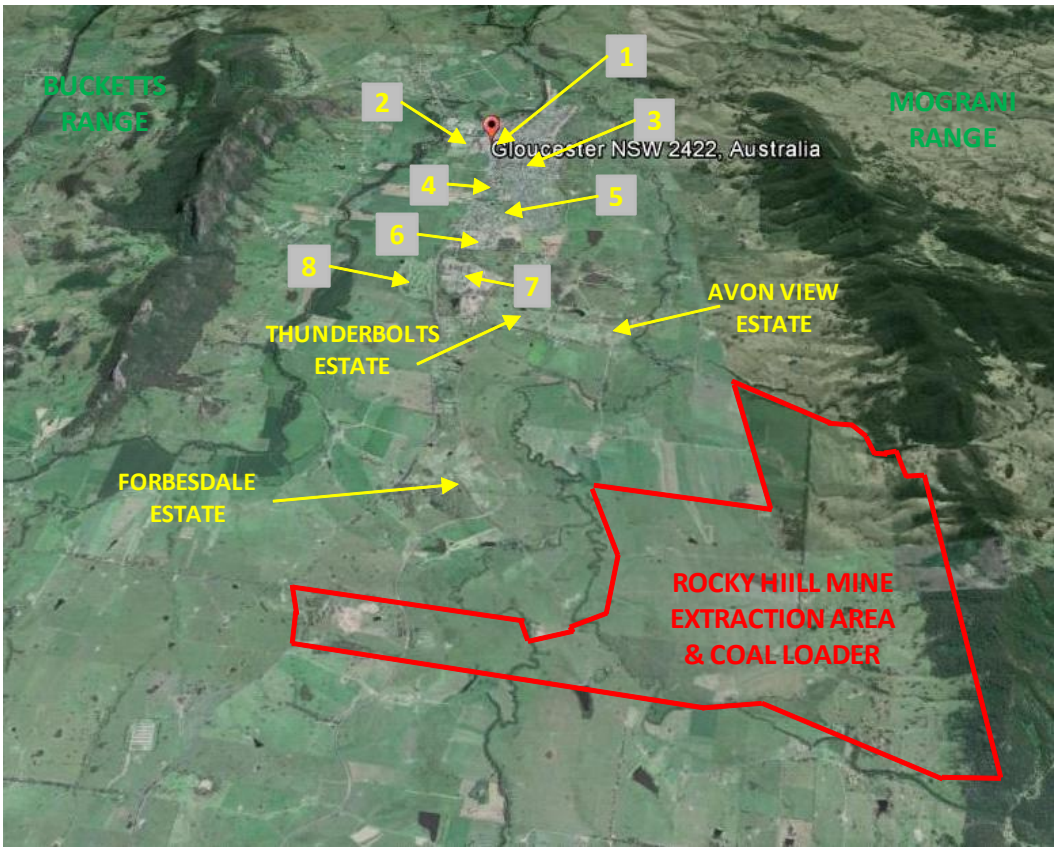
The Rocky Hill Coal mine is proposed to be located immediately to the south of Gloucester on the western bank of the Avon River extending across the flood plain easterly to the Mograni range and southerly some 2km abutting the northern boundaries of land owned by AGL and Yancoal. A corridor some 500m wide extends to the coal loading facility situated atop the elevated central ridgeline of the valley 2km from the extraction area.

Immediately to the west of the main extraction area is situated the rural residential area of the Forbesdale Estate some 900 – 1800m distant. Situated to the northwest are the rural residential properties along The Bucketts Way some 1800 – 2500m distant and to the north the Avon View and Thunderbolts rural residential estates some 1800m – 2500m from the main extraction area.

The table below list some key town infrastructure points and their distance from the proposed main extraction area.

1	Gloucester's main shopping area	5500m
2	Gloucester's sporting facilities	5600m
3	Gloucester Primary School	5100m
4	Gloucester Hospital & Hillcrest and Kimbara aged care facilities	4600m
5	Gloucester High School	4300m
6	Gloucester Residential Area	3700m
7	Gloucester Industrial Area	3200m
8	Gloucester Golf Course	3200m

Figure 1.1 Location of the Rocky Hill Mine



2.2 The Community of Gloucester's Opposition to the Rocky Hill Mine.

Understanding the communities opinion begins with understanding the community.

The Australian Bureau of Statistics conducted the Australian Census in 2011. A summary of the results of that census and comparison figures with NSW and Australia are shown in the table below.

Table 1.1 Gloucester LGA – 2011 Census Summary

	Gloucester LGA	NSW	Australia
Median age	50 years	38 years	37 years
Married	54.7%	49.4%	48.7%
Born in Australia	88.2%	68.6%	69.8%
Both parents born in Australia	82.6%	51.9%	53.7%
Household income (weekly)	$810	$1237	$1234
Household income under $600	37%	24.2%	23.7%
Involved in voluntary work	26.3%	16.9%	17.8%
Own or mortgage home	71.8%	66.6%	67%

The residents of the Gloucester community are on average significantly older than their counterparts in NSW and Australia. They are more likely to be married and far more likely to

have a long Australian family heritage. They have a significantly lower household income but at the same time are more likely to own or mortgage their home. They display their sense of community through volunteer work.

When the community first became aware of the intent of Gloucester Resources Limited to explore land close to Gloucester, with the intent to later develop an open cut mine on that land, 850 residents attended a public meeting to voice their opposition. This figure represented almost 50% of the adult population of the town. This highlights the level of concern felt by the community for such a proposal.

The Gloucester Shire Council, on behalf of the residents of the Shire, conducted a survey of the community to determine the level of approval or disapproval in relation to the Gloucester Resources Limited proposal to develop the Rocky Hill Mine. The result of that survey was overwhelming opposition to the proposal. Over 85% of the respondents to the survey indicated they did not want the proposed development to proceed. Subsequent community meetings held by Gloucester Shire Council have shown that the level of opposition in the community survey remains high.

Subsequent community meetings held by Gloucester Shire Council have shown that the level of opposition shown in the community survey remains. It has also shown that the community, as the Rocky Hill Mine has moved from concept to proposal and now EIS submission, has become polarised in its opposition or approval. This has had a negative impact on the community separating it into two groups with very few individuals having a neutral stance.

In May 2013 the Hon. George Souris presented to the NSW Parliament a petition of over 3000 signatures opposing the Rock Hill Mine.

The Community of Gloucester overwhelmingly opposes the development of the Rocky Hill Mine.

This opposition is borne out in the survey conducted by Key Insights on behalf of Gloucester Resources Limited with a high percentage of community concern with regards to:

- Impacts on the water supply in the local area (82%)
- Dust impacts (79%)
- Visual impacts of the proposed open cut mine (77%)
- Impacts on agriculture (77%)
- Impacts on the local character of the area (77%)
- Noise impacts (76%)
- Flora and fauna impacts (72%)
- Increased traffic associated with workers and deliveries to the Site (52%)
- Coal mining's impact on climate change (51%)
- More trains moving on local railway lines (46%)

The Gloucester Shire Council, The Gloucester Visitors Information Centre, the Gloucester Chamber of Commerce and local community groups and organisations expressed their concerns with the concept of Rocky Hill Mine primarily in the areas of:

- Air quality impacts
- Groundwater and surface water impacts
- Ecological impacts

- Health issues
- Noise issues
- Local traffic impacts

Respondents to the survey were asked to comment in relation to the proposed Rocky Hill Coal Mine.

- 331 respondents chose to comment (67% of survey respondents)
- Comments were grouped into "themes" resulting in 483 responses (multiple themed responses by one respondent)
- Themed responses were graded Pro, Anti or Neutral the Rocky Hill Mine proposal
- 398 responses were anti the proposal (80.7%)
- 49 responses were pro the proposal (10.1%)
- 21 responses were neutral (4.3%), 15 responses commented on the survey rather than the proposal (3.1%)

Both the Gloucester Resources Limited community perception survey and the Gloucester Shire Council survey show overwhelming community opposition to the Rocky Hill Mine proposal.

The only substantive positive response came from a two focus groups comprising a total of 12 adults aged between 15 and 30 years. (At 12.2% of the population this represents the smallest adult demographic in Gloucester. 30-44 years 14.8%, 45-59 years 21.4%, 60-74 years 23.6%, none of whom were canvassed.) Their main point of benefit "that mining would bring Maccas, Woolworths and a cinema to Gloucester."

2.3 Community Concern Over the Renewal of Exploration Licences

In 2009 exploration licences EL6523, EL6524 and EL6563 were renewed. GRIP on behalf of the Gloucester Community opposed the renewal of the licences.

GRIP believes that the exploration licences listed above should not have been renewed in 2009. The licences were not only renewed but they were renewed without any relinquishment of land and for a further three years.

GRL states "In early 2010, accelerated exploration programs commenced within EL6523, which identified sufficient coal resources to allow the Applicant to commence planning to develop the Rocky Hill Coal Project."

GRIP asks, "What work was carried out, to comply with the Exploration Licence agreement, between 2006 and 2009?"

Our observations and reports to the GRL Community Consultative Committee indicate that very little, if any work was carried out in that period. Yet, the licences were renewed.

On the 24th June 2007 GRL reported to the Community Consultative Committee

"That within six weeks (GRL will) complete all the data gathering work necessary for GRL to conduct its exploration program with minimal landowner occupation time."

There was no material progress after almost thirty months or nearly 85% of their tenure. You would question how GRL could submit its compulsory 6 monthly report to the DPI if it didn't do anything for almost thirty months. Holders of coal exploration titles are required under the Mining Act (1992) to lodge, at six monthly intervals, reports on exploration activities, expenditure and the proposed exploration program for the following six months.

Coal Exploration Licences were used under false pretences to purchase land**.**

In February 2009 GRL claimed in the CCC minutes, to have spent ten million dollars purchasing several non-contiguous parcels of land (in the exploration license area) on which, they propose to pursue pastoral interests as a separate line of business to their coal mining interests. They are a company set up to explore for coal yet they are spending millions on land acquisitions presumably not for coal exploration but for agriculture and forestry.

GRIP claims that this is an abuse of the exploration licence and therefore the licences should not have been renewed.

2.4 The Renewal Debacle

The following outlines the period from early July 2009 to mid August 2009 with regards to the announcement of the renewal of the exploration licences and the deception and misinformation surrounding the that announcement.

- From the minutes of the CCC meeting of **3rd July 2009** Mr Brian Wingett, the then Managing Director of GRL, advised he had electronic advice that the licences had been renewed for three years.

- Mr Norm Sage, a resident of Gloucester, was advised on the **6th August 2009** from Mr Jeff Inman, Titles Administrator, DPI that the licences were still under consideration.

- Mr. Allan Young, General Manager, Gloucester Shire Council, was advised on the **6th August 2009** from Melanie Brown, Coal and Petroleum titles DPI that the licences had not been renewed and were still being processed.

- Mr Steve Robinson, community member of the CCC was advised on the **12th August** from Julie Moloney, Department of Industry and Investment DPI that the licences had been renewed.

Where did Mr Wingett get his information from if not from the DPI?

Someone advised Mr Wingett that the licences had been renewed before they officially were. The question is, who makes the decision about the renewal of the licences if not the DPI?

Mr Wingett, a disbarred solicitor, knew about the renewal months before it was official. Maybe the residents should have taken more notice of Mr Wingett when he stated to property owners,

"I will own all the valley one day and I know people in high places."

GRIP questioned this at the time with the DPI and the Govt. and it was never answered as to why Wingett knew two months before the official renewal that the licences had been renewed.

2.5 The Community and Social Licence.

The Social License has been defined as existing when a project has the ongoing approval within the local community and other stakeholders, broad social acceptance and, most frequently, as ongoing acceptance.

At the level of an individual project the Social License is rooted in the beliefs, perceptions and opinions held by the local population and other stakeholders about the project. It is therefore granted by the community. It is also intangible, unless effort is made to measure these beliefs, opinions and perceptions. It is dynamic and non-permanent because beliefs, opinions and perceptions are subject to change as new information is acquired.

Social License has to be earned and then maintained.

GRL have constantly asserted that they are concerned with the views of the community and want to be a model citizen in the Gloucester area. Quote from GRL's Community Newsletter February 2012,

"GRL and the Rocky Hill Project Team understand that open and honest community consultation is an imperative if they are to understand and address the community's and individuals' concerns about the Project and, in turn, for the Project to be accepted as an important part of Gloucester's future."

Yet, they, GRL, are completely disregarding Gloucester Shire Council's Local Environment Plan by proposing that an open-cut mine operate within the Zone E3, scenic protection area.

Gloucester Shire Council is elected by the people of the shire to represent the people of the shire. Much time and effort is executed to produce a Local Environment Plan. This plan has been accepted by the residents.

GRL state "The application is made possible by virtue of the fact that mining is a permissible land use with consent within Zone RU1 – Primary Production. In addition, the *Gloucester Local Environmental Plan 2010* nominates "extensive agriculture" as permissible in Zone E3. *State Environmental Planning Policy (SEPP) (Mining, Petroleum Production and Extraction Industry)* 2007 provides that mining is permissible where agriculture is a permissible land use.

GRL have fallen back on the (SEPP) to override the council so they can build an open-cut mine in an area of extreme scenic beauty. This shows a complete disregard of the residents wishes and demonstrates GRL's disdain for the residents.

Where is their desire to "understand and address the community's concerns?"

GRL do not have a "Social Licence" to develop and operate the Rocky Hill Mine.

The community when surveyed declared that they do not want this mine in their valley so close to their town yet here we are on the verge of approval.

Are we, the people of Gloucester, simply to be considered "collateral Damage" by the Department of Planning and Infrastructure as the assessment of the Rocky Hill Mine is undertaken or will the community's concerns by listened to and approval be denied.

3. Community Concerns: Physical, Social, Economic and Environmental

Gloucester Residents in Partnership has prepared this submission to oppose the Rocky Hill Coal Project keeping in mind the areas of concern highlighted by Key Insights "Community Perception Survey".

The community's concerns over the impact of the development and operation of the Rocky Hill Coal Mine cover not only the physical impacts but also how those impacts in turn will affect the environment and the social and economic wellbeing of the community itself.

3.1 The Impact on Water due to the Rocky Hill Mine

3.1.1 Surface Water

The Rocky Hill Mine proposal plans to divert a substantial quantity of surface water from its natural sub-catchment flows for up to 21 years. The landscape of these sub-catchments will be totally destroyed by open cut coal mining and then replaced with an artificial landscape for which there are no quantifiable parameters for surface water quality or quantity. The diversion flow characteristics have been modelled and deemed to have only a minor negative impact. This assessment is incorrect and unacceptable.

The post mining (rehabilitated) surface water concept in Fig 2.24 is farcical. The actual situation is totally unknown; EIS section 2.15.5 says,

"there is likely to be some settlement"....."particularly above the main pit."

There is no information on how the actual landscape will be achieved, how it will perform, and no risk analysis. It cannot be assessed and therefore the proposal application should no be approved.

The proponent's objective is, "the management of surface water to avoid or minimise the adverse impacts." EIS sections 4.7.3 and 4.7.4. Minimising such adverse impacts is unacceptable in the Avon, Gloucester and Manning River valleys.

The EIS identifies a number of risks in section 4.7.1 that could result from the mine proposal. The significance of these risks has been ranked as lower than will be the actual situation.

3.1.1.1 Risk - Sediment

Discharge of sediment-laden water and pollution of adjacent creek flows is regarded as a medium risk in the EIS (p4-160) but is potentially much greater due to the following reasons:

The height and slope of the visibility barriers mean that they will be very difficult to vegetatively stabilise in a reasonable period of time and erosion will wash sediment into the Waukivory Creek and Avon River flood plains. There is further discussion of this substantial risk in the section of this submission dealing with flooding.

All sediment dams are designed to discharge into one or other of the Creeks and Rivers outside of the mine area as shown in Figures 3.2 to 3.5 of WRM 2013 (p 5-67/9). This means that the statement on EIS page 4-179 that the capacity of sediment dams would be "designed largely to contain the projected sediment-laden water" is deceitful.

Although Table 4.49 provides an "adopted size" for sediment dams it is taken from Table 3.2 (p 5-81 of WRM 2013) but there are no calculations provided as to the required capacity. The assumed catchment sizes for the proposed sediment dams on the western wall of the visibility barriers are ridiculous as there is no information as to how the runoff from the visibility barrier will actually enter the dam. In fact section 4.7.4.3 of the EIS states that "all sediment dams will be sized according to Blue Book requirements' so it is obvious that such calculations have not yet been done, so any risk assessment is fictitious.

WRM (2013) on page 5130 states that the spillways of these dams will be above the 1:100 AEP flood level but this is not stated in the EIS. In either case this is an unacceptable design for a sediment dam on a flood plain; data exists in the consultant report for PMF levels and this should be used for such critical infrastructure.

The management arrangements considered for all sediment dams is that when they become full of water and sediment it will be discharged within 5 days, as stated in section 3.3.1 of WRM 2013, but there is no accurate statement as to where it will be discharged. It is proposed that these discharges will go to the river system if the water is of a suitable quality (EIS p 4-184) as defined in an as yet unapproved EPA license. The water qualities proposed by the proponent (EIS Table 4.55) are higher than the NSW Water Quality Guidelines for salinity and suspended solids and should not be accepted. Therefore, there is a very high risk that water cannot be legally discharged but will simply overflow the sediment dams and pollute the Avon River.

The total volume of all sediment dams (without any sediment in them) is 580ML as presented in Table 4.49 of the EIS. Rainfall and runoff for the mine area is stated on page 4-184 to vary between 238ML/a and 1199ML/a so the sediment dams can only hold the runoff and sediment for a part of what is stated.

The site water balance presented in Section 4.7.4.6 of the EIS and section 4.3 of WRM 2013 is only for the saline water zone. It does not include the clean water or dirty water zones and hence does not meet the DGRs for a complete water balance.

As the EIS does not actually provide a water balance for the dirty water area the following approximation is made here. Assume that from Fig 3.13 in WRM 2013 (p 5-78) that in year 7 of the mine the area of dirty and saline water management are similar. Table 4.3 WRM 2013 page 5-93 indicates that in about year 7 the contribution from rainfall and runoff in the saline area would be about 1400ML/a so it can be assumed that a similar amount occurs in the dirty water zone. As presented in Table 4.49 of the EIS (P 4-182) the capacity of the sediment dams in only 580ML in total so these dams would have to be emptied by pumping to the river at lease twice in the year. The risk of pollution associated with this management is very high and totally unacceptable.

3.1.1.2 Risk - Erosion

Erosion and instability of levees on the flood plains and the channels of Oakey Creek are regarded as low risks in the EIS (P4-161) but data in the reports indicates a higher risk for the following reasons:

Even in section 4.7.5.5 (i) of the EIS it states that "there may be a need for localised scour protection at the toe of the … visibility barrier" for 1 in 100AEP flood events. Figure 5.25 in WRM (2013) indicates that 1:100 flood velocities could increase by 1m/s to 2m/s against some of the constructed sediment dam walls. Figures 4.10 and 4.11 in WRM (2013) Appendix C indicate that for a 1:1000 year ARI (flood), the water against the levee and dam walls could be 2-3m deep and 2-3m/s velocity; unless protected these structures will erode. A further high risk design is that these sediment dams are to be constructed where flood water is deepest as seen by comparing the longitudinal distances in Figures 4.27 and 4.28. In other words these so-called sediment dams are really designed to protect the visibility barrier walls at low points of the flood plain; a very high risk for erosion and down stream water pollution and it is unacceptable.

Section 4.7.4.3 states that sediment-laden runoff from the western face of the barrier will be collected in "a series of sediment dams strategically placed along the toe of the barrier. It then proposes to release this water into the Avon River under an EPA licence. This is despite stating on page 4-184 of the EIS that "no overflows would occur throughout the life of the project. Such contradictory statements mean that the EIS is not credible.

Oakey Creek will carry extra water because of discharge from the diversion bank that the mine will construct to the east of the site EIS (Fig 4.40) in order to stop runoff entering the mine site. Some of this water would normally flow into the Avon River directly or via Waukivory Creek (Fig 4.38). The extra flow in Oakey Creek has only been analysed for a 1 in 20 AEP event and this is entirely unacceptable as the actual Diversion Channel will be designed for a 1:100 yr flow (WRM 2013 page 5-69). Section 4.7.4.2 of the EIS says that the diversion channel will 1-15m wide and "exhibit a gentle gradient" but this is not supported by the cross section in Fig 3.6 of WRM 2013 (p 570) and the statement that the channel will be 30m wide. The downstream ends of both channels will flow into steep drainage lines and while it is stated that energy dissipators will be used to reduce erosion, there is no design data for this and no risk assessment. The erosion assessment of the diversion channels and of the extra flw3 into Oakey Creek is inadequate and unacceptable.
There is no information presented about the storage or management of the spoil from the construction of the clean water diversion channels. It is stated that the

channel will be grass lined but no information on how or over what time period this will occur. Both of these are high risk elements in the design that has not been evaluated in the EIS and this is unacceptable.

3.1.1.3 Risk – Saline Water

The need to retain poor quality water due to an inability to discharge it without treatment in regarded in the EIS as a medium risk but given the very large volume of contaminated water discussed in the proposal EIS 4.7.4.6 (p4-184) for volume and EIS 4.7.2.6 (p4-169) for quality issues, this risk should be rated as very high for the following reasons.

A site water balance for saline water is not actually presented in an integrated or diagrammatic form and although Figure 4.44 (EIS p4-178) might pretend to do this it fails. Summary data on page 4-184 indicates that inflows could be up to1,200ML/annum from rainfall and 1,100ML/a from saline groundwater, outflows could be up to 600ML/a for usage on site and 600ML/a for evaporation from storages, resulting in a need to store at least 1,100ML in some years. There is no year by year analysis of cumulative inflows, outflows, storages or risks associated with these operations in the EIS and this is unacceptable.

Section 4.7.4.7 of the EIS states that "under average conditions approximately 39,000 tonnes of salt could be expected to accumulate in the saline water zone storages over the life of the proposal" this is a very high risk strategy. To suggest that this is only a medium risk is not responsible planning.

As discussed above, there is no water balance for the dirty water management in the mine and this is a major deficiency. The fact that sediment dams will have to be pumped out and even cleaned of sediment to maintain storage is a high risk management action that is not addressed in the EIS and is unacceptable.

A big point is made (p4-184) that "no overflows would occur throughout the life of the Proposal" and that there "would be the lack of need to extract water from Waukivory Creek, the Avon River or on-site sediment dams" beyond the site establishment and construction period. This highlights 2 deficiencies in the EIS; firstly that an unspecified amount of water has to be stored on site for years and secondly that a large amount of water is being diverted from the downstream water system. Both of these 2 problems are high risk.

A further point is made in this section that "water from the on-site sediment dams once of an acceptable quality, would be returned to the existing creek/river system to maintain environmental flows". This is a high risk strategy for which no data or analysis is provided and as such is totally unacceptable.

Table 4.47 (p4-169) and subsequent discussion provides data that indicate existing surface water quality at the proposed mine area and the rail load-out facility are much higher than NSW Water Quality Objectives for characteristics such as electrical conductivity (salinity), sediment (TSS), nitrogen, phosphorous and some heavy metals. This is simply accepted in the proposal and no remediation provided whereas in reality the proponent as land owner should prepare and implement a plan to remedy this unacceptable situation. The lack of action on this matter is

unacceptable and means that any further contamination will be a high risk for environmental pollution at the site.

3.1.1.4 Risk – Chemical Contamination

Chemical contamination of surface water and the long term impact to salinity levels in regional surface water are regarded as low risks in the EIS. In fact these are high risks from the information presented and also from the fact that some information is not presented.

Contamination by seepage from the visibility barriers is not assessed yet these will be 40m high and constructed with relatively uncompacted subsoil contaminated with salt. The leachate from these structures will flow directly into the Waukivory Creek and Avon River flood plains.

The proposal in Table 4.55 of the EIS (p 4-189) that water with salinity and suspended solid values above NSW Water Quality Objective levels will be pumped from sediment dams to the Waukivory Creek and Avon River systems will contaminate these systems and is an unacceptable high risk. The suggestion on the bottom of page 4-184 that water from the sediment dams "would be returned to the existing creek/river systems to maintain environmental flows" is astounding. It infers that environmental flows have been reduced by the mine and that the water above defined objective standards is acceptable for environmental flows. This is simply a misleading management proposal in order to remove excess dirty water from the site.

Section 4.7.4.7 states that at the end of the proposal "under average conditions" there will be 39,000 tonnes of salt accumulated in storages and that this will simply "make its way back into the groundwater system and overburden as the pits are backfilled". This statement is unsubstantiated and illustrates another very high risk element of the design. The salt 'slug' will have a very high risk of contaminating surface and ground water as it moves out of the mine area when the pits are filled to a height of 45m above the original ground surface. This will be a long term impact of unquantified magnitude.

The post mine rehabilitation plan does not include provision for testing (and if necessary treating) material for salinity, acid forming potential, or the presence of heavy metal contaminants prior to it being moved and placed in the new landscape. This means that there is a very high risk of unsuitable material being exposed during the earthworks and even being placed permanently in unsuitable places near drainage lines. A risk assessment of all material to be repositioned must be undertaken before it is moved during this landscaping phase.

3.1.1.5 Risk – Post Mining Water

Of very great concern is that there is no risk assessment in the EIS of the post mining surface water situation. Such a risk assessment has not been undertaken by the proponent either due to negligence or deceit. In fact it is not possible to effectively analyse the post mining surface water situation for the following reasons:

While indicative rehabilitated surface heights are provided in Fig 2.25 of the EIS these cannot be verified as there is no mass balance for spoil excavated and spoil

used to fill in the pits. Sect 2.15.5 says that heights might subside ("some settlement") but the self-drainage will be unaffected. This statement would not be correct if the large flat rehabilitated surface above the main pit (newly filled with 100m of spoil) was to subside by 1m relative to the land surface to the west where the visibility barrier has been removed and the land has compacted naturally over years. The risk in this scenario is high and would add to the accumulation of water in the void area.

There is no plan presented as to how overburden (waste) material will be placed during reformation of the surface landscape and hence no risk assessment of the movement of saline and acidic groundwater within the final landscape.

There is no surface water balance in the EIS for the post mining landscape so issues such as stream volumes and velocities cannot be assessed. This means that soil erosion is unknown and the risk that this poses to downstream pollution is potentially very high until vegetation is established.

The likely risks that revegetation will fail on the reformed landscape is high given the harsh soil conditions and the variable climate, but this issue has not been assessed for risk. It can be assumed to be high.

Fig 2.24 shows that new streams will be established over the filled voids but there is no information on how these will be constructed or what their flow characteristics will be. It is likely that water will simply infiltrate into the void area and add to the annually increasing volume of contaminated ground water. Eventually this 'basin' of polluted water will enter the downstream ground water systems and even flow onto the land surface to the west of the barrier area.

3.1.1.6 Mitigation Failures

There is no mitigation proposed in the EIS for most of the issues discussed above. It is not acceptable to state that these issues will be detailed in the Mining Operations Plan that will be submitted to DRE after development consent (EIS section 2.15.1 and other sections). The risks need to be assessed as part of determining development consent and there is insufficient data in the EIS to enable this analysis.

Monitoring of water quality is proposed to "confirm the quality of water collected on site" or "released of site" or to "establish the extent (if any) to which runoff from the site is having an adverse impact".

The proposed mitigation measure for excess dirty water is to pump it for release outside the mine area subject to an Environmental Pollution Licence.

One proposed mitigation measure for saline water is to spray it on roads in the mine to suppress dust.

The EIS states that "standard mitigation measures" will be adopted but this is far from a standard development; it is a coal mine with pits 100m deep and barriers 40m high on the edge of a substantial flood plain.

There is no trigger points proposed that would cause action to be taken if the water quality was different to that predicted or if it was having an adverse impact. This is

entirely unacceptable and results in a very high risk management situation that should not be approved.

Pumping dirty water for disposal outside the mine area is unacceptable because the suggested limits of salinity and suspended solids are above NSW guidelines.

Spraying saline water on mine roads will initially suppress dust but because the salt has an adverse impact on soil structure the dust problem will in fact increase. The other problem is that this salt will return to the pits and dams in the mine area via rainfall runoff and not reduce the amount of accumulated salt.

3.1.1.7 Conclusion

This proposal should be refused because it fails to provide a full water balance as required in the DGRs and as such the impact of the mine on surface water quality and quantity cannot be assessed. This is a serious error in the EIS.

This proposal should be refused because the DGRs require a "detailed site water balance inclusive of volume and frequency of any water discharges". The EIS has not done this for the whole of the dirty water management area. The EIS has not done this for any of the post mine rehabilitated areas. The EIS has not done this for the period of at least 5 years from the end of mining to final rehabilitation to the time when the site is adequately revegetated.

This proposal should be refused because the rehabilitation plan is inadequate and cannot be assessed for its impacts on surface water post mining. In fact the proposed filling of mine voids with over 100m of unconsolidated overburden and coal waste is an un-tried concept and of high risk at this site because there is no data provided as to the likely impacts. There are no statements in the EIS about what will happen if the landscape fails. This is entirely unacceptable.

3.1.2 Flooding

While a detailed flood assessment has been undertaken, the design has used a 1;100 AEP for flooding and this is inadequate given the information available in the modelling for larger floods.

This is particularly pertinent because of the very limited data available for the modelling, that the study was not conducted with local stakeholder consultation, and that AGL is proposing a more extensive flood study, so that they can consider their impacts and cumulative impacts for all developments in the area.

The proposal for this mine development includes building visibility barriers and sediment dams on the floodplain of the Avon River and Waukivory Creek (EIS p4-161). This is entirely unacceptable as the earthen structures will impact on the flood characteristics of these water courses and also contribute polluted sediment to the downstream water due to increased water velocity eroding these structures (Consultant Study WRM 2013 section 4.12.1).

The proponent does not adequately address the environmental impact of the proposed visibility barriers that are to be built on the flood plains of Waukivory Creek and the Avon

River. The inadequate design criteria proposed for these structure will result in sedimentation and water pollution from these barriers (that are in fact flood levees). The issue of managing flood water that enters, and possibly leaves the mine has not been adequately been addressed.

The proposed height of the conveyor across the flood plain is not adequately evaluated for its flood impact or its security.

Section 2.1.3 of the EIS should contain the need for approval under the Water Management Act 2000 to construct structures on the floodplain.

The pollution by dissolved solids, salinity and heavy metals, from the failure of the proposed visibility barriers and sediment dams on the flood plain has not been considered.

The issue of licensing under the Water Management Act 2000, for structures to be constructed on the flood plain, has not been considered.

3.2 The Impact on Health due the Rocky Hill Mine

The adverse health impacts of the Rocky Hill coal mine is one of the major concerns of the community. This is largely, but not entirely due to the close proximity of the mine to residences.

3.2.1 Who will be impacted?

Figure 4.6 in the EIS displays 193 properties listed under the heading of 'Sensitive Receptors'. Of those 173 are not owned by GRL. This means that GRL is aware of the fact that 173 individual land holders will be immediately affected by the Rocky Hill mine. Of those 173, GRL isolate 66 residences (receptors) as being most at risk and therefore qualify to be assessed in the noise and/or air quality assessments. These residences (receptors) are singled out because they live from as close as 350m and as far as 2.51km from the 'closest area of disturbance' and as close as 1.27km and as far as 3.49km from the 'closest open cut pit'.

The residences (receptors) in the Forbesdale Estate, the closest residential estate, are located between 1.2km and 2.0km west of the western edge of the western and northern visibility barrier and 1.7km and 2.5km west of the closest open cut pit. The residences on the southern side of the Forbesdale Estate are approximately 1.1km to 1.9km north of the Rail Load-out Facility." The Forbesdale Estate has 50 resident families and has the potential to house two more residences.

The residences (receptors) in The Avon River Estate are located approximately 1.8km to 2.4km northwest of the Mine area and immediately north of Jacks Road, the main access route to the Mine area. The Estate contains 44 lots of which only 19 are occupied. The Avon Estate has the potential to house 25 more families.

The residences (receptors) in The Thunderbolt Estate are located approximately 1.9km to 2.8km northwest of the Mine area also north of Jacks Road. The Estate contains 51 lots of which only 27 are occupied. The Thunderbolt Estate has the potential to house 24 more families.

If we add the 51 lots without homes, to the 66 residences (receptors), GRL have stated as more at risk, then the total is 117 potential families at risk from impacts, because they will live between 1.2km to 2.8km from the mine workings.

The argument might be that the vacant lots cannot be assessed because they might never be built on. However the fact that the mine is situated close to land zoned R5 - 'Large Lot Residential', means that people can live there and all vacant lots could and should be occupied. The risk of mine impacts must be assessed on the potential of the residential area not on what the present occupation is.

From the reasoning above the assumption is that there are not 173 sensitive receptors but 224 sensitive receptors. This is 224 families, not individuals, when we use the 2011 census figure of 2.3 per household for Gloucester this represents 515 people. These people will be at risk from the impacts of this mine, because of their close proximity to the mine.

The health danger for these 515 people is unacceptable.

The adverse impacts, of open-cut coal mines on health, have been known for years. Australia still uses levels, for PM10 particles which are known to be unsafe. The US Harvard Six Cities (1993) report stated that the most important cause of health defects was PM 2.5. There is no 'safe' level for PM2.5 particles. The health danger for the people of Forbesdale and residences close to the mine, particularly the children and the elderly, is critical.

If this mine is approved then Gloucester will be among the communities who suffer daily with high levels of emissions from open cut coal mines in the Hunter Valley.

Following is a landmark review article. It reinforces the fact that this mine should never be approved so close to a built up area.

'Health and Social harms of Coal Mining – Spotlight on the Hunter'

Beyond Zero Emissions commissioned this report by Sydney University researchers (Colagiuri R et al) which reviews 50 international peer reviewed articles detailing the harms of open cut coal mining and power generation. Its key finding is that living near coal mines can cause serious harm to human health. It states –

Adults in coal mining communities have been found to have:-

- Higher rates of mortality from lung cancer and chronic heart, respiratory and kidney diseases.
- Higher rates of cardiopulmonary disease, chronic obstructive pulmonary disease (COAD) and other lung diseases, hypertension, kidney disease, heart attack, stroke and asthma.
- Increased probability of a hospitalisation for COPD (by 1% for each 1,462 tons of coal mined) and for hypertension (by 1% for each 1,873 tons of coal mined)
- 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 wheezing and coughing; increased absences from school due to respiratory infections.
- A high prevalence of any birth defect, and a greater chance of being of low birth weight (a risk factor for future obesity, diabetes and heart disease).

The government restricts smoking and is even putting restrictions on passive smoking but ignores the health risks from open-cut coal mines.

The study conducted by the Newcastle Coal Terminal Action Group 2013, and analysed by Air Quality experts Howard Bridgeman, from the University of Newcastle and Jill Sweeney from the University of Western Australia showed alarming results for particulate pollution. Suburbs closest to the Port of Newcastle recorded significantly higher levels of particulate pollution compared with levels recorded at monitors in Cooks Hill which is further away from the Port. Higher levels of particulate pollution were also recorded when the wind came from nearby coal stockpiles and the coal train line.

GRL have an answer for this dilemma of health impacts. They will monitor the dust levels. But who will monitor the guardians of the results? Community supervised dust monitoring in the Hunter and in Newcastle have uncovered what all knew but couldn't prove; that the previous decades of monitoring by industry with their private consultants and government regulatory bodies has been fictional. When the results of the community monitoring are published in Newcastle Herald and the Singleton Argus the difference is obvious and dramatic.

With receptors 'houses' only metres away from the proposed Rocky Hill coal mine and the rail line, having monitors is not enough. When the monitors are checked and have recorded that the levels are higher than the regulations, the damage is already done.

3.2.2 Causes of Health Impacts

Open Cut Coal Mining results in health damage in a number of ways:-

Particulate Matter and Dust causes multiple types of health damage both from the different sizes of particle and the different chemical contents of those particles. Dust is produced both from overburden and coal in extraction, processing, transportation and rehabilitation.

Noise and Blasting account for the highest number of complaints from residents impacted by the Stratford mine. The impacts are not recognised by the NSW Department of Health because of the lack of research accorded these problems. The loudness, the frequency, the character and the duration of noise are all factors that influence the stress that noise causes. Situated in close proximity to three housing estates, small acreage blocks and farms, the Rocky Hill coal mine will have a devastating effect on the people who have chosen to live in a quiet, rural area.

3.2.2.1 Particulate matter and Dust

Mechanical processes tend to result in coarse, PM 10 or 10 microns, and very coarse sized particles PM 50. These cause amenity problems such as depositing coal dust on your roof, which accelerates rusting through the sulphur content and coating your

washing line. Coarse particles get trapped in the nose and large bronchi and can exacerbate bronchitis, COAD and irritate the eyes.

An additional impact for those with domestic rainwater tanks is the acidity arising from the sulphur in the dust, nitrogen oxide blast gases and diesel fuel combustion products which cause release of lead and copper from roofing and plumbing. In the Macquarie University study of 101 tanks mostly within 5km of a mine they found 97% of tanks with a pH between 5-6, 16% of tanks had drinking water with a lead content above the maximum advisory level and a further 16% with health endangering levels of copper. The hydrocarbons, BTEX etc, in the drinking water were not investigated.

Incendiary processes such as working diesel machinery, locomotives and blasting result in fine PM2.5 and ultrafine PM 0.1 particles. These fine particles can get into the lung tissue, between the alveolar cells, like bacteria. The particles set up inflammatory reactions which release chemicals into the blood supply, which narrows fine blood vessels, causing strokes, heart attacks, diabetes and reduces the birth weight of babies. Ultra fine particles, like viruses, get inside cells, where they can damage genes and lead to cancers and mutations. Toxic gases such as sulphur dioxide, nitrous oxides and carbon monoxide are also produced.

Particulate matter and dust emits from the mine in two main forms as:

Diesel Emissions
There are no mandatory maximum levels for diesel exhaust emissions from off road machines. They use about a litre of diesel for each ton of coal produced i.e. 2million litres+/yr. Diesel exhaust fumes are a Grade 1 carcinogen.

The EIS assessment of Air Quality was undertaken by Pacific Environment Limited (PEL) with Toxikos, a division within PEL. They compiled a Health Risk Assessment focusing on "the potential acute and chronic health risks of increased levels of $PM_{2.5}$ and NO_2 . . (which concluded) they are negligible or acceptable"

This is failing to address a specific requirement of the Director General for a focus on diesel emissions. To quote Key Insights "Diesel particulates are known to cause irritation and are considered a probable human carcinogen . ." and again "Known health effects of particulates include upper respiratory tract irritation and infection, decreases in lung function and the exacerbation of symptoms and increased mortality from cardiovascular disease" and finally "Populations that are most vulnerable include elderly people with existing respiratory and cardiovascular disease and young children with asthma". (SCSC Vol 4 part 14, 5.2.1).

Key Insights may consider diesel particulates to be a "probable human carcinogen" but the World Health Organisation describes them as a class one carcinogen. GRL's Coverage of DGR's (Appendix 3) states these emissions are covered in the EIS at 4.4.6 and 4.4.8, but nowhere in 4.4.6 is diesel mentioned and in 4.4.8, diesel is only mentioned in table 4.41 as a CO_2 equivalent greenhouse gas. The EIS has failed to fully address the Director General's requirements with regard to diesel emissions.

The Rocky Hill Coal project will consume 26 million litres of diesel annually and 500,000 litres every week for up to 21 years. The particulates emitted are a major concern for health impacts but are ignored in the EIS.

Dust

People in general would perceive a considerable difference between Dust, Soot and Smoke. Dust, you sweep up with a brush, soot you wash down being careful not disturb it should it blow away and settle elsewhere and smoke drifts by on the wind, producing stains that are only removable by industrial solvents. This is a reasonable perception as it correlates accurately with the types of particulate matter:

- **TSP** (Dust): Total suspended particles, up to 30µm in diameter, used to determine the potential for particulate matter to affect amenity.
- **PM_{10}** (Soot): Suspended particles up to 10µm in diameter, particles between PM_{10} and $PM_{2.5}$ are often referred to as coarse particulate matter, used to determine the potential for particulate matter to affect health.
- **$PM_{2.5}$** (Smoke): Suspended particles up to 2.5µm, referred to as fine particulate matter, used to determine the potential for particulate matter to affect health.

As a comparison to the above the average thickness of a human hair is 70µm and the diameter of a grain of fine beach sand is 90µm.

All three are produced differently, all three act differently in the atmosphere and all three will be produced on a daily basis by the Rocky Hill Coal Project.

PM 2.5 particles are like cigarettes, there is no absolutely safe level and the higher the dose the higher is the risk. If you live near a mine on average your life expectancy is reduced by nine months. The very young, the elderly, the chronically sick and the socially disadvantaged are at greatest risk.

The atmospheric lifetime and distance that particulate matter is a major factor in the potential to impact on an individual's health

The table below has been extracted from the "NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining. Section 2.1 Definitions of Particulate Matter. Table 1"

Table 3.1 Atmospheric Lifetime and Potential Travel Distance for Particles of Various Size categories

Particle size	Description	Atmospheric Lifetime	Travel Distance
TSP	Total of all particle suspended in the atmosphere	Minutes to Hours	Typically deposits within the proximate area downwind of the point of emissions
PM_{10}	A subset of TSP, including all particles smaller than 10µm in diameter	Days	Up to 100 kilometres or more
$PM_{2.5}$	A subset of the PM_{10} and TSP categories, including all particles smaller than 2.5µm in diameter	Days to Weeks	Hundreds to Thousands of Kilometres

Dust is suppressed mostly through spraying water on haul roads, stockpiles and rail wagons but this method is not effective for fine particles since they are released in exhaust emissions and remain in the atmosphere for a long time (hours to days).

The Chemical Content of Particulate Matter and Dust
The NPI (National Pollution Inventory) list the chemicals that each Mine emits that are toxic. Stratford Mine (2010-2011) reported 24 toxic substances:- These emissions include 29kg lead , 0.4 kg mercury and 6.9kg polycyclic aromatic hydrocarbons from burning diesel which all cause brain damage. Also 8.4kg arsenic, 19,000kg volatile organic compounds such as BTEX which are both carcinogenic.

These tend to cause damage which accumulates over time. Additionally the following particles:- PM 10 760,000kg and PM 2.5 19,000kg (guestimate). Many of the hydrocarbons and some heavy metals are toxic to the brain.

Amazingly despite Stratford Mine now having been operating for 17+ years no Health Audit has been done to record the health of potentially affected people such as in Stratford Village who are within 1.5km of the Mine and who will be 1.0km under current proposals.

3.2.2.2 Noise and Blasting

Noise and blasting account for the highest number of complaints from residents impacted by the Stratford mine.

Noise
The impacts are not recognised by the NSW Department of Health because of the lack of research accorded these problems. The loudness, the frequency, the character and the duration of noise are all factors that influence the stress that noise causes. Situated in close proximity to three housing estates, small acreage blocks and farms, the Rocky Hill coal mine will have a devastating effect on the people who have chosen to live in a quiet, rural area.

Noise travels further when there is a temperature inversion at night. A quiet rural situation may have an ambient noise level as low as 20decibels at night. The decibel scale is logarithmic giving deceptive impressions about relative loudness.

A rise in 3 decibels doubles the sound energy. (23 decibels has twice the sound energy as 20 decibels, and 113 decibels twice that of 110.

Thus if one bulldozer is emitting 110 decibels the addition of a second similar machine would raise the sound to 113 decibels).

A rise of 15 decibels at night is likely to wake you from your sleep. A noisy coal train can easily do this especially when braking or accelerating or going uphill. Similarly large mining vehicles can do this. The government regulators quote a down ward limit of 30 decibels even if the true reading is 20 decibels. This permits many noises that waken people from sleep. Recurrent wakenings cause excessive drowsiness the next day – an important safety hazard.

Frequent wakening will cause sleep deprivation which results in stress chemicals being released with raised blood pressure and cardiac arrhythmias. It causes emotional disruption and impairment of concentration and learning the next day and triggers behaviour problems in children. This in turn is compounded by brain damage from heavy metals and PAH's. School performance has been shown to be impaired in children living close to rail lines with frequent night trains. Sleep disturbance is often a cumulative result from both dust induced asthma and sudden noise increases of more than 15 decibels.

Noise of higher frequencies is transmitted through the air and is reduced by insulation. **Low frequency noise** (e.g below 60 Hz) is transmitted more through solids and is not suppressed by insulation.

It can travel through a hill and re-emerge the other side. Below 20Hz it becomes too low for many of us to hear and is called infrasound. The vibrations/sound waves are still occurring and having a stressful effect on electrical transmission in our brains. Our tissues don't like to be constantly vibrated. (Middle C on a piano is 256Hz and the lowest note on a grand piano is 28Hz).

Low frequency noise can be at the natural wavelength for causing resonance in an enclosed space such as a room.

Sound Monitoring does not tell the whole story:

- The sound technicians record outside, and not inside the house where resonance may be making the sound louder.

- They discount noise under 60Hz frequency. Mine machinery often has its maximum loudness at these low frequencies.

- The sound is of an impure character that humans find unpleasant. A birdsong of a similar decibel level may not be distressing. This aspect of noise is ignored.

A sudden bang, such as from a mine blast, can be very stressful, particularly if the accompanying vibration causes the house to shake. This can cause bricks to crack, pictures to be dislodged etc. It is not unusual for people to get panic attacks

triggered by mine blasts. It is unheard of to receive compensation for this. Problematic sound extends further than problematic dust.

The EIS fails to give the full operating noise level of the project but hints that it would be about 120DBA. Looking at the nightime mobile equipment list in Table 6.1 of the SCSC, it seems that the listed equipment would be around 135swl plus more noise from the trains, loader, CHPP and conveyors.

It should be recognised that attenuating dump trucks may reduce their noise by 6db but it is an inadequate reduction if it still produces 114db.

It should also be noted that reducing the night use of say two trucks of 114db each, to one truck, will change the noise output from 117db to 114db. Halving the number of trucks produces a minimal reduction.

There is a statement that the equipment has no significant low frequency noise in It's noise signature; if so why not produce the signature?

Blasting

Blasting results in noise and vibrations and if the explosive is wet, or impure old diesel is being used, very toxic nitrogen oxide fumes are released. No monitoring of these blast gases is required by current legislation.

A sudden bang, such as from a mine blast, can be very stressful, particularly if the accompanying vibration causes the house to shake.

Bangs cause startle reactions and panic attacks. Blast gases have a high nitrogen content which is toxic and not monitored.

Blasting causes bricks to crack, pictures to be dislodged etc. It is not unusual for people to get panic attacks triggered by mine blasts. It is unheard of to receive compensation for this.

Noise can affect human and animal health by its' amplitude, spectral content, character (dozers/music) and dose (non stop). Tones, pitch and fluctuating noise all carry a propensity to cause annoyance. It can disturb lifestyle, create sleep disturbance, sleep deprivation and physiological impacts upon the brain and its functions, as well as the body's organs.

The noise complaints from residents around such mines (with little ambient noise) typically extend to 10km from the source. At around 3.5km from the source, low frequency noise of 20Hz to 250Hz will become the dominating characteristic of the noise and further away, infrasound below 20Hz will be more perceptible because of the attenuation of the higher frequencies. It is these lower frequencies which are more harmful to health.

There is no topographical barrier between the Rocky Hill mine and the hospital 5km away. The valley walls are 300m above the valley floor and funnel toward town

where the valley tapers to 4km wide. This 'tapered trench' will have a roof of inversion layer in winter and behave like a tunnel, confounding the predictions in this EIS of staying within 35DbA in town.

The object of an EIS is to get a proposal approved. It is not to warn the public of all the potential problems arising. The public may remain ignorant of the cause of the illnesses which are the result of mine noise.

In the World Health Organisation (WHO) Guidelines for Community Noise, "The primary sleep disturbance effects are;.a reduction in the proportion of REM sleep (Hobson 1989). Other primary physiological effects can also be induced by noise during sleep, including increased blood pressure; increased heart rate; increased finger pulse amplitude; vasoconstriction; changes in respiration; cardiac arrhythmia; and an increase in body movements (Berglund & Lindvall 1995). For each of these physiological effects, both the noise threshold and the noise response relationships may be different. Different noises may have different information content and this could affect physiological threshold and noise response relationships (Edworthy1989)."

WHO notes in 3.4 "sources with low frequency components require special attention. Disturbances may occur even if the sound pressure level during exposure is below 30dBA." and in 3.9 "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. (Berglund et al 1996). Since A weighting underestimates the sound pressure level of noise with low frequency components, a better assessment of health would be to use "C" weighting."

3.2.3 Potential Health Impacts

The health impact on the Gloucester community will be immense. This impact will be on both the physical and mental health of individuals and will affect the entire community. The effect may vary from any one individual to another but all will suffer.

3.2.3.1 Physical Impacts

In 2012 the Health and Sustainability unit of the Boden Institute for Obesity, Nutrition and Exercise at the University of Sydney prepared a paper titled

"Health and Social Harms of Coal Mining in Local Communities"

The paper represents a pragmatic review of international peer reviewed health literature and reports from relevant government and non-government organisations undertaken to identify background information and evidence that reflects what is known about the community health and social harms associated with coal mining activity.

The relevant question asked was

"What specific diseases or other health problems are associated with coal mining in local communities?"

A summary of key findings shows

Adults in coal mining communities have been found to have:

- Higher rates of mortality from lung cancer, chronic heart, respiratory and kidney disease
- Higher rates of cardiopulmonary disease, chronic obstructive pulmonary disease (COPD) and other lung disease, hypertension, kidney disease, heart attack and stroke and asthma.
- Increased probability of hospitalisation for COPD and for hypertension
- 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 respiratory symptoms although not all studies reported this effect.
- 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 low birth weight.

These findings are supported by every NSW Government Departments published literature on health and coal mining including "**Mine Dust and You**" a factsheet published by the NSW Department of health developed in conjunction with the NSW Minerals Council, the representative advocate for the mining industry.

In the World Health Organisation (WHO) Guidelines for Community Noise, "The primary sleep disturbance effects are:

- a reduction in the proportion of REM sleep(Hobson 1989).
- increased blood pressure; increased heart rate;
- increased finger pulse amplitude;
- vasoconstriction;
- changes in respiration;
- cardiac arrhythmia;
- and an increase in body movements (Berglund & Lindvall 1995).

For each of these physiological effects, both the noise threshold and the noise response relationships may be different. Different noises may have different information content and this could affect physiological threshold and noise response relationships (Edworthy1989)."

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3.2.3.2 Psychological Impact

People feel overwhelmed and powerless at the hands of enormous mining companies.

They feel helpless and hopeless.

They have to abandon plans they made for the future.

This leads to both anxiety and depressive illnesses. Research into the psychological pain caused to individuals, who are attached to their landscape and grieve for the loss of that loved landscape (which gave them solace), has been given the label 'Solastalgia'. Indigenous persons are particularly distressed by disturbance of their country. This contributes to feelings of depression.

In Gloucester, Forbesdale residents were told their new houses were located in the council's environment protection zone, but were never told the Dept of Planning could over-ride these promises of protection, signed off by another minister. Similarly the Dept of Planning over-rides the warnings of the NSW Health Dept (as at Camberwell). Exploration areas lead to houses losing their value and plans may have to be put on hold for many years when a mining company has been given a 20 year life on some exploration areas.

The community becomes divided by the riches a few get from a house sale in a critical area or employment in a mine. The majority don't share those riches and non mining businesses suffer by having employees attracted elsewhere. Gloucester Shire has a very low average income despite mining being here for 17 years.

These stressors cause some new cases of depression and anxiety but most frequently cause the re-emergence of past psychological disturbances that had become dormant but are re-activated by chronic stress.

The extensive purchasing of and progressive destruction of small rural communities such as Forbesdale, Craven and Stratford changes the social character and landscape of this valley of heritage significance

Geoff leventhall (2003), states, "psycho-physiological damage may result from long term exposure to low frequency noise"

"The Health Effects of Environmental noise-other than hearing loss, 2004"

by the Australian Government Department of Health & Ageing reports on interesting research in Australia.
Page1 "Low frequencies below 16Hz, are perceived through both hearing and through touch."
Page 11 "It is sometimes difficult to distinguish between the physiological and psychological effects, especially when the physiological symptoms may be the underlying cause of the psychological stress."
Page26 "Noise, acting as a stressor, is thought to have an impact on the cardiovascular system through certain stress response mechanisms such as the

release of cortisol, adrenalin and noradrenalin which have cascade effects, including raising blood pressure and increasing vasoconstriction."

There is a wealth of other research on health issues with noise covering ischaemic heart disease, damaged autonomic nervous system-hormonal system.

There are other issues of concern such as rooms resonating with low frequency noise (Leventhall), where the hum inside one's head will vary in strength as one moves around the room.

Infrasound causes mystery headaches, loss of balance, confabulation and inappropriate words. It can produce extreme distress and hatred.

There are no plans to track medical issues in the community caused by mining. GRL do not even recognise the need to do so.

3.2.4 Lack of Compensation for Community

Miners are medically examined before they are employed and only the healthy get employment.

This provides a baseline measurement of their lung and cardiac function. They are re-examined regularly. They only stay in the high risk zone for 40 hours per week. They are paid high wages as initial compensation for unhealthy work and then if health damage occurs they can get further compensation from a Dust Diseases Tribunal.

Community members living close to a mine are not examined initially to see if they are in a high risk group. They may be in that high risk zone for 168 hours of the week. No compensation tribunal exists for them. Many suffer chronic health damage. Some die. Very few ever receive compensation for damaged health.

Having a mine so close to residential areas is negligent. The mine should not be approved on those grounds alone.

3.2.5 Grounds for Refusal of the Application

We know from several studies on school children in the UK that asthma rates start to escalate above the background rate if you live within 5km of a mine and at 1.5km the rate has tripled.

With Gloucester, the geography of the narrow valley, with mountains rising to 565 meters, cause this to be a partially enclosed valley that holds the dust particles (and noise) within the valley. Meteorologist, Martin Babakhan, would expect the walls of the valley to redirect much of the dust back to the centre of the valley multiplying the impact of the particles and also increasing the temperature inversions.

This project should be refused on these grounds:

- It will make life unliveable in many properties.
- it will make a greater number of properties unsaleable and all property valuations to drop significantly.

- it is far too close to all properties in the valley for a distance, north and south of at least 7km.
- it will cause illness, learning difficulties in children, depression in adults and have an undeniable impact on the hospital.

Wilkinson Murray admit in 4.2.1 that on human health impacts, the project noise will cause illness in the community after all mitigation measures are completed. They also claim that there should be no problem in the project maintaining the compliance limit of 35DbA. One of these statements must be a lie.

The proponent was required to present evidence to support an argument against an evening and night operation ban on operations. They failed to fill the requirement.

This EIS warns us of none of the health ramifications of the mine and Wilkinson Murray wasted much space in this EIS by driving their campaign to get rid of the "C" weighting and replace it with a fanciful formula which would suit the agenda of those consultants who see their job as facilitating industry.

The grounds for refusal are supported by:

- **Senate Enquiry into Air Quality**
  On August 16th 2013 the Federal Government Senate Enquiry made thirteen recommendations which included that a health impact assessment should be part of every new development, coal wagons should be covered, there should be a buffer zone around mines, diesel emissions should be legislated and constant dust monitoring should be available on line for affected communities. The State Government has yet to comment.

- **Planned Regulation Review**
  Plans are for a National Clean Air Policy in 2014. The USA have had regulations for PM 2.5 levels for 15 years and they have had dramatic improvements in health impacts as a result, but Australia prefers to ignore this evidence.

Continuous open cut mining is among the worst sources of disturbance and harmful noise. The Rocky Hill mine proposal will be one of the worst examples of mining's impact upon a town and rural residential area. The Forbesdale area is only 1km west of the mine and will be uninhabitable. The whole of Gloucester town is within 6.5km from the open pit. No amount of controls by GRL will save these people from excessive noise and impacts from blasting.

The physical and psychological health impacts of the mine will not only be felt by the residents of Gloucester. The huge financial burden that it will bring, in particular to the State but also the Federal health budgets, will ensure that all Australians will share the impact.

3.3 The Impact on Visual Amenity due to the Rocky Hill Mine

Over 800ha of open cut mine, up to 40m high piles of overburden, conveyors and rail loading facilities will have a significant impact visually on the Gloucester Valley.

The extent and nature of that impact will depending on the year of operation of the mine, the time of day and the prevailing atmospheric conditions.

The impact on any individual will vary immensely depending on whether they are simply passing through the area, coming to visit the area or living in the area. Will they view the mine for a few seconds or will it form the backdrop of their daily existence?

The Rocky Hill Mine will dramatically change the Visual Amenity of the Gloucester Valley.

Vi-su-al attained or maintained by sight
Ame-ni-ty the quality of being pleasant or agreeable[1]

[1] *Definitions from Webster's Dictionary*

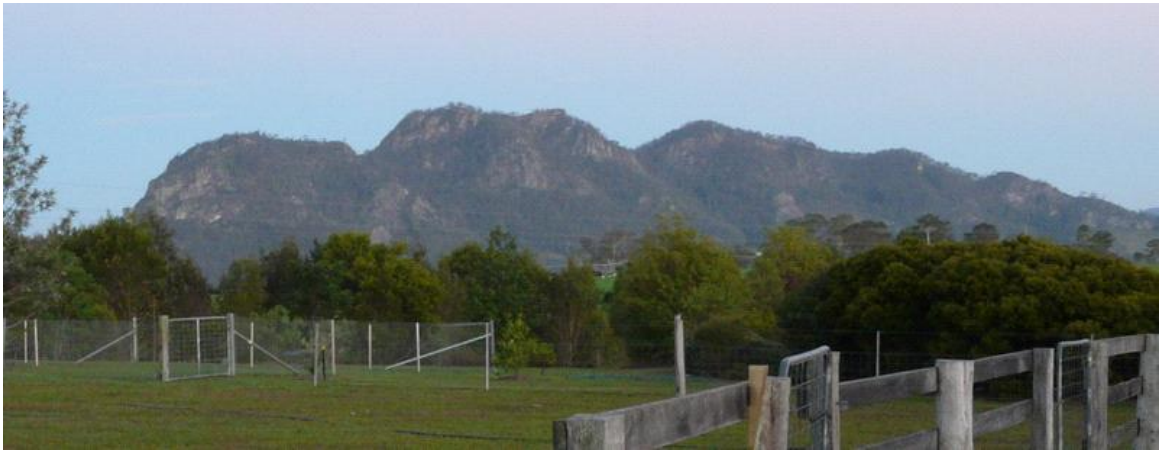
Visual amenity then, by the definition, concerns what can be seen and what is pleasant or agreeable.

3.3.1 The Existing Visual Amenity

The loss of visual amenity can only be understood if there is an appreciation of what is to be lost.

The following photographs were taken from locations within 2km of the proposed Rocky hill Mine site, both towards and away from the site. They are typical of the views experienced cresting the rise to the central valley spur some 10km south of Gloucester and travelling along the Bucketts Way towards the town.

The Bucketts at sunrise: taken from the rear of 5 Forbesdale Close.



The Avon River Valley and Mogranai Range: taken from 19 Grantham Road.

Sunrise over the Mogranai Range looking over the proposed Rocky Hill Mine site:
taken from 77 Fairbairns Road.

The Avon River Valley and the Mogranai Range looking south: taken from 30 Fairbairns Road.

The Mograni Range looking over the proposed Rocky Hill Mine site: taken from the Bucketts Way.

Looking west up the Gloucester River Valley: taken from the Fairbairns Road and the Bucketts Way intersection.

3.3.2 Loss of Visual Amenity

In the Visibility Assessment of the proposal, undertaken by Richard Lamb and Associates on behalf of Gloucester Resources Limited, it states:

"The prime aim of mitigation of the visual impacts should be to minimise the effect of the final landform on the scenic quality of the site. This should be the main concern in terms of visual impacts, other than visibility which is a secondary aim"

Thankfully the final landform is in the "godlike hands" of Gloucester Resources and their consultants as the Richard Lamb and Associates assessment goes on to state"

"The final landform will be distinguishable from the existing landform for those who are familiar with it. The proposed rehabilitation to woodland may be perceived by the contemporary population as an improvement in scenic quality."

Are we the community of Gloucester to believe, as is implied from the above statements of Richard Lamb and Associates, that the at least 15 years of loss of visual amenity during the mine's construction, operation and rehabilitation will be worth it for our new and improved scenic landscape?

This is particularly significant as shown in *Part 2 Engineering Section 6 Final Landform* the much flaunted final landform is an impossibility due to the insufficiency of available material

The Richard Lamb and Associates assessment identifies four principal components that would have a visual impact on the area:

- Four separate and/or contiguous pits and a coal handling and preparation plant (CHPP) within the mine area;
- An overland conveyor for transporting product coal to the Rail Load-out Facility;
- A Rail Load-out Facility (incorporating a rail loop and two coal storage bins);

- Two Power Line Corridors incorporating a relocated 132kV power line and a new 11kV power line external to the mine area;

The primary solution to prevent these eyesores on the landscape, as is always the case with open cut mines, is to hide them away from the community's view behind barriers of earth, trees or man-made visibility screens.

In terms of the solution to the problem of "Loss of Visual Amenity"

The solution to the problem is the problem!

The visual amenity of the area is not a scene or one view. It is the perception one has of the whole. It is not stated or commented on or for much of the time even consciously noticed but forms the background to a moment, an experience or one's daily life.

The community of Gloucester is fortunate to have one of the most scenic areas of the country as the backdrop to their lives. Small changes to the scene incite comment, clouds atop the Bucketts, frost on the golf course or a plume of smoke in the distance. The community is very aware of its surroundings and the minor changes that occur to it.

Visitors comment on the beauty of the area, not necessarily a particular item or scene but the overall perception as they travel around it.

Impacts on visual amenity cannot be hidden behind a barrier or screen when it is those very barriers and screens that are the cause of the impact.

3.3.3 Viewing Categories Redefined

Extensive comment is made in the EIS (4.5.4.3 Daytime Mitigation Measures) on the construction of the Western / Northern, the Central and the Eastern visibility barriers and their ability to shield operations at the Rocky Hill Mine site. These measures are guided by the visual absorption capacity of the area when viewed from different viewpoints that have been categorised by Richard Lamb and Associates as follows.

Category 1: Distant Elevated View

Places to the north and northwest, Kia Ora Lookout, The Bucketts Walking Track and Lions Lookout.

Moderate –high visual absorption capacity elevation 200m-350m AHD

Category 2: Middle Distance View

Places to the north and north-northwest of the site, parts of The Bucketts Way, rural residences adjacent to The Bucketts Way and rural residential estates off Jacks Road.

Low – moderate visual absorption capacity elevation 100m-120m AHD

Category 3: Middle Distance View

Places west of the site, The Bucketts Way and some of the rural residences in the Forbesdale locality.

Low – moderate visual absorption capacity elevation 125m-145m AHD

Category 4: Middle Distance View

Places along Fairbairns Road to the southwest and south of the site.

Moderate –high visual absorption capacity elevation 100m-120m AHD

There is no argument with definitions chosen to categorise the viewing locations. The obviously technical definitions used to define closeness however appear to bear no regard to the size of the object being viewed. By definition someone standing 101m from the Sydney Harbour Bridge has a middle distance view of the Bridge, clearly absurd, with the definition of close as indicated by Richard Lamb and Associates being less than 100m.

The Category 1 locations, whilst having been specifically requested by the Director in his requirements, represent a viewing platform for only a very small percentage of the resident and visiting populations.

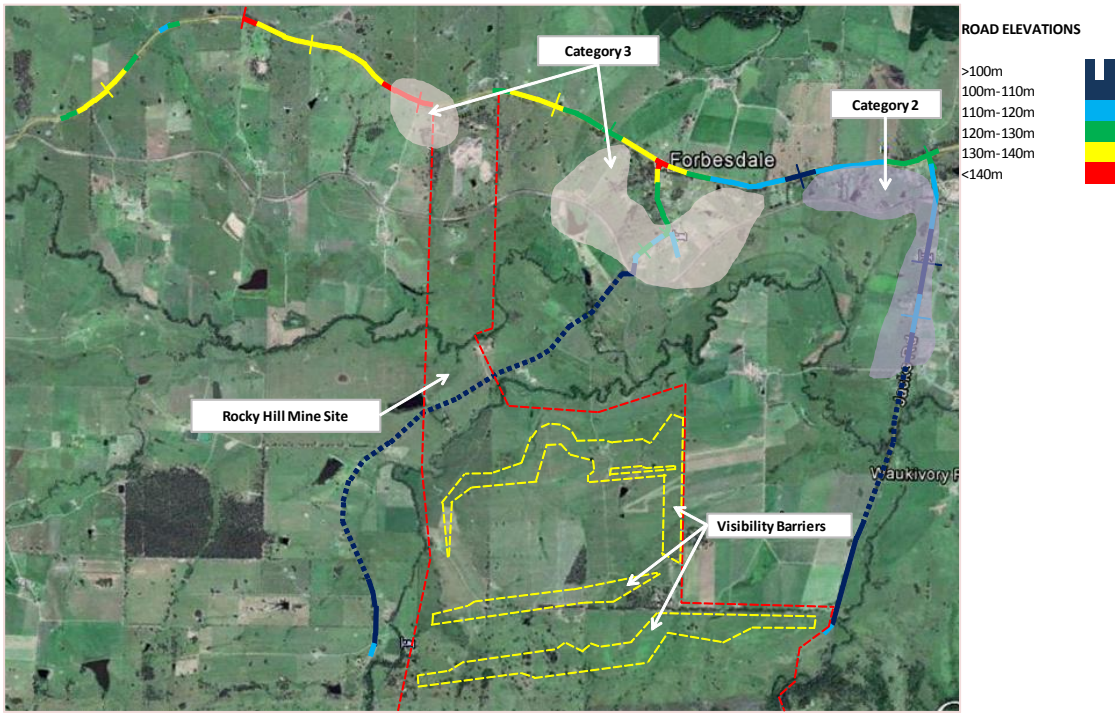
The Category 2 locations, apart from those rural residential properties along The Bucketts Way and the rural properties along the northern side of Jacks Road, lie to the northern side of the intervening ridge line that runs from The Bucketts Way to the Avon River flood plain. The ridge blocks any direct view of the mine site. However the residents of the Avon View and Thunderbolts estates will have a clear view of the Rocky Hill Mine as they enter and exit the area via Jacks Road.

Category 4 locations are located along Fairbairns Road at an elevation generally below that of the site. The properties along the section of Fairbairns covered in this category are all owned by Gloucester Resources Limited, AGL or Yancoal with the exception of two or three and as such should be considered irrelevant.

Category 3 and parts of category 2 therefore remain the only categories that have any great relevance from the standpoint of loss of visually amenity.

The figure below shows the sections along The Bucketts Way, Fairbairns Road and Jacks Road from which all or part of the mine site can be viewed. The road elevations are indicated by the respective colours and the Richard Lamb and Associate 2 and 3 categorised areas are also shown.

Figure 1.2 Rocky Hill Mine road viewpoints and elevations



Gloucester Residents in Partnership would suggest that a visual impact from a viewpoint at any of the areas shown along the public roads would be significant. The impact from the private residences between the roadways and the Rocky Hill Mine site even more so.

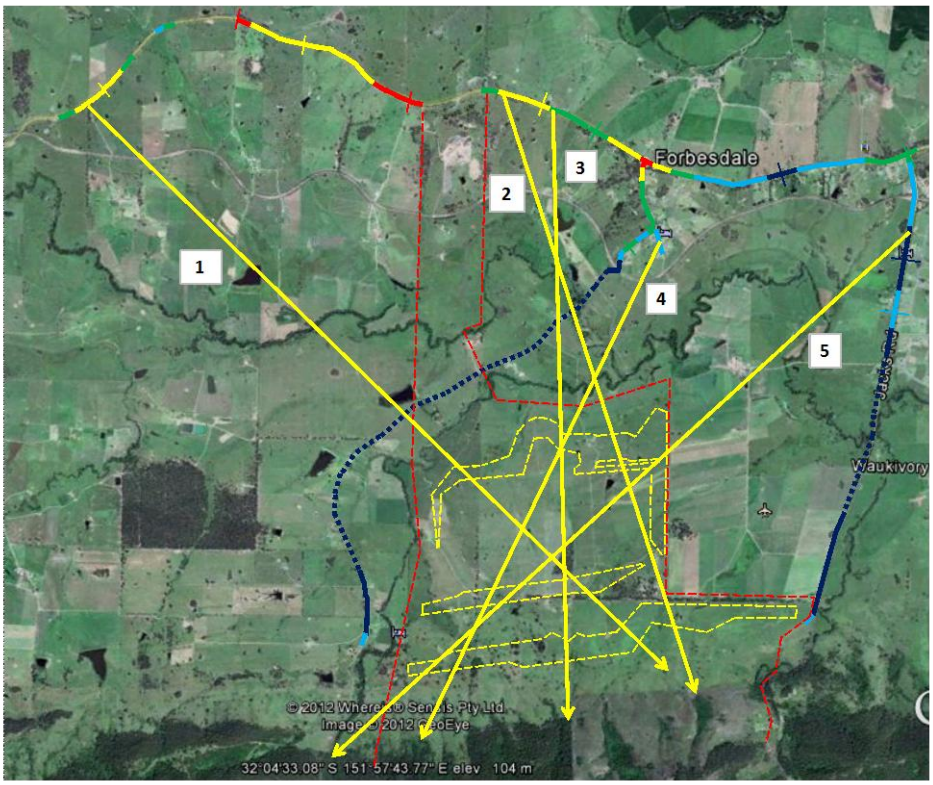
A far simpler categorisation of viewpoints can now be made simply by location and what can be seen.

3.3.4 What can be seen from where?

The view of the Rocky Hill Mine from any location can be defined mathematically by angular measurements taken from the point of observation. Figure 4.3.1 of the EIS shows the shielding impact of the visibility barriers from various locations. The scale of the diagrams however does not allow the reader to clearly appreciate the compounding effect of the appearance of the barriers.

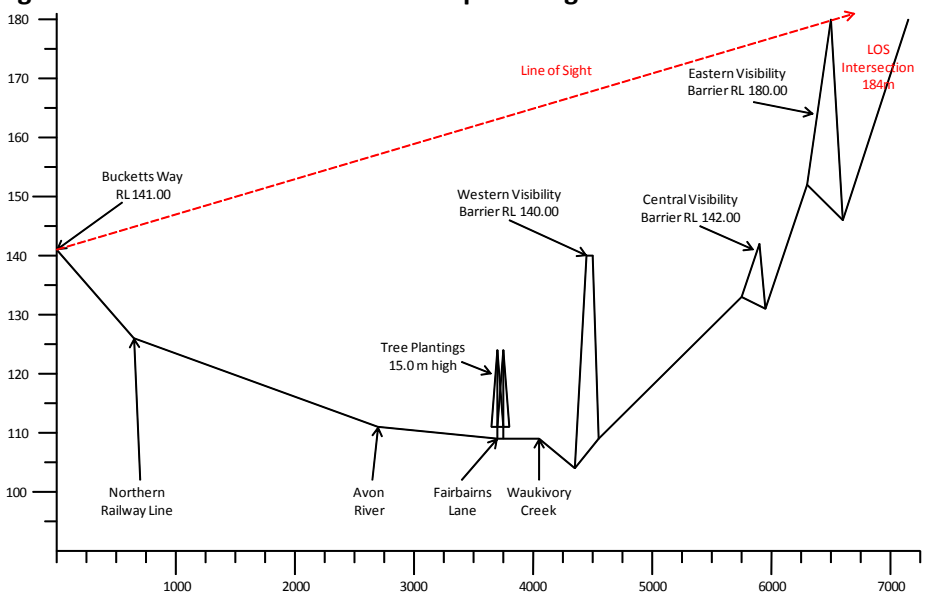
Five viewpoints were selected from the affected roadways discussed previously and cross sections drawn from those locations to the Rocky Hill Mine site.

Figure 1.3 Cross Section Locations



ross section 1 is located on The Bucketts Way at an elevation of 141m AHD.
It is the first view of the Rocky Hill Mine site that residents or visitors to the area will have as they crest the central ridge line approaching from the south.

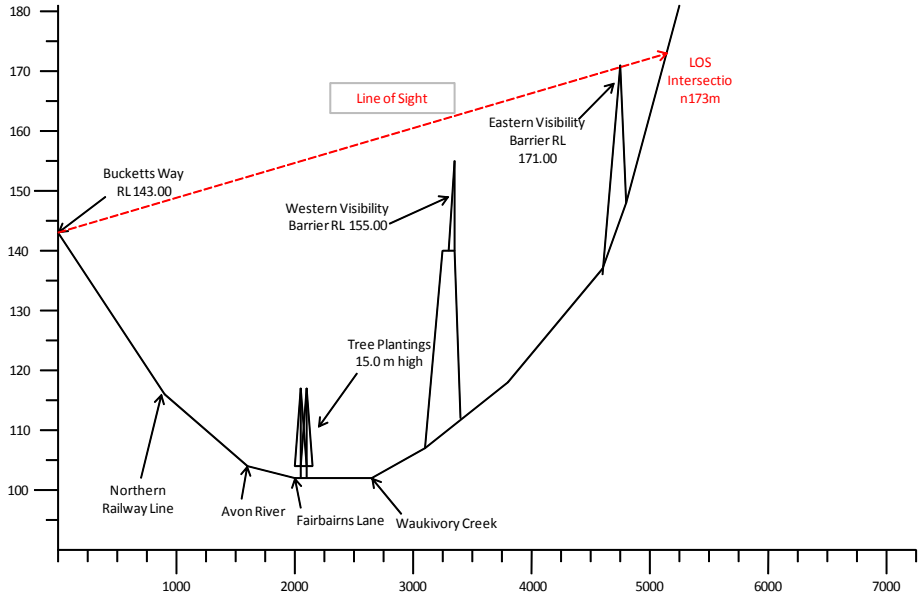
Figure 1.4 Section 1 Vertical Compounding Effect



The compounding effect of the barriers increases the apparent height of the barrier wall to 167AHD, an increase of 27m giving a total perceived barrier height of 60m. This represents 1.6% vertically of the human central field of vision[1] when looking at the view from this location.

Cross section 2 is viewed from The Bucketts Way adjacent to the Rail Load-out Facility (elevation of 143m AHD). This view is over the highest part of the western visibility barrier.

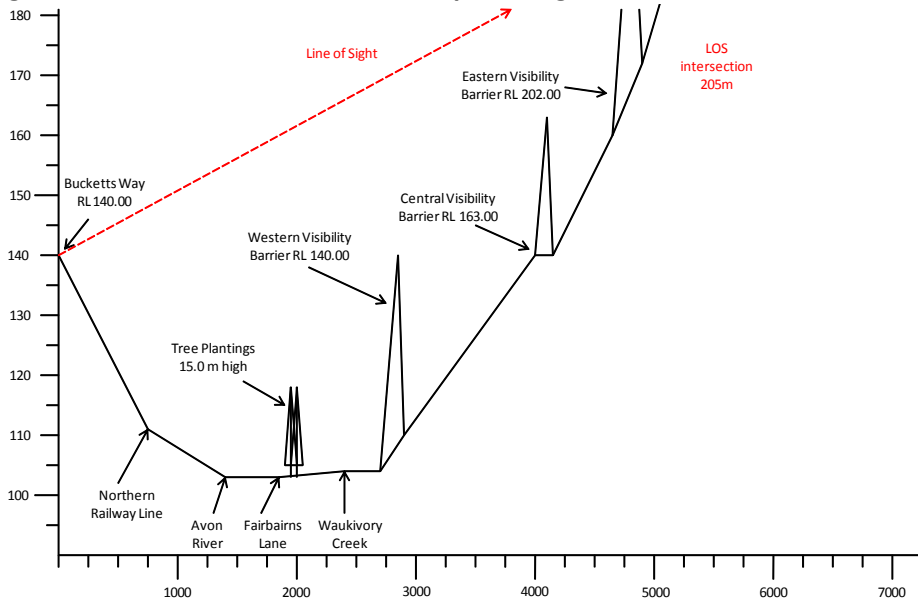
Figure 1.5 Section 2 Vertical Compounding Effect



The compounding effect of the barriers increases the apparent height of the barrier wall to 162AHD, an increase of 7m giving a total perceived barrier height of 55m. This represents 2% vertically of the human central field of vision[1] when looking at the view from this location.

Cross section 3 is viewed from the Bucketts Way at a point most perpendicular to the visibility barriers (elevation 140m AHD).

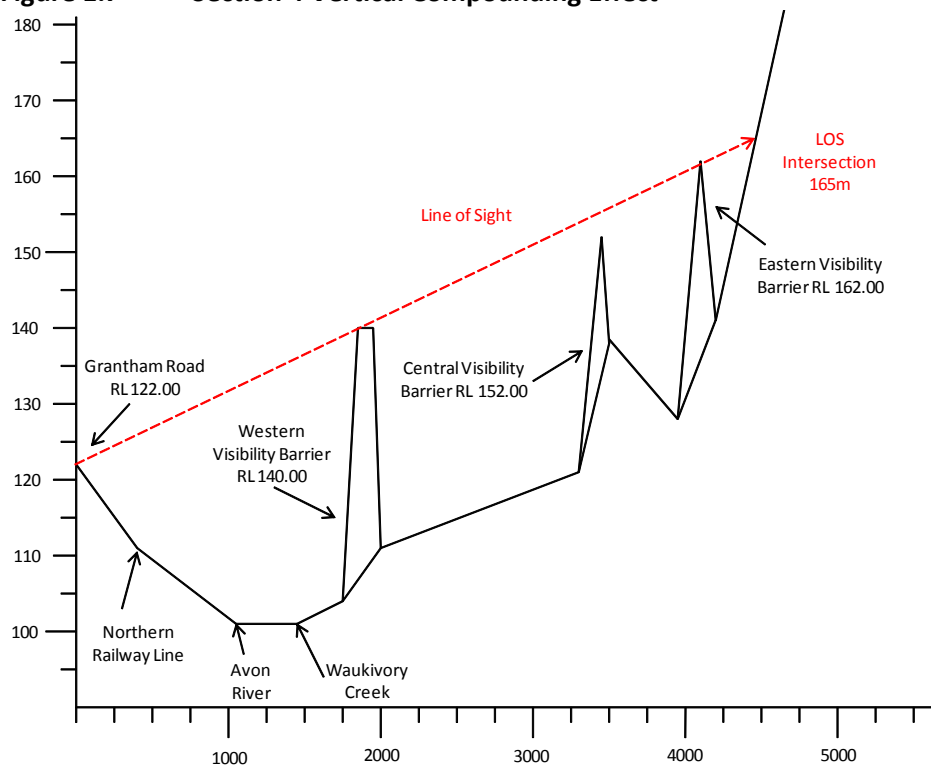
Figure 1.6 Section 3 Vertical Compounding Effect



The compounding effect of the barriers increases the apparent height of the barrier wall to 171AHD, an increase of 31m giving a total perceived barrier height of 67m. This represents 2.8% vertically of the human central field of vision[1] when looking at the view from this location.

Cross section 4 is viewed from Grantham Road across the site of the CHPP (elevation 122m AHD)

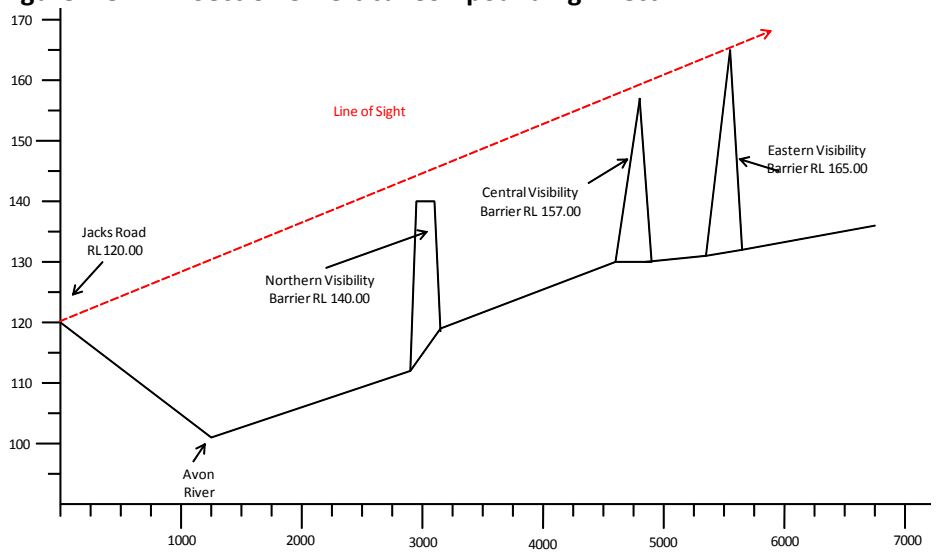
Figure 1.7 Section 4 Vertical Compounding Effect



There is no change to the apparent height as the barriers lie behind each other.
The height remains as shown at 140AHD and 36m high. This represents 2.4% vertically of the human central field of vision[1] when looking at the view from this location.

Cross Section 5 is viewed from Jacks Road looking south-east over the northern corner of the western visibility barrier (elevation 120mAHD)

Figure 1.8 Section 5 Vertical Compounding Effect



The compounding effect of the barriers increases the apparent height of the barrier wall to 145AHD, an increase of 5m giving a total perceived barrier height of 33m. This represents

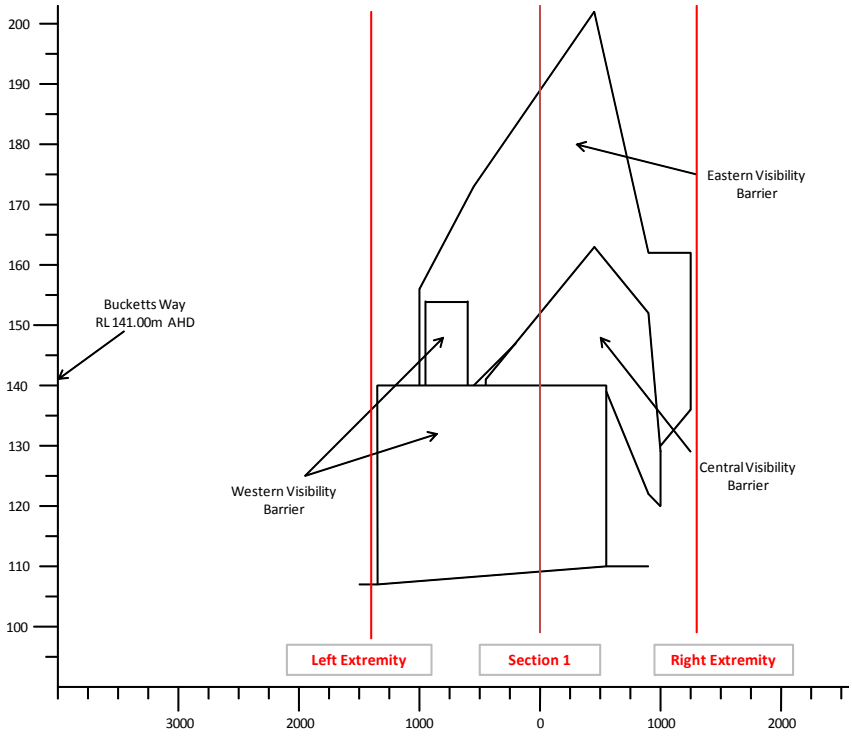
1.3% vertically of the human central field of vision[1] when looking at the view from this location.

This compounding effect does not only occur in vertical perception but also horizontally.

The diagrams below show the extent, to the left and right of the section line, that the visibility barriers will extend. It also shows clearly the vertical compounding effect combined with the horizontal compounding.

Note: the horizontal distances shown are not the actual barrier length. They are the apparent length perpendicular to the section at the point of intersection with the Western Visibility Barrier.

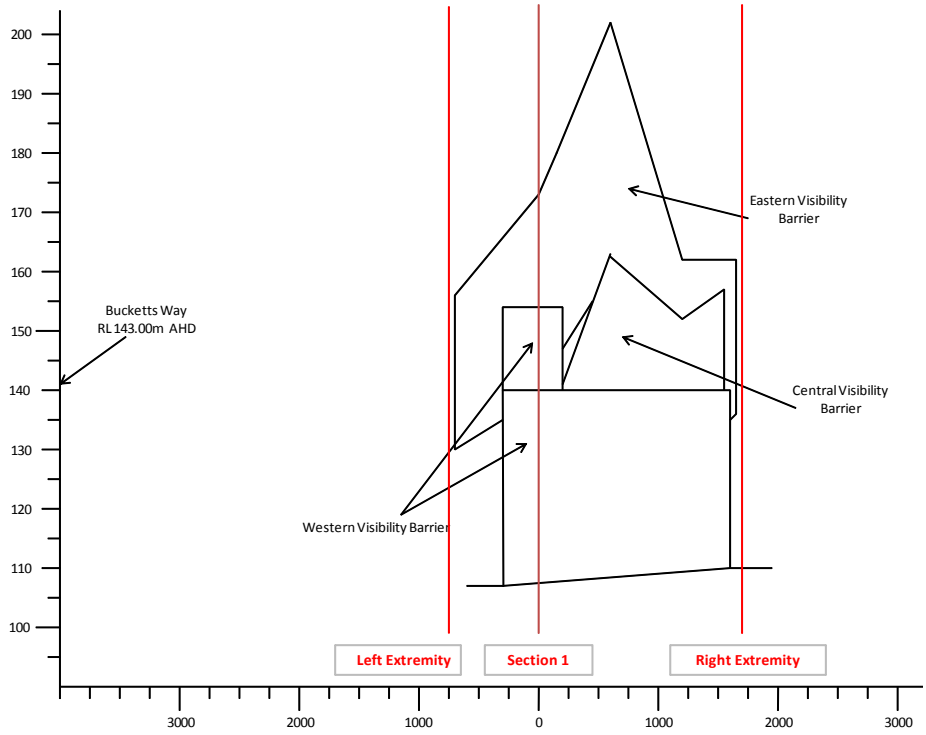
Figure 1.9 Section 1 Horizontal Compounding Effect



The extent of this impact can be seen in the photograph below taken from the Bucketts Way as shown in **Figure 1.3**. The extremities represent a 34 degree separation. This represents 57% horizontally of the human central field of vision[1] when looking at the view from this location.

Figure 1.10 Section 1 photograph from The Bucketts Way.

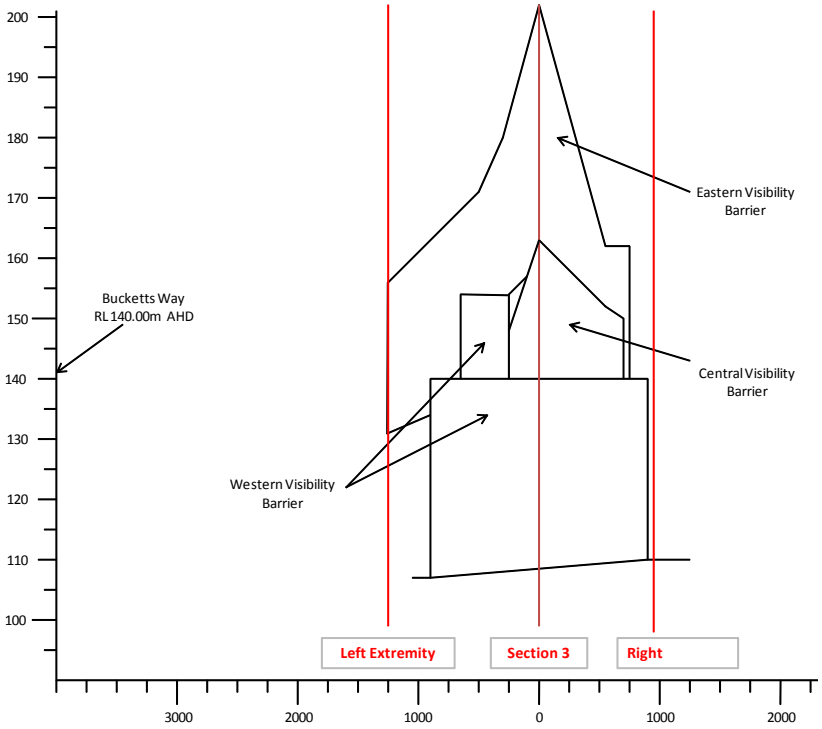
Figure 1.11 Section 2 Horizontal Compounding Effect



The extent of this impact can be seen in the photograph below taken from the Bucketts Way as shown in **Figure 1.3**. The extremities represent a 44 degree separation. This represents 73% horizontally of the human central field of vision[1] when looking at the view from this location.

Figure 1.12 Section 2 photograph from The Bucketts Way

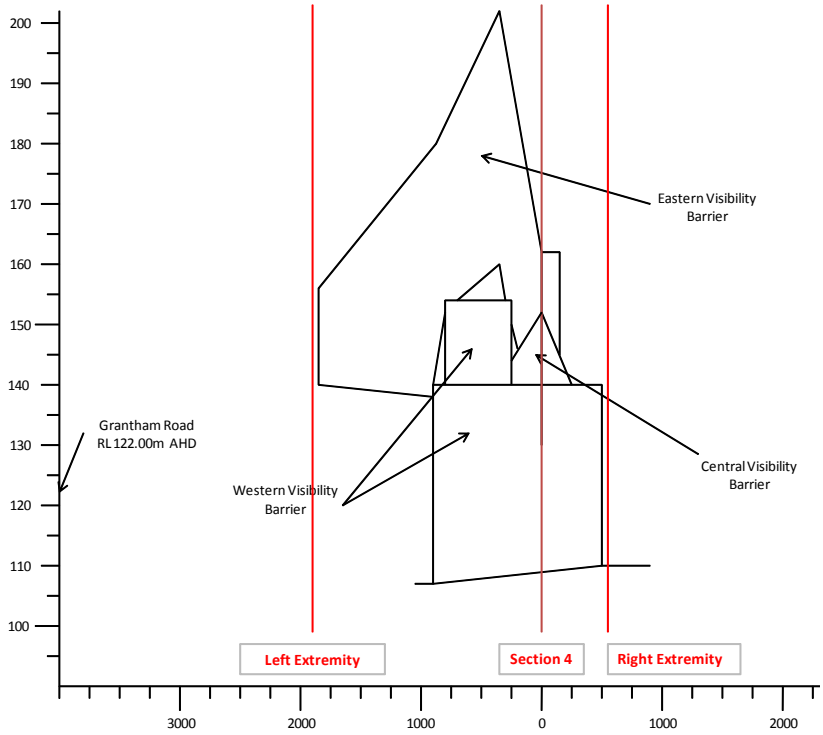
Figure 1.13 Section 3 Horizontal Compounding Effect



The extent of this impact can be seen in the photograph below taken from the Bucketts Way as shown in **Figure 1.3**. The extremities represent a 48 degree separation. This represents 80% horizontally of the human central field of vision[1] when looking at the view from this location.

Figure 1.14 Section 3 photograph from The Bucketts Way

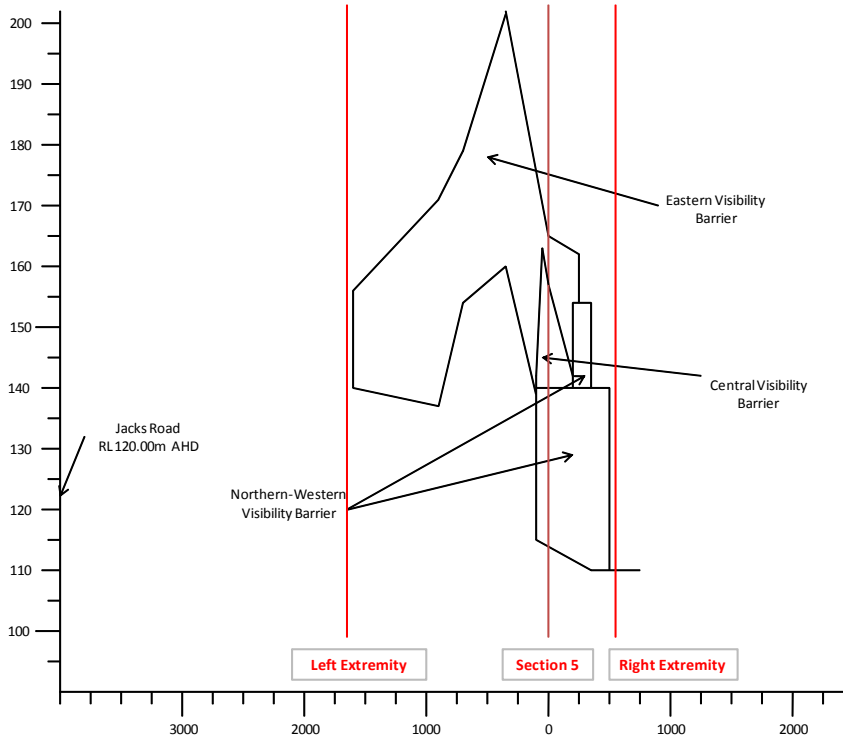
Figure 1.15 Section 4 Horizontal Compounding Effect



The extent of this impact can be seen in the photograph below taken from the Bucketts Way as shown in **Figure 1.3**. The extremities represent a 70 degree separation. This represents 117% horizontally of the human central field of vision[1] when looking at the view from this location.

Figure 1.16 Section 4 photograph from Grantham Road

Figure 1.15 Section 5 Horizontal Compounding Effect



The extent of this impact can be seen in the photograph below taken from the Bucketts Way as shown in **Figure 1.3**. The extremities represent a 51 degree separation. This represents 85% horizontally of the human central field of vision[1] when looking at the view from this location.

Figure 1.16 Section 5 photograph from Jacks Road

[1] *The Human Central Field of Vision.*

The human field of vision extends vertically 60 degrees above and below the horizontal and 95 degrees left or right of the point of gaze. The central field of vision in humans represents that part of the total field where, colour, movement, depth of field and binocular vision occur allowing us to see clearly. This is typically how we would view a landscape. It extends 25 degrees above and below the horizontal and 30 degrees left and right of the point of gaze.

The final impact of this vertical and horizontal compounding effect is what we actually see when looking towards the mine site.

The following sectional photographs show the effect on the landscape of the visibility barriers. The colour of the barriers has not been chosen by accident but represents closely the barrier colouration at the adjoining Stratford Mine. This photograph was taken from the Bucketts Way at a distance of 5.5km.

Figure 1.17 Stratford Mine Visibility Barrier

The images shown below and the photomontages produced in the EIS differ in their appearance in two significant areas.

- Their appearance: There is little reason to assume, despite what is said in the EIS with regards to revegetation, that the Rocky Hill visibility barriers will look any different. Forty metre high mounds of bedrock covered with a smear of poor quality topsoil will hardly prove ideal growing conditions for anything but the hardiest of weeds. This is even more likely considering the very porous nature of the material being used combined with the steeply sloping surface allowing almost no capture and retention of water.

- Their extent: The EIS photomontages depict a series of snapshots rather than displaying the total area of affectation over the life of the mine.

Figure 1.18 Section 1 Compounded Visual Impact

Figure 1.19 Section 2 Compounded Visual Impact

Figure 1.20 Section 3 Compounded Visual Impact

Figure 1.21 Section 4 Compounded Visual Impact

Figure 1.22 Section 5 Compounded Visual Impact

At nightfall the ugly scar of the visibility barriers on the landscape disappears into the shadows. Under a cloudless sky with a full moon the features of the landscape are completely visible but muted, as in a black and white photograph, with the colour drained and only shades of grey remaining.

Figure 1.23 Section 3 Cloudless Sky - Full Moon

On a cloudy night with no moon or stars for illumination all form is lost and only the small pinpricks of light from dwellings in the valley are visible.

Figure 1.24 Section 3 Cloudy Sky – No Moon

The impact on the areas visual amenity however does not disappear, as do the barriers, with the coming of nightfall.

The glow from the mines lights will be visible from all parts of the valley, even the supposed mitigation measures will do little to lessen the impact of the bright glow from the valley floor.

Reflection of light off airborne particles, both those created by the mine themselves by way of dust and water droplets by way of fog, will further amplify the glow. On nights of low cloud cover the glow will appear at its worst with the clouds being coloured by the light emanating from below.

Ironically the darker the night, due to the moon's phase or prevailing meteorological conditions, the less visible the barriers become and the more pronounced the effect of the light glow on the valley.

The following images, created from the section photographs, depict the view on a cloudless night with a partial moon.

Figure 1.25 Section Photograph 1 Night View

Figure 1.26 Section Photograph 2 Night View

Figure 1.27 Section Photograph 3 Night View

Figure 1.28 Section Photograph 4 Night View

Figure 1.29 Section Photograph 5 Night View

It is impossible by way of images such as these to truly convey the impact of the mine's glow, its extent is far more reaching than the limited resources available to the writer can depict.

For many residents it will be a reminder when they are outside of the ugliness that lies over the rise or behind the trees.

For others it will be a light that cannot be dimmed, lighting bedrooms, requiring once open windows to be closed and heavy curtains to be drawn to try and eliminate its effect.

To visitors and travellers passing through the valley it gives a stark indication that this is not a rural area but an area of industry.

There is a general use of terms such as minimise, appropriate, preferably, if warranted, regular, as quickly as possible. All these terms enable whatever lighting design and regime GRL chooses.

Light may be a larger issue than represented in this section of the EIS.

Residents of lifestyle properties on the estates overlooking the mine or with views towards the mine will see direct light emitted throughout the night and/or the glow that accompanies night operations at industrial developments. The glow is likely to be amplified during low cloud events which are a feature of the enclosed valley.

The frequency of low cloud events and light propagating atmospherics would be valuable information.

EIS 4.5.5.5, 'After Dusk Impacts', suggests an internal view that there will be no night glow on occasions ('...when present, ...'). Surprisingly it suggests that the residents surrounding the site might actually like the glow - particularly if their homes have outlooks in that direction!

The EIS assessment applies more weight to transient viewers than to those who are captive to the views. "... greater weight is placed on public domain viewing places ... (than residents)... in the overall assessment." This approach plays down those impacts that are nightly left to the GRL's lights and that may generate greater issues than a passing offensive view - ie emotional and relationship disquiet leading to permanent impacts in some people/families.

There is room within the EIS stated hours of operations for conditions in which the mine can be operated 24hours. Additionally, security lighting is highly likely to be an overlay on the lighting considerations described.

Thus we should expect that light emission will be a close to constant impact - especially for residents within hearing of the mine and therefore potentially suffering sleep disturbances that combine with all night lighting to adversely impact on their well-being.

The proposed mitigation actions are peppered with escape words. Essentially the suggestion is that GRL should aim to comply with the 1997 Standard - Control of Obtrusive Effect of Lighting. It will take measures that might be successful but ultimately it seems aimed at achieving the minimum light constraints - not for developing a system of lighting that achieves the Government's goal of World's Best Practice. This, for a mine vaunted of being small and modern, seems somewhat of a contradiction.

Terminology in 4.5.4.5 is indicative of a mine that will implement as it chooses and go through the management will be relied on. Essentially GRL expects to do the minimum defined and then wait for the complaints. It will then act on the 'practical opportunities' but would implement 'as soon as possible'. Whereas this presents an even, pro-active stance, the words themselves allow considerable wriggle room.

3.3.5 Visual Amenity Lost or Stolen

Vi-su-al attained or maintained by sight
Ame-ni-ty the quality of being pleasant or agreeable

The visual amenity is not a single view as depicted in a photograph, it is not the effect of a single object or the impact of many, it is not the brightness of the day nor the darkness of the night, it is the wallpaper that forms the backdrop to life.

The visual amenity of the Gloucester Region forms the backdrop to every activity residents and visitors to the area partake in. It is not something you go and look at or something that you even take particular note of. It is however something immediately recognisable as having changed.

For a minimum period of 14 years and potentially 21 years Gloucester Resources Limited, through the operation of the Rocky Hill Mine, will change the visual amenity of the Gloucester Valley. That change will be noticed by all, by day and by night, year in year out for years to come.

To suggest that this theft of the areas visual amenity can be mitigated by piles of mining leftovers and making sure staff are trained to turn off lights that are not needed is absurd.

Star gazing, will become a thing of the past for the residents and visitors to the Gloucester area. Tourists, who come to Gloucester to experience the star filled skies, will stay away. The lights from the Stratford mine illuminate the whole valley. GRL claim that their Rocky Hill mine will be different. Common sense would tell anyone that their mitigating controls will not stop the light from escaping.

The visual amenity of the Gloucester Valley, the background to people's lives, the reason that many have come here to live and the reason that many stay will dramatically change, if not forever, then certainly for the duration of the Rocky Hill Mine.

3.3.6 Cautionary Note

The diagrams used to indicate the compounding effect of the visibility barriers and the images depicting the visual impact, both by day and night, have been produced using the information given in the EIS. This is the same information that has been used by Lamb and Associates in their determinations and as such can be used as a comparison between the two.

Such comparisons however would prove of little worth.

In this submission,

Section 2: Engineering, Financial and Meteorological deficiencies, anomalies and concerns.

Part 3.2.1: The Western Visibility Barrier

Shows in detail the flawed design of the western visibility barrier and the impossibility of construction to the heights indicated in the EIS.

Part 6: The Final Landform

Shows in detail the significant lack of material availability to produce the final landform as detailed in the EIS.

As a result of these failings within the EIS all discussion based on either the Western Visibility Barrier or the Final Landform must take into account that neither will be produced to the designs outlined.

It remains however completely valid that regardless of the final design of barriers and landforms Gloucester Resources Limited may come up with they will be responsible for the theft of the visual amenity of the Gloucester Valley.

3.4 The Impact on Agriculture due to the Rocky Hill Mine

The agricultural impacts addressed in the EIS mainly relate to the footprint of the mine area. They do not adequately address the impacts on water resources. They do not address the impacts that are already occurring as a result of the extraordinary purchasing of land in the whole district by the proponent over the last 5 years.

3.4.1 Current Agricultural Land Use

In the EIS much fanfare is given to the the fact that GRL have purchased the land of one major dairy enterprise and leased it back to the operators plus enabled this operator to lease other land purchased by the proponent over recent years. This is not a benefit at all as it does not include any of the land associated with the mine area and is an activity that could have been undertaken without the mine proposal or the EIS. This dairy, handed down

through generations, has been highly successful for many years. It is visited by tourists. To suggest that it is an economic benefit associated with the mine is absurd.

Section 4.17.2.4 Infers that dairy operations could occur within the mine site. This will never be possible once earthworks and other machinery operation commence. It also suggests that the Mine Area and adjacent lands, now owned by GRL, were not being used for commercial agriculture prior to being purchased by the applicant over the last few years. These lands were being stocked at or above district average levels prior to their sale to GRL. It is important to note that the production of the area has declined since being purchased by GRL.

3.4.2 Agricultural Impacts

3.4.1.1 Impact on Land Value

GRL has purchased a total area of at least 3,000 ha in about 40 properties in the vicinity of the mine of which only about 856 ha will be used directly for mining. The previously existing agriculture on at least 2000 ha and at least 30 family farms has been terminated and in many cases not replaced.

This has impacted on agricultural employment in the district and on trade for agricultural service industries. Local stock agents have estimated that livestock sales have decrease by 10% as a result of mine owned land carrying less stock per hectare. For the proponent to conclude (section 4.17.6) that their mine has “only minor short-term impacts” and “long-term positive net benefits” is not correct.

Section 4.17.5.3 states “agricultural land values both within and adjacent to the site are unlikely to change”, this is not correct. GRL has purchased a large area of agricultural land at above market value over recent years. This has raised the expectation for future land sales in the district to levels that are unsustainable for agricultural production.

At the same time, land, in the vicinity of the mine, that has not been purchased by GRL cannot be sold. Prospective buyers are not prepared to accept the potential risks to this land by the mine impact and definitely do not want to live next door to a coal mine.

3.4.2.2 Impact on Water Resources

There will be impacts on water resources that will affect surrounding agriculture but these are dismissed in the EIS.

In section 4.17.4.1 of the EIS it states, “all land in the mine area will be returned to its pre-mining land capability.” The only detail provided is that this land capability will be achieved by simply placing an 80 cm soil profile (undefined top soil and sub-soil depths) on top of the mine voids that have been filled with mine waste material. There is also a statement that saline sub-soil will be removed and disposed of, but there is no calculation presented of the volumes involved for any of these procedures. Hence there is no confidence that the objective can be achieved.

There is no information on the compaction level to be achieved in the filling operation and hence no information on the water holding capabilities of the reformed land for pasture production. Section 4.17.5.1 even goes as far as to say that the productivity of the rehabilitated land will be higher than that of the original area before mining, but there is no data provided to support this unbelievable claim.

3.4.3 Inadequacy of Information

Figure 4.5.2 on page 4-215 of the EIS presents the mapped Land Capability Classes for the area by NSW Department of Primary Industries.

These were done as a desk study and as stated on page 4-213 they are to be revised in late 2013. Fig 4.5.2 also shows the Speldon Dairy farm to the north of the mine site and this is a farm of irrigated dairy pasture that could possibly be regarded as Class 3 in a re-classification. A field assessment would be required to accurately determine the land class. The proponent is very keen to describe the Speldon property as a "success" but there is no possibility that its level of pasture development and productivity will be feasible across the fence after mine rehabilitation.

There is inadequate information presented to consider the impacts on the agricultural situation as it existed before GRL started purchasing farm land at inflated prices and then not managing the land to its full potential. There is also inadequate information to assess the likely potential of the site for agriculture after the mine ceases and therefore GRL's claim that the land capability will be improved is refuted.

This application should be refused on the grounds that there is inadequate information presented to consider the impacts on the agricultural situation as it existed before the proponent starting purchasing farm land at inflated prices and then not managing the land according to its full potential.

It should be refused on the grounds that there is inadequate information to assess the likely potential of the site for agriculture after the mine ceases and hence the proponent's statement that the land capability will be improved is refuted.

The Rocky Hill Mine should be refused on these grounds. All land should be resold to agricultural producers at a price that represents the land value prior to GRL's purchase.

3.5 The Impact on the Local Character of the area due to the Rocky Hill Mine

Gloucester is unique. It retains its distinctly rural identity even though it's reasonably close to the coastal fringe. An hours journey from Taree or Forster makes it far enough away to avoid the frenetic pace of the seaside and river towns yet close enough for a day trip. The key to its uniqueness lies in its ability to hold onto its farming roots and clean, green environment. Travellers use the Gloucester tourist route to enjoy the vistas of the rolling hills, forested peaks and grazing cattle. They visit the valley to get away from the noise, dust and traffic of the city.

The town of 2,500 people is still a big country town, even though it boasts six cafes, an art gallery and boutique shops. The people are friendly and inviting, with a mix of 'locals',

residents with ancestry from the town and 'newcomers', mainly tree changers. The exodus of self funded retirees from Sydney has continued to gain momentum which brings added financial benefit to the area. Not needing employment themselves they contribute by using the local industries and trades for house construction and maintenance and small acreage activities. Gloucester also has the largest volunteer force in NSW. Over 190 volunteer organisations operate out of the town, which enhances the sense of community.

Although predominately farming land the area abounds in natural forests with the world renowned, heritage listed Barrington Tops National Park as the crown. Adventurers, walkers and campers come from afar to avail themselves of the delights of this region. The flora and fauna and wild rivers are just some of the attractions.

Whether wanting to live here or just visit, people come to Gloucester to 'get away from it all'. The attributes above are the reasons why Gloucester has survived as a vibrant, rural town while many small towns have vanished.

All the reasons above are given in evidence as to why the Rocky Hill coal mine will destroy the local character of the area and reduce Gloucester to just another mining town, surviving on one unsustainable industry.

The tree changers will not be attracted to Gloucester as a means of getting away from their previous harried city lifestyle.

The tourists will not be able to 'get away from it all' in Gloucester. The noise, dust and traffic will be here.

The small country town, with diverse industries, will be a small mining town depending on its survival from one industry.

There will be an exodus from the region of people choosing not to live in an area impacted by mining. They will take with them the much needed incomes for industries not involved in mining.

The sense of community will be shattered by 'drive-in-drive-out' mine workers.

The volunteers will dwindle in number due to the exodus of retirees and the time poor shift workers.

The sense of community will be lost due to less involvement from drive-in-drive-out workers and shift workers.

The local cafes, shops, industries and farms will find it difficult to attract workers, so the town will be at risk of closure.

The vacant lots in the housing estates surrounding the mine will remain vacant, denying the Council and the town much needed funds.

The visual amenity will be lost forever. The Stroud-Gloucester Valley's heritage landscape significance underpins the Valley's way of life, its agriculture and its tourism industry.

3.5.1 Recognition of the Valley's Scenic-heritage Significance

The Vale of Gloucester was among the first cultural landscapes to be formally identified in Australia when it was listed by the National Trust of Australia (NSW) in 1975 and was nominated for entry on the Register of the National Estate in 1976.

This nomination was supported by Gloucester Shire Council but, for unknown reasons, the Australian heritage Commission failed to assess the nomination and it remains as an Indicative Listing on the now discontinued Register of the National Estate. The Gloucester Local Environmental Plan 2010 Zone E3, Environmental Management, specifically addresses the significance of this area.

The Stroud-Gloucester Valley and for the purposes of this submission, the northern end of the valley have been acknowledged as having heritage significance for historical, scenic, scientific and social reasons since 1952. The documents that note that significance are;

- the Gloucester Shire Council's commemorative publication The Vale of Gloucester, Eve Keane, Gloucester Shire Council, 1953;
- again 2009;
- the nomination to the Register of the National Estate 1976;
- nominations to the National Heritage List 2010, 2012;
- provision of the Environment Protection (Scenic) Zone in the Gloucester LEP;
- The Stroud-Gloucester Valley: A Heritage Landscape Under Threat, BGSP Alliance Inc., 2009.

If the Rocky Hill mine is approved The area's heritage-scenic significance will be substantially changed and degraded and, even if there is eventually some level of recovery, the short to medium term damage to the physical environment, tourism and the local economy will be high. Some impacts will remain as substantial, and permanent changes to the landscape.

Gloucester does not just **have** scenic beauty, its identity **is** its scenic beauty. The Rocky Hill EIS for Non-Indigenous Heritage does not give due regard to the Gloucester Valley's scenic-heritage qualities and the impact the proposed development will have on these qualities. They have been widely acknowledged at both a popular level and by acknowledged experts such as the National Trust of Australia, professional historians and practising heritage consultants. The scenic-heritage qualities are a major influence on the valley's sense of identity, its way of life and its economy.

The GRL, Rocky Hill coal mine will change completely Gloucester's local character. It has impacted and will continue to impact on the lives of residents and visitors to the valley. It is a project which should never have been allowed to develop. We recommend that the project be rejected on these grounds.

3.5.2 The Impact of Increased Traffic due to the Rocky Hill Mine

The Rocky Hill Mine will generate over 300 cement trucks, over 400 semi trailers and fuel tankers, over 1700 tipper and quad dog trailer combinations, over 3000 contractor trucks and vehicles and over 100 ultra heavy escorted loads. Yet, GRL claim that this will not have a serious impact on the area.

GRL state that offsite construction will include:

- The construction of an upgraded intersection with deceleration lanes at the corner of Jacks Road and The Bucketts Way.
- Upgrading and widening the pavement along the full length of Jacks Road.
- Construction of a new bridge across the Avon River on Jacks Road; upgrading the 1.3km section of Waukivory Road from Jacks Road to McKinleys Lane, and the construction of a suitable intersection with McKinleys Lane.
- Upgrading a 50m section of McKinleys Lane and constructing the entrance to the mine area access road.

Jacks Road is a small country road with a housing estate on the northern side and farms on the southern side. The traffic to this area will increase dramatically causing noise and dangerous driving conditions. This is not an industrial area, this is a farming and residential area. Parents and children wait at bus stops along Jacks road for the school bus. McKinleys Land is just that a lane used by farmers. The impacts this will cause to this area on the very outskirts of the town will be dramatic.

The Bucketts Way is the main artery in and out of town. It is a single lane road with no sections for overtaking. The traffic on this road has increased dramatically, mainly because of mining vehicles. GRL asserts that it will employ local workers wherever possible but the definition of local includes Taree Shire and Great Lakes Shire.

A breakdown of the submissions from the Yancoal, Stratford mine extension revealed that of the form letters in favour of the mine extension (assumed to be the mine employees) more than half came from areas other than Gloucester Shire. Yancoal has admitted that half of its employees live outside the shire. The question begs to be answered, how will GRL employ local workers when Yancoal has to resource workers outside the shire?

This means that the number of drive in, drive out workers will increase. It is common knowledge that coal mines employ people who have to travel to the mine. This causes a dislocation between workers and their community where they work and can have detrimental effects on the local community. This increase in traffic volume, causing deterioration of the Bucketts Way, is not compensated by the mining companies. Our rates are used for road maintenance, even though, the industry in town causing the damage and employing workers from out of town do not contribute.

The mine will cause noise, pollution and dangerous driving conditions.

It is stated that: “approximately 186 to 294 light traffic movements and 4 to 16 heavy vehicle movements will be occurring per day. A small number of vehicles would also access the Rail Load-out Facility via The Bucketts Way and overland conveyor (via Fairbairns Road).”

“Peak operational traffic movements would occur at the start of each day’s operations i.e. between 6.00am and 7.00am and around shift changes occurring between approximately 2.00pm and 6.30pm, and at approximately 10.00pm and 4.00am.”

“Notwithstanding predicted compliance, there may be noticeable increases in traffic noise, particularly around shift change periods when mine-related traffic is concentrated.” The management measures to control this noise beggar belief. “It is therefore proposed that the

Applicant manage traffic noise levels through employee/contractor education and awareness and encourage considerate driver behavior by all personnel accessing the Site."

It is obvious from this statement that GRL do not take the issue of increased noise through increased traffic seriously. Given that the shift changes will occur at 4:00am, 7:00am, 2:00pm, 3:00pm, 5:30pm and 10:00pm, that is six times in a 24 hour period, then the measures appear grossly inadequate. It needs to be stressed that the roads accessing the mine are at present small country roads in a rural precinct. The drastic increase in traffic will make the roads more dangerous and noisier. Education and awareness programs for mine personnel will be unsuccessful and will add further stress to the sensitive receptors.

To assert that these roads will, on approval, have constant vehicles, many heavy vehicles, and it will not have severe consequences for the town begs belief. Traffic generated from the Rocky Hill mine will have severe impacts for the Gloucester area. On these grounds it should be refused.

3.5.3 The Impact of more trains on the Rail Network due to the Rocky Hill Mine

EIS 2.8.3 "Each train would be loaded within a period of approximately 1.5hrs. Once loaded, the train would remain stationary, and idling, until its allocated time to leave the rail loop and return to the Port of Newcastle" "....with trains typically despatched between one and three times per day." "It should be noted, however, that the timetable for the arrival and departure of trains would be dictated by ARTC....."

The statement above indicates that for up to three times a day trains will take 1.5hrs to load and then sit idling until they are given permission to leave. The important point to stress is that this could happen any time of the day or night. Even with mitigation this will have a large noise and dust impact on the residents.

These residents are living in the valley for the lack of noise and dust so any change will be noticed and will be stressful.

4 Cumulative Impacts from the Interaction with AGL & Yancoal

Cumulative Impacts are ignored

This proposal cannot be assessed in isolation. The valley has three extraction industries wanting to exploit its resources. AGL have approval for 110 coal seam gas wells and plan for at least 300. Yancoal have two operating mines and are currently awaiting approval for extensions and GRL want approval for an open-cut coal mine close to town. All these projects are within the same area of the Avon Valley. The AGL proposal overlaps both of the coal mining proposals. None of the cumulative impacts have been addressed adequately by any of the companies involved. It is not feasible to have open-cut mines interspersed with coal seam gas wells without the danger of contamination of water and the risk of explosions.

AGL opposed the EIS for the Stratford mine extension on the grounds that:
"the Offset Areas cover a portion of AGL's approved Stage 1 Gloucester Gas Project, and a significant portion of AGL's approved concept plan area, and may constrain AGL's ability to carry out the Gloucester Gas Project."

AGL have been drilling within the GRL mine site area. Both projects cover the same area of land. Who will be the victor? How can the Department even consider approving GRL's mine proposal while AGL has an approval on the same land? This is a conflict of uses and serves to put doubt on the credibility of the approval process.

Open-cut coal mines and coal seam gas cannot co-exist successfully on the same area of land.

4.1 Cumulative Impact on Visual Amenity

Richard Lamb & Associates Non-indigenous Heritage Assessment fails to assess cumulative impact.

The practice of dismissing the cumulative impact of other development for the reason that the impact is claimed to be small is contrary to assessment procedure. All impacts should be given due consideration, even those of apparently minimal impact, for two fundamental reasons. First, cumulative impact assessment should consider the cumulative impact of ALL developments because it is the total impact that is being assessed. Individual developments may each have a low level of impact but a high level of combined impact. Second, a particular development may have a low level of impact on its own but may combine with other development in a multiplying or reactionary manner to produce a greatly increased impact. Failure to address these two requirements constitutes failure to assess cumulative impact.

The reasons for the Lamb Non-indigenous Heritage Assessment completely ignoring cumulative impact are not stated in the Assessment but would go to the Lamb Heritage Report's failure to properly assess the landscape significance of the site and its setting. This is a serious omission that limits the application of the assessment because the Rocky Hill project, the existing and planned Stratford mine extensions and the AGL Coal Sean Gas project will have a substantial combined impact.

The Lamb Visibility Assessment goes to some length to justify the visual impact, which it notes has the potential to create an excessive cumulative impact. However, it then attempts to justify that by lengthy criticism of the Barrington, Gloucester, Stroud Preservation Alliance assessment. Lamb makes unconvincing assertions that the various developments are not situated within the same view and makes sweeping claims that rows of eucalypt trees and extensive earth mounding are the panacea for all visual ills. At no point are these assertions convincing and at no point is the cumulative impact properly assessed. At no point is assessment of the visual impact caused by the earth mounds incorporated into the overall assessment.

6.2 Visibility Environmental Impact Statement, R.W. Corkery & Co. Pty. Limited
4.5.5.6 Cumulative Impacts page 4-136
The Lamb Visibility Assessment leads the Visibility Environmental Impact Statement by R.W. Corkery & Co. Pty. Limited to a number of unsubstantiated conclusions at 4.5.5.6 Cumulative Impacts page 4-136.

Firstly, it notes that 'the proposed activities to be undertaken by AGL would be of a scale that would not contribute to any noticeable visual impacts. Similarly, the proposed re-located 132kV power line and new 11kV power line and the associated substation would be

of a scale that is unlikely to contribute to any noticeable cumulative impacts'. An inspection of the area shows that this claim cannot be substantiated.

Secondly, it notes that the Stratford Coal mine lies within some common view catchments to the proposal area but excuses this by the claim that for most of the viewing locations that are to the north-west and west of the mine area the two mines would not be in the same view. The logic of this is unclear and it can only amount to another method to dismiss cumulative impact.

Thirdly, the last paragraph in that section, page 4-136, concludes by claiming 'Lamb (2013a) concludes that, on balance, it is considered that while minor cumulative impacts would occur, given the short life span of the Proposal, the cumulative impacts would not be significantly increased as a result of the combines presence of the Stratford Coal Nine and the Applicant's proposal'. This conclusion is not supportable by inspection of the site and area and cannot be justified. It is narrow and selective, it diminishes the cumulative impact of the existing and planned mining projects, fails to acknowledge the combined visual impact and the extent that both will be visible, and completely omits the AGL project from the assessment.

The AGL project will have a significant visual impact when all aspects of that project are considered, yet this has been ignored. The AGL project will include gas wells, connecting roads and necessary infrastructure. Coal seam gas projects have a high visual impact and failure to consider the AGL project is a serious omission.

The continued reference to the 'short' life span of the project is regularly used throughout the Non-indigenous Heritage and Visual Assessments and the Environmental Impact Statements. That lifespan is acknowledged as being around 21 years which can hardly be classified as a small duration. If the existing mines in the area and elsewhere are to be examples, it will almost certainly exceed that period considerably. The mine, if approved, will expand into subsequent stages. GRL are seeking from the Planning Department approval to explore in Stage two, which is north of stage one, The Rocky Hill proposal. The project should be classified as having a long term impact.

5 Conclusion and Alternative

This submission by Gloucester Residents in Partnership contains countless reasons why Gloucester Resources Limited should not get approval to build the Rocky Hill coal mine.

Flawed and Impossible Designs of critical mine infrastructure.

- Visibility barriers that will not be possible to construct given the present design criteria.
- Implausible conceptual engineering designs of rail load out and transport facilities, barriers and landforms which are simply too costly to build if the mine is to maintain viability
- Conceptual final landform design that is impossible to complete due to substantial material shortage

Lack of Financial Viability and the impact of failure or long term closure.

- Viability of the industry is dependent on world coal prices
- The risk to the future of the town due to its dependence on one industry at the expense of damage to other already viable industries in the area

The use of manipulated or inappropriate data to mask deficiencies or to highlight benefits

- Meteorological data from remote locations and mathematical averaging to distort results
- Use of incorrect base data in economic models to increase economic benefits
- Use of multipliers that distort the economic benefit to the community, State and nation

Negative impacts on health, both physical and psychological

- Damaging noise emissions from the mine and operations
- Excessive particulate emissions from the mine and operations
- Health impacts from diesel emissions
- No measuring will be undertaken for low frequency noise
- Loss of place and identity for many residents of Gloucester
- The mine has and will continue to cause psychological distress

Negative impacts on the local, State and National economies

- Economic loss from the impact on tourism, agriculture and other industries
- Economic cost of damage to local roads which will have to be paid for by the community
- Economic cost of damage to regional roads which will have to be paid for by the State
- Economic cost of health impacts on the community

The impact on the visual and cultural heritage of the Gloucester Valley.

- The mine will create a visual eyesore in the Avon Valley
- The mine will dramatically change the visual amenity of the Gloucester Valley
- Rehabilitation is impossible to achieve with the stated plans, due to lack of overburden
- Close proximity to residential areas and the town
- Loss of the unique character of Gloucester
- Loss of the clean, green image which symbolises the area
- the mine will be partially constructed on the flood plain of the Avon Valley

Unsubstantiated claims.

- EIS which is full of vague plans which GRL say will be implemented after approval
- The arguments for the impacts on ground and surface water are unsubstantiated
- The arguments for non indigenous heritage lack credibility

Lack of indigenous consultation.

- Consultation with the local aboriginal community elders was non existent

Lack of a comprehensive response to specific Director Generals Requirements.

- In particular the cumulative impact with AGL who are drilling and fracking coal seam gas wells on one side of the Avon River while less than 500m away GRL intend to be blasting 190m below the level of the river
- In particular the cumulative impact with the Yancoal owned Stratford mine if approval is granted for its northerly expansion currently before the Department

Community outrage.

- 85% of the residents of Gloucester do not want the mine, even GRL's own community survey showed 80.7% do not want the mine
- Gloucester Shire Council have unanimously resolved to oppose the mine
- GRL do not have a Social License to mine in the Gloucester Shire
- The mine is in Zone E3, scenic protection zone, of the LEP
- GRL abused the terms of their exploration licences by acquiring properties for agriculture and forestry
- The mine will only benefit GRL and its shareholders there is only a cumulative negative impact on the local community

GRL have brought nothing but negative impacts to the community and the mine has not even been approved. Their only arguments for their existence are money and jobs and they are being challenged successfully on those points.

From GRIP's conversations with locals, visitors, members of local, state and federal government and people who are pro mining, no one believes this mine should be built in the Avon Valley so close to homes and farms.

GRL are a company without a social conscience. They tried to gain approval for a similar project in the wine growing Margaret River area of Western Australia, but the WA Government would not give that approval. They appealed but the Government stood firm on their decision.

The Rocky Hill Mine project is small by Hunter Valley standards but it is large when compared with the area of the town. It is a completely unsuitable industry for this beautiful heritage valley. If GRL get approval for this mine then the whole valley is at risk. GRL are already waiting for approval to explore in Stage two, just north of the present proposal and closer to the town. The Rocky Hill mine is their foot in the door and their justification for further extensions.

Gloucester Residents in Partnership have been opposing this development, on behalf of their members, for over four years. We do not have any political affiliations nor do we gain any financial benefit from this opposition. We are local people wanting the best for the community of Gloucester. Over the years we have witnessed and been part of the havoc GRL has afflicted on the people, mainly in the Fairbairns Road and Forbesdale areas of the valley. We have watched people give up their beloved homes and farms, selling to GRL, because they have seen that as the only option. We have watched people leave the Gloucester area because they want to get away from the nightmare they have suffered at the hands of GRL. We have known many people who have abandoned their dream of living in Gloucester because they do not want to live so close to a coal mine.

There is an existing alternative.

The Gloucester Shire Major Development Project (GSMD)

Gloucester Shire is a continuing major project. By its diversity, it has attracted or produced a population 5,000 people living in more than 2,000 dwellings and has generated all the essential businesses to support and grow Gloucester.

The cornerstone of the GSMD project has been organic growth based on exploiting, valuing and sustaining the environment. Today businesses are attracted to the Shire for its beauty and healthy lifestyle.

Its stakeholders reject the intrusive damaging Rocky Hill project. The GSMD's current Board of Management, the Shire Council, has rejected the proposition that GRL can 'coexist' and contribute to the project. In arriving at their position they have noted the immense damage to be inflicted, and the potential for GRL to permanently disfigure the economy, the environment and the community for which the Council is directly responsible.

GRL's proposal is insignificant from any economic comparison. But it carries enormous deleterious impacts because of its technology, its need to inflict permanent damage, to expand, take and damage more land, its lack of long term loyalty to the community, its potential to create shockwaves with its responses to the coal price, its continued contamination of all that the GSMD project and its people and businesses rely on, and its eventual exit which should be expected to be unplanned and under-resourced - particularly if it coincides with poor profitability.

Essentially we have in conflict two 'significant' projects. One is major, pre-exists and has a vibrant healthy future. The other is comparatively insignificant and demonstrably brings no economic benefit to the Shire Project or the State. But the nature of its business is anything but insignificant - because its intent is precisely opposite GSMD's. It undermines the cornerstone of the larger project and for this reason it has the potential to cripple the major project. Already this has started.

Already there are negative business impacts. These will deepen.

Gloucester Residents in Partnership, on behalf of the residents of Gloucester and the surrounding region, oppose in its entirety the GRL Rocky Hill coal project and request in the strongest terms that the Director General and the Department of Planning refuse application SSD-5156 unconditionally.

Section 2

Engineering, Financial and Meteorological

Deficiencies, Anomalies & Concerns

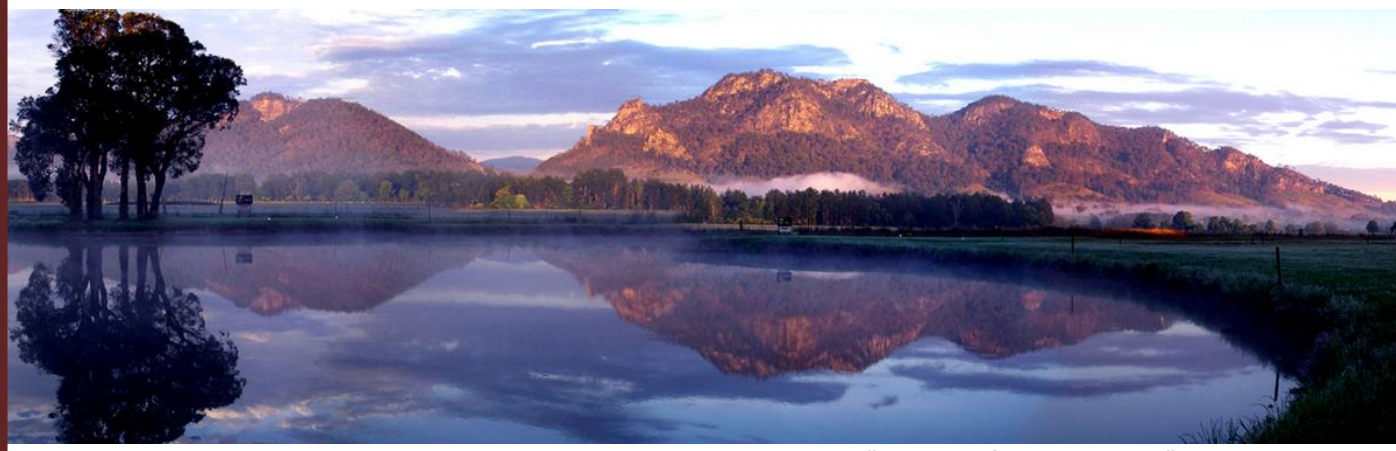
With

The Rocky Hill Coal Project

Gloucester NSW

Prepared by

GRIP GLOUCESTER RESIDENTS in PARTNERSHIP



"Bucketts of Contemplation"

OCTOBER 2013

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"Bucketts of Joy"

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Preamble

This section concerns itself with a number of elements of the EIS that are indicative of the failure of Gloucester Resources Limited to respond adequately to the direct requests of the Director General in his Environmental Assessment Requirements.

These include:

- The off-handed response to the Director General's specific request for information concerning the interaction of the proposed mine and the Gloucester Airfield.

- The lack of engineering detail provided that would enable assessment of conceptual designs that on scrutiny appear both impractical and often impossible to construct within the parameters provided.

- The financially unviable nature of the project bringing into question what elements of the design and operation outlined, will be omitted or modified to fit within financial constraints or who in fact will bear the cost of rehabilitation following financial failure.

- The use of totally irrelevant data in computer models under the guise that they were what is available, and the deceptive and manipulative use of meteorological data to downplay the effect of wind on air quality and noise.

The Department must seek:

- Clarification in detail of those elements as requested by the Director General his Requirements
- Detail on those that have only been given a cursory glance in the EIS even though specifically sought.
- Detail on those that are required to make informed decisions in regard to the engineering integrity of major infrastructure components.
- Detail that would show that the State of NSW will not bear the cost of GRL's financial ineptitude and
- It must ensure that statistical data supplied and used as a basis in the EIS is relevant and appropriately used.

Table of Contents

Table of Contents 109

Engineering, Financial & Meteorological Deficiencies, Anomalies and Concerns 111

1 Introduction and Submission Summary 111

1.1 The Interaction between the Gloucester Aircraft Landing Area and the Rocky Hill Mine 112

1.2 The Rocky Hill Mine Visibility Barriers 113

1.3 The Financial Viability of the Rocky Hill Project. 115

1.4 Meteorological Data – Relevancy and Accuracy. 117

1.5 Conclusion 118

2. The Interaction between the Rocky Hill Coal Project and Gloucester Aircraft Landing Ground 121

2.1 General 121

2.2. Airfield and Rocky Hill Mine Interaction 122

2.3 Potential Re-alignment or Re-location of the Airfield 123

2.4 The Impact of the Closure of Gloucester Airfield 125

2.4.1 Disaster Management 125

2.4.2 Aircraft Safety 126

2.4.3 Tourism 126

2.4.4 Social Impact 126

2.5 Summary 126

3. The Rocky Hill Mine Visibility Barriers 127

3.1 General 127

3.2 The Barriers 127

3.2.1 The Western-Northern Visibility Barrier 128

3.2.1.1 GRL Design Criteria 128

3.2.1.2 Western Visibility Barrier Cross-Sections 129

3.2.1.3 Cross-Section Analysis 133

3.2.1.4 Western Visibility Barrier Construction issues 135

3.3 Summary 136

4. The Financial Viability of the Rocky Hill Project. 138

4.1 General 138

4.2 Income versus Expenses 138

4.3 Reasons for Ignoring the Financial Loss of the Rocky Hill Mine. 140

4.3.1 Creative Accountancy 141

4.3.2 Coal Price Increases 141

4.3.3 A Greater Quantity of Coal to be Mined than Disclosed in the EIS. 141

4.3.3.1 Understatement of Current Coal Reserves Available in the EIS 141

4.3.3.2 Development of other Stages Requiring No Additional Infrastructure. 143

4.3.3.3 Development of other Mining Exploration leases 144
4.3.4 Sale of the Approved Rocky Hill Mine to Yancoal. 144
4.4 Summary 145
4.5 Income and Expenditure Calculation Details 146
5 Meteorological Data – Relevancy and Accuracy 152
5.1 General 152
5.2 Meteorological Data Sources. 152
5.3 Averaging of Meteorological Data. 154
5.4 Summary 158
6 The Final Landform 160
6.1 General 160
6.2 How Much Material is Available to Complete the Final Landform 160
6.3 How Much Material is Required to Complete the Final Landform 162
6.4 Material Availability vs Material Requirement 167
6.5 The Impossibility of the Final Landform. 168

Engineering, Financial & Meteorological Deficiencies, Anomalies and Concerns

1 Introduction and Submission Summary

There is a necessity for the EIS submitted by the applicant to respond to those requests made by the Director General in his Environmental Assessment Requirements such that qualified persons then can make informed decisions as to their legitimacy, viability and suitability.

This is not the case with many elements of the EIS submitted by Gloucester Resources Limited in relation to the Rocky Hill Mine.

Detailed within this section are four different issues that are indicative of many that occur within the EIS.

- The failure of GRL to provide an adequate response to a direct request by the Director General in relation to the Gloucester Airfield.

- The use of concepts and designs that may well not be delivered, but as is often the case with building projects "that what can be conceived may not be achieved" most commonly because of financial constraints but also because of physical impossibility. This is exemplified in the Western Visibility Barrier which is promised to be the solution to issues of visual amenity and a major contributor to noise and dust reduction.

- The outlined development and construction of the Rocky Hill Mine to the design detail outlined in the EIS, combined with the operational processes and stated contributions to the State and Federal coffers by way of taxation and royalties, when costed, show the mine will run its course at a significant financial loss.

- The computer modelling used to support design details and show areas affected by dust and noise emissions is flawed. It uses by irrelevant data obtained from sites so remote from the Gloucester Valley as to be absurd. Data from wind-monitoring at the GRL meteorological station has been averaged and compiled in a way that masks the true impact of wind in dust migration and noise transmission.

This section is not designed to provide solutions to GRL's problems. The detail in this section has been compiled with the assistance of professionals in the relevant fields, manufacturers of mining equipment, transport companies and finance providers and as such is as accurate as possible given the depth of information included in the EIS submitted by GRL.

It is the Department's responsibility to ensure that the issues raised are rectified, revaluated or explained formally by Gloucester Resources Limited before any consideration of their application can take place.

1.1 The Interaction between the Gloucester Aircraft Landing Area and the Rocky Hill Mine

Under the heading of General Requirements in the Director-General's Environmental Requirements Gloucester Resources were asked to include in their EIS:

- *Detailed description of the development, including:*
    - *Likely interactions between ..... and the operation of the Gloucester aircraft landing ground.*

Out of the thousands of pages provided within the EIS, there are just two paragraphs in section 4.15.2 dealing with this specific request. The first describes the existing aircraft landing area. The second stating the agreed non compliance to CASA standards following the construction of the Mine Infrastructure and the following sentence:

"While the Gloucester Airstrip is located on land owned by the Applicant, the Applicant is willing to continue to provide Gloucester and its surrounds access to leisure aerial activities and, as such, GRL will assist the Gloucester Aero Club in re-orientating or repositioning the airstrip so that it can accommodate the proposed Mine Area while also meeting all aircraft safety requirements."

GRL's "detailed description" fails to meet the Director-General's Requirements

Under section 2 of this submission the issues facing the existing aircraft landing area are detailed in **2.2 Airfield and Rocky Hill Mine Interaction**. The re-orientating or repositioning options, as suggested by GRL they will assist in, are canvassed in **2.3 Potential Re-alignment or Re-location of the Airfield.**

The two re-alignment options both fail to comply with the CASA regulations on glide path obstruction. The two potential locations on the GRL property have been assessed and both are inadequate - failing CASA requirements in one case, and environmental and flooding concerns in the other.

A "detailed review" by Gloucester Resources Limited" would have shown as it does in this submission that there can be no re-alignment or re-location as it states in the EIS and closure of the aircraft landing area due to the Mine's Infrastructure will be the only outcome.

The impact of this closure, both in terms of disaster management within the area and socially are outline in **2.4 The Impact of the Closure of Gloucester Airfield.**

The Department must request that Gloucester Resources provide full detail of their intended re-orientation and / or re-positioning so that it can be assessed. As is shown in this submission those realignments and relocations investigated by Gloucester Residents in Partnership clearly do not leave any available option but the closure of the Gloucester Aircraft Landing Area. This matter and its potential impacts need full disclosure and examination ASAP – with further community involvement prior to any decision.

1.2 The Rocky Hill Mine Visibility Barriers

The barriers to be constructed at the Rocky Hill Mine site vary in design and function. The most significant of these, both in stature and the stated purposes for its construction is the Western Visibility Barrier. With a height at its northern end of 50m and an overall length of over 2000m it is the most impacting piece of mine infrastructure, both visually and environmentally to be constructed.

To construct a 10 to 16 storey high wall with a footprint of 250 football fields, over 2km in length and containing over 6 million cubic metres of excavated rock in less than a year is truly an engineering feat.

GRIP assumes that to allow assessment of such a substantive and integral part of the mine's infrastructure there would be in the EIS a corresponding amount of information on the design characteristics and engineering detail of the barrier. Apart from a view of the conceptual appearance shown in Fig 2.8 Isometric View of the CHPP and a reference to slope in sections 2.3.4 Environmental Considerations – Visibility and section 2.6.2.4 Overburden and Interburden Management, there is none.

The intended maximum slope on the eastern face of the barrier 2:1 V:H is in itself of concern. This is the same slope angle as that on the F3 freeway north of Sydney where in situ Hawkesbury Sandstone has been cut to form steep vertical walls. The construction method and expertise required to construct an earth and rock slope, if indeed it is at all possible, at this angle is well beyond that found in normal mine or road engineering. The cost of implementing such a design would be prohibitive. A reduction in slope carries implications for the western slope and the efficacy of the barrier design and effect.

Study was done to see if the Western Visibility Barrier could be constructed within the simple parameters of base, required height, minimum and maximum slopes, regardless of their practicability, as outlined in the EIS.

Eight cross-sections of the current landform were used at approximately 300m intervals. The footprint of the barrier, as shown in the EIS, was then added. The maximum and minimum slopes were then added as outlined in the sections mentioned previously. Allowing for a 20m wide vehicle access road to remain atop the barrier, these were then compared to the finished heights stated in the EIS.

Zero % of the cross-sections indicated that the Western Visibility Barrier could be constructed at the western and eastern face minimum slope angles.

Only 22% of the cross-sections indicated that the Western Visibility Barrier could be constructed at the western and eastern face maximum slope angles.

More that 77 % of the cross-sections indicated that it was impossible to build the Western Visibility Barrier within the parameters outlined in the EIS.

The conceptual design of the barriers may well satisfy the requirements to hide the described mine from view and impact on noise and dust emissions on paper, but faithful construction seems at least impracticable.

ALTERNATIVES

The second half of this section outlines the alternatives available to enable the Western Visibility Barrier to be constructed using the height and slope parameters in the EIS. Assuming that the western edge of the main pit must be as shown then the only alternative is to extend the barrier's base further on to the Avon River or Waukivory Creek flood plain. The EIS states that the western foot of the barrier sits at the 100 year flood level. So any movement towards these watercourses would increase the likelihood of the barrier being impacted during flood events – and being an unplanned participant in flood events.

The option of increasing the western slope doesn't exist if the concept of vegetation growth to hide the ugliness of bare rock slope is to be entertained. The option of increasing the eastern slope doesn't exist as it is already absurdly steep.

The reduction of the height of the barrier whilst retaining the other parameters is the simplest solution. This however calls for reductions of over 10m thus rendering the barrier Incapable of performing its intended functions.

The Western Visibility Barrier is essentially the overburden dump for the first year's excavation. It is therefore a commercial cost and as such must be minimised. It therefore would appear incongruous to design the barrier in such a way as to be extremely expensive, if in fact possible, to construct.

The department must question the design detail of the Western Visibility Barrier when it physically impossible to construct within the parameters in the EIS. Modifications would lead to encroachment onto floodplains and fail its intended purpose.

Detailed information outlining the measures to be taken to prevent rainfall runoff on the western face of the barrier entering the waterways also requires clarification.

The Rocky Hill Mine lies in an area of the Gloucester Valley known locally as storm alley. Summer storms generated over the Great Dividing Range track down the Gloucester River Valley cross the Avon Valley and head towards the coast via the Waukivory Valley. The name "storm alley" has been given to the area due to the frequency and severity of the storms that transit the area. Rainfall totals of over 100mm in an hour, hail and severe westerly winds are often the results of these storms.

What plans are in place to cover landslip due to intense rain events pushing silt and debris into the Avon River?

What plans are in place to prevent compacted ice as a result of hail from a major storm event blocking drainage channels and diverting water from its intended course?

What plans are in place for a 1:500 year flood - as was the case recently in Bundaberg Queensland - that would undermine the barrier and dump it in the Manning River water Catchment.

The Department must request that Gloucester Resources Limited provide full engineering detail regarding the Western Visibility Barrier outlining the construction detail and methodology to be used, costing of the project, detail of water runoff mitigation in extreme events and possible scenarios of failure of the barrier due to flooding above the 1: 100 year and 1:500 year levels.

GRIP notes the potential for extreme events due to climate change. It is now accepted by governments that climate change is real and will continue to produce increasingly extreme weather events for at least the remainder of this century.

In clear knowledge of overwhelming scientific opinion, the government's duty of care to the Gloucester community needs to be a clear priority. The precautionary principle needs to be applied. Thus Rocky Hill's risk identification and mitigation reassurances which clearly have been written to achieve approval , need critical – indeed sceptical – scrutiny.

The many failings raised in this submission are pointers to systemic issues within GRL and Corkery processes where the driver is profit and cost minimisation before extraneous considerations.

1.3 The Financial Viability of the Rocky Hill Project.

The balance sheet of a mine and the balance sheet of a household are identical in one respect.

When costs are greater than income there is going to be a problem.

Throughout the EIS there are references to everything from the type of construction, materials, equipment and transport that will be required to develop the mine to its point of operation. The EIS also outlines the machinery, the equipment, manpower, the electricity and fuel consumption, the wages to be paid and the taxes that are owing to various Governments during the operational and rehabilitation phases of the mine.

TO test GRL's financial viability, GRIP has investigated GRL's outlined but uncosted expenses, with the assistance of machinery and equipment providers, financing companies, transport companies, local councils and publically available figures from within the mining community itself. This information, additional to GRL's EIS costed expenses allowed for a conservative costing for the development, operation, rehabilitation and eventual closure of the Rocky Hill mine. The latter aspects are likely to exceed our estimates several fold – depending on diligence in the closure and rehabilitation process.

Similarly the EIS contains ample information on the quantity of ROM coal to be mined, the percentage loss through processing and the amount of coal available for shipment and sale through the Port of Newcastle. The value of coal for export is available daily so the value of the mines only source of income is readily obtained.

For the purpose of this exercise the costs are in 2013 dollars and the coal price used is $100 per tonne with the $AUD and $US at parity.

Result:
The Rocky Hill Mine is not viable. It will lose more than $280 million over its projected life.

Calculations are outlined in Section 4.2 and detailed in Section 4.5

It should be noted that at the time of writing the average coal price for April was $89.96 per tonne. This would reduce the income of the mine by$161.62M increasing the loss to$442,970,000.00.

Several possibilities exist for not recognising non-viability. These are outlined in detail in Section 4.3. covering:

- **Creative Accountancy**
- **Coal Price Increases**
- **A Greater Quantity of Coal to be Mined** due to:
    - Understatement of available coal reserves in the current application
    - Reliance on undisclosed reserves to be accessed in future stages that require no additional infrastructure
    - Reliance on GRL's contiguous exploration licence areas to the south
    - **Sale of the Approved Development to Yancoal**

This section does not only put forward these as options but outlines in detail evidence within the EIS provision is being made for either the mining of a greater quantity of coal or the sale to Yancoal.

As presented to the Department, the Rocky Hill Mine is a financial white elephant and a naive attempt to slip an understated 'small modern coal mine' past the community it directly affects today. Full disclosure at the outset would assure even greater community concern and allow the Planning Department to arrive at a fully informed decision.

It is not, nor should it be, the Department's role to determine the commercial viability of projects put before them. It is not their concern as to whether the applicant turns a profit or "does their shirt" on the venture. It is however the Department's duty to ensure that what is outlined in the EIS is indeed possible and that the approval, once given, would ensure that what began as stated, would be completed as stated.

Clearly the mine as described is unviable. For several reasons, it may never achieve viability. If it were approved and failed long term viability, then GRIP is concerned that the Gloucester Community and the State of NSW may end up bearing the costs of repatriation and rehabilitation.

The Department must ensure that GRL do not use the cloak of 'commercial-in-confidence' to avoid disclosing in full detail the option or combined options that they intend to pursue to achieve financial viability.

GRIP believes that those options –especially those affecting the scale, location, additional reserves and years of operation – must be disclosed in a new EIS that demonstrably is viable and independent of undisclosed future operations.

The Planning Department and the Gloucester Community deserve all the facts for a viable Rocky Hill coal mine at the time of assessment

1.4 Meteorological Data – Relevancy and Accuracy.

The Rocky Hill Mine is situated on the floor of the Gloucester Valley between the Bucketts and Mograni Ranges rising steeply to a height of over 400m to the east and west of the proposed site. The Gloucester River Valley and the Waukivory Valley run transversely from the site cutting the line of hills creating a pathway from the 1400m high Gloucester Tops to the coast. A central ridge separates the Gloucester and Avon rivers as they flow through the valley until their intersection with the Barrington River to the north of the town.

Wind direction in the valley is extremely variable as it swirls between the valley walls and can be self generating due to heating of the valley floor creating convection currents, temperature variations of several degrees, particularly in winter, due to the slightest elevation change or the shadowing effect of the ranges and rainfall that can be extremely variable in its location and intensity across the valley.

It is imperative then that any attempt to provide computer modelled information on those emissions from the mine that would be effected by meteorological elements should contain extensive data from multiple locations within the valley. This is has not been the case with a total reliance on the one GRL operated meteorological station at the Rocky Hill Mine Site and data from meteorological stations up to 100km distant.

Section 5.2 pinpoints these remote locations and defines the intervening terrain highlighting the absurdity of this seemingly selectively used data in any form of computer modelling per the EIS.

The use of meteorological data from only one location in an area of such high variability and the use of irrelevant data from locations that are hours away by car is absurd and distorts the modelling used in the EIS – to GRL's advantage.

Wind velocity and direction are key elements in the determination of the transmission of noise and dust emissions.

For dust, wind velocities over 3m/sec are used and for noise velocities under 3m/sec are used, therefore determining the average velocity eliminates the highs and lows which are the critical points that should be considered.

This is exactly what has occurred within the EIS – which has eliminated almost entirely the impact of these emissions on the valley by the averaging of wind velocities until a figure of almost 3m/sec is obtained thereby implying little or no effect.

This is exemplified by the absurd, albeit factual, statement made by GRL in section 4.1.3.6 Wind of the EIS

"On an annual basis, the two years of wind data show similar patterns with winds from the south and northeast dominating. The annual percentage of calms (winds less than 0.5 m/s) was 6.1% and 7.0% respectively and the annual average wind speeds were again similar at 2.6m/s and 2.3m/s respectively."

In practical terms, wind velocity is highly variable over the span of a day. Gloucester does not experience 'averages'. It experiences the realities of daily variation and its consequences are real. To attempt to use averages of even a few hours is absurd. To use

averages over a year is deception. It is clearly aimed at delivering faulted information favouring GRL to the decision process – to the enduring cost of residents.

Similarly the validity of the data on wind direction has been compromised by the compilation of data bridging extended periods thereby masking the indication of the daily wind variation within the valley.

Section 5.3 of this submission outlines the comparisons of wind data from the GRL meteorological station and recordings from the five recording stations established at Forbesdale within 2km of the GRL site.

If the data that is available is insufficient or incomplete, the solution is then to get more or complete it, not to go to another location and use inapt data. If the purpose is to look at the effect, the average has no value other than to obscure reality for GRL's purposes.

The Department must ensure the validity, relevance and accuracy of the information provided to it. It must ensure GRL supply data and evidence from wholly appropriate sources for reasonable periods and present it correctly.

1.5 Conclusion

The four issues outlined above are not unique within GRL's EIS.

The lack of concise and complete answers to specific requests outside those required in Clauses 6 and 7 of schedule 2 of the *Environmental Planning and Assessment Regulation 2000* is not restricted to the Gloucester aircraft landing area question but also, we note particularly:

- Just three paragraphs outline the need for the mine. None quantify the need. They baldly note the type of coal and that there is a market for it.

- A few pages of description in section 1 of the EIS and odd sentences scattered through the 347 pages of section 4 do not satisfy the pressing issues of **the cumulative impacts of the four extractive industry operations within a few square kilometres on an enclosed valley floor.**

Conceptual designs for major engineering infrastructure, rather than precise engineering detail such as those outlined concerning the Western Visibility Barrier, also exist in relation to:

- The Rail Load Out Facility design, which locates the facility on the top of a hill - requiring hundreds of thousands of cubic metres of excavation. While this is feasible from an engineering view, it carries an inordinately high cost. This design, yet again, perhaps masks GRL's plan to expand in the valley.

- Similarly the Rail loading infrastructure incorporating a Surge Bin is intended to obviate the need for coal stockpiles at the rail load out facility. This is a radical departure from what is used at all other open cut facilities. It raises questions,

again, regarding the large additional cost involved compared to traditional methods and the full intent of such a large investment.

- Conceptual re-sculpting of the base of the Mograni range to accommodate the rubbish left after the mine has gone, is technically unachieveable without massive engineering and borrowings from other mining developments. In the final wash-up, 'resculpting 'still needs material to replace the 21 million tonnes of coal.

These concepts are deceptive. They do not countenance, or explain, or cost the practical costs confronting GRL.

GRIP's concern over the financial viability of GRL's project is entirely justified given the current volatile nature of the world coal market, the introduction of new suppliers into the Chinese market from Mongolia and Russia, and the world-wide push for reduction in the use of fossil fuels.

Against this background, GRL's 'small modern mine' with limited coal reserves and life, will be very expensive to implement and is unlikely to be viable without very substantial undisclosed coal mining closer to Gloucester, or along the Bucketts Way – and with 24 hour operations entirely within reach via interesting unexplained provisions in the EIS.

What solution does Gloucester Resources Limited have in mind for this Rocky Hill project to be viable?

- Creative accountants
- Sustained record coal prices
- Coal reserves on which the efficacy of this project depends
- Sale of the Approved Proposal to Yancoal or other.

The Specialist Consultant Scientific Compendium contains over 2700 pages of data, modelling and research material that forms the basis of the arguments, explanations, validations and conclusions in the EIS.

- 2700 pages of entirely confusing and mind-numbing information on everything from the size of dust particles to the migratory habits of bats.

- 2700 pages compiled by consultants using data from field observations, empirical evidence and information from past submissions.

The question remains, is the data relevant, and have the results been so statistically masked/mathematically modified so as to skew or deflect them away from the intent of the assessment process.

This was certainly the case with the meteorological data and there is no reason to assume that the same does not apply to other sections of the EIS that the community of Gloucester simply does not have the resources to forensically review.

The Department must seek to clarify all the issues raised in this section of the submission.

- It must demand of GRL detailed responses, as requested but not adequately provided, to the specific requests outlined in the Director General's Environmental Assessment Requirements.

- It must demand of GRL detailed engineering designs and costing estimates for the infrastructure of the mine rather than the un-costed perhaps impossible conceptual designs offered in the EIS.

- It must demand of GRL full explanation of the financial frailty of the Rocky Hill Mine and what future pathway it anticipates taking given that the State of NSW and the people of the Gloucester Valley will be left to bear the costs if Rocky Hill fails. What option will they be pursuing to validate the mines financial existence?

- GRL should be required to submit a new EIS that defines a project that is independent of future development/expansion/continuous record coal price possibilities. This will give the community and the Planning Department information crucial to decision process.

- It must ensure that all data used in modelling of scenarios, all data used by way of explanation and all data that used to substantiate arguments is relevant, not because some paid consultant says it is but because it has been independently studied and found to be the case.

The Department must do all in its power to ensure that its decisions affecting the lives of the people of the Gloucester Valley are based on accurate responses, feasible practical designs, accurate and appropriately used data and will result in the Rocky Hill Mine being able to fulfil financially, by a defined pathway, all its obligations throughout the life of the mine.

Failure by Gloucester Resources Limited to satisfy the Department in any of these areas should lead to the immediate refusal of any application for the development of the Rocky Hill Mine.

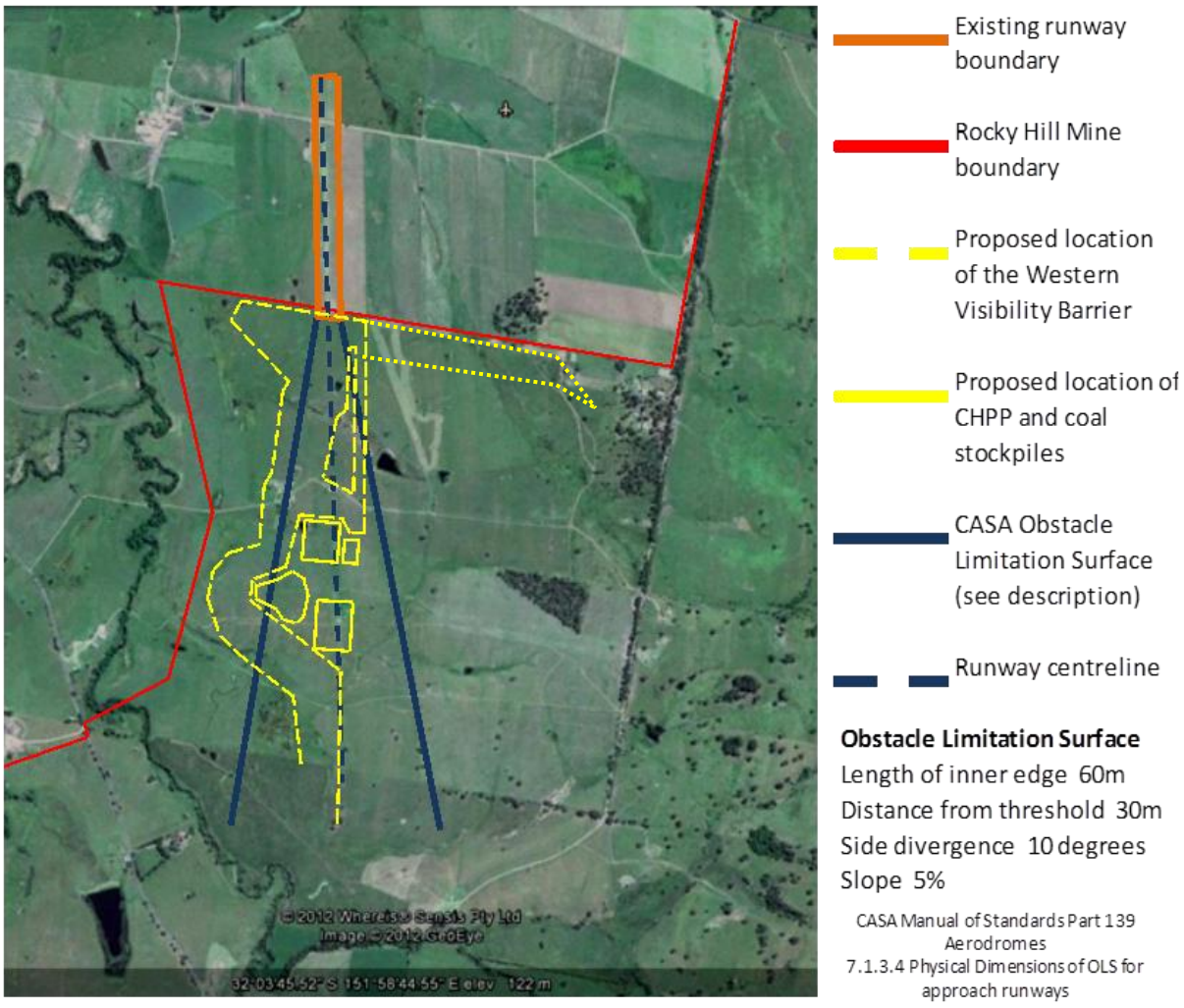
2. The Interaction between the Rocky Hill Coal Project and Gloucester Aircraft Landing Ground

2.1 General

Gloucester Aircraft Landing Ground is a Registered Authorised Landing Area code sign YGCR that has been operational for over 30 years. The landing area is a grass runway of approximately 875m length running North – South. It is located approximately 5.3 km south of the Gloucester post office and immediately north of the proposed mine extraction area on a property commonly known as "Maslen's Dairy".

Prior to the GRL purchase of the "Maslen's Dairy" property (announced September 2012) the Airfield was leased from The Speldon Partnership (Maslen family), who operate the dairy, and Gloucester Resources Limited who own the land immediately at the southern end of the runway and lease a small portion of it to the Gloucester Aero Club. GRL now also owns the dairy property. It is maintained and operated by the Gloucester Aero Club who maintain a clubhouse, hanger and fuelling facilities adjacent to the runway.

Figure 2.1 Airfield and Mine Infrastructure locations



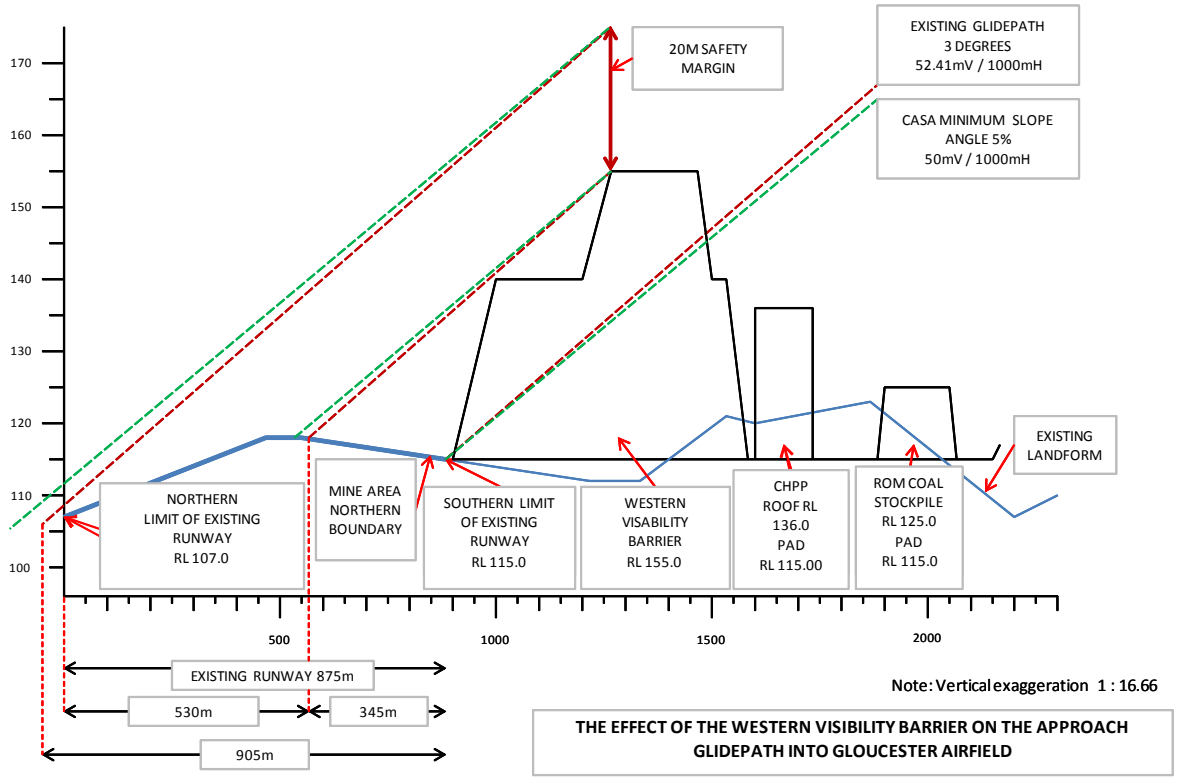
2.2. Airfield and Rocky Hill Mine Interaction

Figure 2.1 , the map above, shows the location of the proposed mine infrastructure - in particular the western section of the Western-Northern Visibility Barrier, CHPP and coal stockpiles in relation to the airfield runway. The CASA Obstacle Limitation Surface also shown and covers that area where the mine infrastructure lies. The Obstacle Limitation Surface describes a plane that extends from the end of the runway at a slope of 5% with a divergence from the runway edges of 10 degrees for a distance of 1600m

.

The effect of the proximity of the Western Visibility Barrier on the operation of the airfield can be seen in **figure 2.2**. The majority of landings at the airfield approach from the south using a glide path of 3 degrees. Both this glide path and the CASA 5% OLS surface are shown.

Figure 2.2 Gloucester Aircraft Landing Area glide path details for southern approach.



As can be seen in **figure 2.2,** the construction of the Western Visibility Barrier effectively shortens the available runway length by 345m if it was in fact possible to land with the wheels of the aircraft skimming the top of the barrier. Allowing for a 20m safety margin the landing area would be 30m past the end of the existing runway.

Obviously the Gloucester Aircraft Landing Area and the Western Visibility Barrier cannot coexist. As there can be no compromise with aircraft safety this would mean the either:

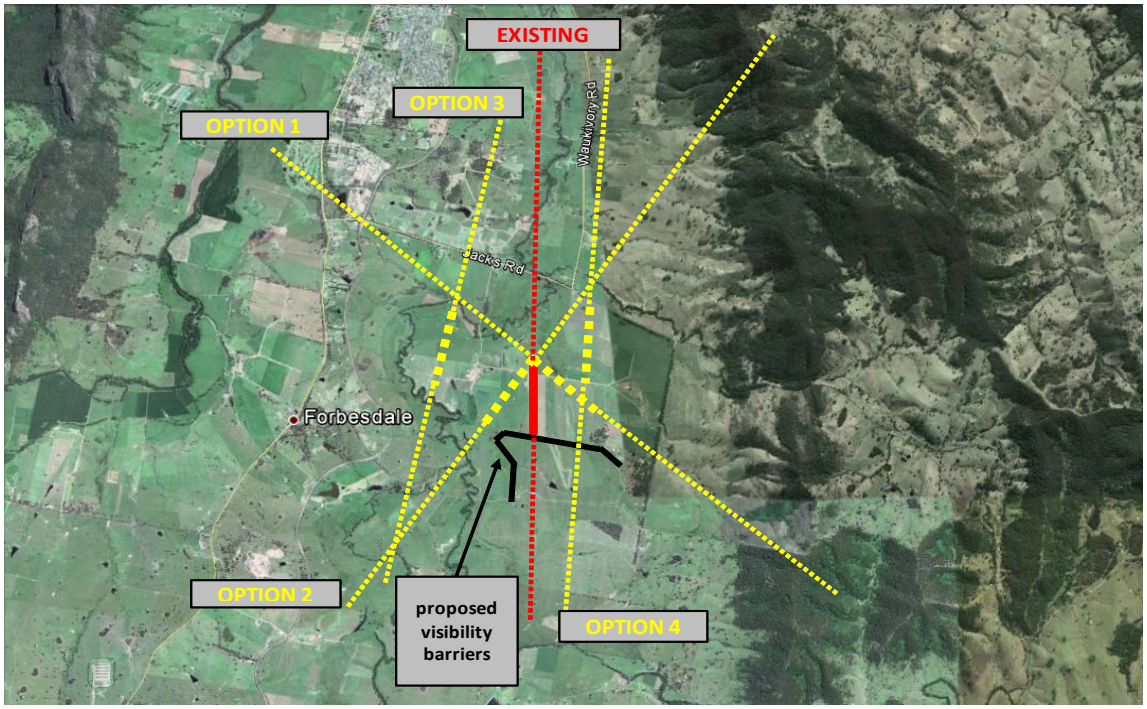
- The Western Visibility Barrier relocated no closer than 1km south of the landing area.
- The runway be realigned either SE-NW or SW-NE so as to avoid the western and northern visibility barriers.
- The relocation to another portion of the property.
- The closure of the airfield.

2.3 Potential Re-alignment or Re-location of the Airfield

Re-alignment of the runway would require "swinging" the southern end of the runway in either a SE or SW direction to a point where the western or northern barriers no longer influenced the glide path including the required Obstacle Limitation Surface. These options are shown as Options 1 & 2 on the map below.

Re-location, with regards to maintaining runway length and requiring a similarly level area leads to the Options 3 & 4.

Figure 2.3 Re-location and Re-alignment Options



Option 1: Re-alignment of the runway to miss the eastern end of the Northern Visibility Barrier. This requires the rotation of the runway to a heading of 310 degrees (50 degree shift from existing).

Option 2: Re-alignment of the runway to miss the north-west corner of theWestern Visibility Barrier. This requires the rotation of the runway to a heading of 35 degrees (35 degree shift from existing).

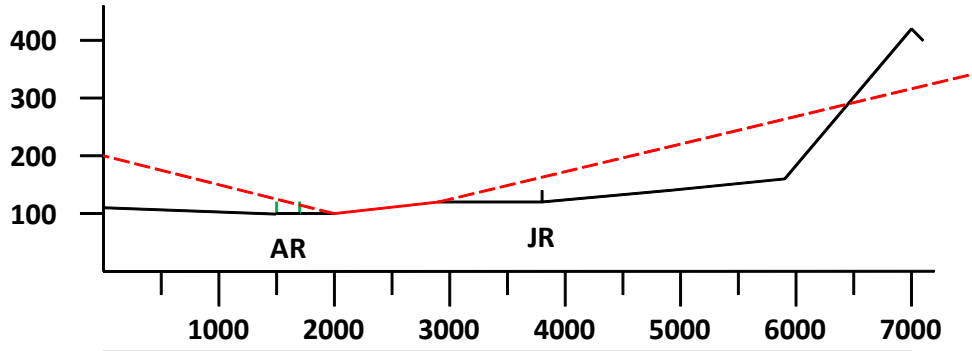
Option 3: Re-location of the runway to the east within a loop in the Avon River with an alignment to avoid the Western Visibility Barrier. New heading 13 degrees.

Option 4: Re-location of the runway to the North East as close as practical to Waukivory Road. New Heading 6 degrees.

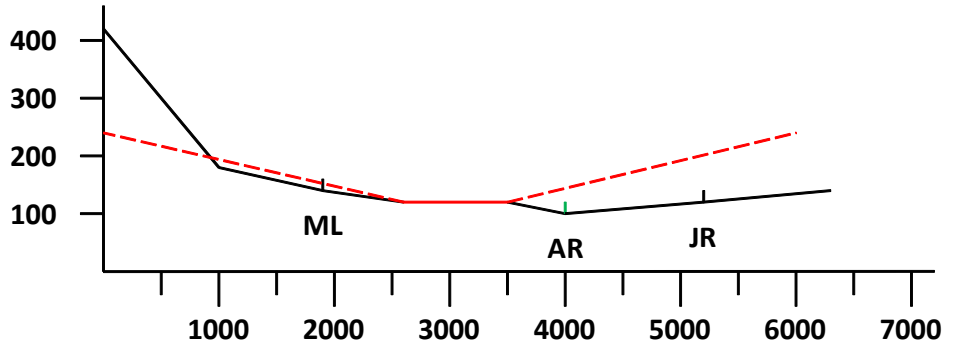
These are not all the options available but cover the re-alignment alternative of an easterly or westerly swing and the re-location possibilities that are available. Re-location further to the east than option 4 would encounter increasingly sloping ground so was not considered.

The CASA requirements of a glide path slope of 5% (50m / 1000m) are shown in figure 3.3 below.

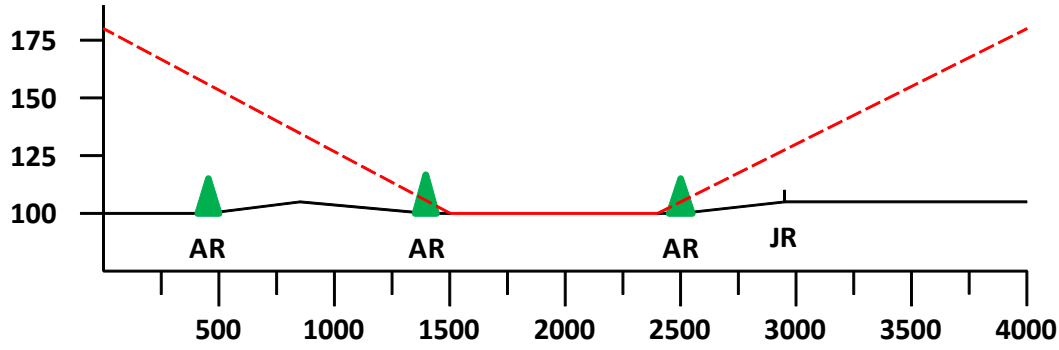
Figure 2.4 CASA Glide Paths for Re-alignment and Re-location Options



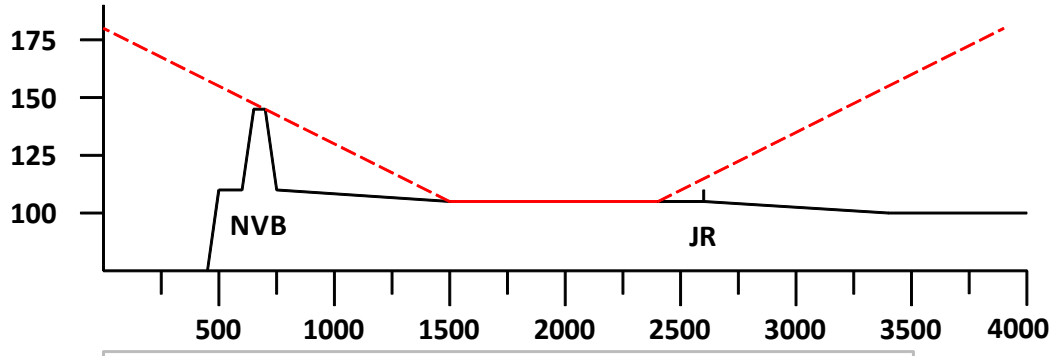
Re-alignment Option 1 (vertical exageration 10:1)



Re-alignment Option 2 (vertical exageration 10:1)



Re-location Option 3 (vertical exageration 10:1)



Re-location Option 4 (vertical exageration 10:1)

Option 1: Or any other alternative requiring further easterly rotation, is impractical due to the Mograni Range to the north at 400 plus metres obstructing the CASA approved glide path.

Option 2: Or any other alternative requiring further westerly rotation, is impractical due to the Mograni Range to the south at 400 plus metres obstructing the CASA approved glide path.

Option 3: Would be possible however would require the removal of approximately 100m of trees on either side of the Avon River both on the southern and northern approaches to satisfy CASA Obstacle Limitation Surface requirements. The runway also would be located at less than 1m above the level of the Avon River and as such prone to flooding on a regular basis. Takeoffs and landings to and from the north would pass directly over the Thunderbolts Estate residential area. For these reasons this location would be impractical.

Option 4: The Northern Visibility Barrier obstructs the CASA approved glide path to the south. The rotation of the southern end of the runway easterly to miss the barrier would then have issues with the rising slope of the Mograni Range to the east and passing over the Avon River residential estate immediately to the North. This option therefore is also impractical.

With there being no possibility of the mine moving a kilometre to the south and all re-alignment and re-location options either impossible under CASA guidelines or totally impractical, the only remaining possibility is the airfield's closure.

2.4 The Impact of the Closure of Gloucester Airfield

The closure of Gloucester Airfield due to the Rocky Hill Mine will have social and logistical impacts that extend far beyond the Gloucester Valley

2.4.1 Disaster Management

The Gloucester Aircraft Landing Area forms part of both the Gloucester Shire Council and the NSW Rural Fire Service disaster management strategies. The airfield allows for the use of fixed wing aircraft in particular air reconnaissance fire spotting and water bombing operations using fire retardants. The nearest alternative airfield is located approximately 55km distant at Taree. The airfield is the closest to the heritage listed Barrington Tops National Park and the extensive wilderness areas to the north and south of it.

In October 2012 the airfield was used to fight a Declared Section 44 fire (Local State of Emergency) for a period in excess of three weeks. During this time up to 5 aircraft used the airfield for the purpose of refuelling, loading fire retardants and overnight accommodation.

2.4.2 Aircraft Safety

As a Registered Authorised Landing Area it is listed in the Australian Airfield Registry and is available for use by all aircraft. This is particularly significant in an emergency situation as it forms part of the safety net for light aircraft using the NSW mid north coast.

2.4.3 Tourism

Several times a year, the airfield plays host to aircraft-related events that bring in total a significant number of visitors to the town all of whom require accommodation and meals as no facilities are available at the airfield. Such events include

Fly in events: 3-4 day events held 2 to 3 times per year with up to 50 visiting aircraft.
Glider events: A weeklong event held annually attracting upwards of 20 aircraft and support towing aircraft.

Parachuting events: Several weekends a year the airfield is used by upwards of 30 parachutists, support staff and jump aircraft.
The area's natural beauty, with the airfield lying as it does between the Mograni and Bucketts ranges, affords spectacular views for the participants making the trip to Gloucester a sought after experience.

2.4.4 Social Impact

The closure of the Gloucester Airfield Landing ground would impact on two levels within the Gloucester community.

The Gloucester Aero Club: The Aero Club itself provides a community based organisation and venue for those with a common interest in aviation to get together and enjoy their passion. It provides a venue for the tuition of young prospective pilots within the local area without the need to travel to other, busier airfields to practice in particular their takeoff and landing skills.

The Gloucester Community: The hanger at the airfield has for many years provided a hireable venue for countless social functions. It is a sought after venue in particular for 18th and 21st birthday celebrations allowing that because of its location no night time noise restrictions apply. It is also often the venue for the annual Gloucester Ball, a black tie event held annually to raise funds for designated causes within the community.

2.5 Summary

Realignment of the Gloucester Airfield runway is not an option. The proximity of the 400m high Mograni range to the east of the existing runway means that minimum glide path angles could not be obtained and the runway would fail to satisfy CASA's requirements. Relocation options are either impractical due to the flooding of the area by the Avon River or again non compliance with CASA requirements.

With the Western and Northern Visibility barrier designs and locations as outlined in the EIS, airfield realignment or relocation could not occur on GRL land. The airfield would therefore need to close.

3. The Rocky Hill Mine Visibility Barriers

3.1 General

Information contained in this section was obtained from the following sources.

- The Documentation Supporting an Application for Director-General's Requirements for the Rocky Hill Project
- CMA map Gloucester 9233-1N (2007)
- Google Earth

The information was interpreted using standard surveying and engineering practices by persons qualified in these fields. The methodology used highlights identified errors, omissions and engineering concerns.

3.2 The Barriers

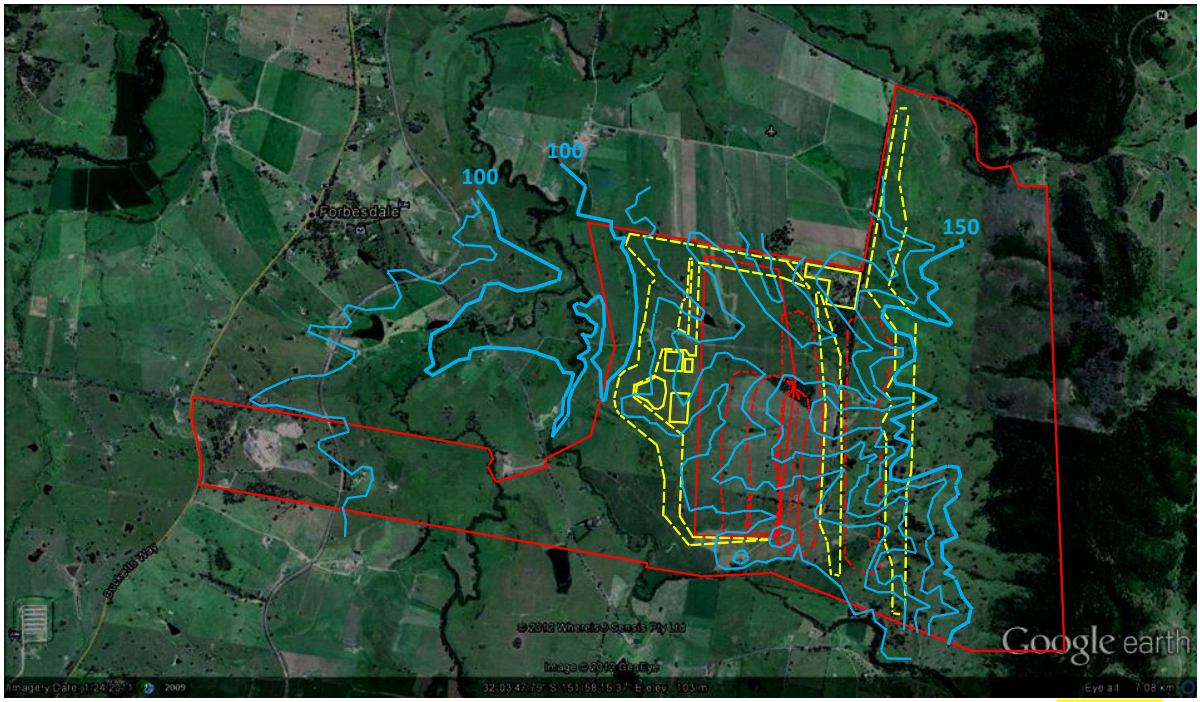
The mine area is traversed by three separate barriers. The combined Western-Northern Barrier the Central Barrier and the Eastern Barrier - all of which are proposed to be constructed within the first 5 years of operation: Western-Northern Visibility Barrier in year 1, Central Visibility Barrier year 2, and Eastern Visibility Barrier by year 5.

There are two engineering issues regarding the construction of the Western Visibility Barrier:

- sections of this barrier, in particular those adjacent to the coal stockpiles, cannot physically be built dimensionally as outlined in the GRL submission even if constructed to the most exacting standards described there in.
- the remainder of barrier can only be built an extraordinarily high cost for what is essentially an overburden dump.
- Essentially GRL has proposed an economically unachievable development that will fail its proposed purposes – to reduce visibility, noise and dust concerns.

Effectively the barrier will be constructed in accordance with the minimum specifications outlined in the GRL submission rather than the maximum and, if so, our view is that the barrier is physically impossible to build to the dimensions presented in the GRL submission.

Figure 3.1 Visibility Barrier Locations



Mine Area Boundary — Mine Pits - - - - Mine infrastructure □
Visibility Barriers - - - - Contour Lines at 10m intervals ——— 100
(The heights shown are on the Australian Height Datum (AHD)

3.2.1 The Western-Northern Visibility Barrier

The Western-Northern Visibility Barrier extends in a north – south direction for approximately 2000m, at the southern end it turns forming an east – west barrier tapering into the existing landform approximately 500m later.
The western section attains its maximum width of over 500m and varies in width along its length to just over 100m. At the northern end of the western section, for approximately 450m, there exists a second tier on top of the main barrier to the eastern edge extending the height 15m. The northern section attains a maximum width of approximately 180m tapering at the eastern end

3.2.1.1 GRL Design Criteria

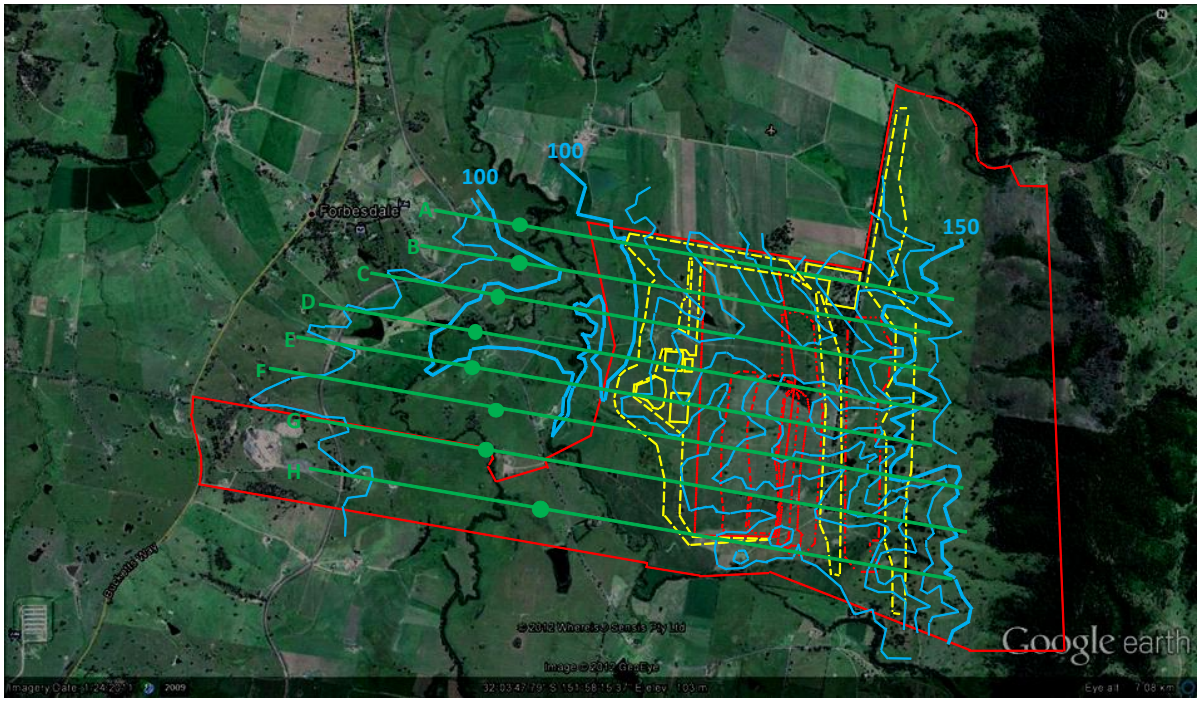
"The western section of the Western-Northern Visibility Barrier, which would remain in place for the duration of mining activities, would be constructed with outer slopes of 1:4 (V:H) to 1:5 (V:H) and inner or easterly slopes of approximately 1:1.5 (V:H) to 2:1 (V:H) depending on the method of construction. (Section 2.6.2.5)

The height of the barrier is 140m AHD with the exception of the northern second tier which has an elevation of 155m AHD. On the eastern side of the barrier where the CHPP and the product and ROM stockpiles are located they sit on a pad at 115m AHD. (Interpreted from figure 2.7)

3.2.1.2 Western Visibility Barrier Cross-Sections

Eight cross sections were taken at various points along the Western Visibility Barrier. The cross sections are parallel to the northern mine area boundary and extend from the Avon River flats to the boundary of the main pit. They cross the barrier at approximately 90 degrees to the longitudinal direction with the exception of section F which is at approximately 45 degrees due to the barrier's design.

Figure 3.2 Cross-section Locations



A

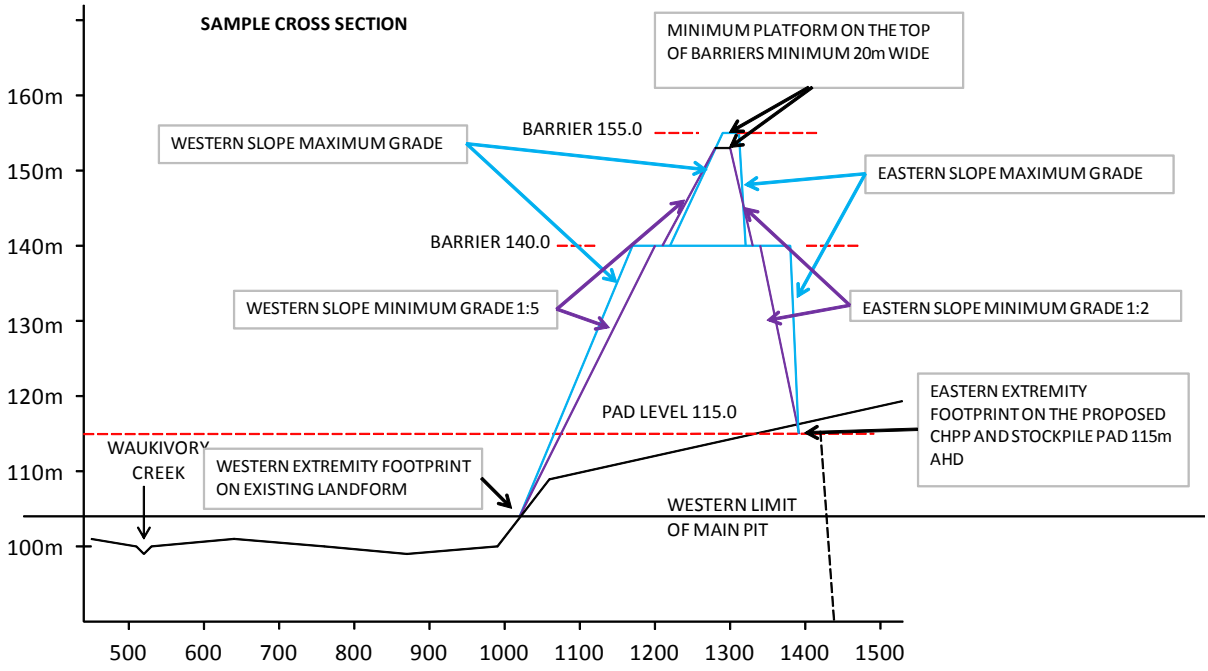
Section Number Section starting point

The following details were assumed in the preparation of the cross-sections.
That the footprint of the Western Visibility Barrier as shown in the GRL submission would fall on the natural landform on the western margin and the CHPP / stockpile pad on the eastern margin.

- That the construction would require a minimum 20m platform on the top of the barrier to allow for safe machinery operation.
- The maximum gradients to be used, as indicated in the GRL submission, 1:3 western slope, 2:1 eastern slope are indicated on the cross-sections in BLUE.
- The minimum gradients to be used, as indicated in the GRL submission, 1:4 western slope, 1:2 eastern slope are indicated on the cross-sections in PURPLE.

NOTE: all cross-sections are shown with a 10 (vertical) to 1 (horizontal) scaling

Figure 3.3 Sample Cross-Section



The general trapezoid shape formed by the footprint, construction platform, western and eastern gradients represents the maximum obtainable height achievable using those parameters.

In the sample section shown above the lower tier, level 140m, of the barrier is easily achieved by using either the minimum or maximum slope angles.

The top tier, level 155m, however is only achievable using the maximum slope angles. The minimum slope angles would create a shortfall of 7m in the maximum height of the barrier. This would require a change in the footprint of the barrier of 35m to maintain the barrier height or reversion to the steeper slope angles.

In **Figure 3.4** the cross-sections A-H are shown and represent the following

Section A The barrier, single tier, at its widest point height required 140m.

Section B The barrier, double tier with the second tier at its narrowest, required height tier 1, 140m required height tier 2, 155m.

Section C The barrier adjacent to the CHPP, double tier with the second tier at its widest, required height tier1 at 140m, required height tier 2 at 155m.

Section D The barrier adjacent to the CHPP, single tier required height 140m.

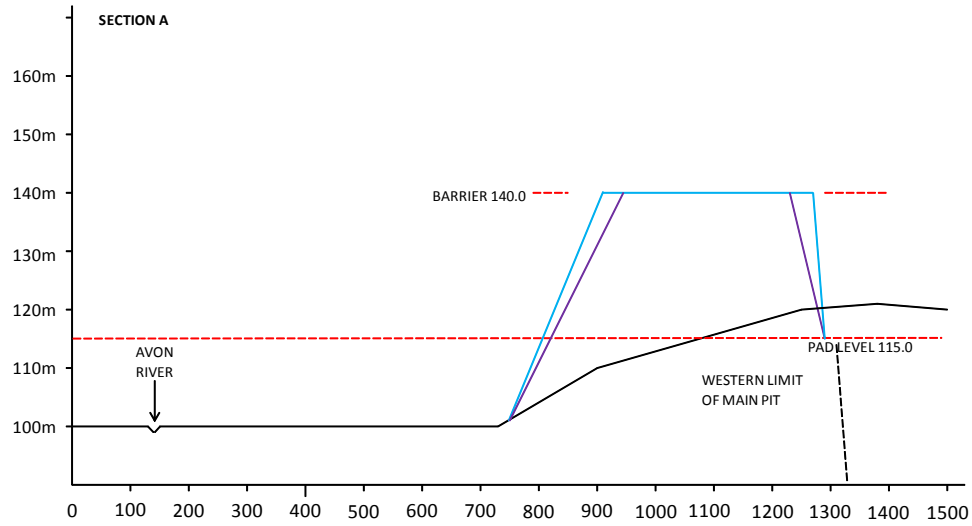
Section E The barrier adjacent to the ROM and product stockpiles, required height 140m.

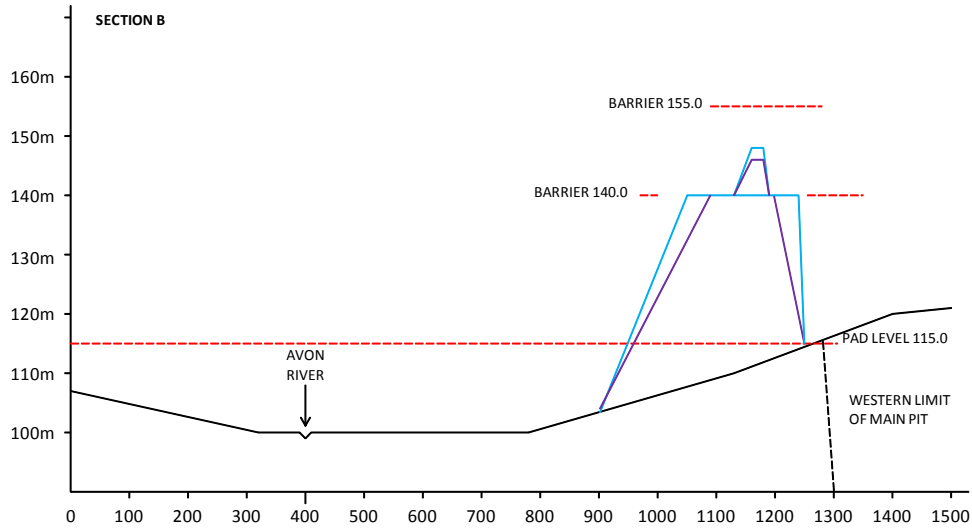
Section F The barrier, single tier south of stockpiles, required height 140m

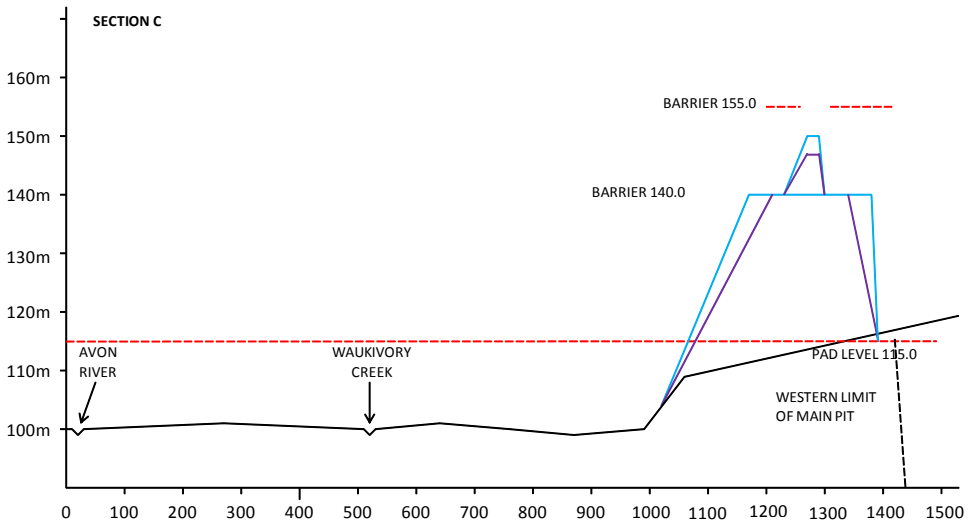
Section G The barrier, single tier required height 140m.

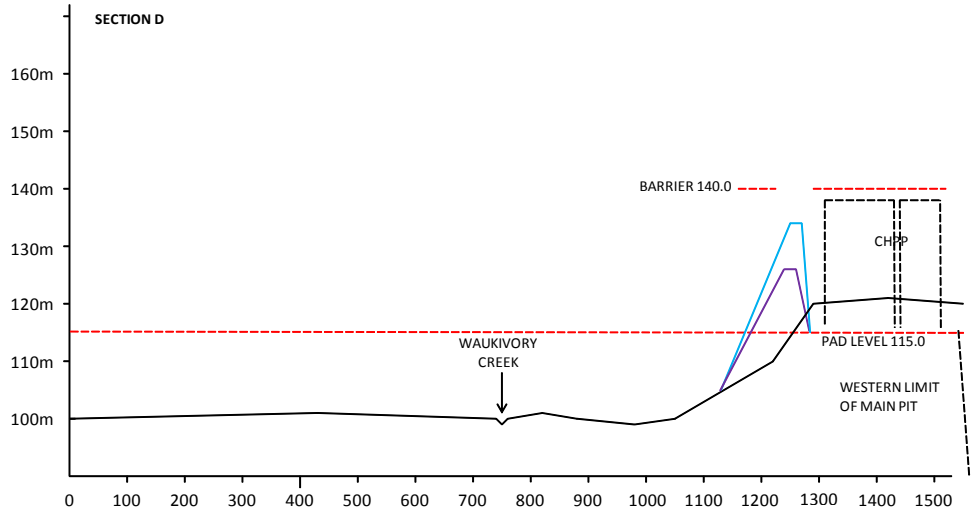
Section H The barrier at the SW corner of the Main Pit, single tier required height 140m.

Figure 3.4 Western Visibility Barrier Cross-Sections A-H





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150m
140m
130m
120m
110m
100m
BARRIER 140.0
CHPP
WAUKIVORY
CREEK
PAD LEVEL 115.0
WESTERN LIMIT
OF MAIN PIT
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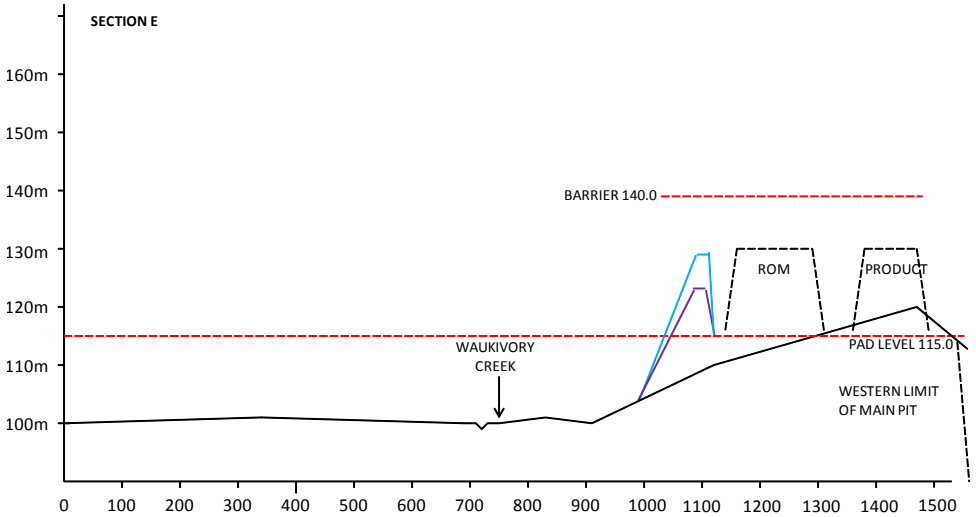
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500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140m
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110m
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BARRIER 140.0
ROM
PRODUCT
WAUKIVORY
CREEK
PAD LEVEL 115.0
WESTERN LIMIT
OF MAIN PIT
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600
700
800
900
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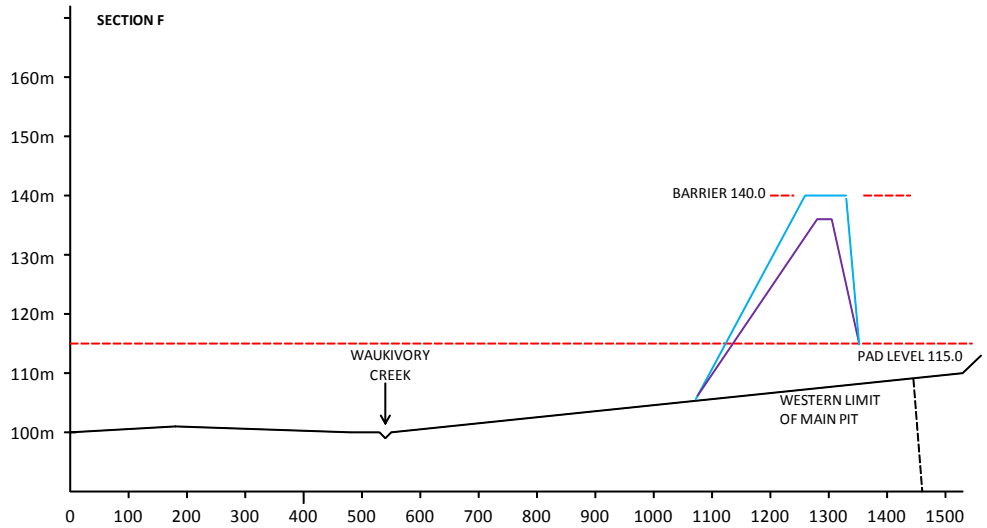
1100
1200
1300
1400
1500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BARRIER 140.0
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WESTERN LIMIT
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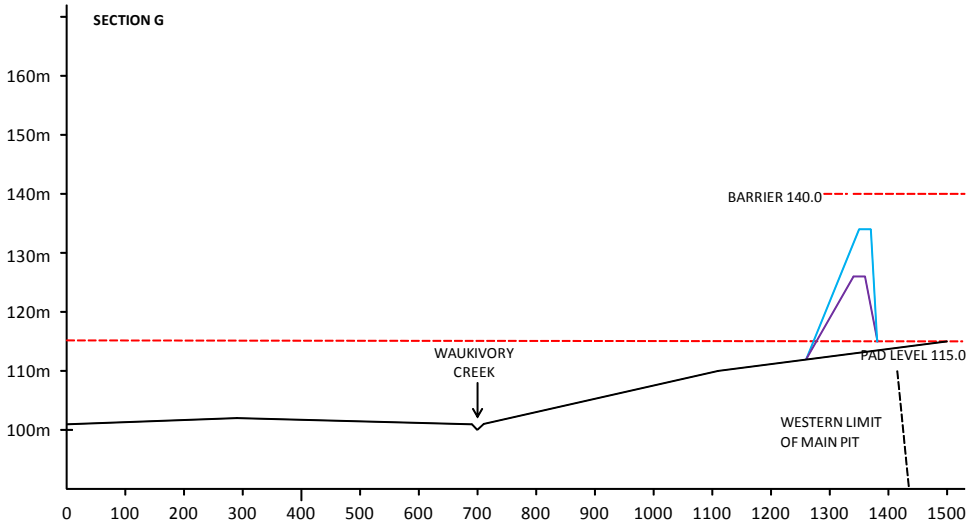
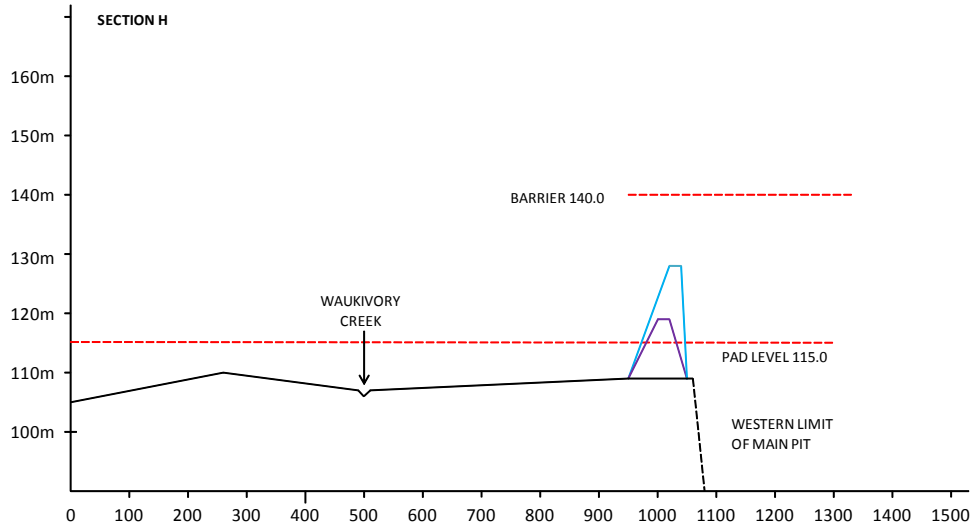




3.2.1.3 Cross-Section Analysis

All the above sections are shown with a 10 (vertical) to 1 (horizontal) exaggeration for the purpose of clarity in regards to the achievable barrier heights.

Cross-Section A With a width of approximately 600m and a single tier elevation of 140m there would be no technical issue in constructing this section using the minimum slope angle criteria.

There is concern that the western foot of the barrier is only 1m above the level of the Avon River.

Cross-Section B With a width of approximately 350m and an elevation of 140m there would be no technical issue in constructing the lower tier using the minimum slope angle criteria. The second tier with a width of approximately 60m and an elevation of 155m CANNOT be constructed to the maximum slope angle criteria, an increase in width of 28m to 87.5m would be required. An increase in the width by 45m to 102.5m would be required to allow the minimum slope angle criteria to be used.

There is concern that the western foot of the barrier is only 2m above the level of the Avon River.

Cross-Section C With a width of approximately 380m and an elevation of 140m, there would be no technical issue in constructing the lower tier using the minimum slope angle criteria. The second tier with a width of approximately 70m and an elevation of 155m cannot be constructed to the maximum slope angle criteria, an increase in width of 20m to 90m would be required. An increase the width by 40m to 110m would be required to allow the minimum slope angle criteria to be used.

There is a concern that the western foot of the barrier is only 4m above the level of the Avon River and Waukivory Creek.

Cross-Section D With a width of approximately 180m and an elevation of 140m, the barrier cannot be constructed to the maximum slope angle criteria. The width of the barrier would need to be increased by 24m to 224m to allow the maximum slope angle criteria to be used. The width of the barrier would need to be increased by 70m to 250m to allow the minimum slope angle criteria to be used. As the barrier is adjacent to the CHPP the increase in width would need to be westerly moving the foot of the barrier to the same level as Waukivory Creek.

There is concern that the western foot of the barrier is only 4m above the level of Waukivory Creek. Using the maximum slope angle criteria the western foot would be only 2m above Waukivory Creek. Using the minimum criteria the foot would be at the same level.

Cross-Section E With a width of approximately 130m and an elevation of 140m the barrier would NOT be able to be constructed to the maximum slope angle criteria. The width of the barrier would need to be increased by 40m to 170m to allow the maximum slope angle criteria to be used. The width of the barrier would need to be increased by 80m to 210m to allow the minimum slope angle criteria to be used.

As the barrier is adjacent to the ROM and product stockpiles, the increase in width would need to be westerly - moving the foot of the barrier to only 2m above the level of Waukivory Creek. For the minimum slope angle criteria to be used the increase in width would require moving the foot of the barrier to the same level as Waukivory Creek.

Cross-Section F With a width of approximately 190m and an elevation of 140m the barrier cannot be constructed to the maximum slope angle criteria. The eastern foot of the barrier is assumed to be at the level of the CHPP and stockpile pad. This is 7m above the level of the edge of the main pit only 100m to the east. Construction would still be possible at the natural land form level but the eastern side of the barrier would need to be 31m high at a 2:1 slope. The width of the barrier would need to be increased by 20m to 210m to allow the minimum slope angle criteria to be used at pad level.

As the barrier is adjacent to the western edge of the main pit any increase in width would need to be westerly - moving the foot of the barrier to the only 3m above the level of Waukivory Creek.

Cross-Section G With a width of approximately 130m and an elevation of 140m the barrier cannot be constructed to the maximum slope angle criteria. The width of the barrier would need to be increased by 24m to 154m to allow the maximum slope angle criteria to be used. The width of the barrier would need to be increased by 70m to 200m to allow the minimum slope angle criteria to be used. As the barrier is only 30m to the west of the main pit any width increase would need to be westerly.

Cross-Section H With a width of 69m and an elevation of 140m the barrier would NOT be able to be constructed to the maximum slope angle criteria. The width of the barrier would need to be increased by 48m to 117m to allow the maximum slope angle criteria to be used. As the barrier is only 10m from the main pit the increase in width would need to be westerly. For the minimum slope angle criteria to be used an increase in width of 105m to 174m would be required.

There is concern that the western foot of the barrier is only 1m above the level of Waukivory Creek.

3.2.1.4 Western Visibility Barrier Construction issues

The Western Visibility Carrier construction issues vary along its length from zero in the north, impossibility in the centre and south, and difficulty for most.

Figure 3.5 Longitudinal Section Showing Areas of Construction Possibility

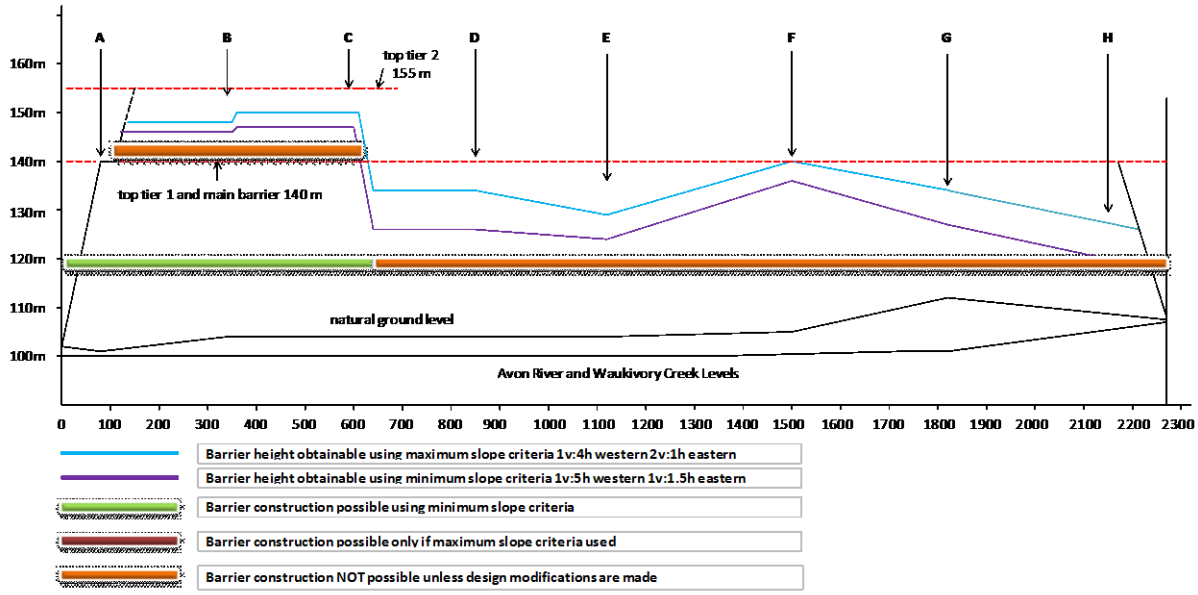


Figure 3.5 shows those areas where the Western Visibility Barrier can, or cannot, be constructed using the minimum or maximum slope criteria, the barrier design footprint and required finished levels of 140m AHD for the main tier and 155m AHD for the second tier.

3.3 Summary

The Wester Visibility barrier runs for approximately 2270m from just south of the existing Gloucester Airfield to the point where it turns easterly at the southern end of the main pit.

It is to consist of a single tier and at the northern end for a distance of approximately 540m is topped by a second tier. The table below indicates the length of barrier (expressed in metres and as a percentage of total tier 1 and tier 2 length) that can be constructed using the following criteria.

- Required finished level of the main tier 140m AHD
- Required finished level of the second tier 155m AHD
- Varying barrier width and footprint as shown in the GRL submission.
- Maximum slope on the western face is to be no greater than 4:1 horizontal to vertical.
- Minimum slope on the western face is to be 5:1 horizontal to vertical.
- Maximum slope on the eastern face is to be no greater than 1:2 horizontal to vertical.
- Minimum slope on the eastern face is to be 1.5:1 horizontal to vertical
- 20m wide platform on the top of the barrier to allow construction

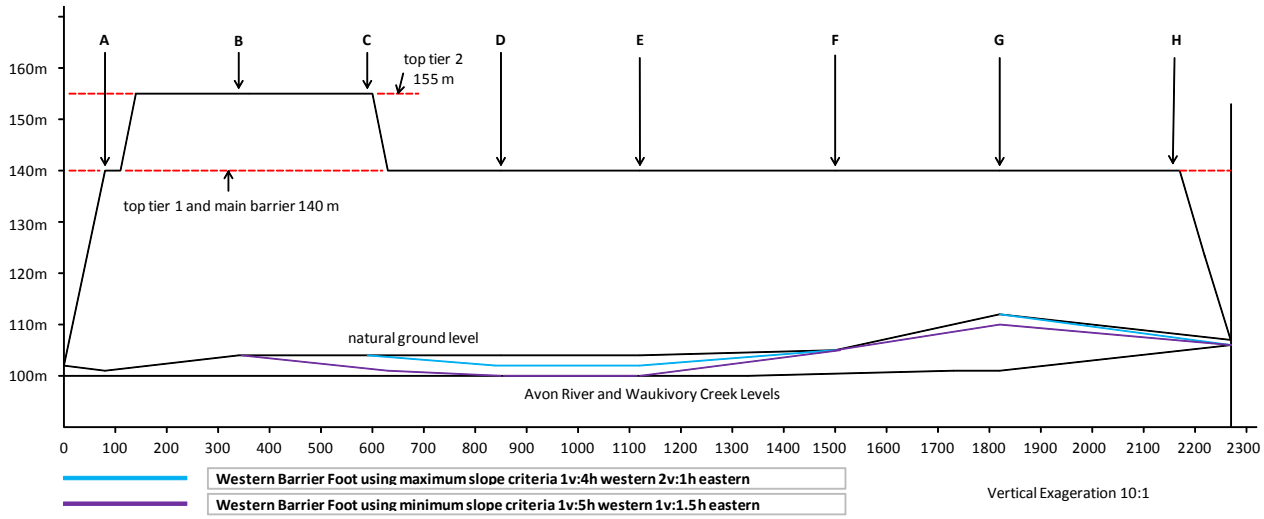
Table 3.1 Construction Possibilities Using Various Design Criteria

	Tier 1	Tier 2	Total	%
Construction possible using minimum slope criteria	0m	0m	0m	0%
Construction possible only using maximum slope criteria	630m		630m	22.3%
Construction NOT possible unless design modifications made	1640m	540m	2180m	77.7%

The above table shows that 77.7% of the barrier does not fit within the parameters set. If the design heights and maximum slope criteria are to be retained, the design change required would be to increase the footprint of the barrier. This would need to be done expansion in a westerly direction because of the CHPP, ROM and Product stockpiles and the edge of the main pit all lying to the east.

Changing the footprint in a westerly direction will move the barrier further onto the Avon River and Waukivory Creek flood-plains. In some cases the western edge would lie at the same level as the water courses themselves as shown below.

Figure 3.6



The required design modifications using the maximum slope design criteria would mean that 77.7% of the Western Visibility Barrier would be required to have a 1h:2v eastern face and a 4h:1v western face.

4. The Financial Viability of the Rocky Hill Project.

4.1 General

There is such a large discrepancy in the financial projections of GRL's proposal that it is clear that the proposal as submitted is NOT VIABLE. Information essential to PAC's assessment regarding this proposal - and essential to an informed community response - has not been disclosed.

The financial discrepancy opens questions regarding stated dates, durations, processes, designs and results contained in the EIS. Gloucester Resources Limited, at the very least, should be required to provide sufficient information as to the viability and options that it has available to allow the Planning Department, and the community at large, to be confident that they will not be left "holding the bag" by way of a big black hole in the ground or the far larger real project closer to the Gloucester township.

The community needs to know. So does the PAC.

4.2 Income versus Expenses

The figures below outline, in a very basic profit and loss format for the income and expenditure of the Rocky Hill Mine. These have been obtained by the extraction of figures contained within the EIS and then dollar values assigned to them based on current costs or values of those items.

For example: **Income is equal to:**

- The amount of ROM coal to be extracted during the lifetime of the mine. **22,995,000 tonnes.** (Table 2.6 of the EIS Estimated Annual Overburden and ROM Coal Production)

- Adjusted for the loss through processing and handling through the CHPP. **30%** (EIS section 2.1.2 Overview of the Proposal)

  "*Processing of all ROM coal at the CHPP. At the maximum ROM coal production rate and an estimated peak yield (i.e. product coal as a percentage of ROM coal processed through the CHPP) of 70%,"*

  Leaving **16,096,500 tonnes** available for despatch via the rail load out facility for the Port of Newcastle.

- An assumption the quality of the coal and hence the price obtainable would be similar to that produced at the Yancoal owned Stratford and Duralie Mines adjacent to the proposed mine.

  "Yancoal quarterly report for March 2013 Sales 40% Metallurgical, 60% Thermal. (2012 comparison 42% Metallurgical, 58% Thermal).

That equates to 6.4386 million tonnes of metallurgical coal and 9.6579 million tonnes of thermal coal over the life of the Rocky Hill Mine

- $ Value (in $A) FOB Newcastle for Australian Thermal Coal and Australian Hard Coking Coal. The price for these grades of coal at the end of May 2013.

  Metallurgical $150 / tonne Thermal $90 / tonne

  Income from coal over the life of the Rocky Hill Mine

  (6.4386mt x $150) + (9.6579mt x $90) = **$1,835.00**

Figure 4.1 Rocky Hill Mine Profit & Loss Summary

ROCKY HILL MINE COST ANALYSIS (Summary)

INCOME	$'M	$'M	$'M
COAL SALES		1835.00	
Metallurgical Coal (40% of sales)			
Thermal Coal (60% of sales)			
TOTAL INCOME			1835.00
EXPENDITURE			
PRE APPROVAL EXPENSES		60.00	
MINE DEVELOPMENT EXPENSES		71.00	
Mine Extraction Area	27.00		
Overland Conveyer	7.50		
Rail Load Out Facility	31.00		
Off Site Construction	5.50		
MINE OPERATIONAL EXPENSES		1575.07	
Earth Moving Machinery Costs	325.78		
Electrical Power Cost	20.40		
Wages and Associated Costs.	309.54		
Coal Transportation Costs	119.75		
Government Taxes & Royalties	791.60		
TOTAL EXPENDITURE			1706.07
TOTAL PROFIT / LOSS			128.93

A detailed version of the Profit and Loss Summary shown above is included at the end of Section 5.

The figure shown are by no means the total expenditure that the mine will incur, but only those expenses that were reasonably able to be costed from information contained in the EIS.

These omitted costs of themselves are significant and will include at least the following:

- Costs associated with all vehicles operated by the mine other than those directly involved in coal production..
- All rates and charges associated with supply of water, sewage, garbage and waste collection etc. other than those in developing the mine infrastructure.
- All daily running expenses of the mine (other than those listed) from the cost of coffee in the lunch room to leasing of photocopiers.

Conservatively these would be estimated at $10.0M per year adding $140.0M during the 14 years outlined.

ESTIMATED TOTAL LOSS **$11.07 million dollars**

It should be noted that the single largest expense of projects such as this "the cost of borrowed funds" has not been taken into consideration.

The three phases of the mine's operation (development, operation and rehabilitation), according to the EIS, will cover a period of 16 years. A period of 21 years in which to complete these three phases is being sought to allow for any unforseen contingencies. If they were to occur, all expenses not directly related to tonnages of coal produced would increase in direct proportion to the additional amount of time required to complete the three phases.

4.3 Reasons for Ignoring the Financial Loss of the Rocky Hill Mine.

There are several possible reasons why the financial loss outlined in 5.2 would be of no concern to Gloucester Resources Limited. If the option that the company is totally fiscally incompetent is ignored then the remaining possibilities that could make the mine financially sound would be:

- **Creative Accountancy**
- **Coal Price Increases**
- **A Greater Quantity of Coal to be Mined** due to:
    - Understatement of the available coal reserve in the current application.
    - Development of other Stages requiring no additional infrastructure.
    - Development of other Mining Exploration Leases
- **Sale of the approved development to Yancoal.**

It would be also reasonable to assume that Gloucester Resources Limited did not wish to operate the mine to reach a point of financial equilibrium but in fact desire to make a profit.

In table 32 Part 14 Section 6.8 "Impacts on Government Finances" GRL claims that they will contribute $275 million by way of company tax to the national coffers. This would be the amount payable on a taxable income of $916.67 million company profit. This would require either

- An increase in sales to **$2762.74 million.**
- A decrease in expenditure to **$918.33 million**

Both of these occurrences would be highly improbable!

4.3.1 Creative Accountancy

Whilst a significant number of expenses have been outlined there has been no attempt as part of this submission to outline any of the legitimate deductions and allowances that would be available to offset those expenses. There has also been no attempt in terms of expenses to include the significant cost of borrowed funds - other than those of mining vehicle leasing,

Whilst a good accounting company can do many things with the tools they have available to them, even they would be unable to produce the magic GRL needs.

4.3.2 Coal Price Increases

For the additional income of $927.74M to be derived as a result of the increase in the price of coal, the coal price would need to increase immediately and consistently for the 14 years of operation by 50.56%.or to a price of $225.83 per tonne for metallurgical coal and $150.55 per tonne for thermal coal.

The price of thermal coal has only ever reached the $150 mark once and then only for a few months in 2008.

Lack of demand from China and their sourcing of coal from better-placed Russia and Mongolia suggest that the dizzy height of $129.23 per tonne is unlikely to be reached or sustained continuously for 14 years.

4.3.3 A Greater Quantity of Coal to be Mined than Disclosed in the EIS.

If there were more ROM coal than outlined in the EIS, more product coal would be produced and more sales would result. Three ways exist in which that could occur – presented in 4.3.3.1 to 4.3.3.3

4.3.3.1 Understatement of Current Coal Reserves Available in the EIS

Geological estimation of coal reserves, both in terms of the quantity and quality of the available coal is essential information required to determine the viability of a mining project.

GRIP notes:

The Yancoal mine at Stratford, immediately to the south of Rocky Hill, was approved and established in 1995 with an EIS lifespan of 18 years. There is currently a request before the Department of Planning and Infrastructure to extend the operation of the mine a further 11 years to extract 2.6Mtpa of coal - potentially 28.6 million tonnes of ROM coal.

Why should we assume that the GRL results would be any different?

Even now there are discrepancies in GRL's information. The Authors Certification and Section 2.2.3 Coal Reserves and Resources identify 25 million tonnes as potentially recoverable. Table 2.6 Estimated Annual Overburden and ROM Coal Production shows a figure of 22.995 million tonnes. **What happened to the other 2.005 million tonnes?**

Three lines in GRL's EIS provide an explanation for the sudden discovery of new reserves - Section 2.2.4 Further Reserve Drilling Operations.

Behind those lines lies GRL's provision for:

- **Increased operational hours to 24 hour operations; and/or**
- **Stage 2 – which is also artificially outside this application.**

The operational hours of the mine as outlined in section 2.12.1 of the EIS are:

- A day and evening shift 7.00am – 10.00pm
- Pre start checks 6.00am – 7.00am.
- Limited drilling 10.00pm – 4.00am when depth of pit makes this allowable.

Further evidence supporting the unstated intent to mine 24 hours is the following machinery listed for night time use 10.00pm-7.00am in *EIS Table 2.7 Indicative Mobile Equipment List*

Table 4.1 Night time Equipment Usage Extracted from EIS Table 2.7

Equipment	Model	Years 2-4	Years 5-8	Years 9-14
Drill	Rotary SKF 12	1	1	2
Excavator	40t 345D		1	
	120t PC1250		1	1
	200t 994-200		1	1
	350t EX3600	1	2	2
Haul Truck	C789Q & Haulmax	3-4	8-13	4-6
Scraper	657G			
Grader	14M	1	1	1
Front End Loader	Cat 998		1	
Bulldozer	D10 / D11	1	2	2
	844RTD			1
Water Cart	Cat777 & road truck	2	2	2
Bobcat			1	

Why then in Section 4.2 of the EIS, Issue Identification and Prioritisation – Noise, are all readings and criteria listed for night time. Why does **Table 4.11 Active Noise Management Strategies – Operations** list under activities, for all fourteen years of operational life, "**Operate a Reduced Fleet"**.

All the required detail to support an application to increase the operational hours of the mine has been obtained. The subsequent approval of such an application would allow the extraction of 30% - 50% more ROM coal with little addition to the overall operational costs thereby solving the issue of profitability.

AT THIS POINT, GRIP AGAIN EMPHASISES
The GRL APPLICATION IS A COMPLETE DECEPTION.

IN ITS EIS, GRL HAS SET IN PLACE ALL THE ELEMENTS FOR APPROVAL OF A LARGER MINE AND EXTENDED OPERATIONS THAT IT HAS NOT DISCLOSED AND THAT IT IS BANKING ON.

THIS EIS SHOULD BE REJECTED AND ALL THREE GRL ELs SHOULD BE REVOKED.

4.3.3.2 Development of other Stages Requiring No Additional Infrastructure.
Additional reserves of coal may not be mysteriously hidden in geological data but be as obvious as being on the place next door.

As well as owning the land outlined as the mine operational area in the EIS Gloucester Resources Limited also owns the adjoining property to the north, formally known as Maslen's dairy, lying between the northern limit of the Rocky Hill Mine pit area and Jacks Road. GRL also owns property to the north of Jacks Road. All of the property lies within the recently renewed exploration lease EL6523. (Indeed GRL owns the property adjoining the residential area at Gloucester Railway Station. The intent of this ownership has never been disclosed.)

Exploratory drilling has already taken place on properties to the north of Jacks Road and application for Stage 2 exploration on the Maslen's dairy property has been submitted.

It would be naive to assume that GRL have bought all these properties, have renewed the exploration licence and are continuing exploratory drilling without any intention to mine them or exploit them for further mining-related activity.

Mining of Stage 2, Maslen's Dairy, simply requires a northerly extension of the pits of the Rocky Hill mine – advancing towards Gloucester Township and further impinging on productive floodplain and life style housing estates. This advance would all be achieved with little additional infrastructure – simply extend the western visibility barrier / overburden dump and an extension of the haul roads. The only question here is that of time.

Whilst it would seem prudent to allow an additional amount of time to complete a project as substantial as a coal mine, GRL's time allowance is unexplained.

In GRLs' Rocky Hill application we have:

- An application for **21** years of operation
  BUT
- **1** year of construction and commencement
- **13** years of extraction

- **2** years of clean-up
- **ie - a total of 16 years**

Five years are unaccounted for. They appear to be a provision for further mining via an undisclosed advance towards Gloucester. (In discussion regarding stage 2 exploration with the GRL MD in September 2013, he admitted that GRL would mine closer to Gloucester Township if it were economic.)

As Rocky Hill as proposed will not be viable until it has greater produced coal, 'STAGE 2' IS ESSENTIALLY NOT STAGE TWO IN ANY PHYSICAL SENSE.

It is only known as 'stage two' as a piece of gamesmanship. Stage 2 is wholly intended to proceed so that the project can be viable. In presenting the current non-viable proposal, GRL has created a ploy to minimise its EIS implications.

The REAL EIS has been withheld because the REAL Rocky Hill consumes additional floodplain, is located closer to Gloucester and the estates, presents greater noise and dust issues, remains for a longer period and is likely to move to 24 hour operations.

All the provisions are in place for a different mine. But their intent is undisclosed.

Thus the EIS impacts are undisclosed. The Planning Department and the Gloucester Community have been presented with insufficient information so that the impacts of this inappropriate anti-social development might slip under the radar.

4.3.3.3 Development of other Mining Exploration leases

Gloucester Resources Limited is the holder of exploration licences EL6563 and EL 6524. These cover areas to the west and south of the Rocky Hill mine. These licence areas together form a continuous chain from near the Yancoal operated Duralie Mine along the western boundary of the Yancoal leases, past Yancoal's Stratford Mine and the area earmarked for the Stratford Mine expansion. GRL's licences fill in the area of the Gloucester Valley floor not currently covered by Yancoal licences.

GRL have already begun exploration - having renewed their ELs again. For almost identical reasons outlined in 4.3.3.2, it serves GRL's purposes not to disclose what is well known to them. GRIP reminds the Planning Department the licences have now been owned for more than 6 years and the geology is well known.

4.3.4 Sale of the Approved Rocky Hill Mine to Yancoal.

Rocky Hill Mine would lie immediately north of the operational area of the Yancoal owned Stratford Mine sharing a common boundary. The extensions being sought by Yancoal for the Stratford Mine would allow for continued operation of their processing and rail load out facility for approximately the same period as GRL anticipate it will take to mine the Rocky Hill reserves.

With the provision of infrastructure available at the Stratford Mine, efficiencies obtainable because of size and increased output and a totally different costing base, the purchase of

the Rocky Hill Development and its future operation in conjunction with the Stratford Mine is logical and commercially desirable.

This would eliminate entirely the lack of profitability by changing totally the whole structure of the operation. It would also then allow GRL to repeat the process with their Licence areas EL 6524 and EL 6563.

Despite GRL's denials, GRIP notes that GRL and Yancoal have common ownership and directorship linkages.

HANS-JUERGEN MENDE (Business Newsweek - 1 September 2012)
Co-founder American Metals and Coal International Inc (AMCI Inc) in 1986.
CEO and President co-founder of AMCI Capital LP
Director of Yancoal Resources Ltd since October 2007 to present
Director of Gloucester Resources Ltd - current

Yancoal Resources Ltd operates as a subsidiary of Yancoal Australia Pty Ltd
Yancoal Australia Pty Ltd's is Aust subsidiary of Yanzhou Coal Mining Co. Ltd

'**AMCIC2 Holdings BV**' is listed as a shareholder on the Rocky Hill website

Yancoal and GRL might well share a common Chief Financial Officer:

CRAIG SMITH (ASIC Information 2 August 2012)
Chief Financial Officer and Company Secretary, Yancoal Resources Ltd, Eagle Street Brisbane

CRAIG SMITH (Linked In)
Chief Financial Officer and Company Secretary, Gloucester Resources Ltd, Eagle Street Brisbane

GRIP urges the Planning Department to validate this information and particularly to review the recent history of ownership/directorship changes that may have cut the links.

4.4 Summary

The Rocky Hill Mine is a financial white elephant in the form that it is being presented to the Department for approval of the EIS. Essentially, this EIS is presented so that it masks the only way that Rocky Hill can be viable – a larger mine closer to Gloucester for a longer time. This EIS is simply gamesmanship.

It is however the Department's duty to ensure that what is outlined in the EIS is indeed practicable and adds NET value to the state. Approval, if given, would presume that what was begun as stated would be completed as stated.

Given the figures taken directly from the EIS, this CANNOT be the case.

The Department must ensure that the community of Gloucester is not left with the spectre of GRL's financial collapse by way of huge cavity in the floor of the valley and rusting infrastructure dotting the landscape. The Department must ensure the State of NSW will not have to pick up the bill for the repatriation and rehabilitation that was GRL's responsibility under the terms of the mine's approval.

The Department must ensure that GRL do not try to hide under the cloak of 'commercial-in-confidence'. GRL needs to reveal in detail the option or combined options that they intend to pursue to overcome the financial disaster presented in their EIS.

4.5 Income and Expenditure Calculation Details

ROCKY HILL MINE COST ANALYSIS (detail)

INCOME	$'M	$'M	$'M
COAL SALES		**1835.00**	
Total production of product coal 16.0965 million tonnes from extraction of 21 million tonnes of ROM coal *based on $90 per tonne FOB Newcastle for Australian Thermal Coal and $150 per tonne For hard coking coal*			
	TOTAL INCOME		**1835.00**
EXPENDITURE			
PRE APPROVAL EXPENSES		**60.00**	
Includes but is not limited to the cost of Licences, land aquisitions, wages (both employees and contractors), EIS preparation costs including consultant fees and government taxes and charges.			
MINE DEVELOPMENT EXPENSES		**71.00**	
Expenses to be incurred during the establishment and construction phase of the mine (Year 1) Includes but it is not limited to the cost of materials, their transport to site, original designs and engineering and contractor costs. Excludes work performed by Rocky Hill employees or machinery *Based on cost comparisons of similar projects, Council engineering input, raw material and quarry product cost.*			
Mine Extraction Area	**27.00**		
Mark Out and Fencing of the Mine Extraction Area including key boundaries, the removal of existing fencing and the erection of security fencing. (as outlined in EIS section 2.5.2)	**1.00**		
Construction of Site Offices and Amenity Buildings including the access road, offices, stores buildings, bath house and carparks. (as shown in EIS figure 2.13)	**2.00**		
Construction of Water Management Structures (as outlined in EIS sections 4.6 & 4.7)	**2.00**		

Construction of the Western and Northern Visibility Barriers including but not limited to the engineering, design and construction, levelling of the coal stockpile and CHPP area. (as outlined EIS section 2.3.4 Visibility)	**3.00**
Construction of Service Infrastructure including but not limited to power supply, water supply, fuel depot , communications supply, explosive materials storage and explosive magazines, waste management facilities and sewerage treatment facilities. (as outlined in EIS sections 2.9 & 2.10)	**3.00**
Construction of the CHPP including the building, machinery, plant and equipment associated with the CHPP. 80 concrete trucks - 30 semi trailers (as outlined in EIS section 2.4.2 & 2.5.3)	**15.00**
Construction of the Workshop including the building machinery, plant and equipment associated with the workshop. 100 concrete trucks - 20 semi trailers (as outlined in EIS section 2.5.3)	**1.00**
Overland Conveyer	**7.50**
Piers and Access Roads including topsoil removal, materials, contractors and transport of materials to site. 100 concrete trucks - 20 semi trailers (as outlined in EIS sections 2.4.3 & 2.5.4	**1.00**
Conveyor Sections 10m length - 2960m total includes materials, drive motors and contractors detail to indicative design drawing by Nepean Mining Transport of materials to site 200 semi trailers (as outlined in EIS section 2.4.3	**6.00**
Fairbairns Road Underpass including earthworks, culverts and road realignment and reconstruction to detail in figure 2.10 Transport of materials to site 10 semi trailers (as outlined in EIS section 2.4.3)	**0.25**
Avon River Crossing and Rail Crossing including earthworks and additional piering and structural requirements not previously outlined transport of materials to site 10 semi trailers (as outlined in EIS section 2.4.3	**0.25**
Rail Load Out Facility	**31.00**
Earthworks including but not limited to all associated excavation relocation of material onsite for rail and access roads. All importation of quarry products (both structural fill, rail ballast and track capping) 54420 tonnes total transport by 1700 tipper and quad dog trailers. All machinery and contractors not employees of Rocky Hill Mine Design by Halley & Mellows figure 2.11 (as outlined in EIS section 2.4.4.2)	**6.00**
Rail Infrastructure including but not limited to rail track, sleepers signalling and other materials to ARTC specifications and design (as outlined in EIS section 2.4.4.2)	**10.00**

Surge Bin, Load Bin and Load Conveyor including all piering and structural elements, all materials and prefabricated materials, design, engineering and contracted installation. Transport of materials to site 47 concrete trucks, 93 semi trailers Design by Halley & Mellows figure 2.12 including wide loads. (as outlined in EIS sections 2.4.4.3, 2.4.4.4 & 2.4.4.5)	**15.00**
Off Site Construction	**5.50**
Engineering design and construction to relevant standards of the following roads and intersections (as outlined in EIS section 2.5.6)	
Jacks Road & Bucketts Way intersection upgrade providing deceleration lanes on approach.	**0.75**
Jacks Road upgrading and widening of pavement along the full length of the road (approximately 2.7km)	**1.50**
Avon River Bridge on Jacks Road to be constructed	**1.50**
Waukivory Road upgrade from Jacks Road to McKinleys Lane including the construction of the McKinleys lane intersection approximately 1.3km	**0.75**
Jacks Road and Waukivory Road Intersection upgrade	**0.25**
Waukivory Road and McKinleys Lane upgrade and 50m of McInleys Lane to the mine access road	**0.25**
Bucketts Way modification of entry into the Rail Load Out Facility	**0.50**
MINE OPERATIONAL EXPENSES	**1575.07**
Expenses to be incurred during the operational life of the mine including the construction, operational and rehabilitation phases. This in no way represents a complete list but only those directly listed by GRL in the EIS or those that can be calculated from the information provided in the EIS.	
Earth Moving Machinery Costs	**325.78**
Earth Moving Machinery as listed by GRL for use in the mine for the 14 year development and extraction period. (vehicles to be used and duration of use as outlined in EIS section 2.6.5 and table 2.7)	**78.96**

	$ Value / unit
Drill - Rotary SKF12	500,000.00
Excavator - 40T 345D	600,000.00
Excavator - 120T PC1250	1,000,000.00
Excavator - 200T 994-200	1,500,000.00
Excavator - 350T EX3600	2,000,000.00
Haul Truck - Cat 789Q & Haulmax	5,000,000.00
Scraper - 657G	2,000,000.00

Grader - 14M	400,000.00
Front end Loader - Cat 988	600,000.00
Bulldozer - D10 / D11	1,500,000.00
Bulldozer -Rubber tyred 844RTD	600,000.00
Water Cart - Road Truck & Cat 777 *	5,100,000.00
Bobcat	100,000.00

* the 2 vehicles are treated as 1 unit due to the large cost difference.

Based on information obtained from Hitachi, Komatsu,Liebherr and Westrac.

	Quantity Required*
Drill - Rotary SKF12	1.714
Excavator - 40T 345D	1
Excavator - 120T PC1250	1
Excavator - 200T 994-200	1
Excavator - 350T EX3600	1.857
Haul Truck - Cat 789Q & Haulmax	14
Scraper - 657G	2.143
Grader - 14M	1.857
Front end Loader - Cat 988	0.929
Bulldozer - D10 / D11	2.983
Bulldozer -Rubber tyred 844RTD	1.857
Water Cart - Road Truck & Cat 777	1
Bobcat	0.929

* quantity required is based on: **machinery years rq'd / 14 years**
(the rehabilitation phase machinery requirements are not included)

	14 year Machinery Cost
Drill - Rotary SKF12	857000.00
Excavator - 40T 345D	600000.00
Excavator - 120T PC1250	1000000.00
Excavator - 200T 994-200	1500000.00
Excavator - 350T EX3600	3714000.00
Haul Truck - Cat 789Q & Haulmax	70000000.00
Scraper - 657G	4286000.00
Grader - 14M	742800.00
Front end Loader - Cat 988	557400.00
Bulldozer - D10 / D11	4474500.00
Bulldozer -Rubber tyred 844RTD	1114200.00
Water Cart - Road Truck & Cat 777	5100000.00
Bobcat	92900.00
Total	**94038800.00**

Advice obtained from Westrac Finance and CBA finance suggests that machinery purchases such as this generally by way of lease, typically over 5 years with 50% residual (current rates 5.8% -6.5%)
The machinery is then traded, new machinery is released and so on for the term of the project.

Interest Payable on $94M over 14years at 6%

Maintenance of vehicles including but not limited to lubricants and parts for standard servicing, tyres and other components replaced due to wear and components replaced due to breakdown. Includes contract labour but not GRL employee labour **14.00**

Fuel delivered by semi trailer tankers. **232.82**
(as outlined in EIS section 2.9.3)
stated maximum 15Ml delivered by 10 tankers per week (29,000l / load)
(as outline in EIS table 2.6)
maximum output year of 2M tonne would require 15Ml of fuel
Total out put of mine 22.995M tonne would require 172.46Ml of fuel

(price of diesel fuel delivered to site $1.35 / litre)

Electrical Power Cost 20.40

Electrical Power includes electricity consumed but not the cost of any infrastructure associated with the supply to the mine. **20.40**
136,000MW hours over 14 years.
(as outlined in EIS section 2.9.1)

(cost at $0.15 / KW hour

Wages and Associated Costs. 309.54

Wages paid to up to 150 employees during all phases of the mines operation. Payments to contractors are not included. **257.38**
Determined on the payment of $17.6M in State Payroll Tax.
(as outlined in EIS section 6.4.3.2

Workers Compensation Insurance Premiums **9.00**
based on an average of 150 employees earning in total $20.78 / year
(figures obtained from GIO)

Superannuation Payments **23.16**
Based on the current figure of 9% of ordinary wages

Other Insurances **20.00**
Extensive insurance cover would be borne by the company covering a variety of aspects of the mining operation.

Coal Transportation Costs 119.75

The coal price paid is based on FOB the Port of Newcastle and as such the mining company bears the cost.
Transport would be provided by a contracted company using their locomotives and rolling stock and in turn leasing track time off ARTC

Total ROM coal production **22,995,000 tonnes**
(as outlined in EIS table 2.6)

Estimated peak yield of ROM coal through the CHPP **70%**
(as outlined in EIS section 2.1.2)

Total Product Coal output for despatch by rail **16,096,500 tonnes**

The coal will be despatched through the Rail Load Out Facility

Train Capacity 42 x 80 tonne wagons **3360 tonne /**

	train	
Total train movements required	**4790**	
Cost per train *(based on Queensland Rail estimate that rail freight costs equate to 15% of total production expenditure)*	**$25,000**	
Government Taxes & Royalties		**799.60**

Amounts as outlined in EIS section 6.4.3.2

Local Government		
payment of additional Council rates		**3.00**
Community Fund		**8.00**
State Government		**206.60**
Royalties	$ 186.00	
Payroll tax	$ 17.60	
COAL 21 scheme	$ 3.00	
Commonwealth Government taxation obligations		**582.00**

TOTAL EXPENDITURE	**1706.07**
TOTAL PROFIT / LOSS	**128.93**

5 Meteorological Data – Relevancy and Accuracy

5.1 General

Meteorological Data hides in the background but forms the backbone of all the computer modelling done to assess the impacts of all the emissions from the mine area. These emissions may be either noise or particulate matter generated from mine operations including vehicle operation, mining processes and blasting.

Within the EIS there are 92 pages dedicated to the assessment, impact and management of noise, blasting and air quality. A further 576 pages of detailed study appear on noise and air quality in the SCSC.

There is no doubting the credibility of the consultants and learned individuals who conducted these studies - nor of the computer models they used. The input into these studies however is seriously questioned - based on:

- The source of the data used as a basis for the modelling.
- The averaging of data.

5.2 Meteorological Data Sources.

In **Section 4.1.3.2 Data Sources**, the EIS outlines several data sources and the reasons for their use. The section is reprinted below.

*"Meteorological data from the following Bureau of Meteorology (BOM) stations is presented in **Table 4.1**. Long term climate data was sourced from the following locations as they provided the largest and most complete datasets within the local area.*

- *Gloucester Post Office (Station # 060015) – Rainfall and evaporation. Located approximately 5.5km northwest of the Site. It should be noted that evaporation rates were interpolated from the Gloucester BOM station and calculated using the Queensland Climate Change Centre of Excellence (QCCCE) Patched Point Dataset (PPD).*

- *Chichester Dam (Station # 061151) – Temperature. Located approximately 38km southwest of Gloucester.*

- *Lostock Dam (Station # 061288) – Relative humidity. Located approximately 57km southwest of Gloucester.*

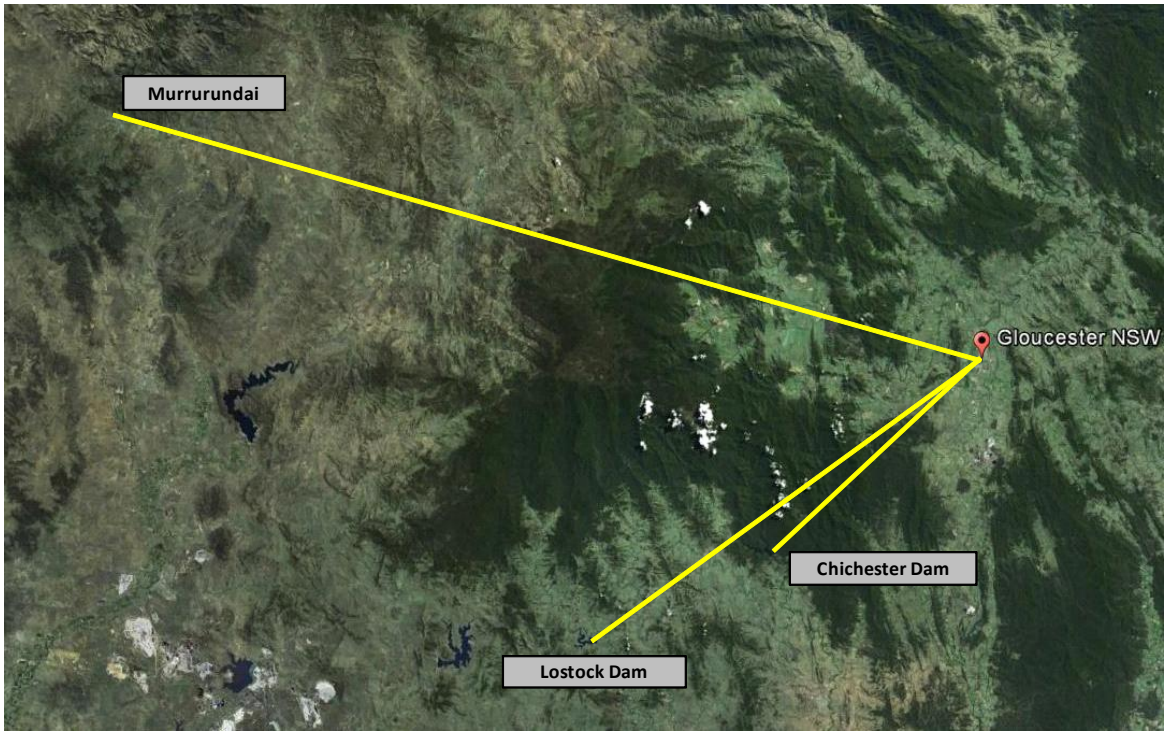
*The Applicant has also established a comprehensive meteorological station within the Mine Area (see **Figure 4.3**). Climatic data collected from the station since July 2010 has been used and referenced in the various specialist consultant assessments. Monthly meteorological summaries are provided on the Applicant's website (rockyhillcoalproject.com.au)."*

In **Section 4.4.7.2, Particulate Matter and Dust Deposition** outlines the approach and data sources used in the use of TAPM, CALMET/CALPUFF modelling systems to determine the predicted air quality impacts due to the mine. They used the following:

"The model also incorporated observed hourly surface data from the Site, as well as from the Stratford Coal Mine (SCM) approximately 4km to the south of the Mine Area. Cloud amount and cloud heights were sourced from the closest available hourly observations (BoM Automatic Weather Station at Murrurundi Gap)."

The map below shows the location of locations of the **"Locations in the local area"** outlined in **Section 4.1.3.2** and the **"closest available"** indicated in **Section 4.4.7.2**

Figure 5.1 Meteorological Data Source Locations



Chichester Dam: Located 36.5km from the Rocky Hill Mine Site is situated in a steep sided valley 190m above sea level. The valley is shielded entirely from weather influences from any direction but the south. Intervening topography consists almost entirely of the Great Dividing Range rising 12km from Rocky Hill Mine to an altitude of 800m above sea level and continuing for the remaining 24.5km at the altitude to Chichester Dam.

Lostock Dam: Located 59.7km from the Rocky Hill Mine Site is situated in an open valley 160m above sea level. Intervening topography consists of the Great Dividing Range rising 11km from Rocky Hill Mine to an altitude of 800m above sea level and continuing for 27km the remaining 21.7km consists of open valleys with intervening ridges reaching 450m in elevation.

Murrurundai Gap: Located 110km from the Rocky Hill Mine Site is situated as the name suggests in a gap in the surrounding Liverpool Range at an elevation of 670m. Intervening topography consists of the Great Dividing Range rising 30km from Rocky Hill Mine to an altitude of 1400m above sea level and continuing for 27km the remaining 54km consists of open valleys with intervening ridges reaching 900m in elevation extending from the western edge of the Barrington Tops to the foot of the Liverpool Range.

These weather stations may supply the "most complete datasets" or the "closest available" but that does not make them in any way shape or form "local" and the data from them bear no relevance or usefulness to Gloucester or the Rocky Hill proposal.

The use of meteorological data from any of these locations, in any sort of modelling concerning the Gloucester Valley - and in particular the Rocky Hill Mine site - is absurd and the results so obtained should be rejected.

Decision information must be directly relevant to Gloucester and the Rocky Hill proposal.

5.3 Averaging of Meteorological Data.

Averaging in the EIS has hidden the reality of what actually occurs. Its use is indefensible unwarranted and could be considered either intentionally or unintentionally manipulative.

In August 2012, the residents of Forbesdale, located within 2km of the Rocky Hill Mine, established 5 weather stations to demonstrate by way of data the empirically evident swirling effect of winds passing over the Forbesdale spur. Seasonal data was collected for Spring and Summer and indeed showed the varying wind strengths and directions on the spur. It also showed significantly different readings between those recorded at Forbesdale and those at the GRL Meteorological station 1km-2km away.

Section 3.4.3.2 of the Forbesdale Residents Action Group has been reproduced with their kind permission below and outlines how averaging and compilation have distorted the results. The seasonal Spring and Summer Wind Rose Data is also shown.

Figure 3.6 Forbesdale Wind Roses – Spring

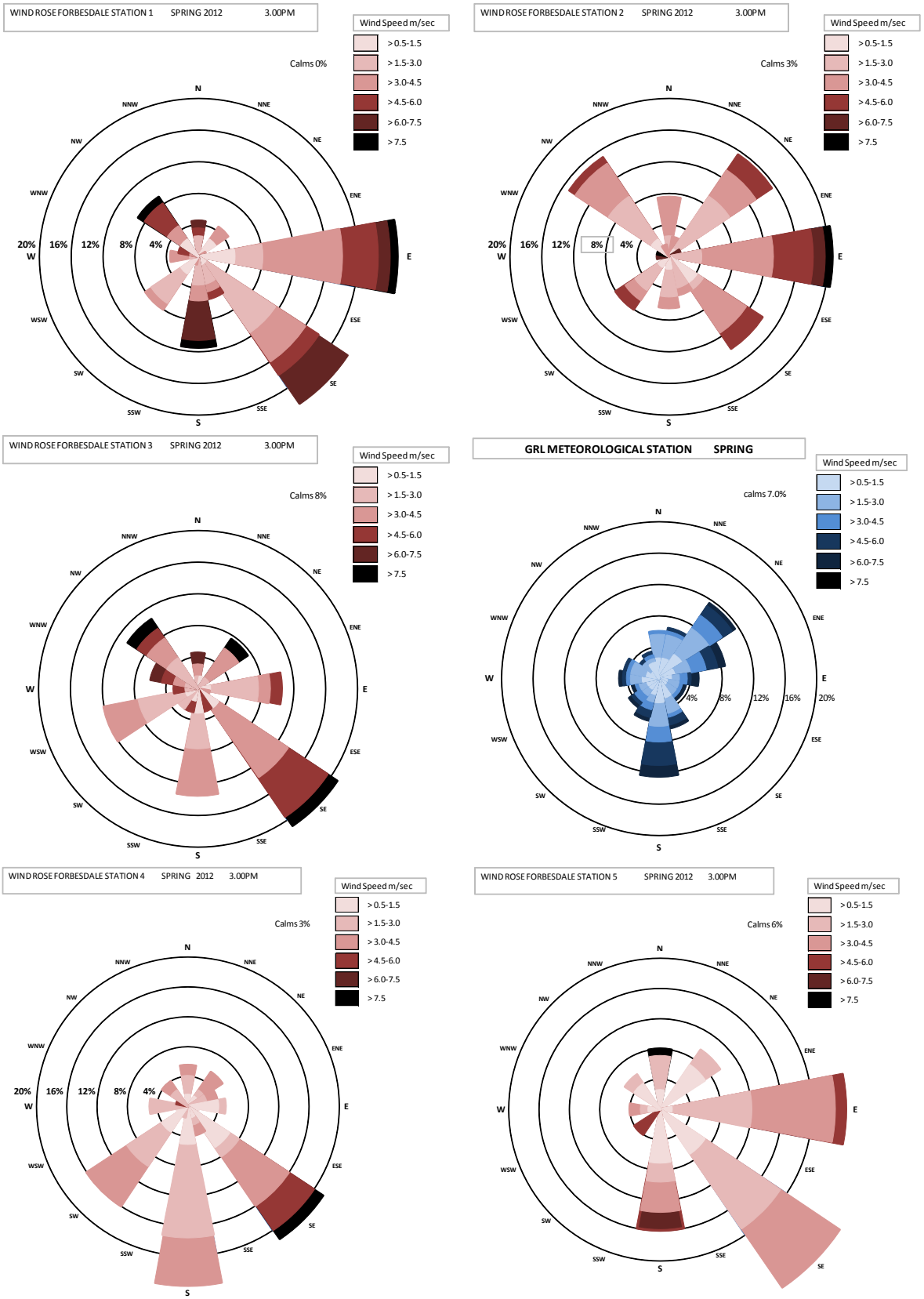
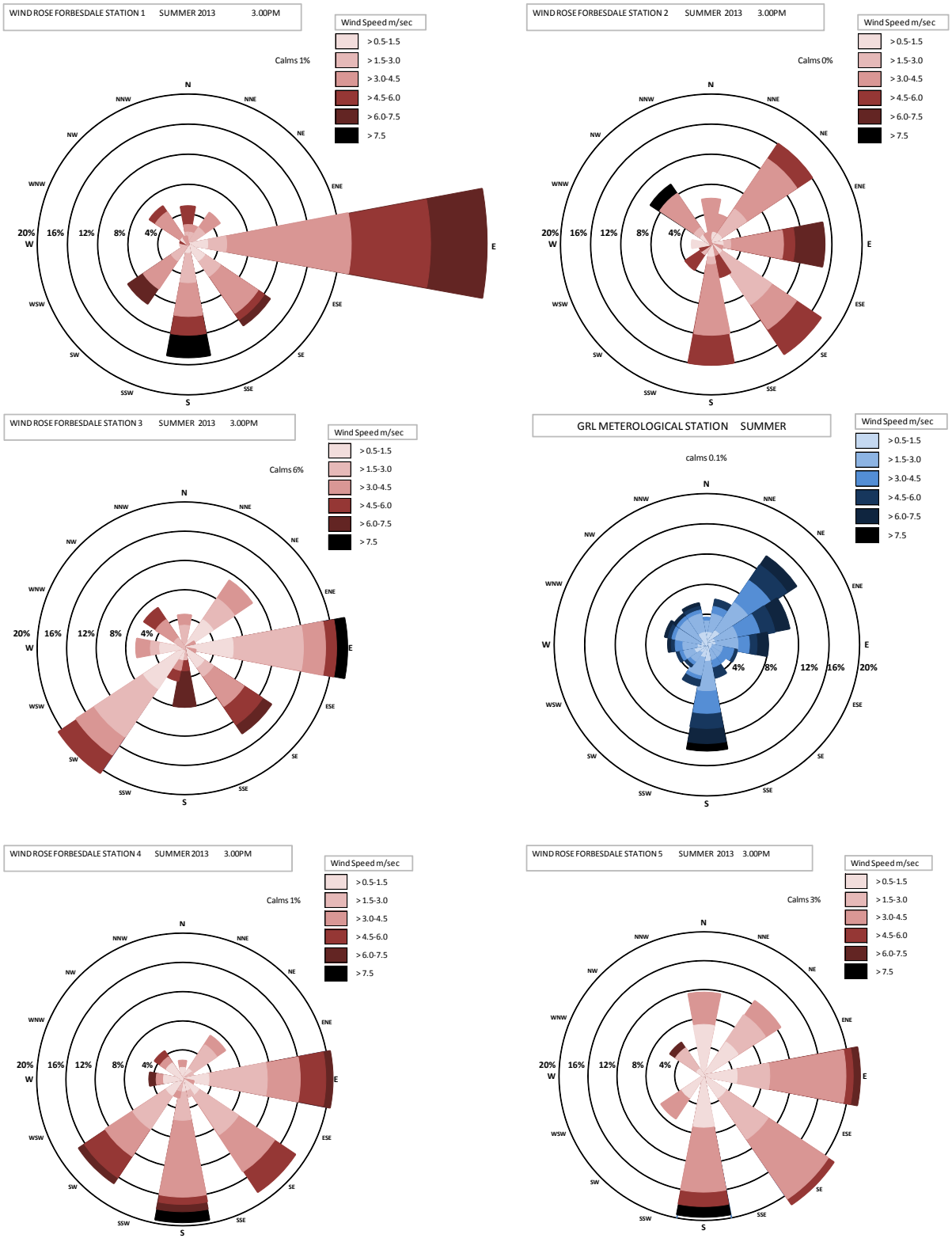


Figure 3.7 Forbesdale Wind Roses – Summer



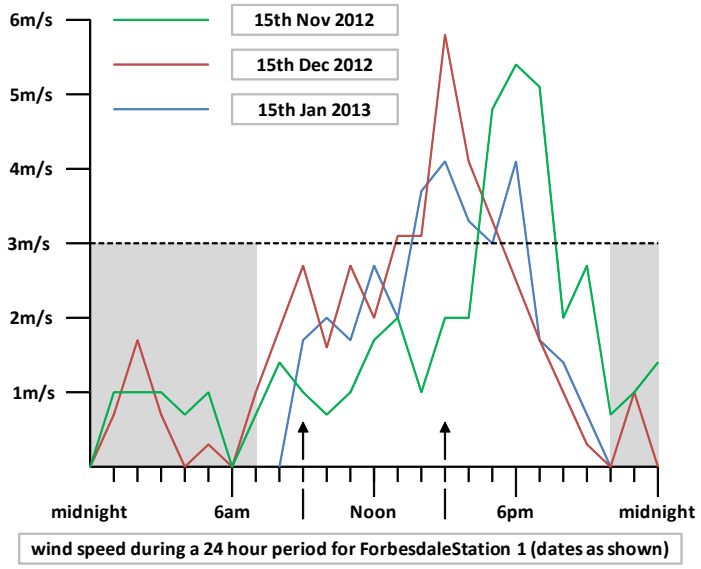
3.4.3.2 Forbesdale Winds vs GRL Winds

The purpose of obtaining wind data by GRL is to be able to use that data in the presentation of arguments with regards to its impact on noise and dust migration. Wind velocity of 3m/s is a key element in both. However, in the case of noise, this represents the maximum point of concern but with dust migration represents the minimum.

Rather than using the available data to amplify the points of concern (the lowest wind readings in the case of noise and those above 3m/s in the case of dust), GRL have continuously sought to "average" readings to the point where they claim that for the 93.9%-93% of the time that the wind blew between July 2010 and June 2012 it did so at between 2.3m/s and 2.6m/s. Such consistency is rare – even within an office.

On average, the EIS is wrong.
The EIS figures are both deceptive and misleading - creating an artificial figure that conveniently reduces both the noise and dust impacts.

Figure 3.8



wind speed during a 24 hour period for ForbesdaleStation 1 (dates as shown)

The diagram above shows the 24 hour readings for Forbesdale Station 1 taken on the 15th day of November and December 2012 and 15th day of January 2013. The grey area represents the period 10pm to 7am when the mine theoretically is non operational. (This does not include 24 hour coal loading operations.)

Clearly a significant amount of the time (26.7% of the time) the wind is above 3m/s affecting dust migration and similarly (73.3% of the time) the wind is below 3m/s affecting noise transmission.

Increasing wind velocity from after sunrise, peaking in the mid to late afternoon and dropping in the evening after sunset, is typical of the valley in the region of the Rocky Hill Mine.

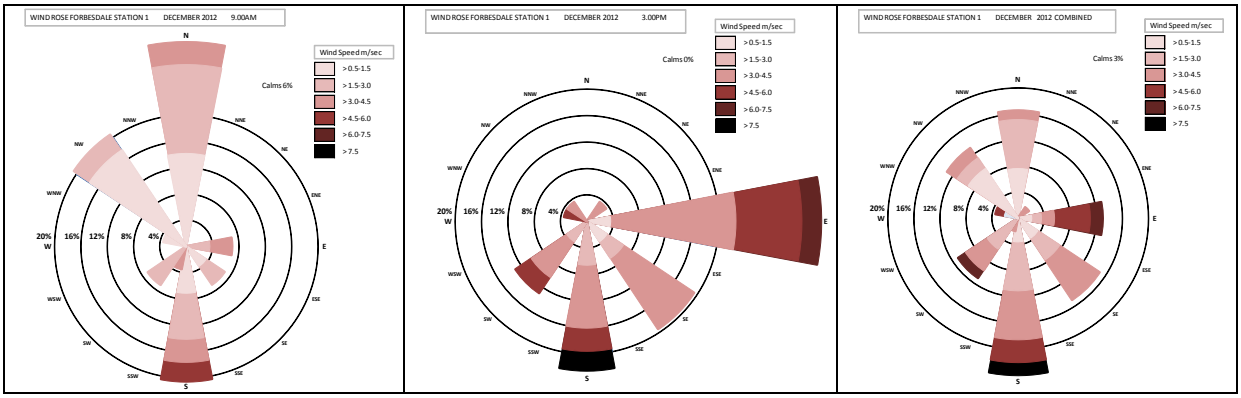
To ignore this by using "average" is deceptive and masks the true relationships between wind, dust and noise. It seems to be a deliberate attempt to mislead the mine approvals process to the long term detriment of Gloucester's residents health, well-being and amenity.

The significant north-north-easterly to east-north-easterly component of the GRL wind roses that is absent from the Forbesdale wind roses is also explained by the lack of desire to amplify the concerns but hide them in data manipulation.

The direction of the wind is of particular significance in the area of dust migration and to a far lesser extent in the area of noise transmission. Therefore by incorporating a greater number of low wind velocity readings the wind rose, rather than looking at the high velocity readings that affect dust, the directional components are altered. This has been done by GRL by incorporating the low velocity 9.00am readings with the higher velocity 3.00pm readings.

It is assumed that in accordance with Australian meteorological practice that GRL used 9.00am and 3.00pm readings as did FRAG. The monthly wind roses posted on the GRL Rocky Hill website indicate 60 readings a month have been used as compared to the 30 on the FRAG wind roses for 9.00am and 3.00pm.

Figure 3.9



9.00am **3.00pm** **combined**

Figure 3.9 shows the effect on the dominant wind direction as depicted by the wind rose when the 9.00am and 3.00pm roses for Station 1 December 2012 are combined. A 35% dominance on the 3.00pm rose, became a 13% fifth most dominant direction on the combined rose.

Again this is both deceptive and misleading creating an artificial figure that reduces both the noise and dust impacts.

5.4 Summary

GRIP does not doubt the validity of data obtained from the Meteorological Stations.

GRIP does not dispute the computer modelling used.

GRIP strongly disputes the use of data from remote irrelevant locations and Corkery/GRL's averaging and compilation of data such that results clearly are distorted and cannot contribute valuably to PAC's assessment process. The misuse and distortions make the EIS conclusions at least erroneous if not deceptive. They appear to deliberately mask the realities of GRL's coal mining ambitions near Gloucester's and Forbesdale's residents.

In such a confined valley the use of meteorological data from remote locations just because that is all there is, makes the conclusions illegitimate.

If computer modelling is to be the basis of conclusions drawn on Air Quality and Noise impacts, then the data input into those models should be relevant and accurate beyond question. Those used in the GRL EIS clearly are not.

The use of averaging and the distortion of data make the use of that data misleading and deceptive. The related EIS conclusions do not qualify for consideration. The Planning Department should reject them out of hand.

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6 The Final Landform

6.1 General

Gloucester Resources Limited have committed in the EIS to spend the two years post mining, to return the mine area to a rural landscape where agricultural pursuits may re-establish as they were before disturbance. Removal of infrastructure, CHPP, overland conveyors, rail load out bins etc. will be undertaken and the final landform of the mine area will be established. This final landform lies as the jewel in the crown of Richard Lamb and Associates who state in their report on visual assessment contained in the SCSC:

"The prime aim of mitigation of the visual impacts should be to minimise the effect of the final landform on the scenic quality of the site. This should be the main concern in terms of visual impacts, other than visibility which is a secondary aim"

Whilst Dr Lamb and his associates may lay some claim to their ability to come up with an aesthetic solution to the issue of hiding the evidence of the area's mining past, simple logic would suggest, and high school mathematics confirms, **there is a serious flaw in their solution.**

6.2 How Much Material is Available to Complete the Final Landform

In assessing the rehabilitation plan it is necessary to determine the volume of material available to do so and the volume of the mine voids and planned rehabilitation profiles. At Rocky Hill the planned backfilling of voids and creation of described landform profiles are to be achieved using material removed in the process of mining, less the amount of produced coal.

Broken and removed from its natural compaction, overburden occupies more volume. But its return to fill voids and described landforms and deliver some attempt at water retaining qualities for natural and agricultural landuse post mining, requires backfilling also to 'recompact' to the extent possible.

Of course:

- 100% replication of compaction cannot be achieved; and
- GRL has to achieve its void filling and final landforms described having removed 21 million tonnes of coal.

GRIP has calculated serious shortfall in the material available to achieve GRL's plan.

In simple terms GRL plans to remove material that consists of three elements:

- Top soil and subsoil: a thin scraping of the productive part of the surface material to be used to cover the hole to allow vegetation after refilling, generally a layer well under a metre in thickness.

- Overburden: all that material that is of no mining value and is removed to gain access to the coal. Basically the material to be used to backfill the hole.

- Coal Product: 21million tonnes removed from the site.

The challenge in assessing the validity of the rehabilitation plan is to discover the facts of available material after its compaction.

Table 6.1 below outlines this for the Rocky Hill Mine.

Note: In terms of material availability the Topsoil / Subsoil quantities are almost insignificant and have been ignored both in its removal and replacement.

In the EIS Table 2.6 Section 2.6.4 *"Estimated Annual Overburden and ROM Coal Production"*, the amounts of these two materials are outlined.

This has been reproduced in columns "a" & "b" in the table below.

Table 6.1 Calculation of Available Fill Material

	a	b	c	d	e	f	g	h
YEAR	***Overburden***	***ROM Coal***	**ROM Coal**	**Product Coal**	**Coal rejects**	**available material**	**available material**	**available material broken**
	(bcm)	***(t)***	**(bcm)**	**(bcm)**	**(bcm)**	**(bcm)**	**broken m3**	**after 33% recompaction**
			(b / 1.346)	**(b x 70%)**	**(b x 30%)**	**(a + e)**	**(f x 1.2)**	**(f x 1.134)**
1	*6321000*	*600000*	445765	312036	133730	6454730	7745675	7319663
2	*7384000*	*1033000*	767459	537221	230238	7614238	9137085	8634546
3	*9751000*	*1320000*	980683	686478	294205	10045205	12054246	11391262
4	*9166000*	*1775000*	1318722	923105	395617	9561617	11473940	10842873
5	*13508000*	*1758000*	1306092	914264	391828	13899828	16679793	15762404
6	*13197000*	*2000000*	1485884	1040119	445765	13642765	16371318	15470896
7	*11577000*	*2000000*	1485884	1040119	445765	12022765	14427318	13633816
8	*11577000*	*2000000*	1485884	1040119	445765	12022765	14427318	13633816
9	*8841000*	*2000000*	1485884	1040119	445765	9286765	11144118	10531192
10	*8841000*	*2000000*	1485884	1040119	445765	9286765	11144118	10531192
11	*8841000*	*2000000*	1485884	1040119	445765	9286765	11144118	10531192
12	*8841000*	*2000000*	1485884	1040119	445765	9286765	11144118	10531192
13	*8841000*	*2000000*	1485884	1040119	445765	9286765	11144118	10531192
14	*3042000*	*509000*	378158	264711	113447	3155447	3786537	3578277
Total	*129728000*	*22995000*	17083951	11958766	5125185	134853185	161823822	**152923512**

The units of measure for the overburden, bank cubic metres (bcm: the cubic measure of in situ material), and ROM Coal, tonnes (t: the weight of the ROM coal), are different. To compare "apples with apples" both were translated to the same unit of measure.

Standards tables list the weight in tonnes for a bank cubic metre of bituminous coal as 1.346t / bcm.

This factor has been used to convert the ROM tonnes in column b to the ROM bcm in column "c" enabling a consistent unit of measurement to be used.

Column "d" represents that proportion of ROM coal processed and despatched from the mine site (in bcm), 70% of the originally extracted ROM coal.

Column "e" represents that proportion of ROM coal left as rejects after the processing of the ROM coal (in bcm) and available to be used as fill in combination with the overburden.

Column “f” represents the combined total amount of overburden and rejects material available to fill the hole (in bcm).

The excavation of material, as outlined previously, leads to an “expansion in volume” of the material due to the broken material containing more airspace per cubic metre than the bank equivalent. It is generally considered in the excavation of materials such as the overburden and rejects from the mine that the increase in volume is 20%.

Column “g” represents the amount of available material converted from bank cubic metres to broken cubic metres by this factor of 20%.

Some compaction can occur naturally with time, mechanically or by the sheer weight of overlying material. In the case of the Rocky Hill mine, little mechanical compaction will occur. Compaction by its massive weight will be the principal means. Most compaction will occur in the lower parts of the pits where overlying material will reach nearly 200m in thickness.

Column “f” represents the amount of available broken material with a re compaction rate of 33%. That is the 20% expansion from bank to broken is reduced to 13.4%.

This gives a total volume amount of material that had been extracted or moved from its original location within the mine site of **152 923 512 cubic metres of material.**

This material would have been used to construct visibility barriers and other mine infrastructure during the course of the life of the mine or placed in areas as indicated in the EIS for use in the rehabilitation process after the cessation of coal removal.

152 923 512 cubic metres of material is the total available.

6.3 How Much Material is Required to Complete the Final Landform

Having dug their hole and taken away some of the material, GRL now needs to fill the voids and re-create the landform.

Over a period of years, to the complex plan presented in the EIS, some material will be removed early and not touched again until mining operations cease; some will be moved directly from its original location to its new location; some will delay in temporary storage awaiting the end of mining operations.

This process continues from almost the first day of the mine’s operation until the last load of coal from the pit arrives at the ROM coal stockpile.

(All the time this movement of material has followed the plan to create the final landform envisaged by Richard Lamb and Associates all those years before.)

Over the two years of rehabilitation, infrastructure will be removed and GRL will complete backfilling and cosmetics.

When finished, GRL will have filled all the holes dug to remove the coal. It will have removed the rubble barriers designed to save the community from noise, dust and unsightly

nature of the mine's operation. They will have removed all overburden materials from their temporary resting places. They will have remodelled that area to the east of the old main pit creating a new landform up to 45m higher than the original.

The detail of this elevation change and retention of original landform is shown in Figure 2.25 of the EIS titled "Landform Elevation Comparison".

It shows the increases in elevation due to the deposition of overburden materials across the mine area. If we assume that all those areas not shown as having an increase would be at the original landform levels, it becomes a relatively simple matter to calculate the volume of material required to create the landform.

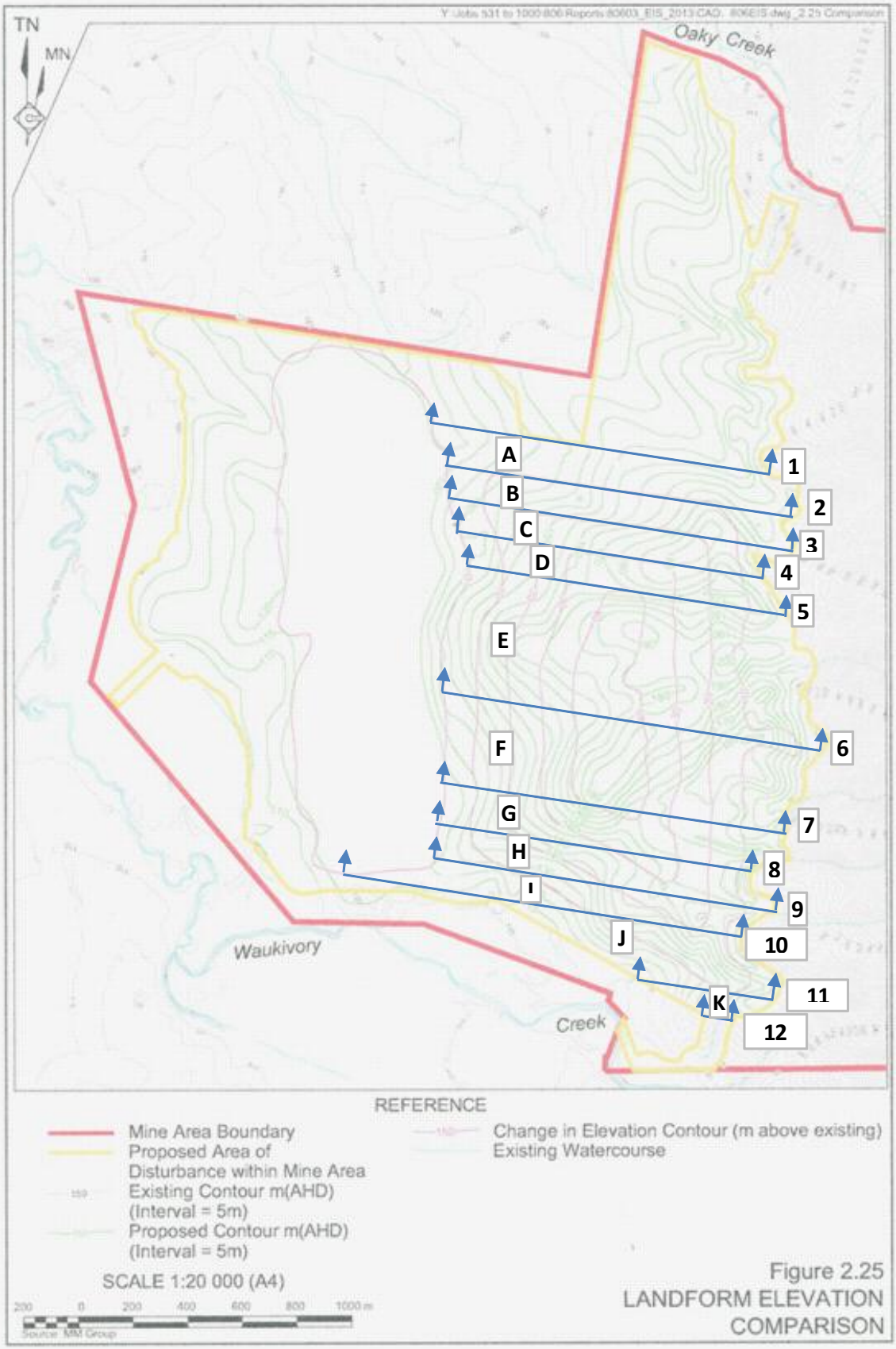
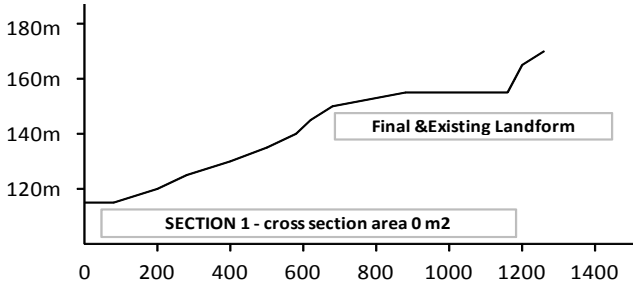
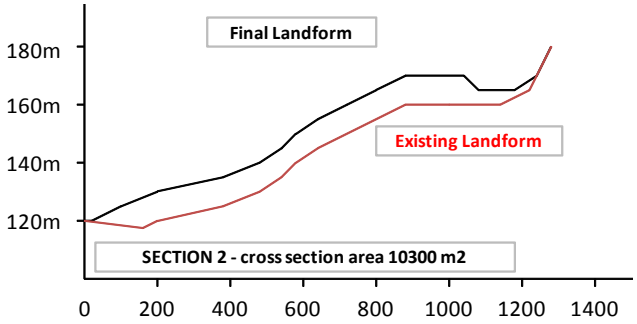


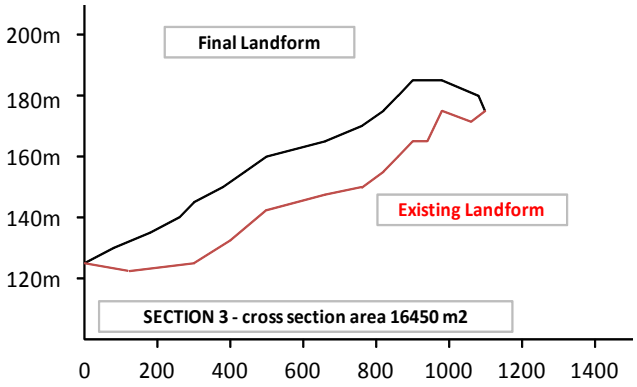
Figure 2.25
LANDFORM ELEVATION COMPARISON

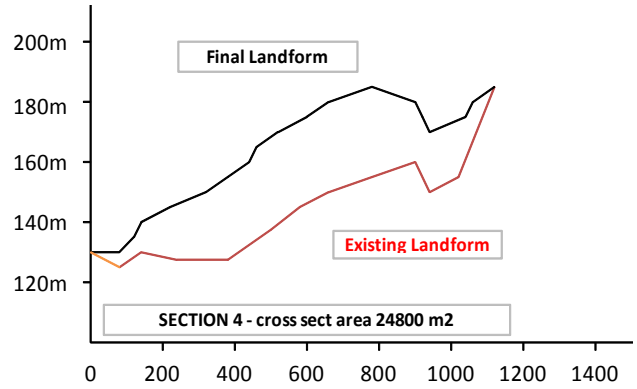
GRIP has taken cross-sections 1-12 across that area of placement east of the original main pit.

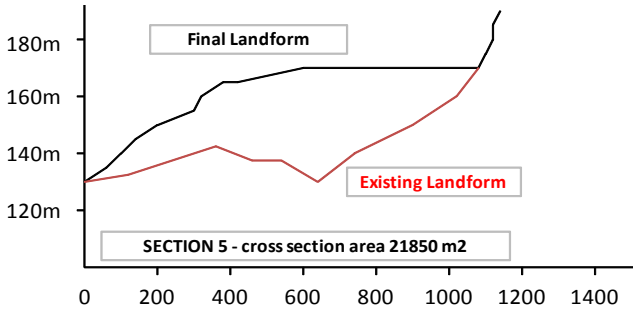
These extend from the contour of zero elevation change to the west and the edge of the proposed disturbance within the mine area to the east.

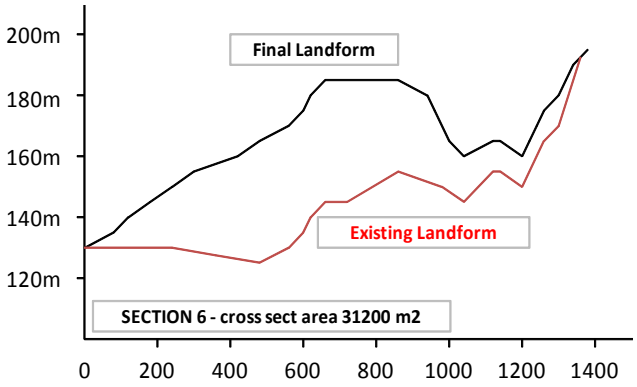


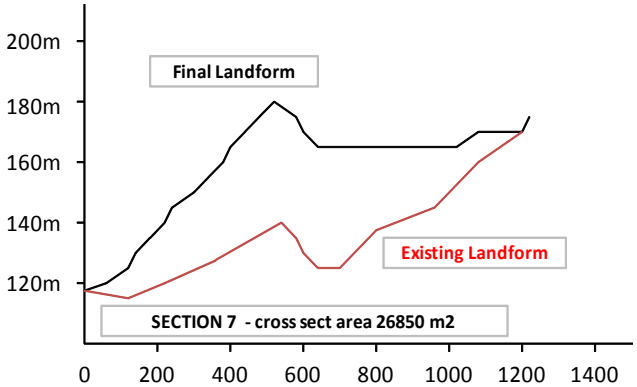


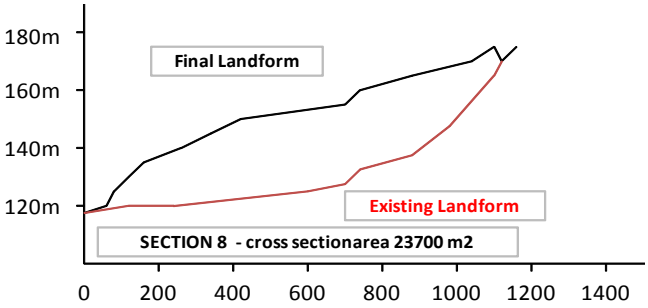


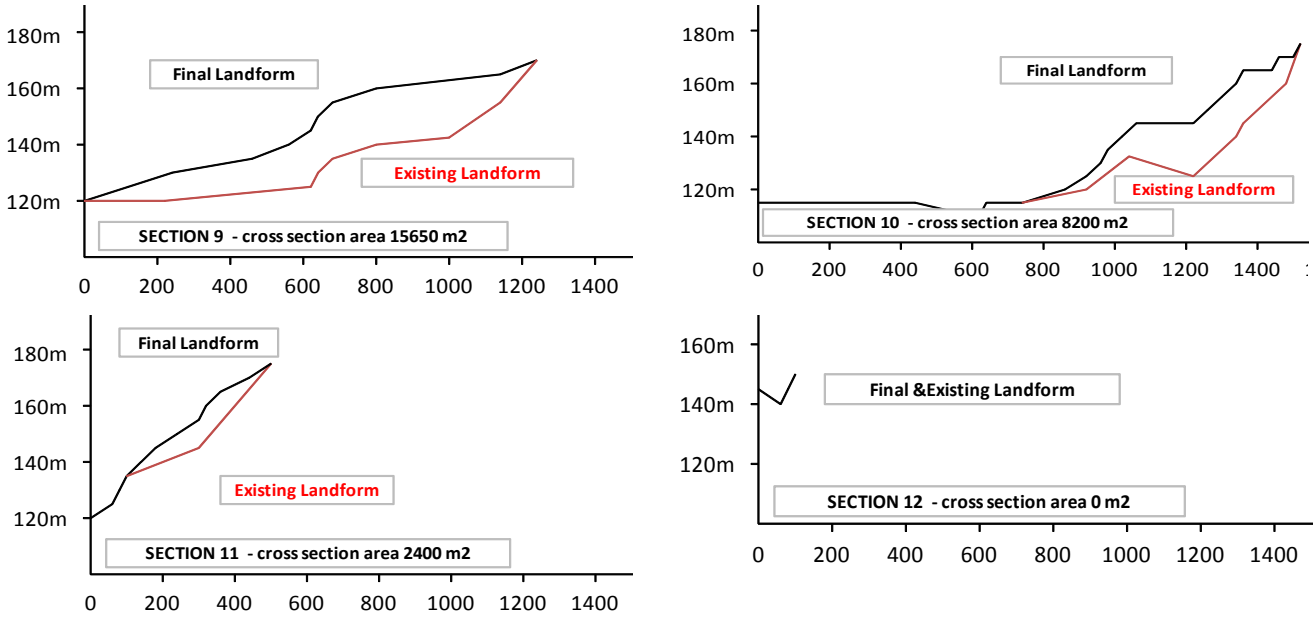












The final landform levels are derived from the proposed contour levels shown in figure 2.25 of the EIS. The existing levels are derived from the change in elevation contours shown in the same figure.

The cross-sectional area of the difference between the final and existing landform is then calculated and shown as the cross-sectional area in m2.

Table X.2 Calculation of Volume Difference between the Existing and Final Landform

	a	b	c	d	f
SECTION	**Sect area m2**	**BLOCK**	**av sect area m2 example (sect 3 + sect 4)/2 = C**	**block width**	**block volume m3 (d x f)**
1	0				
		A	5150	145	746750
2	10300				
		B	13375	125	1671875
3	16450				
		C	20625	145	2990625
4	24800				
		D	23325	105	2449125
5	21850				
		E	26525	470	12466750
6	31200				
		F	29025	335	9723375
7	26850				
		G	25275	125	3159375
8	23700				
		H	19675	135	2656125
9	15650				
		I	11925	125	1490625
10	8200				
		J	5450	210	1144500
11	2700				
		K	1350	85	114750
12	0				
					38613875

Column “a” represents the cross-sectional area of each section as shown on the individual cross-sections.

Each of the 11 Landform Blocks between each section is identified, A-K, and the average cross-sectional area calculated.

Column “c” represents the average cross-sectional area of each Landform Block.

Column “d” represents the width of each Landform Block.

Column “e” represents the volume of each Landform Block

A total **of 38 613 875 m3 of material** would be required to change the Existing Landform into the Proposed Landform as indicated in figure 2.25 of the EIS.

6.4 Material Availability vs Material Requirement

The amount of material required to fill the voids created by the extraction of the coal and to create the new landform envisaged by Lamb and Associates is now the simple sum of:

- The total bank cubic metres of overburden and ROM coal that would be removed during the mine’s operation (Table 2.6 in the EIS).

  129 728 000 m3 Overburden + 22 995 000 ROM Coal = **146 811 951 m3**

- The total bank cubic metre volume of the new landform = **38 613 875 m3**

The total volume required = 185 425 826 m3

The amount of material available is the amount removed from the hole, less the amount shipped as product coal, allowing for expansion during the extraction process and some compaction during replacement.

- 146 811 951 m3 removed – 11 958 766 m3 shipped = **134 853 185 m3**

- 134 853 185 m3 bank cubic metres expanded 20% = **161 823 822 m3**

- 161 823 822 broken cubic metres re compacted 33% = **152 923 512 m3**

The total volume available = 152 923 512 m3

This amounts to an enormous shortfall of 32 502 314 m3 (broken material), 21.25% more than is available or 28 661 652 m3 (bank material).

This is 19.5% more than the total material including product coal ever extracted during the mine’s operation.

This shortfall doesn’t take into account any materials that may have been left at temporary deposition sites. The area that roughly approximates the main pit contained within a 0 change in elevation contour in Figure 2.25 has also been ignored as lack of detail is provided

other than to state this area is to be slightly mounded. It should be noted however that a mound reaching a maximum height of 5m centrally and uniform outward slopes would require approximately 2 500 000 m3 of material.

6.5 The Impossibility of the Final Landform.

As previously stated this final landform concept sits as the jewel in the crown of Lamb and Associates work on the visibility impact of the Rocky Hill Mine and its operations, making it abundantly clear that it is this final landform that is the major consideration and should be at the forefront of all thoughts regarding visual amenity.
This final landform will last forever and a fleeting, 16 year (or longer) blight on the landscape should be accepted, as this will simply fade into the memories of those that lived with it and new generations will see an even improved version of the original. Lamb and Associates state:

"*The final landform will be distinguishable from the existing landform for those who are familiar with it. The proposed rehabilitation to woodland may be perceived by the contemporary population as an improvement in scenic quality*."

But what final landform will we get?

Certainly not the one outlined in the EIS with its massive shortfall in material, enough material to cover a rugby league field to a depth of 4779 metres.

At what point in the elaborate plan of excavation, placement, removal and replacement will someone realise there is not enough dirt. Will the main pit remain partially unfilled or will half a hill be missing?

GRIP notes that the method used to calculate the volumes was a simple method that could be employed by any high school student, simple concepts, simple mathematics, simple geometry and simple map reading techniques. Surely then consultant companies with all the computerised techniques that they have available should not get it so wrong.

The Planning Department must insist on a redesign of the Rocky Hill Mine's final landform that truly reflects the material availability or a detailed explanation of from where the additional materials required are going to be obtained.

7 CONCLUSION

The EIS delivers a mining proposal that fails the test of independence on the part of the consultants. Throughout the document Corkery has acted as advocate for the applicant. Failures in substance, misuse of data, unexplained time and equipment provisions, unexplained non-viability, uncosted impacts on Gloucester and the State, are all extraordinary features given the length of the EIS.

So much is omitted and so much is inferable, that GRL should be required to submit an EIS that at least defines GRL's project in these terms:

- its hours of operation limits,
- expansion limits,
- future mines on GRL's ELs that will use this EIS's mining and loading infrastructure,

- GRL's contingency strategy for a range of scenarios based on coal price reductions,
- GRL's time frame limit for the occupation of Gloucester Shire.

GRL has had more than 6 years of secrecy to explore, strategise, create fear, and delay beneficial peaceful investment in Gloucester. Now is the time for honest disclosure – not omission and subterfuge.

GRIP believes the Planning Department has every justification to fully investigate every aspect of GRL's EIS and would be justified in refusing this EIS and revoking all three ELs.

GRIP believes that the Planning Department should further recommend that the Gloucester period of siege should be ended by permanent protections for Gloucester Shire. It is only by permanent protections from damaging developments that closely settled areas can develop self-sustainably and in peace for their communities.

Section 3

Economic

The Economic Cost to the State, The Country and the Local Community

Of

The Rocky Hill Coal Project

Gloucester NSW

Prepared by

GRIP GLOUCESTER RESIDENTS in PARTNERSHIP

"Bucketts of Contemplation"

October 2013

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"Bucketts of Joy"

Photographic images reproduced with the kind permission of Linda Bensen, Photographer, Artist & concerned Gloucester resident

October 2013

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Preamble

This section outlines the economic cost to the State, Nation and local community of the Rocky Hill Mine.

Four areas of economic loss are discussed and costed and compared to GRL's EIS stated economic benefit. These include:

- Health Impacts and Costs
- Agricultural Impact and Cost
- Tourism Impact and Cost
- Road Infrastructure Impact and Cost

The Department of Planning and Infrastructure, under the guidance of an appointed Member of Parliament, is given the responsibility by the people of New South Wales to assess the benefit or suitability of a project.

That assessment is to determine not the benefit or suitability to the applicant but the benefit or suitability to the people of New South Wales.

The Department's duty is to weigh up the social, economic and environmental losses that will be suffered by one section of the community against the overall economic benefit that might be delivered to the whole community of New South Wales.

If in that assessment there is no substantial economic benefit to the people of New South Wales then the approval of that project serves no purpose other than to provide succour to the applicant.

The economic assessment provided by Gloucester Resources Limited is flawed both in the figures used and the rationale behind many of the computations. As is shown in this section of the submission:

The Rocky Hill Project represents an economic disaster for the people of Gloucester and a $181 million dollar financial loss borne by the people of New South Wales!

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Table of Contents

Table of Contents 176

The Economic Cost to the State, the Nation and the Local Community 181

1. Introduction 181

1.1 Health Costs 182

1.2 Agricultural Costs – The Beef Industry 183

1.3 Tourism Costs 184

1.4 Infrastructure Costs 187

1.5 The Economic Impact of the Rocky Hill Mine 189

1.5.1 Local Impacts 189

1.5.2 State and National Impacts 190

1.6 Summary of Benefits and Costs due to the Rocky Hill Mine 192

1.6.1 Employment Benefits 192

1.6.2 State and Federal Finance Benefits 194

1.6.3 Economy Benefits 195

1.6.4 Summary of Benefits 195

This is clearly of no benefit to the people of the State of New South Wales and as such should be rejected. 196

1.7 Curtailed Growth - Directly Impacted Housing Estates 196

1.8 Conclusion – The False Economy Of Mining Gloucester Shire 197

2 Health Costs 199

2.1 The Impact of Coal Mining on Health 199

2.2 The Economic Cost of PM_{10} Pollution 200

2.2.1 Adjustment for inflation 202

2.3 Economic Health Cost of the Development, Construction and Operation of the Proposed Rocky Hill Coal Project. 202

2.3.1 The Stratford Operation 202

2.3.2 Stratford Mine and Rocky Hill Mine comparison. 203

2.3.3 Wind as a Factor in Particulate Matter Distribution 203

2.3.4 The Economic Heath Cost due to increased PM10 particulate matter in Gloucester. 205

2.3.5 Duration and Time Distribution of Increased PM_{10} Volumes due to the Proposed Rocky Hill Coal Project. 206

2.3.6 Bearers of the Economic Health Cost Burden 207

2.3.7 Summary 208

2.4 References 209

3 Agricultural Costs 210

3.1 Beef Industry 210

3.1.1 General 210
3.1.2 Value of Beef Production in the Gloucester LGA 210
3.1.3 Loss of Agricultural Beef Production due to the Rocky Hill Coal Project. 210
3.1.4 Economic Cost of Loss of Beef Productivity in Gloucester LGA 213
3.1.5 References. 213
4 Tourism Costs 214
4.1 General 214
4.2 Tourism in 2012 214
4.2.1 Value of Tourism to the Gloucester Economy 215
4.2.1.1 Overnight Stay & Day Tripper Visitor $ Spend Value 215
4.2.1.2 Employment Value 216
4.3 The Impact of the Rocky Hill Mine on Tourism 216
4.3.1 The Visual Impact on the Gloucester Valley due to the Rocky Hill Mine 217
4.3.2 The Visual Impact of the Town due to the Rocky Hill Mine 217
4.3.3 The impact on Access Routes and the Gloucester Township Road Network due to the Rocky Hill Mine 218
4.3.3.1 Impacts during the Construction Period 218
4.3.3.2 Impacts During the Operational Period 219
4.3.3.3 Total Combined Impact 220
4.4 The Cost to Tourism in the Gloucester Valley. 220
4.4.1 The Financial Cost to the Gloucester Valley Tourism Industry 221
4.4.2 The Employment Cost to the Gloucester Valley Tourism Industry 222
4.4.3 Summary of the Economic Impact on Tourism of the Rocky Hill Mine 222
4.5 Key Insights Survey 223
5. Road Infrastructure. 224
5.1 General 224
5.2 The Existing Road Infrastructure 224
5.3 The Bucketts Way 229
5.3.1 Design and Usage History229
5.3.2 The Bucketts Way Pavement Design Criteria. 230
5.4 Increases in Traffic Flow Due To the Rocky Hill Mine 231
5.4.1 Increases in Traffic Flow during the Construction Phase 232
5.4.2 Increases in Traffic Flow during the Mine's Operational Life 238
5.5 The Impact of Heavy Vehicle Movements due to the Rocky Hill Mine 243
5.5.1 ESA Impacts during the Construction Phase 243
5.5.2 ESA Impacts during the Operational Life of the Mine 248
5.5.3 The Effect of Heavy Vehicle Movements on Access Routes. 251
5.5.4 The Impact due to the Rocky Hill Mine on Access Routes 252

5.5.5 The Impact of the Rocky Hill Mine on Town Road Networks 255
5.6 The Financial Cost of Road Infrastructure Damage. 256
5.6.1 The Cost of Repairs and Maintenance. 257
5.6.2 The Cost of Reconstruction 259
5.6.3 The impact of the Rocky Hill Mine on the Financial Cost 259
6 The Economic Impact of the Rocky Hill Mine 262
6.1 General 262
6.2 Local Economic Impact 262
6.2.1 Economic Impact due to Employment. 262
6.2.2 Economic Impact due to spending on Materials and Equipment. 269
6.2.2.1 The Construction Phase 269
6.2.2.2 The Operational Phase 270
6.2.4 Economic Impact due to Rate Increases 273
6.2.5 Summary of Local Economic Impact 273
6.3 State and National Economic Impact 274
6.3.1 Economic Impact of Salaries 274
6.3.2 Economic Impact of Expenditure on Equipment and Materials 275
6.3.3 The Economic Impact of Company Profits 275
6.3.4 The Economic Impact of Royalties. 276
6.3.5 Summary of State and National Economic Impact 276
7 The Benefit or Loss due to the Rocky Hill Mine 278
7.1 General 278
7.2 Employment Generated Benefits or Losses 278
7.2.1 Employee Numbers Generated or Lost and their Origin 279
7.2.1.1 Generation of Locally Sourced Employee Positions 279
7.2.1.2 Generation of Non-locally Sourced Employee Positions. 280
7.2.1.3 Loss of Local Agricultural based Employee Positions. 280
7.2.1.4 Loss of Local Tourism Based Employee Positions. 281
7.2.1.5 Summary of Local and Non-Local Employee Positions Generated and Lost 282
7.2.2 The Economic Impact of the Generation and Loss of Employment 282
7.2.2.1 Economic Impact on the Gloucester Community 283
7.2.2.2 Economic Impact on the State/National Community 283
7.2.3 Summary of Employment Generated Benefits or Losses 284
7.3 Economic Impacts on Government Finances 285
7.3.1 The Positive Economic Impact on Government and Community Finances. 285
7.3.2 The Negative Economic Impact on Governments and Community Finances 287
7.3.2.1 The Negative Impact of Health Costs on Government Finances 287
7.3.2.2 The Negative Impact of Infrastructure Costs on Government Finances 288

7.3.2.3 Summary of Negative Impacts on Government Finances 289
7.3.2.4 The Loss of Income Generation in the Beef Cattle Sector 289
7.3.2.4 The Loss of Income Generation in the Tourism Sector 289
7.3.2.5 Summary of the Loss of Income Generation in the Local Economy 290
7.4 Summary of Benefits and Costs 291
7.4.1 A Cautionary Note 293
8 Curtailed Growth - Directly Impacted Housing Estates 294

The Economic Cost to the State, the Nation and the Local Community

1. Introduction

There is an obligation for Gloucester Resources Limited as part of their EIS to show the economic benefit that the State, the Country and the Local Community will derive from the Rocky Hill Mine's development and operation.

Section 6.4.3.2 of the EIS titled "Economic Considerations", approximately one page in total, begins with the statement:

"The economic issues identified with respect to the Proposal would invariably have both positive and negative impacts, with the key issues with respect to these impacts outlined below."

This section of the EIS is supported by Section 6 of Part 14 of the SCSC titled "Economic Impact Assessment" prepared by Key Insights, a further 19 pages in total.

Despite their claim that the "Economic issues identified" would have negative impacts none are mentioned in either the EIS or SCSC.

This section of the submission by Gloucester Residents in Partnership attempts to rectify this situation by exploring the impact on:

- **Community Health**
- **Agriculture, in particular the impact on the beef sector**
- **Tourism**
- **Road Infrastructure of the Bucketts Way**

The net economic benefit/loss of the Rocky Hill Mine to all of the relative levels of government is reviewed in light of obvious failings within the Key Insights report.

The Economic Benefit or Loss to the respective governments and the local community is then assessed in light of the previous information and obvious conclusions are presented.

GRIP notes three major deficiencies in GRL's application that enable GRL to understate or skirt around the impacts on Gloucester Shire and the full economic impact on the State.

1. GRL's EIS contains conflicting information regarding the projected amount of produced coal, the duration of the project, the project's unexplained financial loss to mask its dependent advance towards Gloucester.
2. The project's clear financial intent to mine nearer Gloucester and for a longer time has been artificially separated from the project by labelling it Stage 2. The only reasonable reason for so doing is to understate the impacts on Gloucester Shire, the residents and the environment so that the proposal is not burdened by its true impact and community opposition is 'managed' by non-disclosure.
3. GRL's failure to discuss the full life-cycle costs and legacies of this proposal.

1.1 Health Costs

This section reviews the impact on health of coal mining in general and the specific impact the Rocky Hill Mine will have on the health of the Gloucester community over its 14 year operational life. **Should the Rocky Hill project continue for its 21 year EIS provision, then these costs must be proportionally increased for time, proximity and production factors.**

In November 2005 the NSW Department of Environment and Conservation prepared a report titled
"AIR POLLUTION ECONOMICS – Health Costs of Air Pollution in the Greater Sydney Metropolitan Region" [b]*

The primary goal of that project, as defined in the report, is
"To provide robust information on the health costs of ambient air pollution to assist decision making on proposals with the potential to affect Greater Sydney's air quality"

The report assesses the economic impact of the increased amount of PM_{10} particulate matter in the atmosphere due to specific emitting source - in this case the Rocky Hill Mine. The purpose of using the PM_{10} particulate count is not to indicate that this size particle is the cause but that there is a direct relationship between the increase of this size of particulate matter in the environment and the economic cost on health. This figure was then adjusted for inflation to calculate the value in $'2012 of

$79,170 per tonne of PM_{10} particulate pollution

The increased PM_{10} output due to the Rocky Hill Mine was calculated using the Yancoal owned Stratford Mine's published PM_{10} output on the National Pollution Inventory of **760 tonnes PA.** As the two operations are located adjacent to each other, share common coal seams, have the same overburden materials and will employ the same extraction methods this figure was adjusted to calculate:

The output of the Rocky Hill Mine of 944 tonnes of PM_{10} particulate matter annually or 13,216 tonnes over the operational life of the mine (@14yrs)

As the Rocky Hill Mine's output of PM_{10} particulate matter would then travel based on the strength and the direction of the prevailing winds the figures from the Gloucester Resources meteorological station were used to calculate the potential volume of PM_{10} particulate matter that would then travel toward Gloucester.

39% of winds at 3m/s or above would pass 368.1 tonnes annually, or 5153.4 tonnes of PM_{10} particulate matter during the 14 year operational life of the mine, over the township of Gloucester.

The economic cost, to be borne proportionately by the State and Federal Governments is calculated then to be

$29.15 million dollars annually or $408.06 million dollars over the 14 year operational life of the Rocky Hill Mine

When an assessment of the health endpoints is made in the original study to equate the economic impact age is a key factor. When this is then viewed in light of the Gloucester

population where 50.1% of the population is aged 50 years or over compared with the NSW figure of 38.8%, the GRIP figure calculated is substantially underestimated.

Full details can be found in section 2 of this part of the submission.

GRIP makes special note of the need for PAC to apply the precautionary principle. Medical opinion makes it reasonable for the PAC to determine that the smaller sizes will probably inflict more harm. The justification is clear**: since PM2.5 are carried further and can be carried on lighter winds, open-cut coal mining, processing and transportation should not occur in closely settled areas.**

Proximity is a crucial factor for every dimension of health impact and community quality of life. That GRL's coal mining ambitions should even be proposed anywhere in this closely settled Shire is wrong. That GRL intends to mine even closer to Gloucester and its occupied lifestyle estates needs to be stopped at this first hurdle.

The viability of this proposal DEPENDS on future advances on Gloucester residential estates and the Gloucester township. The precautionary principle must apply.

If GRL should argue that it cannot define the larger scale mine and its closer proximity to residences at this stage - due to the 'need' for more exploration for stage 2, their application should be rejected awaiting the real proposal.

GRL have had 7 years to explore and to present their best case. It is being withheld.

Full details of Health costs can be found in section 2 of this part of the submission.

1.2 Agricultural Costs – The Beef Industry

Alternative calculation methods by the NSW Department of Primary Industry and NSW Agriculture values the Beef Industry in the Gloucester area as:

$30 million dollars to the NSW economy and
$14 million dollars to the local economy annually.

The impact on the beef industry is directly related to the land ownership by Gloucester Resources Limited and the use to which that land will be put.
Gloucester Resources Limited own 2200 ha (at the time of writing) of prime pastoral land in the Avon Valley. The use of that land with the development and operation of the Rocky Hill Mine would be

- Mine Operational Area 745ha
- Biodiversity Offset 100ha
- Grazing and Other 1355ha

The mine operational area would result in a 100% reduction in the carrying capacity of that land. The grazing and other land use would result in an estimated reduction of 50% of the carrying capacity brought about by the use of large areas as tree planting screens and a

different psychology behind the running of the cattle herds between a cattleman and a miner.

The NSW Department of Primary Industry values beef productivity in the Gloucester LGA as $250 per head and an averaged carrying capacity of 1 head per hectare.

This amounts to a total attributable cost of $355,625 annually.

NSW Agriculture using a formula based on cattle sale losses attribute a loss of $565,460 annually.

GRIP chose the midpoint between these two calculations as a reasonable and still conservative way to attribute loss:

$461,000 economic cost to the Beef Cattle sector annually or $6.454 million dollars over the operational life of the Rocky Hill Mine.

This is a direct loss from the local economy which carries direct impacts on other Gloucester trade, income, growth and investment

GRL claim that at the cessation of operations and the rehabilitation programme outlined in the EIS, the land will be restored to its original, albeit re-landscaped form.
Although GRIP disagrees that the land can rehabilitated to its previous soil and aquifer qualities, for the purposes of calculation, we assume that the land over the next 10 years could return to its former productivity.

The loss in returning to productivity is

$2.5355 million dollars over the 10 years of productivity re-establishment.

The total impact on the value to the local economy derived from the Beef Cattle sector over the 14 years of operation and the 10 years of re-establishment would be

A loss of $8.9895 million dollars

There will also occur within the beef cattle sector a loss in employment positions. The economic impact of this is covered later in the submission.

Full details can be found in section 3 of this part of the submission.
Again we note that a longer mine life over more extensive area carries greater financial loss impacts.

1.3 Tourism Costs

Gloucester exists as a tourist destination due to the natural beauty of the area, the purity of the many rivers that traverse the area and the friendly “country” nature of the town. Tourism has filled the economic and employment void created by regulatory changes in the timber and dairy sectors and now represents a significant and growing contributor to the area’s economy.

Every nights accommodation sold, every coffee sold at a cafe to a traveller passing through, every litre of fuel to a non local, every bottle of milk sold to a camper even the morning

paper sold to a visitor on an early morning stroll through town from the caravan park contributes to the tourism economy of Gloucester.

The impact on tourism, as outlined in the EIS, only considers 50% of the tourism impact on the Gloucester economy - totally ignoring day-trippers to the area. The assessment by Key Insights in the SCSC is based on interviews with:

- 2 Motels and an online booking service: The greatest single beneficiaries from the short, medium and long term contractors to the mine (particularly during the exploration phase and construction phase) would be these providers.

- A tourism operator who operates primarily in the Gloucester and Barrington Tops some 30km west of Gloucester.

- The Local Golf Club who apart from a couple of specific golf events organised for out- of-town players would only receive marginal impact from tourism.

- The Gloucester Aero club which is located on land owned by GRL and owe their continued existence to the good grace of their landlord.

No Cafe owners, service station operators, supermarket operators, camping equipment providers, clothing store owners or even the local newsagent were consulted. Any opinion given therefore by Key Insights would be based on biased opinion on the impact of tourism and should be disregarded .

The value of tourism to Gloucester can be measured in terms of expenditure and the employment generated by that expenditure.

Destination NSW estimates the value of overnight-stayers to the economy of $30.00 million dollars annually. There is unfortunately no estimate on the impact of day-trippers but there are available figures for Walcha, Gloucester's nearest neighbour to the north and of similar town character to Gloucester. Walcha's day-tripper contribution is similar to its overnight-stayers contribution. It would be reasonable to assume the same would hold for Gloucester – thereby adding a further $30.00 million dollars annually.
The bulk of this economic impact is brought by tourists rather than family visitors giving a figure of

$54 million dollars annually combined economic impact from overnight stayers and day tripper tourists.

In 2012 the Gloucester Tourist Information Centre surveyed local business and determined

241 persons are employed in categories ranging from self-employed to casual, full-time and part-time providing a variety of services to visitors to the town.

The negative impact on the $54 million dollar annual contribution will be caused in three major ways

- The visual impact of the mine as the Gateway to Gloucester.

- The visual impact of the town as it changes from a country town to a mining town.

- The impact on the already poor road infrastructure used as access routes to the town particularly during the construction phase but also during the operation phase of the mine.

Tourist operators, local business, local cafe owners and supermarket operators estimate there will be an immediate drop in tourist visitors as word spreads quickly through the various tourism communities with regards to deteriorating road conditions, the mine's visual impact and Gloucester's shifting reputation as 'another mining town'. Estimates place this impact at:

- 15% drop in the first year increasing to 25% by year 3 in overnight stayers.

- 25% drop in the first year increasing to 30% by year 3 in day trippers.

The economic impact of the drop in tourists to the area outlined above during the 14 year operational life of the Rocky Hill Mine would amount to a drop in overnight-stayer spending of $90.45 million dollars and day-tripper spending of $111.35 million dollars.

A total drop in tourist expenditure of $201.80 million dollars over the 14 year operational life of the Rocky Hill Mine.

If, as claimed by Gloucester Resources Limited, total rehabilitation of the mine site and removal of all related infrastructure were to occur and the necessary repair and upgrade to the road infrastructure as outlined in the next section was completed then the tourists would return. As with the beef cattle industry this re-establishment of the 'Gloucester brand' would occur over the 10 years following closure and require local council and State Government promotional assistance.

The economic impact as the tourism industry re-establishes itself will continue to be reflected in a drop in tourist spending decreasing annually as time passes after closure amounting to $37.13 million dollars in overnight-stayer spending and $44.55 million dollars in day-tripper spending.

A total drop in tourist expenditure of $81.68 million dollars over the 10 year re-establishment phase following the closure of the Rocky Hill Mine.

The total economic impact of the Rocky Hill Mine on the local tourism economy for the 14 years of operational life and the 10 year re-establishment period following closure:

A loss of $283.51 million dollars to the local economy.

Should Rocky Hill continue past its artificially devised EIS life to achieve its own financial viability then the cost to Tourism would be far greater. PAC should receive independent advice on this.

The impact on employment within the tourism sector closely mirrors that of the economic impact. Of the 241 positions currently held in the industry 66 would be lost over the 14 year operational life of the mine progressively returning during the 10 year re-establishment period following closure. As there is a wide cross-section of

employment categories involved, Table 7.1 shows the conversion of these figures to full-time employment equivalents.

A total of 27 full-time equivalent positions will be lost during the Rocky Hill Mine's 14 years of operation and an average of 13 full-time equivalent positions during re-establishment after closure.

Full details can be found in section 4 of this part of the submission.

1.4 Infrastructure Costs

The key infrastructure cost attributable to the Rocky Hill Mine will be the damage caused to the road networks used by the heavy vehicle traffic primarily during construction but also during the operational, removal and rehabilitation phases of the mine.

The road networks to be impacted fall into 2 categories:

- **Regional Roads:** maintained by 1 of the 4 local councils potentially affected, Gloucester, Great Lakes, Greater Taree and Dungog, receiving subsidies from the State Government based on kilometres of road pavement.

- **Town Network Roads:** maintained by local councils within their own budgets.

The increases in traffic volume on both regional road and town road networks has been calculated based on the material volumes required, constructional materials required and the contract and employee labour needed as outlined in the EIS. Consideration has been given to the most likely vehicle to be used and the point of origin of that vehicle.

A commercial decision to be made by Gloucester Resources Limited on the source of supply of structural fill, rail ballast and other quarry related products will have a major influence on the sections of regional roads and which town networks will be impacted. Two obvious scenarios exist:

- **Scenario A**: Quarry products obtained from areas to the east of Gloucester impacting on Avalon Rd, Wallanbah Rd, Bucketts Way East, Gloucester Town and Bucketts Way.

- **Scenario B:** Quarry products obtained from areas to the south, or from Martins Creek at Dungog. The former impacting Bucketts Way South and the Stroud Town, the later impacting on Dungog Rd, Clarence Town Rd, Dungog Town, Stroud Hill Rd and Bucketts Way South.

The impact on both of these scenarios is given in all parts of GRIP's submission.

The increased traffic volumes are calculated for the construction year and the full 16 year operational life including construction operation, removal and rehabilitation.

If mine life is extended to the potential implied in the EIS, then these calculated costs increase proportionally.

The impact of the increased number of various types of heavy vehicles due to the Rocky Hill Mine on the road networks is calculated by using NSW RTA's Equivalent Standard Axle (ESA) figure. This allows vehicles of various styles to be reduced to a common denominator and the total impact compared against design criteria.

ESAs have been calculated for both scenarios.

- **Scenario A**: Increases in traffic volume.
  - **Construction Year:**
    - Bucketts Way South: 3595 vehicles – 10,139 ESAs
    - Bucketts Way East: 1700 vehicles – 13,615 ESAs
    - Gloucester Town: 5212 vehicles – 16,601 ESAs
  - **Operational Life:**
    - Bucketts Way South: 20038 vehicles – 82,473 ESAs
    - Bucketts Way East: 1700 vehicles – 13,615 ESAs
    - Gloucester Town: 8474 vehicles – 19,863 ESAs

- **Scenario B**: Increases in traffic volume.
  - **Construction Year:**
    - Bucketts Way South: 5295 vehicles – 23,754 ESAs
    - Gloucester Town: 1812 vehicles – 2,986 ESAs
  - **Operational Life:**
    - Bucketts Way South: 21738 vehicles – 96,088 ESAs
    - Gloucester Town: 5074 vehicles – 6,248 ESAs

The current Bucketts Way design criteria allows for 7,050 ESAs per annum.

There is obviously a higher volume of traffic during the construction year than the subsequent years, there exists however within that year a peak period of 6 months that will see heavy vehicle traffic due to the Rocky Hill Mine contribute as much as 34.42%, in the case of scenario A, and 28.71%, in the case of scenario B, of the total of all heavy vehicle traffic on the access roads to the mine.

The impact of this huge increase in heavy vehicle traffic, over such a concentrated period, on a road network already 13 years past its design life will be catastrophic. It will require major repair and reconstruction works exceeding Council's abilities.

Two conclusions can be drawn with absolute certainty as a result of the increase in heavy vehicle traffic:

- **The already required upgrade of The Bucketts Way to a new design standard will become a matter of absolute urgency within the first 12 months due to its destruction by heavy vehicle traffic.**

- **Increased traffic over the mine's lifetime will require extensive repair and rehabilitation of the existing pavement and continued maintenance of the new pavement during the operational life of the mine.**

The cost of the upgrade to Bucketts Way would total $165.88 million dollars. The cost of the repairs and maintenance would be as high as $42.74 million dollars over the 16 year operational life of the mine depending on the scenario chosen.

The cost to the road infrastructure therefore due to the Rocky Hill Mine:

- Repairs and Maintenance, $2.753 million dollars.
- Proportion of reconstruction costs, $7.044 million dollars.

Total attributable costs to the mine $9.79 million dollars

These costs account for 16 years life (establishment to rehabilitation) – not the 21 years unexplained activity currently masked by separation of stage 2 from the project.

Full details can be found in section 5 of this part of the submission.

1.5 The Economic Impact of the Rocky Hill Mine

As GRL indicated in their EIS, there would be positive and negative impacts due to the development and operation of the Rocky Hill Mine. GRIP has presented four major cost impacts due to the mine. This section presents the benefits so that a fair conclusion regarding net benefit/loss can be drawn.

The benefit to the State the Nation and the local community is outlined in section 6.4.3 of the EIS and is supported in detail in part 14, section 6 of the SCSC prepared by Key Insights on GRL's behalf.

In this Section GRIP's submission presents economic impacts as:

- the impact on Local Community (benefit of local expenditure by mine employees and the mine on locally sourced goods and services)
- the impact on the State and Nation from the same sources, and
- the impact on the finances of both from the mine's operation.

1.5.1 Local Impacts

A review of the detail on the **benefit of employee expenditure** throws extreme doubt on GRL's/Corkery's conclusions drawn:

- **Many of the figures concerning wages and spending ability of employees are flawed - as is the computation of employment and wages flow-on benefits to the State.**

- **The rational used to define the purchasing potential of consumables by employees and by the mine itself is quite unreasonable. It does not stand scrutiny.**

- **The use of multipliers which amplify benefits which do not exist at all.**

Gloucester Resources Limited claims that 150 employment positions will be created as a result of the Rocky Hill Mine. Key Insights determined an average of 123 positions over the

mine's operational life of 14 years, including the construction year but excluding the 2 year rehabilitation period.

GRIP determined an average over the 16 years of 118, but to enable comparisons to be made, GRIP adopted the Key Insights employee number and time frame.

Key Insights calculations reveal a benefit to the local community, from employee expenditure, over the 14 year operational life of the mine of **$253.66 million dollars.** This figure assumes an average employee income of $144,000PA and a 80% local expenditure of $115,200PA. These figures are then proportioned depending on the category of employee, local, casual local or DIDO, to determine the annual expenditure.

The figures are flawed in three key areas:

- **The income used is pre-tax - not disposable income.**
- **The % of potential local expenditure is absurd with Australian Bureau of Statistics data revealing a potential spend figure of only $25,412.**
  Key Insights figure is inflated by almost $90,000 per average employee.
- **The breakup of employees into categories bears no resemblance to the experience of the last 16 years of the adjacent and similar Yancoal owned Stratford Mine.**

By using the same scenarios as Key Insights, but corrected for the errors and poor assumptions outlined above, the benefit to the local community, from employee expenditure, over the 14 year operational life of the mine is only **$14.56 million dollars.**

The true estimated figure is $14.56m over 14years
NOT Key Insights $253.66m

Deduct $239m local income from GRL's Application

1.5.2 State and National Impacts

The impacts on State and Federal finances come from 4 sources:

- **Salaries:** Payment of State Payroll Tax and Federal Income Tax
- **Expenditure on equipment and materials:** Payment of GST to the Federal Government and its benefit flow on to the States
- **Company Profit:** Payment of Company Tax to the Federal Government .
- **Royalties:** Payment of Royalties to the State Government.

The over-estimation of salaries and the uncertainty of the financial viability of the Rocky Hill Mine make some of the conclusions wrong and others, highly improbable.

The amount payable to the State Government as Payroll Tax and to the Federal Government as Income Tax is entirely dependent on the salaries paid. The figures used for the direct employees are as stated by GRL.

The multiplier figures, however, make the rather convenient assumption that ALL other theoretical employees' salaries created from an uncertain 'multiplier' are generated at the same ridiculously high rate as that used for mine workers.

GRL's GST figure would indeed be that payable if the mine were to be constructed and operated per the EIS. Poor economic viability of the mine would suggest otherwise. (Outlined in section 4.3 of part 2 of this submission). Depending on the option considered and the pathway taken by GRL, this figure could be as low as $1.0 million dollars in the construction period.

Payment of Company Tax is predicated by the amount of profit generated after all expenses and legitimate deductions are considered. Section 4.2 of part 2 of this submission would suggest that given the current coal prices and the details outlined in the EIS to set up and operate, the mine would incur a loss of at least $11.07 million dollars. This figure does not make allowance tax minimising practices.

Thus:

- Company Tax is likely to be zero.
- An increase in profitability of nearly **$1billion** dollars would be required to achieve the Key Insights figures.

Royalties are payable on the tonnage of coal removed. The only variation to this figure would occur as a result in a variation of the tonnage removed.

Revision of the figures provided by Key Insights would see:

- **A reduction in the multiplier salaries paid figure from $414.39 million dollars to $193.12 million dollars would see a reduction in payroll and income taxes paid of $61.115 million dollars**

- **The Company Tax payable would change from $275.0 million dollars to $0 dollars**

Additionally the GST revenue could drop from $12.58 million in the construction year to $1 million if the option to sell to Yancoal is considered.

By using the same scenarios as Key Insights, but corrected for the errors and poor assumptions outlined above, the benefit to the State and Federal Finances would total **$449.59 million dollars.**

$336.425 million dollars LESS than estimated by Key Insights.

Full details can be found in section 5 of this part of the submission.

1.6 Summary of Benefits and Costs due to the Rocky Hill Mine

If the Rocky Hill Mine is to have any merit at all then what is to be gained by the development and operation of the mine must be balanced against what will be lost.

Benefit is related only to the period of construction and operation. Costs are already being borne and will extend far beyond the mine's life. There is a government-acknowledged community/industry adjustment phase and the community has to come to terms with "life after GRL" and its lingering legacies.

In section 6.4.3.2 "Economic Considerations" Gloucester Resources limited state:

"The economic issues identified with respect to the Proposal would invariably have both positive and negative impacts, with the key issues with respect to these impacts outlined below."

Gloucester Resources Limited failed to report any negative economic impacts.

In this section, GRIP will attempt to correct that imbalance.

The "Benefits" from mine development and operation fall into 3 categories:

- **generation of employment previously non-existent and the economic impact of the expenditure of employee salaries.**
- **payment to Local, State and Federal Governments of taxes and charges and to the local community by way of company grants.**
- **economic activity in the local community due to the mine's local expenditure on goods and services.**

1.6.1 Employment Benefits

The generation and loss of employment positions both over the 14 year operational life of the mine and the 10 year period after its closure - combined with the relative expenditure capabilities of the employees - gives the economic benefit or loss.

GRL claims that the operational life of the Rocky Hill Mine will see an average of 123 employment positions being offered. These will be filled by 31 local and 92 non-local persons according to Key Insights moderate scenario.

Based on employment characteristics at Yancoal's Stratford Mine, local employees will be drawn from an existing pool of employed and self-employed people. The employment created therefore does represent new employment but a shift in type of employment and a consequent increment in income. The jobs these new employees vacated will be filled (or not filled) from the unemployed pool or by people moving to Gloucester to seek employment. Of course, not all of those positions vacated are filled. Some, particularly the self-employed or family employed positions, just disappear.

After 14 years of operation and the mine's closure, the claimed 123 created positions will disappear. The employees will then take the highly unlikely opportunity to move back to their far lower paid previous employment, if in fact it were to still exist, or the more obvious option of seeking employment at another mine.

Employee positions from the Beef Cattle sector and the Tourism sector will be lost as outlined previously.

The impact of the Rocky Hill Mine over the 14 years of operation and 10 year re-establishment period would be:

- **Rocky Hill Mine:**
  - **14 years of operation:** Job shift losses **8 positions**
    New positions **31 positions**
  - **10 years after closure:** Mine closure losses **31 positions**

- **Beef Cattle:**
  - **14 years of operation:** Job losses **6 positions**
  - **10 years after closure:** Job losses **3 positions**

- **Tourism:**
  - **14 years of operation:** Job losses **27 positions**
  - **10 years after closure:** Job losses **13 positions**

OUTCOME: The Rocky Hill Mine will produce a LOSS of employment of 10 full time equivalent positions during its 14 year operation and a LOSS of 31 mining positions totally and an average 16 full time positions over the ensuing 10 years.

The economic impact on the local community is dependent on the relative employee expenditure of those gaining employment and those losing it.

- **Mine employee:** Income **$144,000PA** impact **$25,412PA**

- **Local employee:** Income **$21,944PA*** impact **$21,538PA***

*see section 7.2.2.1 for derivation details of these figures.

Over the 14 year operational period, the impact of the additional 31 mining positions and the loss of the 41 local positions would produce

A LOSS in local employee expenditure of $429,408

Ten years' after closure, with the loss of the 31 mining positions and an average loss of 16 full time equivalent positions, the Rocky Hill project would produce:

A LOSS in local employee expenditure of $11,323,800

1.6.2 State and Federal Finance Benefits

Financial benefits to Local, State and Federal Governments comes derives from payment of Taxes, Royalties and Levies - and to the local community by way of output-based payment from Gloucester Resources Limited.

The Financial Benefit. From a 14 year operational life of the coal mine the benefits can be summarised as:

Federal

• Income Tax	$71.09M		
• GST	$103.48M		
• Company Tax	$0		
• Carbon Tax	$28.95M	**Totalling**	**$203.52M**

State

• Royalties	$186.00M		
• Payroll Tax	$6.739M		
• COAL 21 LEVY	$3.00M	**Totalling**	**$195.739M**

Local

• Rates	$3.79M	**Totalling**	**$3.79M**

Community

• GRL Payment	$8.0M	**Totalling**	**$8.0M**

The Financial Cost. Over the 14 year operational life of the mine and beyond those same beneficiaries will incur costs directly attributable to the Rocky Hill Mine and its impact on the local community:

Federal

• Health Costs	$40.806M	**Totalling**	**$40.806M**

State

• Health Costs	$367.254M		
• Infrastructure Costs	$9.797M	**Totalling**	**$377.051M**

Local

• Increased Expenditure	$3.79M	**Totalling**	**$3.79M**

Balancing the financial gains and the additional cost the benefit would be:

- A positive impact to the local community of **$8.0M** (NOTE: this is based on the assumption that Rocky Hill's offered beneficence is sustained by any change of mine ownership)
- A neutral impact on Gloucester Council finances
- A negative impact on the State Government finances of **$181.312M**
- A positive impact on the Federal Government finances of **$162.714M**

A LOSS to Local, State and Federal Government finances of $18.598M offset only by an output based grant to the community of $8.0M

1.6.3 Economy Benefits

The impact of the Rocky Hill Mine on the local economy is again a summation of the benefit that the community will derive based on GRL's demand for locally supplied goods and services and the losses Gloucester will experience in industries impacted by the mine's presence.

The economic benefit to the local community as outlined in Section 6.2.5 is **$4.147 million dollars** over the construction and operational life of the mine.
The two major industries impacted by the mine are the Beef Cattle sector and the Tourism sector as discussed previously. The impact on these industries not only is felt during the mine's 14 year operation but continues for some 10 years as re-establishment occurs.

The economic impact would be:

- **Beef Cattle** $6.454M 14 years + $2.536M 10 years = **$8.99M**
- **Tourism** $201.83M 14 years + $81.68M 10 years = **$283.51M**

This gives a total combined impact of $292.50 million dollars loss to the local economy.

Over its 14 year operational life and the 10 years after its closure the Rocky Hill Mine will create

A LOSS to the Gloucester economy of $288.353 million dollars

1.6.4 Summary of Benefits

The economic impact on the Gloucester Community over the 14 year operational life of the mine and the 10 year re-establishment period thereafter:

A loss to the community of employment both during operation and after closure of 10 and 47 full time equivalent positions respectively

An economic loss to the community of $300.066 million dollars compensated by a production based grant from Gloucester Resources Limited of $8.0 million dollars.

The economic impact on the State of NSW over the 14 year operational life of the mine and the 10 year re-establishment period thereafter:

A financial cost to the State of $181.312 million dollars to be offset by expenditure on materials and services within the State of $942.843 million dollars excluding the Gloucester community.

The economic impact on the Nation over the 14 year operational life of the mine and the 10 year re-establishment period thereafter:

An increase to the Federal Government's finances of $162.714 million to be offset by expenditure on materials and services within the Country of $193.83 million dollars excluding the State of NSW.

The Department of Planning, in their consideration of any proposal must take into account the question:

"Is this project to the benefit of the people of the State of New South Wales?"

For the community of Gloucester, GRL's mine is a disaster removing existing employment positions and substantially more than $300 million dollars from the local economy.

For the State of NSW it represents, a loss of employment and a burden on the State's finances of $181.312 million dollars for the compensation of only $643 million dollars in increased business.

This is clearly of no benefit to the people of the State of New South Wales and as such should be rejected.

Full details can be found in section 7 of this part of the submission.

1.7 Curtailed Growth - Directly Impacted Housing Estates

In their EIS section ..... GRL have counted only existing dwellings on the directly affected estates for purposes of calculating GRL's impacts. GRL have excluded those properties which, with time, would have been occupied had there been no mine. New homes on these properties would have contributed to local building industry activity, site work, new equipment purchases, home establishment expenditure and – new income would have been injected via new residents' annual expenditure for the period occupied.

The estates today are moribund. Property sales and home building starts have all but dried up.

GRIP has calculated some of the more easily accessed costs of this denied opportunity based on simple 10% increments of the base year – ie 5 houses per year for the next ten years (10% of 51 vacant blocks). We have then applied a basic house building, equipping and furnishing expenditure of $250,000 per home and then used relevant ABS employment, income and household expenditure to determine the local income generated for the Shire from this source.

Lost to the Local Building Industry –
Total Building Expenditure over ten years 51 dwelling and establishment costs
$13,693,500

Lost income from new occupants
Total New Resident Expenditure over 24 years =
$18,646,875

Total Value To Gloucester (ie Negative Economic Impact) =$32,340,375

Due to time and resource constraints these additional impacts are not integrated into GRIP's detailed tables and cost calculations.

They appear separately.

Full details can be found in section 8 of this part of the submission.

1.8 Conclusion – The False Economy Of Mining Gloucester Shire

Coal mining damages. It does not 'invest' in the local community – nor necessarily in the State. Its 'investments' are aimed to be wholly consumed over the life of the project. That which isn't consumed is left to rot in-situ, or be taken away, or 'lived with' as a legacy of damage. In 21 years, or whenever GRL's adventure is proposed to stop, there will be no remaining value from GRL's passing.

GRL's coal mining is not a net contributor to 'community' or to local economics. The majority of employees will be drive-in-drive-out. In some service sectors (eg engineering) local employees who currently provide community services are drawn into the existing Yancoal mine to the detriment of community service quality and to the unrecognised business cost of continuous staff turnover and loss to the mine. GRL will exacerbate this problem.

Coal mining is a short-term distraction with a long term impact. It denies Gloucester the opportunity to freely follow other existing industry paths. But how 'short-term' is only known when they leave. Local industry therefore is poorly placed to deal with a large, uncertain, secretive and damaging enterprise in its midst. Investment, in what would otherwise be Gloucester's natural self-sustaining path, is abandoned or constrained (eg lifestyle homes, agricultural support services, retail, tourism enterprises, and unforecast new enterprises that currently form the panoply of small businesses that have chosen Gloucester as 'Home').

Gloucester has a residential growth trajectory that the threat of GRL has already almost 'flat-lined' south of the township. Mining is wrongly promoted as enhancing local income and as the best use of land. The costs are myriad and some are easily calculated. Those that are more measurable show clearly that GRL's proposal delivers a substantial net LOSS to the state and a massive loss to Gloucester. GRIP's very disciplined review puts this beyond doubt.

The most important things are unmeasurable and unknowable. The more qualitative the community values and impacts are, the more difficult they are to measure - and impossible to cost. The damage to environment, people, community, and our future are all dominated by qualitative dimensions. The qualitative dimensions must be taken into account for they ARE Gloucester.

We DO know however that coal mining by its nature is damaging of all these dimensions.

GRIP's conservative and realistic calculations point to a NET loss of income in Gloucester over the life of the project – whether that be the currently advertised life of 16 years total or the 21 years also indicated in the EIS - or indeed a longer period with all its consequences for Gloucester's economy.

The local economy should be expected to gradually develop an increasing dependency on coal mining and a consequential withering of what were sustainable industries and today's unblemished reputation. This seeming growth in dependency does not come about because people want the mine – or because they become accustomed. Essentially, the cuckoo pushes.

Post mining, new and painful costs are borne – dependencies have to be broken. Industries have to re-establish with a different focus. That focus will very largely depend on a damaged Gloucester brand. The state government acknowledged in its Draft Regional Land Use Plan the post-mining economic adjustment period and the need for its sustained funding.

GRL delivers no economic benefit and leaves costs for the community and state once it has profited and gone.

Is it at all reasonable to inflict further damage on this valley for the miniscule product that will be shipped?

2 Health Costs

2.1 The Impact of Coal Mining on Health

In 2012, the Health and Sustainability unit of the Boden Institute for Obesity, Nutrition and Exercise at the University of Sydney prepared a paper titled
"Health and Social Harms of Coal Mining in Local Communities"

The paper represents a pragmatic review of international peer-reviewed health literature and reports from relevant government and non-government organisations undertaken to identify background information and evidence that reflects what is known about the community health and social harms associated with coal mining activity.

The relevant question asked was
"What specific diseases or other health problems are associated with coal mining in local communities?"

A summary of key findings shows:

Adults in coal mining communities have been found to have:

- Higher rates of mortality from lung cancer, chronic heart, respiratory and kidney disease
- Higher rates of cardiopulmonary disease, chronic obstructive pulmonary disease (COPD) and other lung disease, hypertension, kidney disease, heart attack and stroke, and asthma
- Increased probability of hospitalisation for COPD and for hypertension
- 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, respiratory symptoms - although not all studies reported this effect
- 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 low birth weight.

In November 2005 The NSW Department of Environment and Conservation prepared a report titled
"AIR POLLUTION ECONOMICS – Health Costs of Air Pollution in the Greater Sydney Metropolitan Region"* [b]
(*Incorporates the air sheds of Sydney, Wollongong / Illawarra and Newcastle / Hunter)

The primary goal of the project, as defined in the report, is
"To provide robust information on the health costs of ambient air pollution to assist decision making on proposals with the potential to affect Greater Sydney's air quality"
The report details the use of PM_{10} (particulate matter with an equivalent aerodynamic diameter of 10µm or less) as the single indicator (the index pollutant) of the health impacts of common ambient air pollutants following Kunzli *et al.*

In the Department's study, the health costs of air pollution are estimated using two distinct thresholds. For the base case, the study adopts Kunzli *et al*'*s* (1999) approach of estimating

the impact of PM_{10} above a baseline of 7.5µm/m^3. According to Kunzli *et al* this threshold reflects the fact that currently available epidemiological studies have not included populations exposed to levels below 5-10µm/m^3 (mean 7.5µm/m^3).

As acknowledged by Kunzli *et al* (1999), the approach of using one pollutant as an indicator of the air pollution mix and only estimating the impact of PM_{10} above a baseline *will probably underestimate* the impact of air pollution.

In agreement with the paper presented by The University of NSW the Departmental study agreed with NEPC (1998) reporting that:

- **Studies worldwide have shown that exposure to particulate matter is associated with a range of respiratory symptoms and conditions - as well as increased deaths from respiratory and cardiovascular disease**

- **There is no evidence to suggest that threshold concentrations can be identified for PM_{10} below which it is not possible to detect any population health impacts**

- **The elderly, children and people with respiratory infections or pre-existing heart or lung disease are particularly susceptible to the effects of particulates.**

Statistical evidence suggests that the health effects of particulates can occur independently of the presence of other pollutants. There is also increasing evidence that the adverse health effects of particulates are more closely associated with the $PM_{2.5}$ size fraction than with the larger fractions.

We should expect, in time, that more knowledge will be developed for the adverse impacts of the population of sub $PM_{2.5}$ particles. It is entirely reasonable for the PAC to conject that the smaller sizes carry more insidious adverse effects and have a longer reach from their source.

Armed with the above information the PAC should feel wholly justified in applying the precautionary principle for the health of Gloucester residents. The PAC should once again note that GRL has circumscribed the Rocky Hill project proposal such that the true scale of the intended project has not been presented for consideration yet it is essential to the project's viability.

If GRL should argue that it cannot propose the larger scale necessary due to the need for more exploration for stage 2, their application should be rejected awaiting the real proposal.

2.2 The Economic Cost of PM_{10} Pollution

The Departmental paper covers in extensive detail the methodology behind the figures and the obtaining of Low and High figures for the health endpoints.

The following is an extract of the results (Section 6.3 Results)

Table 6.3.1 presents estimates of the health costs of air pollution in the GSMR, using PM10 as the single indicator of the health effects of air pollution.

As previously mentioned, *these are conservative estimates* as:

- PM10 costs were calculated using a threshold effect (i.e. assuming no costs up to the threshold
- Many additional chronic illnesses associated with air pollution were not included in the calculations
- Seasonally limited health effects were not considered (e.g. ozone exposure in summer)
- *The cost estimates of health end points used in this study are considered conservative (of particular significance is the cost estimate for mortality)*

Table 6.3.1: Annual health costs of Air Pollution in the GSMR (2000$)

Region	***Low***	***High***	***Midpoint***
	Total Mean Cost at Ambient Level ($ millions)		
Sydney	*706*	*5,994*	*3350*
Hunter	*226*	*1,765*	*996*
Illawarra	*81*	*638*	*360*
GSMR	*1,013*	*8,397*	*4,706*
	Cost per Tonne of PM_{10} ($ thousands)		
Sydney	*28*	*235*	*132*
Hunter	*8*	*63*	*35*
Illawarra	*6*	*46*	*26*

Table 6.4.1: Annual health costs of Air Pollution in the GSMR when the effects of PM_{10} are estimated without a threshold (2000$)

Region	***Low***	***High***	***Midpoint***
	Total Mean Cost at Ambient Level ($ millions)		
Sydney	*1,153*	*10,872*	*6,012*
Hunter	*368*	*3,163*	*1,766*
Illawarra	*137*	*1,179*	*658*
GSMR	*1,658*	*15,214*	*8,436*
	Cost per Tonne of PM_{10} ($ thousands)		
Sydney	*45*	*427*	*236*
Hunter	*13*	*112*	*63*
Illawarra	*10*	*85*	*47*

As concluded in the report and supported by US EPA conclusions, **there is currently no scientific basis for selecting a threshold for the effects of the major pollutants including PM_{10}, if a threshold is defined as a level characterised by an absence of observable effects.**

As a result the Figure of $63,000 per tonne of PM_{10} particles is used as the basis for calculation of the economic cost.

2.2.1 Adjustment for inflation

The figures from the Departmental report are shown in 2003$.

ABS inflation figures for the years 2004 through 2011 are 2.3%, 2.7%, 3.5%, 2.3%, 4.4%, 1.8%, 2.8% and 3.4%, inclusive. [c]

This allows for an adjustment of $63,000 in 2003$ to $79170 in 2012$.

2.3 Economic Health Cost of the Development, Construction and Operation of the Proposed Rocky Hill Coal Project.

The proposed Rocky Hill coal project lies at the northern end of the Gloucester Valley between, and bordered by the Stratford Mine to the south (owned by Yancoal) and Gloucester Township to the north.

There exists an ambient level in the valley of PM_{10} attributable to many factors, mining operations at Stratford, agricultural activity in the valley, road traffic, hazard reduction burning etc. The issue is how much PM_{10} particulate matter will be added annually to this existing level by the proposed Rocky hill Mine Project.

An accurate assessment is possible using the available figures for the Stratford Mine and interpretation of those figures in addition to information provided by GRL in various submission materials.

2.3.1 The Stratford Operation

Stratford Mine, in addition to its own operation, provides coal washing and loading facilities for coal from Yancoal's Duralie operations to the south.

The annual report for Stratford Mine states that in the year ending June 2011 production was 2.94 million tons of ROM coal with 1.19 tons (40.5%) coming from Stratford and 1.75 million tons (59.5%) from Duralie.

The National Pollution Inventory [d] lists the Stratford Mine as having an annual output of PM_{10} particulate matter of **760,000kg/pa or 760 tonnes per annum** for 2010/2011.

To correctly apportion that part attributable to the Stratford Mine, the amount produced by the washing and loading of Duralie coal needs to defined and the total adjusted.

In the recently submitted EIS by Yancoal re the Stratford Mine the following figures were included for the source of Totally Suspended Particles (TSP's). The particle size used is PM_{30} but the relevance is not the size but the proportion attributable to each operation. There are almost 40 defined sources of TSP's with a total of **1,476,612 kg** with 6 that include the Duralie coal at the Stratford Mine primarily:

Dozer on product stockpiles **131,302 kg**
Loading ROM coal from stockpile to hopper **109,486 kg**

Crushing **6,480 kg**
Other small amounts of a few hundred kg each.

This amounts to approximately **250,000 kg**
The proportion of coal output, as stated earlier, is Stratford 40.5 and Duralie 59.5% therefore the amount of TSP's produced from combined coal at the Stratford operation is Stratford Coal **101250 kg** and Duralie Coal **148750 kg.**

The remaining 1,226,612 kg would be from Stratford operations only giving Stratford a total of 1,327,862 kg or 89.9% and Duralie 148,750 kg or 10.1%

We can assume therefore that 90% or 684 tonnes of the PM_{10} particulate matter registered on the National Pollution Index is from the Stratford Mine operation.

2.3.2 Stratford Mine and Rocky Hill Mine comparison.

The two mines are close to adjacent and as such share common factors of coal type, overburden type and other geological factors. The methods of extraction are to be similar as are the operations of other on-site infrastructure. The operations are to be of a similar size.

It is reasonable to assume therefore that volume of PM_{10} particulate matter produced per tonne of coal would also be very similar. Stratford produces 684 tonnes of PM_{10} particulate matter as a result of the production of 1.19 million tonnes of coal or
574.79 tonnes PM_{10} / 1 million tonnes of coal

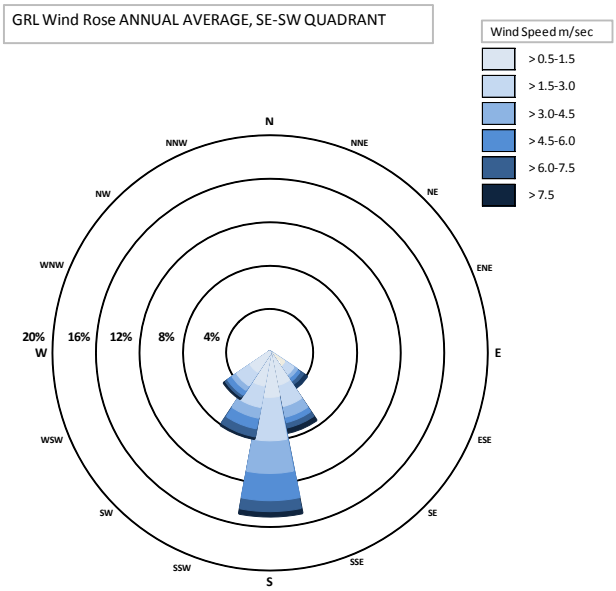
Rocky Hill proposes to produce 23 million tonnes of ROM coal over a 14 year period or an average of 1.643 million tonnes annually or 1.38 times the output of Stratford Mine.

RESULT:
Rocky Hill will produce approximately 944 tonnes of PM_{10} particulate matter annually at its potentially understated rate of production.

2.3.3 Wind as a Factor in Particulate Matter Distribution

The 944 tonnes of PM_{10} particulate matter will follow the path of the prevailing wind direction from the mine. They will travel varying distances depending on size, strength of the wind as they were produced or disturbed, and the distance they were propelled vertically at the time of production. It is reasonable to assume that these particles, because of their size, would float in the atmosphere for some considerable distance propelled even by light winds. There are sound reasons to assume that the fine $PM_{2.5}$ particulate matter would remain suspended for longer periods and travel the valley on prevailing winds.

Figure 1.1 Section of Wind Rose from Rocky Hill Project Meteorological Station

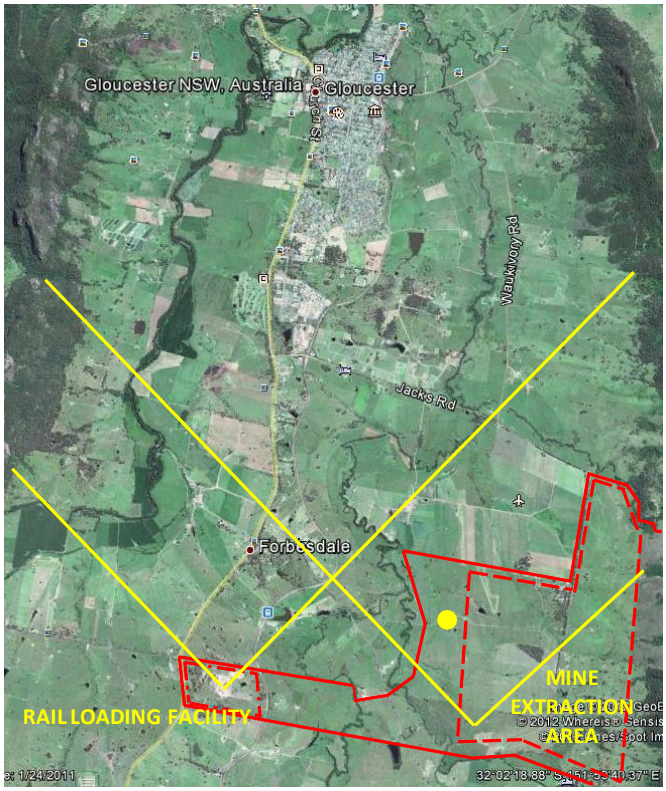


The Rocky Hill Coal Project Meteorological Station is located approximately at the site of the proposed CHPP. Figure 1.1 shows the South West to South East quadrant of the annual wind rose supplied by GRL in their Documentation Supporting an application for Director-General's Requirements [e]. The wind rose shows that winds blow from this quadrant approximately 39% of the year predominately from the south with an even fanning to the south west and south east. The wind speed is above 3m/s or 10.8kph for more than 50% of the time that the wind blows from this quadrant.

Figure 1.2 below shows the relationship of the Gloucester Township to the proposed mine site in particular the extraction area and the rail load out facility. The town lies directly in the path of winds from the South West to South East Quadrant with the most northerly parts of the town less than 8km from the proposed mine infrastructure.

The concentration of particulate matter from the mine passing over the town is compounded by the topography of the area with the town, elevation 100m AHD, sited between the Bucketts and Mograni ranges with elevations in excess of 500m AHD. ***These steeply rising barriers to the west and east of the town must funnel particulate matter directly over the town.***

Figure 1.2 SE –SW Wind Quadrants from Proposed Rocky Hill Coal Project Mine Extraction Area and Rail Loading Facility



It is reasonable to assume that given the direction, frequency and speed of the wind and funnelling effect of the topography that at least

39% or 368.1 tonnes of PM10 the particulate matter being emitted from the proposed Rocky Hill Coal Project will affect the Gloucester Township annually – for a minimum of 14years/20years plus the unknowable hangover effect post rehabilitation.

The hangover effect though unknowable has these dimensions: coal dust plume from mine and transport operations over 14 to 20+years residual in farm and township surrounds where it will be disturbed by community/rural activity until it gradually subsides. The effects of 30% run of mine reject coal – 6 million tonnes. An unstated portion of will be dumped with overburden - where it will be variously re-disturbed during overburden movements, rehabilitation, and during post-mining land uses.

2.3.4 The Economic Heath Cost due to increased PM10 particulate matter in Gloucester.

The proposed Rocky Hill Coal Project will cause an increase in Gloucester residents exposure to PM_{10} particulate matter.

The amount will vary on a daily basis depending on wind direction and strength, operations being conducted at the mine and the phase in the life of the mine. Regardless of day-by-day changes, the following facts and factors will hold true over the life of the mine.

Project Life	14 years (excluding rehabilitation)
Recoverable Coal	23 million tonnes (average 1.5 Mt per annum)
PM_{10} Output	944 tonnes PA (574.79 tonnes / 1 million tonnes coal)

Prevailing wind quadrant	SE-SW
Duration and Strength	39% of winds at or above 3m/s or 10.8 kph

Health cost as calculated by the NSW Department of Environment and Conservation. $79,170 per tonne PM_{10} particulate matter increase ($63,000 in 2003 adjusted by ABS inflation figures to give 2012 amount).

This gives an Economic Health Cost of the proposed Rocky Hill Coal Project of $29.15M per annum or $408.06M over the life of the project.

2.3.5 Duration and Time Distribution of Increased PM_{10} Volumes due to the Proposed Rocky Hill Coal Project.

In their submission GRL states that the proposed Rocky Hill Project will have a life of 14 years. During that time 23 million tonnes of Coal will be extracted and processed producing 16.09 million tonnes of recoverable coal which will be loaded onto rail and transported from the site. This will require the removal, relocation and replacement of 130 million bank cubic metres (Mbcm) of overburden and interburden. All of this will provide a constant source of PM_{10} particulate matter.

There would be a gradual increase in the volume as the initial construction phase shifts to full production and a similar decline as the mine's life came to an end when rehabilitation operations would be the primary cause. **There would be an unknowable hangover disturbance of PM_{10} particulate matter after the mine's closure.**

The PM_{10} particulate matter based on Table 2.6 Estimated Overburden and ROM extraction rates contained in the GRL EIS

Years 1	2.6% of total
Years 2 -5	6.35% of total PA
Years 6-13	8.7% of total PA
Years 14	2.2% of total

Total output of PM_{10} particulate matter from The Rocky Hill Coal Project affecting Gloucester Township over 14 years of operation (having produced 23 million tonnes of ROM coal)
RESULT: 5,154 tonnes of PM_{10} particulate matter.

Table 1.1 Economic Health Costs due to PM_{10} Particulate Matter aligned to Mine production phases

YEAR OF OPERATION	PM_{10} OUTPUT (tonnes)	COST $,000,000
1	134.00	$ 10.61
2	231.93	$ 18.63
3	293.78	$ 23.26
4	396.86	$ 31.42
5	386.55	$ 30.61
6	448.40	$ 35.50
7	448.40	$ 35.50
8	448.40	$ 35.50
9	448.40	$ 35.50
10	448.40	$ 35.50
11	448.40	$ 35.50
12	448.40	$ 35.50
13	448.40	$ 35.50
14	113.39	$ 8.98
TOTAL	**5154.00**	**$ 408.06 million**

Note The table above represents a proportioning of the total cost over the duration of the project. This table aims to represent the cost as a function of PM_{10} emission, which will occur through all phases, excluding rehabilitation rather than a function solely of coal production.

2.3.6 Bearers of the Economic Health Cost Burden

The health endpoints used in the Departmental study cover:

Mortality
Chronic Bronchitis
Respiratory Hospital Admissions
Cardiovascular Hospital Admissions
Acute Bronchitis < 15 years
Asthma Attacks < 15 years
Asthma Attacks > 15 years
Restricted Activity Days

It is beyond GRIP's capability to correctly proportion the cost of Mortality as not only the individual's family and friends but the whole community suffers due to the death of any individual.

The remaining endpoints however, whilst having an emotional cost for those directly involved, reflect a direct health cost burden on the community. The primary healthcare costs for Hospitalisation, Emergency Room Visits and Ambulance services are covered by the State Government. Care by and visits to Medical Practitioners are covered by the Federal Government under Medicare as is the subsidising of many of the pharmaceutical costs under the PBS

We should expect that with time and coal's intrusion into closely settled areas, greater knowledge will be developed for the adverse impacts of sub $PM_{2.5}$ particles. It is entirely reasonable for the PAC to conject that the smaller sizes carry more insidious adverse effects have a longer reach from their source and are carried on lighter winds.

Armed with current research and a paramount concern for community safety the PAC should feel wholly justified in applying the precautionary principle for the health of Gloucester residents. Once again, the PAC should note that GRL has circumscribed the Rocky Hill project proposal such that the true scale of the intended project has not been presented for assessment. It is essential that it be assessed now. Proximity to people is the critical factor of this project and its proximity is the part of this proposal that is being purposefully withheld – to the point of rendering the project unprofitable. GRL clearly does not want this information in the assessment or released to the public.

If GRL should argue that it cannot propose the larger scale necessary due to the need for more exploration for stage 2, their application should be rejected awaiting the real proposal.

2.3.7 Summary

Health is a fundamental consideration when considering an open-cut coal mine in a closely settled area beside a township. Proximity plays a crucial role in every dimension of the health impact – as does the need for greater understandings of the full impact of sub Pm 2.5 dust. GRL has a role to play in disclosing its true project rather than this circumscribed one. The assessment process has a role to play in deciding in favour of health over the rather tenuous economic value of this project to the state.

The 5154 tonnes of PM_{10} particulate matter, that will be emitted from the Rocky Hill Coal Project and directly affect the Gloucester Township during its 14 year operational life, will create an **Economic Health Cost of $ 408.06 million dollars.**

A longer mine life (as is indicated) with greater production and closer to residents will elevate this issue and its economic costs and qualitative costs borne daily and nightly by the community.

The distress and health cost will be borne by the community - but in financial terms by the State and Federal Governments.

The figures used throughout the Departmental Report 'Air Pollution Economics' reflect the *most conservative result possible*. It is also stated in the report that *other diseases and ailments attributable to PM_{10} particulate matter were not included.*

Two major areas not covered in the report need PAC attention in its assessment:

1 There is no attempt to quantify or value the Mental Health Cost associated by mining. The stress created by the threat that a proposed mine, the stress of devaluation of property, the stress over the potential loss of livelihood can all lead to, sometimes, severe depression. During the operational phase individuals can suffer due to increased noise levels causing lack of sleep issues. The Rocky Hill Coal Project has already been responsible for this and will continue to be if approved. (*NOTE - GRL continues to assert that it will mine as close to Gloucester as allowed – if economic. A foot in both camps - we'll do it, we've said 21 years;*

we've said stage 2 – but we'll fight tooth and nail to hide our intent from evaluation at this most critical time – even to the point of proposing an uneconomic project.)

2 The age of the affected population. Gloucester residents are at greater risk. The population density of the northern end of the Gloucester Valley, in particular that part as detailed in Figure 1.2, is similar to that of the Hunter Region used in the Departmental Report. A major difference between the two areas exists however in the age of the populations.

All health studies rate age as being a determining figure in susceptibility to the effects of airborne particulate matter. The median age of Gloucester residents is 50 years compared with the NSW median of only 38 years. 50.1% of the Gloucester population is aged at or over the median age of 50years compared with only 38.8% for NSW [f].

The figure of $ 408.16 million dollars whilst extremely high is an underestimation of the final Economic Health Cost figure.

2.4 References

"a" Colagiuri R, Cochrane J, Girgis S.
Health and Social Harms of Coal Mining in Local Communities: Spotlight on the Hunter Region.
Health and Sustainability Unit, The Boden Institute for Obesity, Nutrition and Exercise, The University of Sydney.

"b" Department of Environment and Conservation (NSW)
Air Pollution Economics. Health Costs of Air Pollution in the Greater Sydney Metropolitan Region.

"c" Australian Bureau of Statistics (ABS) www.abs.gov.au

"d" National Pollution Inventory (NPI) www.npi.gov.au 2010/2011 Stratford Mine

"e" Gloucester Resources Limited.
Environmental Impact Statement
2013

"f" Australian Bureau of Statistic. www.abs.gov.au/census Australian Census 2011

3 Agricultural Costs

3.1 Beef Industry

"The Gloucester Shire has a well earned reputation for Beef Cattle farming."

3.1.1 General

The *ABS National Regional Profile* indicates that there were 62522 head of meat cattle in the region in 2006. Annual cattle sales of beef cattle approximated 40000 head. The majority of producers in the region have approximately 200 head of cattle with a few larger producers having up to 700 head. [a]
There are no feed lots in the area with the cattle being traditionally grass feed. Major breeds in the area include Angus, Hereford and crossbreeds.
The area has its own saleyard facility, The Gloucester Livestock Exchange Centre, owned and operated by Gloucester Council. Store and Fat Sales are held on a regular basis (usually bi-weekly) with approximately 27000 head of beef cattle being processed through the centre annually. Special sales are also conducted throughout the year.

3.1.2 Value of Beef Production in the Gloucester LGA

The NSW Department of Primary Industries data suggests that the value of Beef Productivity in the Gloucester LGA is approximately $250 per head per annum.

60000 head (approx) x $250.00 = $15m per annum

NSW Agriculture figures indicate the cattle market in the Gloucester LGA is worth

$30m to NSW or $14m locally per annum.

3.1.3 Loss of Agricultural Beef Production due to the Rocky Hill Coal Project.

The loss of agricultural beef production is in direct relation to the amount of land available for that production and the productivity of that land. Coal mining companies, GRL and Yancoal, and Coal Seam Gas extraction company AGL have purchased significant areas of grazing land in the Gloucester / Stroud Area. This land is currently being used or is intended to be used directly for mining activities, biodiversity offsets and grazing of beef cattle or other activities. **Table 3.1** outlines the areas and potential usage for each.

Note: Carrying capacity of pastoral land in the Gloucester is 1 head per hectare.

Table 3.1 Land Ownership and Usage by Mining Companies and GRL Percentage

		Companies			
Usage	**GRL**	**Yancoal**	**AGL**	**Total**	**GRL %**
Area owned	2200ha	4000ha	250ha	6450ha	34.11%
Properties	35	55	3	93	38.76%
Mining	745ha	1400ha	50ha	2195ha	33.94%
Biodiversity	100ha	800ha	Nil	900ha	11.11%
Grazing / Other	1355ha	1800ha	200ha	3355ha	40.39%

The area listed as Grazing / Other may be used by mining companies in a variety of ways so it can be assumed that production would be at 50% of that defined in **3.1.3** as $250 per hectare.

The loss attributable to the proposed Rocky Hill Coal Project therefore is,

745 ha total loss @ $250 / ha = $186,250 per annum
1355 ha 50% loss @ $250 / ha =$169,375 per annum

Total attributable loss of $355,625 per annum

Alternatively the value can be derived using the NSW Agriculture figures. Stock and station agents suggest there has been a reduction in cattle sales of 10%. This reduction amounts to $1.4m in total. GRL has 40.39% share of the total grazing land and this amounts to a

Total attributable loss of $565,460 per annum

The midpoint of the two methods of calculation results in a value of the loss of agricultural beef production as

Total attributable loss of $461,000 per annum

The loss of land for grazing occurs prior to the commencement of construction and continues having a 100% effect through all phases of mine development, peak operation, wind up and eventual closure.
The land then would be available for rehabilitation back into grazing land. It has been assumed that this would take 10 years to achieve in total and would occur in a lineal progression.

GRIP has made no provision in this assessment for the quite obvious fact that GRL's rehabilitated geology will be incapable of regenerating aquifers/water balance. (Potentially for hundreds of years – see Dept of Water – Draft Aquifer Interference Policy 2011.) Thus we expect the area 'rehabilitated' will be highly rainfall-dependent. A dry spell or drought will render the area unproductive much earlier and cost significantly more time and resources in recovery – if indeed recovery is seen as economic. This is an uncosted legacy issue for which GRL will never be accountable – though State and Federal governments may be.

Table 3.2 shows the annual cost, cumulative cost and cost during each development phase.

Table 3.2 Cumulative Cost of Loss of Agricultural Beef Production

	Year	Proportion of GRL grazing land	Cost per year $'000	Cumulative cost $'000	Cost per development phase $'000
Construction phase	**1**	100%	$ 461.0	$ 461.0	**$ 461.0**
Full production	**2**	100%	$ 461.0	$ 922.0	
	3	100%	$ 461.0	$ 1,383.0	
	4	100%	$ 461.0	$ 1,844.0	
	5	100%	$ 461.0	$ 2,305.0	
	6	100%	$ 461.0	$ 2,766.0	
	7	100%	$ 461.0	$ 3,227.0	
	8	100%	$ 461.0	$ 3,688.0	
	9	100%	$ 461.0	$ 4,149.0	
	10	100%	$ 461.0	$ 4,610.0	
	11	100%	$ 461.0	$ 5,071.0	
	12	100%	$ 461.0	$ 5,532.0	
	13	100%	$ 461.0	$ 5,993.0	**$ 5,532.0**
Closure	**14**	100%	$ 461.0	$ 6,454.0	**$ 461.0**
Rehabilitation period	**15**	100%	$ 461.0	$ 6,915.0	
	16	90%	$ 461.0	$ 7,329.9	
	17	80%	$ 461.0	$ 7,698.7	
	18	70%	$ 461.0	$ 8,021.4	
	19	60%	$ 461.0	$ 8,298.0	
	20	50%	$ 461.0	$ 8,528.5	
	21	40%	$ 461.0	$ 8,712.9	
	22	30%	$ 461.0	$ 8,851.2	
	23	20%	$ 461.0	$ 8,943.4	
	24	10%	$ 461.0	$ 8,989.5	**$ 2,535.5**
			TOTAL	**$ 8,989.5**	

3.1.4 Economic Cost of Loss of Beef Productivity in Gloucester LGA

The loss of available land in the Gloucester LGA due to the proposed Rocky Hill Coal Project will lead to a loss of beef cattle numbers within the LGA. This will then be reflected as both a loss during the operational life of the Rocky Hill Mine of **$6.454 million dollars** and **$2.5355 million dollars** after closure. In total giving

An Agricultural Beef Production loss of $ 8,989,500

3.1.5 References.

a Gloucester Shire Council report prepared by Buchan Consulting December 2010 ***"Economic Development Strategy for Gloucester Local Government Area" Report 3 "Economic Development Strategy"***

4 Tourism Costs

4.1 General

In the early 1800's Robert Dawson, when he first set eyes on the Gloucester Valley, described it as a "Species of Enchantment". Hundreds of thousands of people that have journeyed through the valley would be in full agreement. Gloucester has a brand – a reputation shared widely by Australians – and predicament also widely understood and of concern to them.

Gloucester appeals in particular to those with interests that encompass a wide range of outdoor activities from hiking through the unspoiled wilderness of the heritage listed Barrington Tops to fishing in the clear waters of the many rivers that run from the Great Dividing Range to the sea.

It appeals also to those who require no more activity than to listen to the echoing sound of bell birds whilst watching the eddies swirl and change in one of the dozens of streams that adjoin local camping areas or enjoy leisurely reading the paper whilst waiting for a coffee in one of the main street cafes.

It appeals to those passing through to other destinations wishing to take ***the scenic route*** rather than the freeway monotony. It appeals to the thousands of motorcycle enthusiasts annually who crowd the main street cafes on weekend mornings enjoying breakfast before embarking on one of the top rides in the state from Gloucester to Walcha.

It appeals to anyone who is amazed by the wonder of Mother Nature and enjoys the hospitality of a small country town nestled at the base of one of her most outstanding creations washed on either side by the crystal clear waters of the Avon and Gloucester rivers as they make their way to the sea.

This may well sound like a promotional brochure for NSW Tourism but it accurately portrays the nature of tourism in Gloucester. Gloucester is based on wonderful scenic beauty, environmental purity and country hospitality all of which would be put at risk with the development and operation of the Rocky Hill Mine. Gloucester's brand is jeopardised and, even if it could be regenerated following coal mining, it will have great difficulty in ever regaining the opportunities lost.

4.2 Tourism in 2012

Over the years, with limitations to the timber industry and the deregulation of the dairy industry and the subsequent closure of the town's dairy factory complex, tourism has become second only to agriculture in economic importance to the town.

There are over 40 accommodation providers and 17 camping areas within Gloucester and the Barrington tops. These provide a total of over 210 beds, 46 "bunk style" beds and over 500 camping spots. Accommodation is available to suit all styles and affordability ranges.

Eight Cafe/Restaurants, two hotel bistros and three licensed club dining rooms offer meals ranging from home cooked breakfast, takeaway meals and a la carte' dining. Full board is also available at many of the accommodation venues.

4.2.1 Value of Tourism to the Gloucester Economy

The value to the economy of Gloucester as a result of tourism can be divided into two sections- overnight stays and day trips. This value again is reflected by both the financial spend of the visitors and the employment that they generate.

4.2.1.1 Overnight Stay & Day Tripper Visitor $ Spend Value

The Destination NSW website lists the following data for travel to the Gloucester Local Government Area based on a four year average up to September 2011.

Stays of 1night or more	
Total Visitors	69,000 persons
Total Visitor Nights	190,000 nights
Average stay	2.7 nights
Average spend per visitor	$428
Total Value	$30,000,000

Reason for visiting Gloucester	
Holiday	64%
Visiting friends or relatives	27.1%
Business	4.9%
Other	3.6%

Accommodation	
Stayed with friends or relatives	31.7%
Commercial accommodation	68.3%

Method of travel	
Private car	87.5%
Other	12.5%

In general terms those who travel to Gloucester for reasons other than to visit family and friends have a far greater impact on the economy and are responsible for a far greater share of the value of tourism than their 72.9% would suggest. It is estimated that this group contributes more than 90% or $27,000,000 of the total figure as accommodation and meals of those visiting friends and relatives are provided by the visitor's hosts.

There are no direct figures available for day tripper visitors to Gloucester on the Destination NSW website. The Gloucester Visitor Information Centre and TAG (Tourism Advancing Gloucester) estimate that in line with our nearest neighbour to the north, Walcha, the day tripper value is approximately the same as the overnight stay value (Walcha overnight $21m, day tripper $29m). The far lower ratios represented by the adjoining areas to the east of Greater Taree and Great Lakes is a

reflection of their appeal as costal holiday destinations for families rather than day tripper locations.

The value to Gloucester therefore would be estimated at $30,000,000

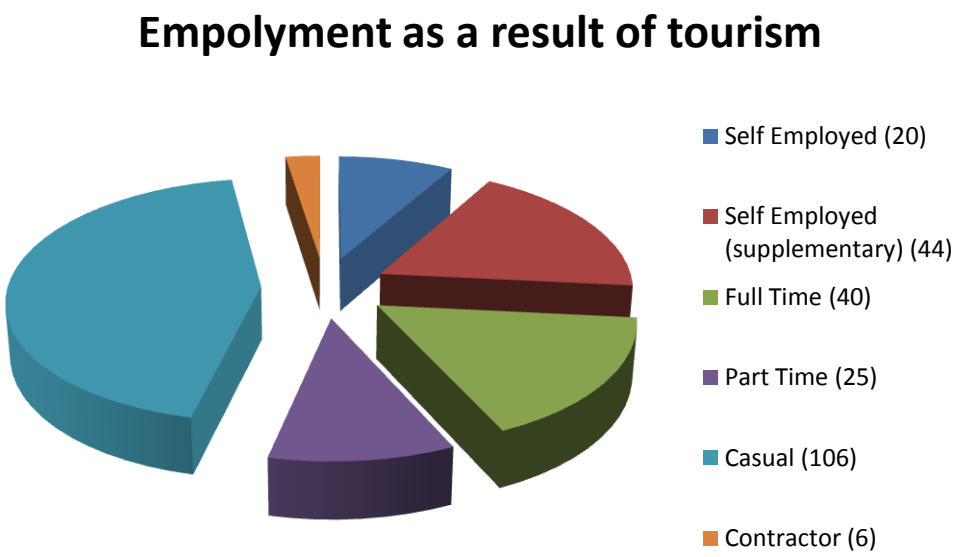
This gives a total spend value of $60,000,000pa approximately $54,000,000 of which is attributable to visitors to the area wishing to enjoy the scenic beauty, environmental purity and country hospitality that Gloucester offers.

4.2.1.2 Employment Value

Tourism is a significant employer in the Gloucester community providing self-employment opportunities, with many successful independent businesses having been established. Barrington Outdoor Adventures, for example, has been providing a service to the areas visitors for over thirty years. These businesses in turn provide employment on a full time basis to many others.

The Gloucester Visitor Information Centre conducted a survey in late 2012 which showed 241 persons were employed in some capacity directly as a result of tourism. This represents 11.65% of the population who indicated they were employed in some capacity in the 2012 census.

Figure 4.1



4.3 The Impact of the Rocky Hill Mine on Tourism

The Rocky Hill Mine will have a significant impact on the appeal of Gloucester as a tourist destination for both overnight stayers and in particular day trippers. This impact generates from three sources, the blight on the visual impact of the Gloucester Valley, the changing visual appearance of the town main street and surrounds due to the vehicles and personnel from the mine and the effects on the access routes due to the increase in traffic on them.

4.3.1 The Visual Impact on the Gloucester Valley due to the Rocky Hill Mine

The Rocky Hill Mine will be situated at the southern gateway to Gloucester. The Gloucester valley itself extends from near Stroud to Gloucester but locals and visitors alike will tell you that they have arrived as they drive along the Bucketts Way and crest the rise after Stratford and the valley opens up in front of them.

To your left, the towering Bucketts and to the right the treed ridge of the Mograni Range frame the valley floor. Patchwork green fields with silvery buttons where the sunlight reflects on the many small dams and the dark green of the trees that line the Avon River and Waukivory Creek.

It matters not when you arrive. In the early morning as the mist still sits low in the Avon Valley and creates a halo of mist mid way up the Bucketts in absolute clarity in the clear air and the bright light of a new day. Or at sunset as the Bucketts cast their shadow over the valley, lose their clarity, and take on the shadowy form that makes it easy to see why the indigenous population recognised them as the sleeping giants. The sun's last rays settle like a fiery blanket over the valley.

The Rocky Hill Mine will sit in the middle of this scene – precisely the WRONG welcome for visitors to the Gloucester Valley!

Obviously the mine will have no visual impact on the Barrington Tops National Park and the beauty of the Great Dividing Range but as the gateway to that area it will leave a lasting impression on visitors as they arrive.

Guests may have a great time at the BBQ in your backyard but they will remember more so the mess your front yard was in when they arrived.

4.3.2 The Visual Impact of the Town due to the Rocky Hill Mine

In addition to the obvious visual impact of the mine on the scenic natural beauty the visual appeal of the town and main street will also change.

The mud splattered four wheel drive ute in the main street with the dog in the back patiently awaiting the return of the driver will be replaced: still a four wheel drive but the dog is gone the mud replaced with the irremovable black stain of coal dust, large black identifying letters adorn the bonnet and a whip aerial topped with an out of place fluorescing orange pennant. The driver no longer wears the clothes of country folk on a visit to town. These are replaced by the fluoro and reflective stripe uniform, steel capped boots and hardhat of the mine worker.

The familiar local crowd outside the bakery, blue jeaned and jacketed, breathing mist and holding a steaming cup of coffee and a "Hebbies" breakfast pie at 6.00am on a winter's morning changes. The mist, coffee and pie remain but the faces are unknown, driving in daily from the coastal areas to the east, grabbing breakfast on their way to a 7.00 am start at the mine and then disappearing as they came at shift's end.

The Rocky Hill Mine will change the visual impact of the town from "country" to "mining" leaving this impression in the visitors mind.

4.3.3 The impact on Access Routes and the Gloucester Township Road Network due to the Rocky Hill Mine

With 87.5% of overnight stayers and almost 100% of day trippers arriving by private vehicle, road access is of critical concern to visitors. Gloucester can be accessed by three main routes.

- The Thunderbolts way, descending the Great Dividing Range from the north, bringing mainly overnight stayers from the New England Area, North Western NSW and Queensland.
- The Bucketts Way East, joining Gloucester to the Freeway at Nabiac to the east bringing mainly day trippers from the coastal areas from north of Port Stephens at Karuah to Port Macquarie and overnight stayers from the NSW Far North Coast and South East Queensland.
- The Bucketts Way, joining Gloucester to the Freeway north of Raymond Terrace bringing overnight stayers and day trippers from the Hunter and the large population centres of Newcastle and Sydney.

The Rocky Hill Mine will have little impact on The Thunderbolts Way save for where it forms part of the Gloucester township road network. The Bucketts Way and The Bucketts Way East will be seriously impacted by the Rocky Hill Mine as will the township road network. This impact will be felt during the mine's construction phase and its ongoing operation.

4.3.3.1 Impacts during the Construction Period

The Rocky Hill Mine EIS outlines the material requirements for the construction of the mines various operational components. Construction of the mine will take place over a one year period but much of the transportation of the materials required occurs in concentrated periods and not evenly spread across the year.

Table 4.1 Additional Vehicle Movements Year 1

	Bucketts Way		Bucketts Way East		Gloucester Town	
	In	**out**	**In**	**Out**	**In**	**Out**
Heavy Vehicles	3595*	3593	1700*	1700	2606*	2606
Vehicles under 2t	7973	7973	2145	2145	6317	6317
Total	**11568**	**11568**	**3845**	**3845**	**8923**	**8923**

Loaded Heavy Vehicles *
Note: the figures for Bucketts Way East assume quarry products used in the construction of the rail load out facility would come from the east. If they come from the south then the figures add to the Bucketts Way totals.

Over 80% of heavy vehicle movements occur during months 4-9 including police assisted wide loads, semi-trailers, tipper and dog trailer combinations, cement mixers and rigid body trucks. The vehicles under 2t comprise employee and contractor vehicles and increase during the period as production commences.

This significant increase in the traffic volume on the access routes, already carrying reduced speed limits due to poor road surface condition, combined with absence of

overtaking lanes will cause driver frustration to the point that they will simply choose to travel to another destination.
The main destructive impact on the road surface is heavy vehicle traffic. The table below outlines the Equivalent Standard Axle values for the additional heavy vehicle movements annually.

Table 4.2 Equivalent Standard Axle Values (Loaded vehicles inbound to mine only)

	Bucketts Way	Bucketts Way East	Gloucester Town
Heavy Vehicle EXAs	10139	13615	16601

A 2 tonne car has an EXA of 0.0004 or 1 EXA is equal to the impact of 2250 2t vehicles.

This is the destructive equivalent of over 53 million cars travelling the Bucketts Way and over 37 million additional cars using the town road network in 1 year

4.3.3.2 Impacts During the Operational Period

GRL's EIS indicates an operational period of 13 years after the construction year and then a 2 year rehabilitation period. In the operational period the majority of vehicle movements will be drive-in-drive-out employees along the access routes and local employees in Gloucester. This employee movement will be concentrated with employees arriving and departing the mine coincident with shift changes. There will still be however considerable heavy vehicle movements, predominately along Bucketts Way bringing fuel and equipment for maintenance and repairs. Lighter vehicles and mine visitors will also be on the access routes from the south.

Table 4.3 Additional Vehicle Movements Year 2-16

	Bucketts Way		Bucketts Way East		Gloucester Town	
	In	**Out**	**In**	**Out**	**In**	**Out**
Heavy Vehicles	16443*	16443	0	0	1631*	1631
Vehicles under 2t	151620	151620	128544	128544	169767	169767
Total	**168363**	**168363**	**128544**	**128544**	**342796**	**342796**

Loaded Heavy Vehicles *

Again the main destructive impact on the road surface is heavy vehicle traffic. The table below outlines the Equivalent Standard Axle values for the additional heavy vehicle movements.

Table 4.4 Equivalent Standard Axel Values Years 2-16 (Loaded vehicles inbound to mine only years 2-14, outbound years 15-16)

	Bucketts Way	Bucketts Way East	Gloucester Town
Heavy Vehicle ESAs	72334	0	13480

A 2 tonne car has an EXA of 0.0004 or

1 EXA is equal to the impact of 2250 2t vehicles.

This is the destructive equivalent of over 162 million cars travelling the Bucketts Way and over 30 million additional cars using the town road network during the mine's 15 year operational life and rehabilitation

4.3.3.3 Total Combined Impact

During the 16 year life of the Rocky Hill Mine the access routes to Gloucester and the town road network will be subjected to an additional:

- **21738 trips** by fully loaded cement trucks, semi-trailers, tipper and dog trailer combinations, oversize semi-trailers with police escorts and rigid transport vehicles and their return all Bucketts Way
- **8474 trips** by heavy vehicles on the town road network.
- **581164 trips** by commercial and passenger vehicles under 2 tonne travelling to and from the mine daily along Bucketts Way.
- **704336 trips** by commercial and passenger vehicles under 2 tonne travelling to and from the mine on the town road network.

This is the destructive equivalent of over 250 million cars travelling the Bucketts Way and over 67 million additional cars using the town road network.

The tourist travelling to Gloucester want two things in regards to travel:

- for the journey to be as short as possible
- for their family and vehicle to arrive safely.

Both of these will be at severe risk due to the operation of the Rocky Hill Mine.

Extensive delays in the first construction year due to the arrival of plant, machinery and infrastructure will destroy the road carriageway causing delays due to the implementation of reduced speed limits and repairs. Combined with frustrating delays behind a stream of heavy vehicles, many under police or pilot escorts, and drive in drive out mine employees will ensure existing and potential visitors to the area will simply go elsewhere.

Word will spread quickly through recreational vehicle and caravan organisations, motorcycle clubs and family networks placing Gloucester in the "lovely place but too hard and dangerous to get to" category causing a significant decline in both overnight stayers and day trippers.

4.4 The Cost to Tourism in the Gloucester Valley.

The impact of the Rocky Hill Mine, as detailed previously, will have a profound effect on tourism both in terms of the money that it brings to the town and the employment that it generates.

Whilst a loss on current figures would be bad enough, due to the combined efforts of NSW tourism, Gloucester Council, various community organisations and business owners, there has been a steady and constant increase in the popularity of The Gloucester Valley as a tourist destination. Promotion of local events such as the Shakespeare Festival, The Writers Fair and regular coverage on travel and lifestyle programs such as "Sydney Weekender" has aided in this growth. This potential for future growth would also disappear along with the tourists.

The question of the tourists returning after the mining ceases would be open to conjecture but at the very least it would require extensive promotion and the repairing of a broken brand.

4.4.1 The Financial Cost to the Gloucester Valley Tourism Industry

Tourist organisations, businesses and operators conservatively estimate an immediate drop of 15% increasing to 25% within the first 3 years of overnight stayers and an immediate drop of 25% increasing to 30% within the first 3 years of day trippers. This would continue for the life of the mine requiring at least 10 years after the mining ceases to re-establish the Gloucester Valley Brand in the tourist community.

Table 4.5 Loss of Tourism Income

	Overnight Stayers				Day Trippers			
	% drop in tourism	value ($million)	cummulative value		% drop in tourism	value ($million)	cummulative value	
1	15.00%	$ 4.05	$ 4.05		25.00%	$ 6.75	$ 6.75	
2	20.00%	$ 5.40	$ 9.45		27.50%	$ 7.43	$ 14.18	
3	25.00%	$ 6.75	$ 16.20		30.00%	$ 8.10	$ 22.28	
4	25.00%	$ 6.75	$ 22.95		30.00%	$ 8.10	$ 30.38	
5	25.00%	$ 6.75	$ 29.70		30.00%	$ 8.10	$ 38.48	
6	25.00%	$ 6.75	$ 36.45		30.00%	$ 8.10	$ 46.58	
7	25.00%	$ 6.75	$ 43.20		30.00%	$ 8.10	$ 54.68	
8	25.00%	$ 6.75	$ 49.95		30.00%	$ 8.10	$ 62.78	
9	25.00%	$ 6.75	$ 56.70		30.00%	$ 8.10	$ 70.88	
10	25.00%	$ 6.75	$ 63.45		30.00%	$ 8.10	$ 78.98	
11	25.00%	$ 6.75	$ 70.20		30.00%	$ 8.10	$ 87.08	
12	25.00%	$ 6.75	$ 76.95		30.00%	$ 8.10	$ 95.18	
13	25.00%	$ 6.75	$ 83.70		30.00%	$ 8.10	$ 103.28	
14	25.00%	$ 6.75	$ 90.45	**$ 90.45**	30.00%	$ 8.10	$ 111.38	**$ 111.38**
15	25.00%	$ 6.75	$ 97.20		30.00%	$ 8.10	$ 119.48	
16	22.50%	$ 6.08	$ 103.28		27.00%	$ 7.29	$ 126.77	
17	20.00%	$ 5.40	$ 108.68		24.00%	$ 6.48	$ 133.25	
18	17.50%	$ 4.73	$ 113.40		21.00%	$ 5.67	$ 138.92	
19	15.00%	$ 4.05	$ 117.45		18.00%	$ 4.86	$ 143.78	
20	12.50%	$ 3.38	$ 120.83		15.00%	$ 4.05	$ 147.83	
21	10.00%	$ 2.70	$ 123.53		12.00%	$ 3.24	$ 151.07	
22	7.50%	$ 2.03	$ 125.55		9.00%	$ 2.43	$ 153.50	
23	5.00%	$ 1.35	$ 126.90		6.00%	$ 1.62	$ 155.12	
24	2.50%	$ 0.68	$ 127.58	**$ 37.13**	3.00%	$ 0.81	$ 155.93	**$ 44.55**

The cost to tourism due to the development and operation of the Rocky Hill Mine

- During the 14 year operational life, $201.83 million dollars.
- During the 10 year re-establishment of tourism, $81.68 million dollars
- **Total cost to the tourism economy $283.51 million dollars**

4.4.2 The Employment Cost to the Gloucester Valley Tourism Industry

The employment cost, or loss of employment opportunities, due to the Rocky Hill Mine will mirror closely the financial impact of the mine.

Table 4.6 Loss to Employment

Year	1	2	3	4	5	6	7	8	9	10	11	12
Total current tourism employment	241	241	241	241	241	241	241	241	241	241	241	241
% drop in total tourism employment	20.0%	23.8%	27.5%	27.5%	27.5%	27.5%	27.5%	27.5%	27.5%	27.5%	27.5%	27.5%
Total Employment Positions Lost	**48**	**57**	**66**	**66**	**66**	**66**	**66**	**66**	**66**	**66**	**66**	**66**

Year	13	14	15	16	17	18	19	20	21	22	23	24
Total current tourism employment	241	241	241	241	241	241	241	241	241	241	241	241
% drop in total tourism employment	27.5%	27.5%	27.5%	24.8%	22.0%	19.3%	16.5%	13.8%	11.0%	8.3%	5.5%	2.8%
Total Loss	**66**	**66**	**66**	**60**	**53**	**46**	**40**	**33**	**27**	**20**	**13**	**7**

The effect on employment will be felt across all of the categories outlined in 4.2.1.2.

Businesses will close, full time employees lose their jobs, and casual and part time work will diminish substantially as 66 employment positions disappear.

4.4.3 Summary of the Economic Impact on Tourism of the Rocky Hill Mine

The tourism industry in Gloucester has grown out of the ashes of lost agricultural income generated through Timber and Dairying due to government policy changes. The natural beauty of the region and its close proximity to the major population centres of Sydney and the Newcastle-Hunter region has allowed businesses, with promotion and assistance from Gloucester Shire Council and government tourism agencies, to develop and grow.

The intrusion of the Rocky Hill Mine will destroy much of what has been achieved and poison the stream of potential for years into the future.

Direct Financial Loss to the Gloucester Region	$298,350,000
Potential Financial Loss to the Gloucester Region	$677,860,000
Total Loss	**$976,210,000**
Direct Employment Loss to the Gloucester Region	**66 Positions Annually**

4.5 Key Insights Survey

It should be noted that in Part 14 Section 4.3 of the SCSC "Interviews with Tourism Operators and Clubs" relate interviews they had with:

- *Two Motels that have derived and would continue to derive the greatest benefit from the short term stay-over by contractors and the like.*
- *An Online Accommodation Organisation who stated Tourism would be negatively Impacted.*
- *A leading Tourism operator who sees the advent of the mine as being extremely damaging.*
- *The golf club who have lost players due to shift work and whose new membership base has been primarily " Tree Changers".*
- *The Aero Club whose existence relies on being able to continue to operate at Gloucester Airfield on what is now GRL land.*

These are hardly representative of the many dozens of B&Bs, Camping Properties, Cafes and General Businesses who all derive a substantial proportion of their income from daily and overnight visitors to Gloucester.

5. Road Infrastructure.

5.1 General

One of the largest expenses that any local Council incurs is the development, maintenance and replacement of its road network. Roads are designed to carry certain loads over a given lifetime based on assumptions and estimates at their time of development. Dramatic change to the loads carried will reduce the serviceable life of the roadway leading to the need for increased repair and patching and eventually the costly replacement of the carriageway.

Failure to do this increases the opportunity for damage to the vehicles using the road and the potential for accidents to occur In the case of higher speed roads these accidents result in significant injuries to drivers and passengers and unfortunately fatalities often occur.

5.2 The Existing Road Infrastructure

The road infrastructure that will be impacted be the Rocky Hill Mine falls into two categories.

- **Access Roads:** These are the major higher speed roads forming the supply and transport routes to the Rocky Hill Mine.

    - **Bucketts Way South**: (Approximately 80km in length) provides access from the Pacific Highway at Twelve Mile Creek to Gloucester passing through the villages of Booral, Stroud Road, Wards River, Craven and Stratford and the township of Stroud. It enters Gloucester at Forbesdale 6km from the town centre.

    This route provides access from Sydney, Newcastle and the Hunter Valley from the south and will form the primary access route to the Rocky Hill Mine for infrastructure materials and equipment during the mine's construction and set up. It also will bring drive in drive out employees from the Newcastle, Lower Hunter and Port Stephens areas. The fuel needs of the mine and deliveries will also use this route.

    The road passes through three local Council areas Gloucester, Great Lakes and to a lesser extent Port Stephens.

    - **Wallanbah Road** (Approximately 5.2km in length) provides access from the Pacific Highway at Nabiac to the intersection with Avalon Road and continues to Wallanbah.

    - **Avalon Road**: (Approximately 6.7km in length) provides a connection from Wallanbah Road to the village of Krambach.

    This route provides access from Taree and the coastal areas of Forster and Tuncurry from the east and north and will be the primary access for drive in drive out employees who reside in the coastal communities off the Pacific Highway.

It may also provide access for quarry materials required for the construction of the Rail Load Out facility depending on which quarries GRL decides to use.

The road passes through the Greater Taree local Council area.

- **Bucketts Way East:** (Approximately 35.6km in length) provides access from village of Krambach to Gloucester.

The route provides a continuation of the access provided by Avalon Road from the Pacific Highway to Krambach and additionally access from Wingham and South Taree

The road passes through the Gloucester and Greater Taree local Council areas.

- **Avon Valley Road and Waukivory Roads**: (Approximately 5.4km in length in total) provides access from Bucketts Way East to the Rocky Hill Mine Entrance at McInleys Lane.

These roads will also provide access for infrastructure materials, equipment, employees and contractors coming from the south via Bucketts Way South prior to the construction of the Avon River Bridge on Jacks Road, the widening and resurfacing of Jacks and Waukivory Roads and the modification to the intersections at Jacks Road and Bucketts Way South, Avon Valley and Waukivory Roads and Waukivory Road and McInleys Lane.

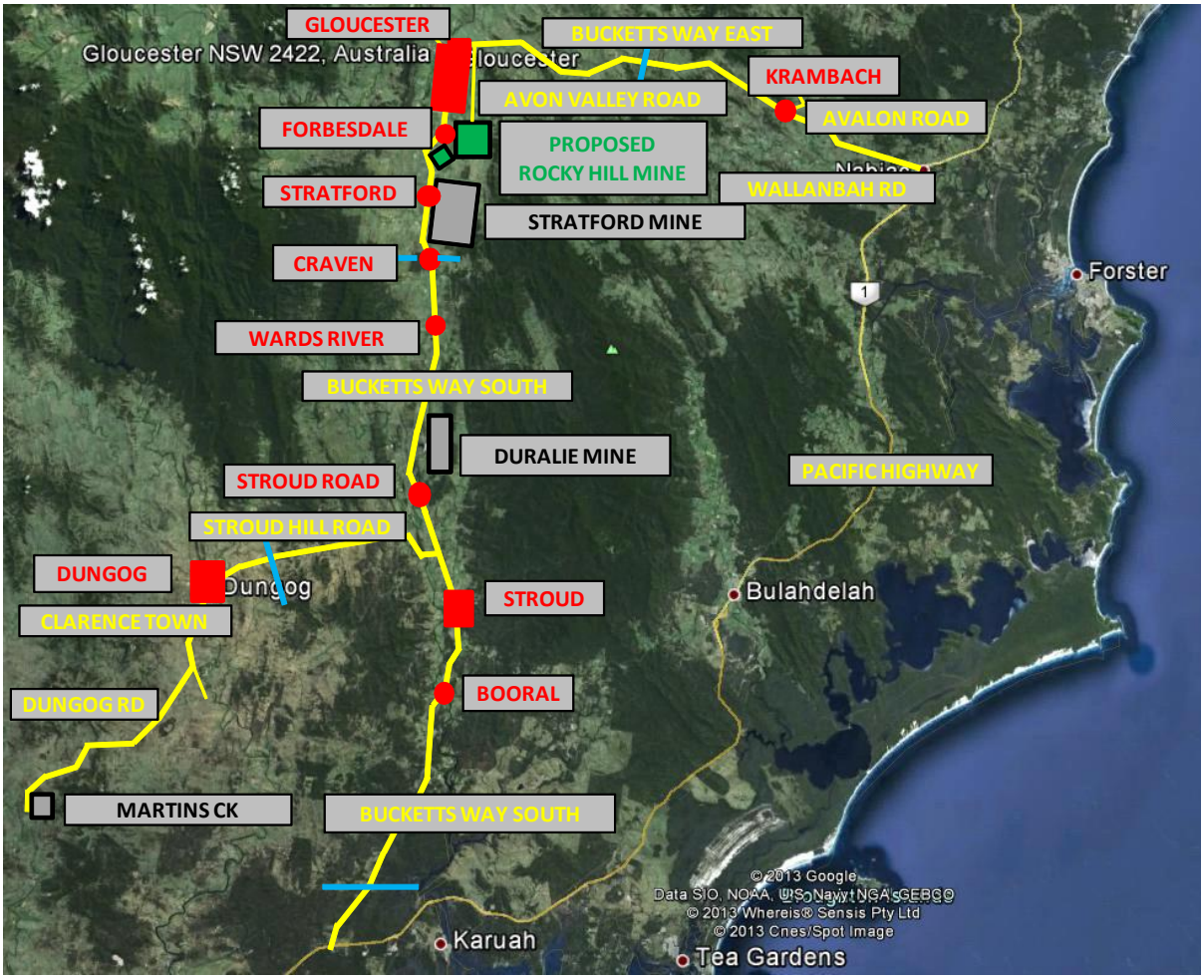
These roads lie within Gloucester Shire.

- **Stroud Hill Road, Clarence Town Road and Dungog Road**: (Approximately 41.8km in total) provides access from the Metromix Quarry at Martins Creek to The Bucketts Way South 1km north of the Stroud Township.

This route would provide access for quarry materials from the Martins Creek Quarry south west of Dungog to the Rail Load Out facility during construction if GRL decide to source their materials from here. Stroud Hill Road is used for drive-in-drive-out employees from the Hunter Valley areas of Singleton and Muswellbrook.

Dungog and Clarence Town roads are in the Dungog local Council area and Stroud Hill Road is covered by both Dungog and Great Lakes Councils.

Figure 5.1 Access Routes to the Proposed Rocky Hill Mine



- **Town Road Networks:** These road networks exist within the town boundaries characterised by speed limits of 60km per hour or less and are subject to variable limit areas such as school zones.

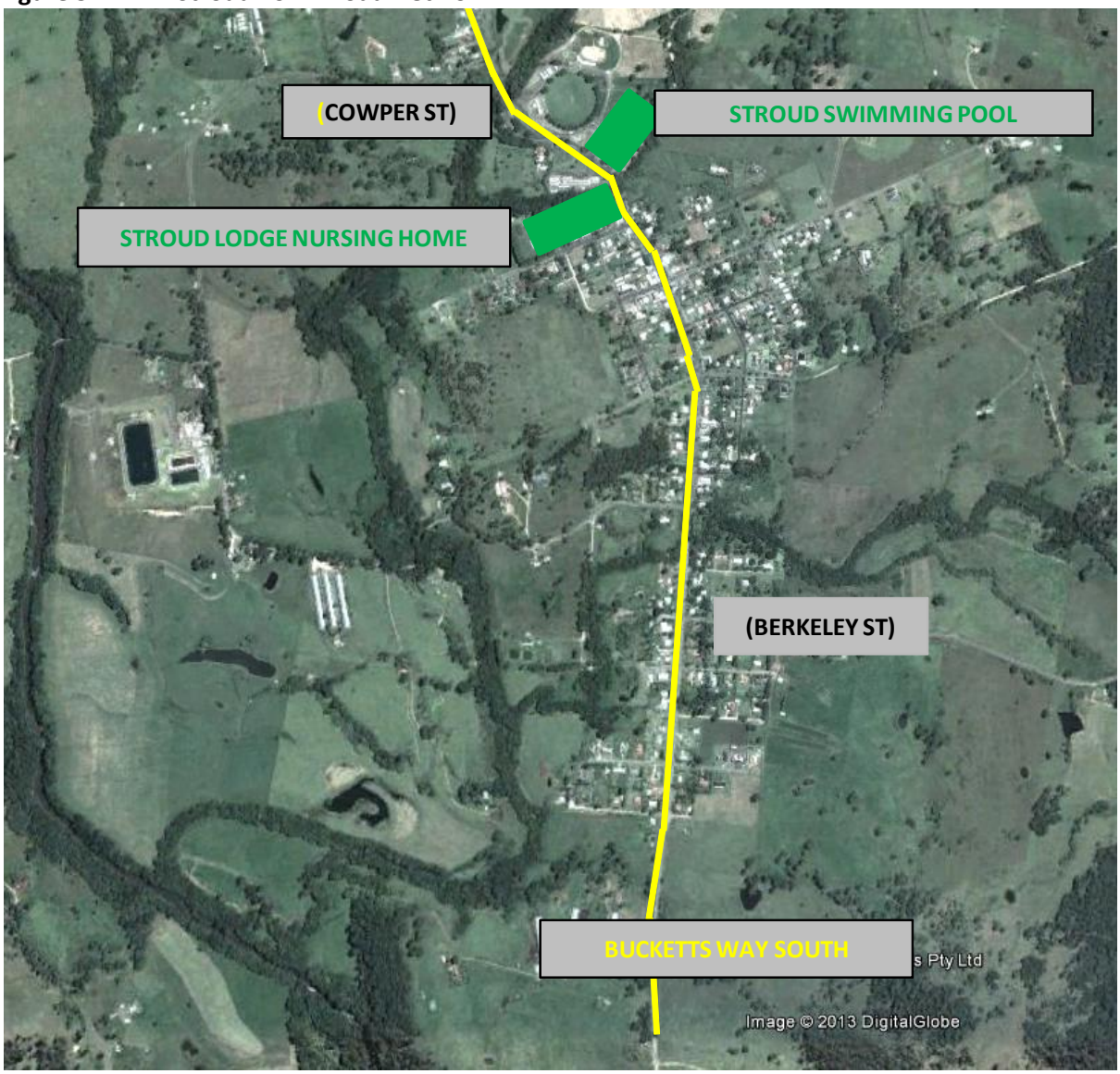
    - **Stroud:** (Population 1022 (2011 census))

    Bucketts Way South (also known as Berkley St to the south of the post office and Cowper St to the North) traverses the town from south to north passing through the commercial centre and passing the Stroud Lodge Nursing Home, local Council swimming pool the Stroud Showground and the golf course and club.

    No alternative heavy vehicle route is available due to the need to cross Lahman's Creek at the northern end of the commercial area. The existing speed limit is 50kph south of Lahman's Creek and 60kph to the north.

    All traffic from the south will pass through Stroud which falls within the Great Lakes Shire.

Figure 5.2 Stroud Town Road Network



- **Dungog**: (Population 2131 (2011 census))

Heavy vehicles entering the town road network from the south do so via Clarence Town Road and turn right into Mary St then left into Dowling St. Vehicles continue along Dowling St past Dungog Primary School and through the main commercial centre of Dungog. At the roundabout intersection with Hooke St the road becomes Dungog Rd, this in turn becomes Stroud Hill Road after traversing the Railway Level Crossing over the main north railway line.

Traffic entering from Singleton and Muswellbrook does so via Wangat St and then Hooke St before turning left into Dungog Road.

There is no Heavy Vehicle Route alternative with the only railway crossing and bridge over the Williams River to the north of the town. School Safety Zones of 40kph are provided outside the Dungog High and Dungog Primary Schools. Other speed limits of 50kph and 60kph apply.

This will be the route taken by Trailer and Dog Tippers from the Metromix Quarry at Martins Creek to Bucketts Way South just north of Stroud and then on to the Rocky Hill rail load out facility.

Figure 5.3 Dungog Town Road Network

- **Gloucester**: (Population 2878 (2011 census))

Bucketts Way East enters the Town Road Network of Gloucester as it passes over the railway line and become Denison Street. Bucketts Way South enters the Town Road Network at the outer residential area of Forbesdale and continues past the Golf Course as Bucketts Way until the intersection with Cemetery road where it becomes Church St. It continues as Church St past the Gloucester Hospital Campus until reaching the 4t load limit, the start of the shopping and commercial centre of Gloucester, at the Church and Phillip Street intersection.

There are two heavy vehicle alternatives around the Gloucester Town Centre.

Coming from the South.

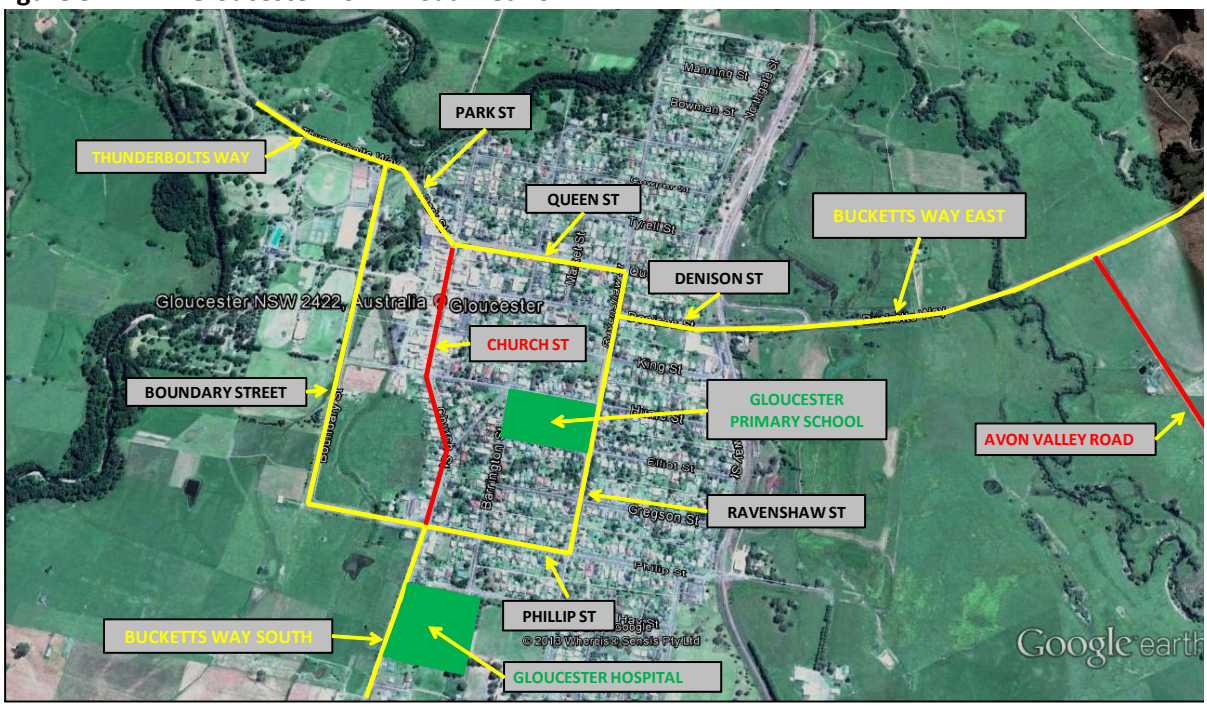
- Turn right into Phillip Street, left into Ravenshaw Street and right into Denison Street and exit Gloucester via Bucketts Way East.

Phillip Street rises steeply from Church Street, past Barrington Street levelling out shortly before the Ravenshaw Street Intersection. Ravenshaw Street passes through the School Safety Zone provided for students at Gloucester Primary School in Hume Street.

- Turn left into Phillip Street which becomes Boundary Street. At the intersection of Boundary Street, Park Street and Thunderbolts Way turn right. Continue along Park Street and then Queen Street. Turn right into Ravenshaw Street then left into Denison Street exiting Gloucester via Bucketts Way East

Boundary Street runs along- side the playing fields, tennis club swimming pool and skateboard park that form part of the Gloucester Sporting Complex.
The change from Park to Queen Streets occurs at the roundabout at the northern end of the main Shopping Street of Gloucester. The road then rises steeply from the roundabout until past Barrington Street.

Figure 5.4 Gloucester Town Road Network.



5.3 The Bucketts Way

The Bucketts way from Twelve Mile Creek to Taree was originally the Pacific Highway and was constructed to the road standards of the 1950's. The road pavement was rehabilitated in the early 1980's to design criteria of a minimum of 300mm of "ridge gravel" the top 125mm lime stabilised. It provided for a 20 year pavement design life for a traffic load of 1000 vehicles per day with a 5% heavy vehicle loading (50HVPD) and no allowance for traffic growth.

5.3.1 Design and Usage History

In 1999 the three caretaker Councils, Gloucester, Great Lakes and Greater Taree engaged Roadnet Pty Ltd to undertake a route development study of The Bucketts Way. The results of the study indicated major deficiencies in condition, underfunding for maintenance and capability to carry increases in traffic load. Safety Issues and the importance of the road to the local and broader communities were also identified. The three Councils formed a Route Management Advisory Group. Over the period to 2011 they were able to obtain funding

from various State and Federal sources for pavement improvement works totalling $44M of the original $66M identified in the Roadnet study.

Allowing for CPI adjustments, a programme of works amounting to $33M still remains to be completed to achieve the 1999 requirements.

The 1980 pavement design was adequate for existing and foreseen traffic at the time and would have continued, perhaps with a reduced level of service, well beyond its design life of 2000. The construction of the Stratford Mining Complex in 2001 and production in 2003 saw a significant increase in heavy vehicle traffic which has continued.

Gloucester Council undertook traffic counts using "vehicle classifying" traffic counters from 2001 to 2011 with the results shown in the table below.

Table 5.1 Traffic Counts for The Bucketts Way 2001-2011

Year	Total	Heavy Vehicles	
2001	1075	201	18.7%
2003	1032	92	8.9%
2006	1380	147	10.7%
2009	1345	199	14.8%
2011	1604	183	11.4%

Whilst there has been an increase in vehicle traffic in general, heavy vehicles have a significant impact on the lifespan of the road pavement - and the increase in heavy vehicle traffic correlates directly with the construction and operational phases of the Stratford Mine.

This increase will be replicated by the Rocky Hill Mine if approved and we should expect concentrations on the Bucketts Way near to Gloucester Township (and on adjoining roads).

5.3.2 The Bucketts Way Pavement Design Criteria.

Gloucester Shire Council engaged the Snowy Mountains Engineering Corporation (SMEC) to conduct pavement investigation and produce a pavement design requirement suitable for more than double the heavy vehicle load The Bucketts Way now experiences compared to the original design criteria. The results are shown in the table below with comparison to the 1980 design also shown.

Table5.2 The Bucketts Way Design Criteria 1980 & 2012

Year	Current AADT	% Heavy Vehicles	Average Growth Rate	Cumulative Growth Factor	Design Traffic Load (20 years)
1980	AADT = 1000	5%	1%	5.0504751	1.41E+05
2012	AADT = 1600	13%	4%	29.77808	3.17E+06

The design traffic load show represents the number of Equivalent Standard Axle loads during the 20 year life of the road pavement.
1.41E+05 is equal to 141,000 ESA loads in 20 years or 7050 loads per annum.
3.17E+06 is equal to 3,170,000 ESA loads in 20 years or 158500 loads per annum

ESA values for typical heavy vehicles using The Bucketts Way

Class 5	3 axle truck	1.387 ESA's	
Class 8	4 axle semi	1.387 ESA's	
Class 9	5 axle semi	3.245 ESA's	
Class 10	6 axle semi	8.025 ESA's	
Class 11	B Double	8.074 ESA's	
	Bogie Tipper plus 3 axle dog trailer		5.79 ESA's
	Bogie Tipper plus 4 axle dog trailer		8.01 ESA's

By comparison a passenger vehicle under 2 tonne equals 0.0004ESA's - or 1/2250th.

5.4 Increases in Traffic Flow Due To the Rocky Hill Mine

The Rocky Hill Mine will be responsible for a significant increase in the traffic flow on the access roads leading to it and the Town Road Networks that the traffic will pass through. The extent of that impact varies during mine life - primarily between the construction phase and the operational phase.

During construction large numbers of heavy vehicles transporting construction materials, infrastructure components and machinery are concentrated in a 12 month period. Several options are available for sourcing the large number of quarry products required for the construction of the rail load out facility (GRL's estimates were used) leading to different impacts depending on GRL' choice. However, regardless of choice, the impact will be profound due to the short time frame and, in some cases, ultra heavy loads.

During the operational phase there will be a continual stream of heavy vehicle traffic providing fuel and logistical support to the mine. Again, there will be a period of concentration in the last two years of mine life as infrastructure is removed for rehabilitation. Employee traffic, whilst of little consequence in terms of pavement damage, creates a daily "wave" (and resident disturbance) on the access roads as they are travelled to coincide with shift changes.

5.4.1 Increases in Traffic Flow during the Construction Phase

The tables below list the vehicle movements generated by the Rocky Hill Mine during the one year construction phase. Movements for two scenarios are shown:

1. Quarry products sourced from east of Gloucester using the Bucketts Way East Access, the Gloucester Town Road Network and Bucketts Way South to the rail load out facility.
2. Quarry products sourced from South of Gloucester using the Bucketts Way South Access

Figures represent arrival at the mine entrance or rail load out facility entrance. The vehicle definitions and sources of numbers are also shown.

DEFINITIONS/DATA SOURCE

1. Cement Truck: Based on GRL estimates for quantities during construction.
2. Semi trailer: (6 axle.) Based on assumptions made of material requirements outlined by GRL. Those shown with* are transporting earth moving machinery.
3. Over size semi trailer: (size unknown.) Based on assumptions made of material requirements outlined by GRL. Those shown with* are transporting earth moving machinery assumption of 3 trucks per machine for large equipment.
4. Dog and Tipper: (Bogie Tipper plus quad dog trailer 4 axel. 32 Tonne Load) Based on GRL quantities required for quarry products for rail load out facility.)
5. Semi Trailer Fuel Tanker: Based on GRL usage quantities proportioned for first year.
6. Contractor's vehicles over 2t: Based on assumption. Contractors responsible for the construction of buildings, rail, infrastructure etc. 12 trips per day, 5 days per week for 52 weeks. 17% daily trip to town from mine site.
7. Small Mine Vehicle: Based on assumption GRL owned, locally based. 10 trips per day, 5 days per week for 52 weeks
8. Contractor's vehicles under 2t: Based on assumption. Contractors responsible for the construction of buildings, rail, infrastructure etc. 6 trips per day, 5 days per week for 52 weeks. 66% daily trip to town from mine site.
9. Drive In Drive Out Employee South: Based on assumption. 80 employees at the mine in total using private vehicles in final months of first year. 20 Local + 45 DIDO south + 15 DIDO east
10. Drive In Drive Out Employee East: Based on assumption. 80 employees at the mine in total using private vehicles in final months of first year. 20 Local + 45 DIDO south + 15 DIDO east
11. Local Employee: Based on assumption. 80 employees at the mine in total using private vehicles in final months of first year. 20 Local + 45 DIDO south + 15 DIDO east

Table 5.3 Vehicle Movements during Year of Construction: Scenario A

VEHICLE MOVEMENTS YEAR 1 (inbound –towards mine) Scenario A from the East													
Vehicle type	Month												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Cement truck Loaded [1]				70	120	80							270
Cement truck Empty				70	120	80							270
Semi trailer Loaded [2]					7*	80	80	50	75	15			297
Semi trailer Empty					7*	80	80	50	75	15			297
Oversize Semi trailer Loaded [3]	4		9*		12*	24*	5		5				59
Oversize Semi Trailer Empty	4		9*		12*	24*	5		5				59
Dog and Tipper Loaded [4]		10	40	330	330	330	330	330					1700
		10	40	330	330	330	330	330					1700
Dog and Tipper Empty		10	40	330	330	330	330	330					1700
		10	40	330	330	330	330	330					1700
Semi Trailer Fuel Tanker Inbound [5]	4	4	4	8	8	8	12	12	12	16	16	16	120
	4	4	4	8	8	8	12	12	12	16	16	16	120
Semi Trailer Fuel Tanker Outbound	4	4	4	8	8	8	12	12	12	16	16	16	120
	4	4	4	8	8	8	12	12	12	16	16	16	120
Contractors Vehicle Over 2t inbound [6]	72	72	145	290	363	363	363	363	363	290	290	145	3119
	12	12	24	48	60	60	60	60	60	48	48	24	516
Contractors Vehicle Over 2t outbound	72	72	145	290	363	363	363	363	363	290	290	145	3119
	12	12	24	48	60	60	60	60	60	48	48	24	516
Small mine vehicle Inbound [7]	108	108	216	216	216	216	216	216	216	216	216	216	2376
Small mine vehicle Outbound	108	108	216	216	216	216	216	216	216	216	216	216	2376
Contractors Vehicle under 2t inbound [8]	36	36	71	143	179	179	179	179	179	143	143	71	1538
	24	24	47	95	119	119	119	119	119	95	95	47	1022
Contractors Vehicle under 2t outbound	36	36	71	143	179	179	179	179	179	143	143	71	1538
	24	24	47	95	119	119	119	119	119	95	95	47	1022
Di Do Employee south Vehicle Inbound [9]	195	195	195	390	390	390	585	585	585	975	975	975	6435
Di Do Employee south Vehicle outbound	195	195	195	390	390	390	585	585	585	975	975	975	6435
Di Do Employee east Vehicle inbound [10]	65	65	65	130	130	130	195	195	195	325	325	325	2145
Di Do Employee east Vehicle Outbound	65	65	65	130	130	130	195	195	195	325	325	325	2145
Local Employee Outbound [11]	87	87	87	173	173	173	280	280	280	433	433	433	2919
Local Employee Inbound	87	87	87	173	173	173	280	280	280	433	433	433	2919

Colour Coding Used:

Gloucester Town		Bucketts Way		Bucketts Way East	

Table 5.4 Vehicle Movement Summary during Construction Year: Scenario A

Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck [1] Loaded					270
Cement truck Empty					270
Semi trailer [2] Loaded	297				
Semi trailer Empty		297			
Oversize Semi trailer [3] Loaded	59				
Oversize Semi Trailer Empty		59			
Dog and Tipper [4] Loaded			1700		1700
Dog and Tipper Empty				1700	1700
Semi Trailer Fuel Tanker [5] Inbound	120				120
Semi Trailer Fuel Tanker Outbound		120			120
Contractors Vehicle Over 2t [6] inbound	3119				516
Contractors Vehicle Over 2t outbound		3119			516
Total Heavy	**3595**	**3595**	**1700**	**1700**	**5212**
Small mine vehicle [7] Inbound					2376
Small mine vehicle Outbound					2376
Contractors Vehicle Under 2t [8] inbound	1538				1022
Contractors Vehicle Under 2t outbound		1538			1022
Di Do Employee south Vehicle [9] Inbound	6435				
Di Do Employee south Vehicle outbound		6435			
Di Do Employee east Vehicle [10] inbound			2145		
Di Do Employee east Vehicle Outbound				2145	
Local Employee [11] Inbound					2919
Local Employee Outbound					2919
Total Under 2t	**7973**	**7973**	**2145**	**2145**	**12634**
Total All	**11568**	**11568**	**3845**	**3845**	**17846**

Table 5.5 Vehicle Movements during Construction Year: Scenario B

VEHICLE MOVEMENTS YEAR 1 (inbound –towards mine) Scenario B													
Vehicle type	Month												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Cement truck Loaded [1]				70	120	80							270
Cement truck Empty				70	120	80							270
Semi trailer Loaded [2]					7*	80	80	50	75	15			297
Semi trailer Empty					7*	80	80	50	75	15			297
Oversize Semi trailer Loaded [3]	4		9*		12*	24*	5		5				59
Oversize Semi Trailer Empty	4		9*		12*	24*	5		5				59
Dog and Tipper Loaded [4]		10	40	330	330	330	330	330					1700
Dog and Tipper Empty		10	40	330	330	330	330	330					1700
Semi Trailer Fuel Tanker Inbound [5]	4	4	4	8	8	8	12	12	12	16	16	16	120
	4	4	4	8	8	8	12	12	12	16	16	16	120
Semi Trailer Fuel Tanker Outbound	4	4	4	8	8	8	12	12	12	16	16	16	120
	4	4	4	8	8	8	12	12	12	16	16	16	120
Contractors Vehicle Over 2t inbound [6]	72	72	145	290	363	363	363	363	363	290	290	145	3119
	12	12	24	48	60	60	60	60	60	48	48	24	516
Contractors Vehicle Over 2t outbound	72	72	145	290	363	363	363	363	363	290	290	145	3119
	12	12	24	48	60	60	60	60	60	48	48	24	516
Small mine vehicle Inbound [7]	108	108	216	216	216	216	216	216	216	216	216	216	2376
Small mine vehicle Outbound	108	108	216	216	216	216	216	216	216	216	216	216	2376
Contractors Vehicle under 2t inbound [8]	36	36	71	143	179	179	179	179	179	143	143	71	1538
	24	24	47	95	119	119	119	119	119	95	95	47	1022
Contractors Vehicle under 2t outbound	36	36	71	143	179	179	179	179	179	143	143	71	1538
	24	24	47	95	119	119	119	119	119	95	95	47	1022
Di Do Employee south Vehicle Inbound [9]	195	195	195	390	390	390	585	585	585	975	975	975	6435
Di Do Employee south Vehicle outbound	195	195	195	390	390	390	585	585	585	975	975	975	6435
Di Do Employee east Vehicle inbound [10]	65	65	65	130	130	130	195	195	195	325	325	325	2145
Di Do Employee east Vehicle Outbound	65	65	65	130	130	130	195	195	195	325	325	325	2145
Local Employee Outbound [11]	87	87	87	173	173	173	280	280	280	433	433	433	2919
Local Employee Inbound	87	87	87	173	173	173	280	280	280	433	433	433	2919

Colour Coding Used:

Gloucester Town		Bucketts Way		Bucketts Way East	

Table 5.6 Vehicle Movement Summary during Construction: Scenario B

Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck [1] Loaded					270
Cement truck Empty					270
Semi trailer [2] Loaded	297				
Semi trailer Empty		297			
Oversize Semi trailer [3] Loaded	59				
Oversize Semi Trailer Empty		59			
Dog and Tipper [4] Loaded	1700				
Dog and Tipper Empty		1700			
Semi Trailer Fuel Tanker [5] Inbound	120				120
Semi Trailer Fuel Tanker Outbound		120			120
Contractors Vehicle Over 2t [6] inbound	3119				516
Contractors Vehicle Over 2t outbound		3119			516
Total Heavy	**5295**	**5295**			**1812**
Small mine vehicle [7] Inbound					2376
Small mine vehicle Outbound					2376
Contractors Vehicle Under 2t [8] inbound	1538				1022
Contractors Vehicle Under 2t outbound		1538			1022
Di Do Employee south Vehicle [9] Inbound	6435				
Di Do Employee south Vehicle outbound		6435			
Di Do Employee east Vehicle [10] inbound			2145		
Di Do Employee east Vehicle Outbound				2145	
Local Employee [11] Inbound					2919
Local Employee Outbound					2919
Total Under 2t	**7973**	**7973**	**2145**	**2145**	**12634**
Total All	**13268**	**13268**	**2145**	**2145**	**14446**

The difference between the sourcing of quarry products from the east or south of Gloucester makes an obvious difference to the heavy vehicle load on the Gloucester Town Road Network: 1700 loaded inbound Bogie tipper and Quad axel dog trailer movements and their unloaded return trips.

These Town Network movements however do not simply disappear. They transfer to either Dungog - if product is sourced from Martin's Creek, or Stroud - sourced from Newcastle quarries.

5.4.2 Increases in Traffic Flow during the Mine's Operational Life

The tables below list the vehicle movements generated by the Rocky Hill Mine during the operational life of the mine including the construction and rehabilitation phases. Movements for two scenarios are shown:

1. Quarry products sourced from east of Gloucester using the Bucketts Way East Access, the Gloucester Town Road Network and Bucketts Way South to the rail load out facility.
2. Quarry products sourced from South of Gloucester using the Bucketts Way South Access

Figures represent arrival at the mine entrance or rail load out facility entrance. The vehicle definitions and sources of numbers are also shown.

DEFINITIONS/DATA SOURCE

1. Cement Truck: Based on GRL estimates for quantities during construction.
2. Semi trailer: (6 axel.) Based on assumption. Years 2-14, 5 per week 52 weeks per year for delivery materials, replacement machinery etc. Years 15-16, removal of incoming material from year 1.
3. Over size semi trailer: (size unknown.) Years 2-14 incoming earth moving machinery as outlined by GRL. Assumption of 3 trucks per machine for large equipment. Years 15-16 removal of machinery and infrastructure
4. Dog and Tipper: (Bogie Tipper plus quad dog trailer 4 axel. 32 Tonne Load) Based on GRL quantities required for coal loader)
5. Semi Trailer Fuel Tanker: (50000 litre) Based on GRL usage quantities 144 million litres over life of mine proportioned based on GRL production estimates
6. Contractor's vehicles over 2t: Based on assumption. Contractors responsible for the maintenance of machinery, rail, infrastructure etc. Years 2-14, 2 trips per day, 5 days per week for 52 week per year. Years 15-16 removal of mine infrastructure at half the rate of installation. 17% daily trip to town from mine site.
7. Small Mine Vehicle: Based on assumption GRL owned, locally based. Years 2-14, 12 trips per day, 6 days per week, 52 weeks per year. Years 15-16, 5 trips per day, 5 days per week, 52 weeks per year.
8. Contractor's vehicles under 2t: Based on assumption. Contractors responsible for the maintenance of machinery, rail, infrastructure, mine visitors etc. Years 2-14, 2 trips per day, 5 days per week for 52 week per year. Years 15-16 removal of mine infrastructure at half the rate of installation. 66% daily trip to town from mine site.

GRL employee figures given as 100 during construction then reaching a maximum of 150 at maximum production then reducing to 50 during rehabilitation.

Figures used:
Year 1 0-90 progressively during the year - 80 in private vehicles 10 in mine vehicles.
Years 2-4 115, 103 using private vehicles12 using mine vehicles.
Years 5-14 150, 138 using private vehicles 12 using mine vehicles.
Years 15-16, 50, 45 using private vehicles 5 using mine vehicles.

9. Drive In Drive Out Employee South: Based on assumption. Years 2-4. 31 Local + 36 DIDO south + 36 DIDO east. Years 5-14. 40 Local + 49 DIDO south + 49 DIDO east. Years 15-16. 20 Local + 15 DIDO south + 10 DIDO east.
10. Drive In Drive Out Employee East: Based on assumption. Years 2-4. 31 Local + 36 DIDO south + 36 DIDO east. Years 5-14. 40 Local + 49 DIDO south + 49 DIDO east. Years 15-16. 20 Local + 15 DIDO south + 10 DIDO east.
11. Local Employee: Based on assumption. Years 2-4. 31 Local + 36 DIDO south + 36 DIDO east. Years 5-14. 40 Local + 49 DIDO south + 49 DIDO east. Years 15-16. 20 Local + 15 DIDO south + 10 DIDO east

Table 5.7 Vehicle Movements during the Mines Operational Life: Scenario A

VEHICLE MOVEMENTS Years 1-16 (inbound-towards mine) Scenario A						
Vehicle Type	Operational Year					Total
	1	2-4	5-8	9-14	15-16	
Cement truck [1] Loaded	270					270
Cement truck Empty	270					270
Semi trailer [2] Loaded	297	780	1040	1560	297	3974
Semi trailer Empty	297	780	1040	1560	297	3974
Oversize Semi trailer Loaded [3]	59	15	12	9	79	174
Oversize Semi Trailer Empty	59	15	12	9	79	174
Dog and Trailer [4] Loaded	1700					1700
	1700					1700
Dog and Trailer Empty	1700					1700
	1700					1700
Semi Trailer Fuel Tanker [5] Inbound	120	475	871	1294	120	2880
	120					120
Semi Trailer Fuel Tanker Outbound	120	475	871	1294	1200	2880
	120					120
Contractors Vehicle Over 2t [6] inbound	3119	1560	2080	3120	3119	12998
	516	257	343	515	516	2147
Contractors Vehicle Over 2t outbound	3119	1560	2080	3120	3119	12998
	516	257	343	515	516	2147
Small mine vehicle [7] Inbound	2376	11232	14976	22464	2600	53648
Small mine vehicle Outbound	2376	11232	14976	22464	2600	53648
Contractors Vehicle under 2t [8] inbound	1538	1560	2080	3120	1538	9836
	1022	1030	1373	2059	1022	6506
Contractors Vehicle under 2t outbound	1538	1566	2080	3120	1538	9836
	1022	1030	1373	2059	1022	6506
Di Do Employee south [9] Vehicle Inbound	6435	22464	40768	61152	6240	137059
Di Do Employee south Vehicle outbound	6435	22464	40768	61152	6240	137059
Di Do Employee east Vehicle [10] inbound	2145	22464	40768	61152	4160	130689
Di Do Employee east Vehicle Outbound	2145	22464	40768	61152	4160	130689
Local Employee [11] Outbound	2919	19344	33280	49920	8320	113783
Local Employee Inbound	2919	19344	33280	49920	8320	113783

Table 5.8 Vehicle Movement Summary during Mines Operational Life: Scenario A

Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck Loaded					270
Cement truck Empty					270
Semi trailer Loaded	3974				
Semi trailer Empty		3974			
Oversize Semi trailer Loaded	174				
Oversize Semi Trailer Empty		174			
Dog and Tipper Loaded			1700		1700
Dog and Tipper Empty				1700	1700
Semi Trailer Fuel Tanker Inbound	2880				120
Semi Trailer Fuel Tanker Outbound		2880			120
Contractors Vehicle Over 2t inbound	12998				2147
Contractors Vehicle Over 2t outbound		12998			2147
Total Heavy	**20038**	**20038**	**1700**	**1700**	**8474**
Small mine vehicle Inbound					53648
Small mine vehicle Outbound					53648
Contractors Vehicle Under 2t inbound	9836				6506
Contractors Vehicle Under 2t outbound		9836			6506
Contractors Vehicle Over 2t inbound	12998				2147
Contractors Vehicle Over 2t outbound		12998			2147
Di Do Employee south Vehicle Inbound	137059				
Di Do Employee south Vehicle outbound		137059			
Di Do Employee east Vehicle inbound			130689		
Di Do Employee east Vehicle Outbound				130689	
Local Employee Inbound					113783
Local Employee Outbound					113783
Total under 2t	**159893**	**159893**	**130689**	**130689**	**352168**
Total all vehicles	**179931**	**179931**	**132389**	**132389**	**360642**

Table 5.9 Vehicle Movements during the Mines Operational Life: Scenario B

VEHICLE MOVEMENTS Years 1-16 (inbound-towards mine) Scenario B						
Vehicle Type	Operational Year					Total
	1	2-4	5-8	9-14	15-16	
Cement truck [1] Loaded	270					270
Cement truck Empty	270					270
Semi trailer [2] Loaded	297	780	1040	1560	297	3974
Semi trailer Empty	297	780	1040	1560	297	3974
Oversize Semi trailer Loaded [3]	59	15	12	9	79	174
Oversize Semi Trailer Empty	59	15	12	9	79	174
Dog and Trailer [4] Loaded	1700					1700
Dog and Trailer Empty	1700					1700
Semi Trailer Fuel Tanker [5] Inbound	120	475	871	1294	120	2880
	120					120
Semi Trailer Fuel Tanker Outbound	120	475	871	1294	1200	2880
	120					120
Contractors Vehicle Over 2t [6] inbound	3119	1560	2080	3120	3119	12998
	516	257	343	515	516	2147
Contractors Vehicle Over 2t outbound	3119	1560	2080	3120	3119	12998
	516	257	343	515	516	2147
Small mine vehicle [7] Inbound	2376	11232	14976	22464	2600	53648
Small mine vehicle Outbound	2376	11232	14976	22464	2600	53648
Contractors Vehicle under 2t [8] inbound	1538	1560	2080	3120	1538	9836
	1022	1030	1373	2059	1022	6506
Contractors Vehicle under 2t outbound	1538	1566	2080	3120	1538	9836
	1022	1030	1373	2059	1022	6506
Di Do Employee south [9] Vehicle Inbound	6435	22464	40768	61152	6240	137059
Di Do Employee south Vehicle outbound	6435	22464	40768	61152	6240	137059
Di Do Employee east Vehicle [10] inbound	2145	22464	40768	61152	4160	130689
Di Do Employee east Vehicle Outbound	2145	22464	40768	61152	4160	130689
Local Employee [11] Outbound	2919	19344	33280	49920	8320	113783
Local Employee Inbound	2919	19344	33280	49920	8320	113783

Table 5.10 Vehicle Movement Summary during Mines Operational Life: Scenario B

Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck Loaded					270
Cement truck Empty					270
Semi trailer Loaded	3974				
Semi trailer Empty		3974			
Oversize Semi trailer Loaded	174				
Oversize Semi Trailer Empty		174			
Dog and Tipper Loaded	1700				
Dog and Tipper Empty		1700			
Semi Trailer Fuel Tanker Inbound	2880				120
Semi Trailer Fuel Tanker Outbound		2880			120
Contractors Vehicle Over 2t inbound	12998				2147
Contractors Vehicle Over 2t outbound		12998			2147
Total Heavy	**21738**	**21738**			**5074**
Small mine vehicle Inbound					53648
Small mine vehicle Outbound					53648
Contractors Vehicle Under 2t inbound	9836				6506
Contractors Vehicle Under 2t outbound		9836			6506
Contractors Vehicle Over 2t inbound	12998				2147
Contractors Vehicle Over 2t outbound		12998			2147
Di Do Employee south Vehicle Inbound	137059				
Di Do Employee south Vehicle outbound		137059			
Di Do Employee east Vehicle inbound			130689		
Di Do Employee east Vehicle Outbound				130689	
Local Employee Inbound					113783
Local Employee Outbound					113783
Total under 2t	**159893**	**159893**	**130689**	**130689**	**352168**
Total all vehicles	**181631**	**181631**	**130689**	**130689**	**357242**

The sourcing area for quarry products during the construction phase is again reflected in the operational life figures.

Regardless of where the quarry materials are sourced Bucketts Way South will bear the burden of the majority of heavy vehicle traffic and it is the heavy vehicle traffic that damages the road pavement most.

This damage is reflected as a cost to the Councils responsible for the maintenance and rehabilitation, as required, of this vital public access route.

The total vehicle movements reflect a different, less quantifiable, cost to the community by way of delays, noise and safety issues.

GRIP believes there are significant road safety issues due to the nature and volume of vehicles. However it is currently beyond GRIP's resources to undertake this analysis. We hope that the PAC will formally seek neutral RTA and/or University analysis of this vital factor affecting the community and its services.

5.5 The Impact of Heavy Vehicle Movements due to the Rocky Hill Mine

Section 5.3.2 shows the proposed design criteria developed by the Snowy Mountains Engineering Corporation and the 1980 design criteria to which the Bucketts Way was constructed and to which has been maintained and repaired. The Impact of heavy vehicles on roads is best described by the use of Equivalent Standard Axles (ESA's) where one ESA = 8.2 tonnes or 80kn.

The following tables outline the impact of the heavy vehicle movements in terms of ESA's. The ESA values used for each vehicle type are:

VEHICLE TYPE	AXLES	ESA
Cement Truck	3	3.67
Semi Trailer	6	8.025
Oversize Semi Trailer	Unknown*	8.025*
Bogie Tipper & Quad Dog Trailer	7	8.01
Contractors Vehicle over 2t	3-5**	2.0*

*Oversize vehicles can be of any number of axle configurations all of which combined with the large weight the carry have an effect substantially higher than that used.
**Average figure as specific vehicles would vary.

The ESAs relate directly to the traffic movements and as such fall in two distinct patterns, the operational phase and the construction phase, during the lifetime of the mine. The two scenarios of easterly or southerly sourcing of quarry materials also continue their impact.

5.5.1 ESA Impacts during the Construction Phase

The tables below show the ESA figures in total and summary for both Scenarios.

Table 5.11 ESA Values for Heavy Vehicle Movements: Scenario A from the East

ESA's VEHICLES OVE 2t YEAR 1 (inbound-towards mine) Scenario A													
Vehicle type	Month												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Cement truck Loaded [1]				257	440	294							991
Semi trailer Loaded [2]					56	642	642	401	601	120			2462
Oversize Semi trailer Loaded [3]	32		73		97	194	40		40				476
Dog and Tipper Loaded [4]		80	320	2643	2643	2643	2643	2643					13615
		80	320	2643	2643	2643	2643	2643					13615
Semi Trailer Fuel Tanker Inbound [5]	32	32	32	64	64	64	96	96	96	128	128	128	963
	32	32	32	64	64	64	96	96	96	128	128	128	963
Contractors Vehicle Over 2t inbound [6]	144	144	290	580	726	726	726	726	726	580	580	290	6238
	24	24	48	96	120	120	120	120	120	96	96	48	1032
Totals		**80**	**320**	**2643**	**2643**	**2643**	**2643**	**2643**					**13615**
	208	**176**	**395**	**644**	**943**	**1626**	**1504**	**1223**	**1463**	**828**	**708**	**418**	**10139**
	56	**136**	**400**	**3060**	**3267**	**3121**	**2859**	**2859**	**216**	**224**	**224**	**176**	**16601**

Table 5.12 ESA Value Summary for Heavy Vehicle Movements: Scenario A from the East

SUMMARY ESAs YEAR 1 (inbound towards mine) Scenario A					
Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck Loaded					991
Semi trailer Loaded	2462				
Oversize Semi trailer Loaded	476				
Dog and Tipper Loaded			13615		13615
Semi Trailer Fuel Tanker Inbound	963				963
Contractors Vehicle Over 2t inbound	6238				1032
Total	**10139**		**13615**		**16601**

Colour Coding Used:

Gloucester Town		Bucketts Way		Bucketts Way East	

Table 5.13 ESA Values for Heavy Vehicle Movements: Scenario B from the South

ESAs VEHICLES OVE 2t YEAR 1 (inbound-towards mine) Scenario B													
Vehicle type	Month												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Cement truck Loaded [1]				257	440	294							991
Semi trailer Loaded [2]					56	642	642	401	601	120			2462
Oversize Semi trailer Loaded [3]	32		73		97	194	40		40				476
Dog and Tipper Loaded [4]		80	320	2643	2643	2643	2643	2643					13615
Semi Trailer Fuel Tanker Inbound [5]	32	32	32	64	64	64	96	96	96	128	128	128	963
	32	32	32	64	64	64	96	96	96	128	128	128	963
Contractors Vehicle Over 2t inbound [6]	144	144	290	580	726	726	726	726	726	580	580	290	6238
	24	24	48	96	120	120	120	120	120	96	96	48	1032
Totals													
	208	**256**	**715**	**3287**	**3586**	**4269**	**4147**	**2866**	**1463**	**828**	**708**	**418**	**23754**
	56	**56**	**80**	**417**	**624**	**478**	**216**	**216**	**216**	**224**	**224**	**176**	**2986**

Table 5.14 ESA Value Summary for Heavy Vehicle Movements: Scenario B from the South

SUMMARY ESAs YEAR 1 (inbound towards mine) Scenario B					
Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck Loaded					991
Semi trailer Loaded	2462				
Oversize Semi trailer Loaded	476				
Dog and Tipper Loaded	13615				
Semi Trailer Fuel Tanker Inbound	963				963
Contractors Vehicle Over 2t inbound	6238				1032
Total	**23754**				**2986**

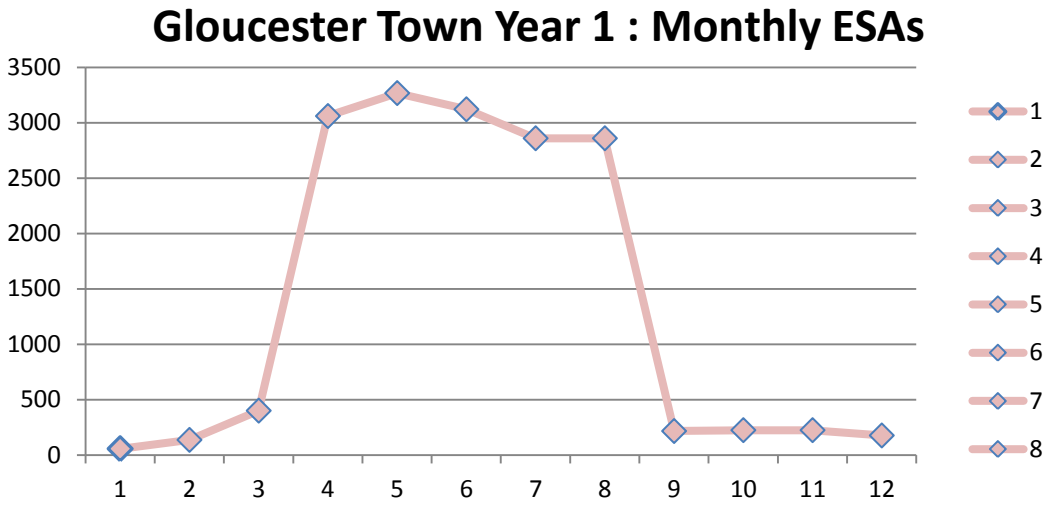
Colour Coding Used:

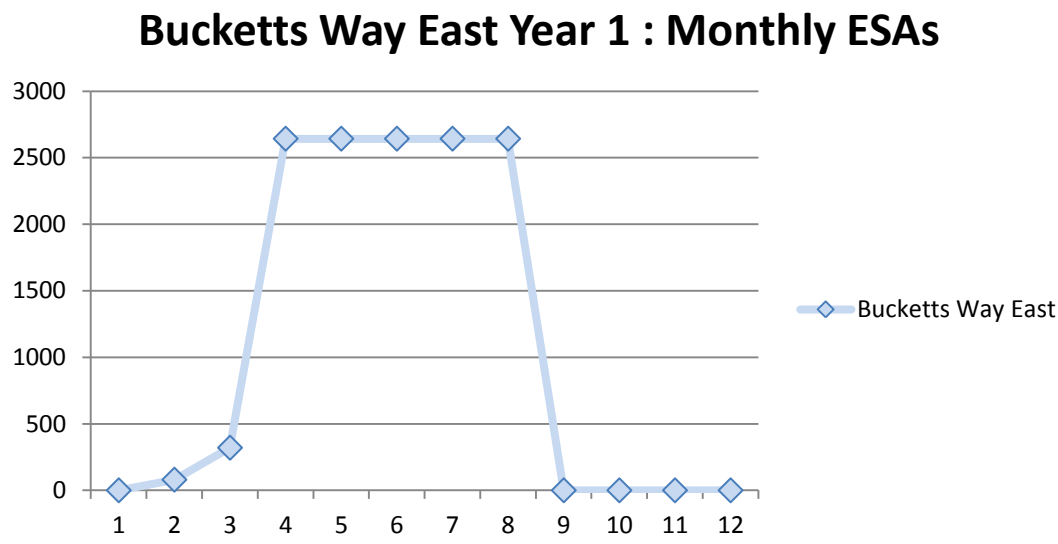
Gloucester Town		Bucketts Way		Bucketts Way East	

Two things become obvious from the above information:

- The major impact during the construction phase will come from the Bogie Tipper and Quad Dog Trailer combination carrying quarry materials required for the rail load out facility. The source location chosen for these materials by GRL will have therefore have a major influence on the degree of damage done to the respective access routes.
- The majority of the impact from heavy vehicles occurs during months 4-9 (6 months total). The graphs below represent this impact for both scenarios.

Figure 5.5 **Six month ESA Peak during Construction Phase: Scenario A**





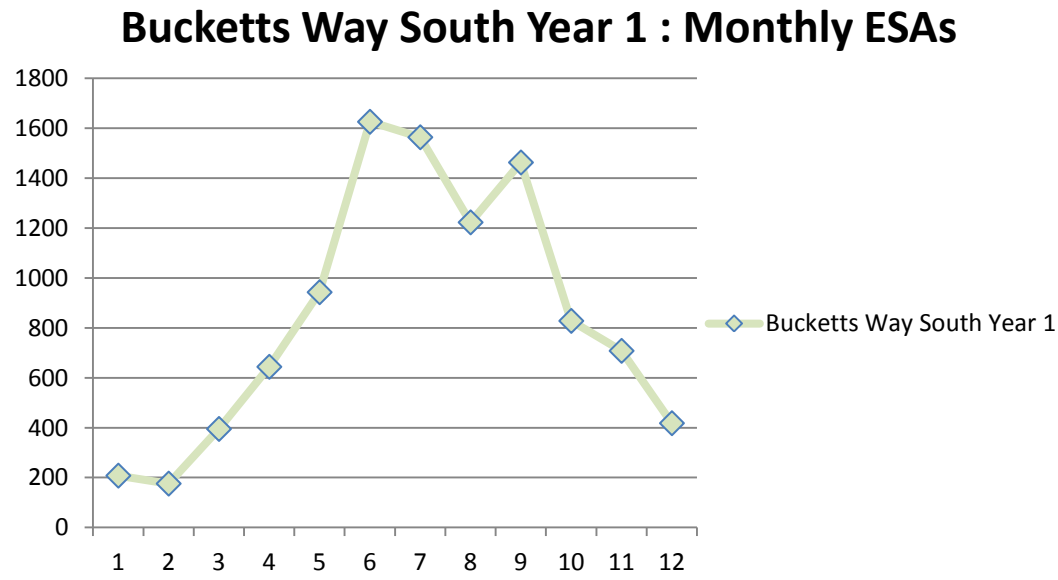
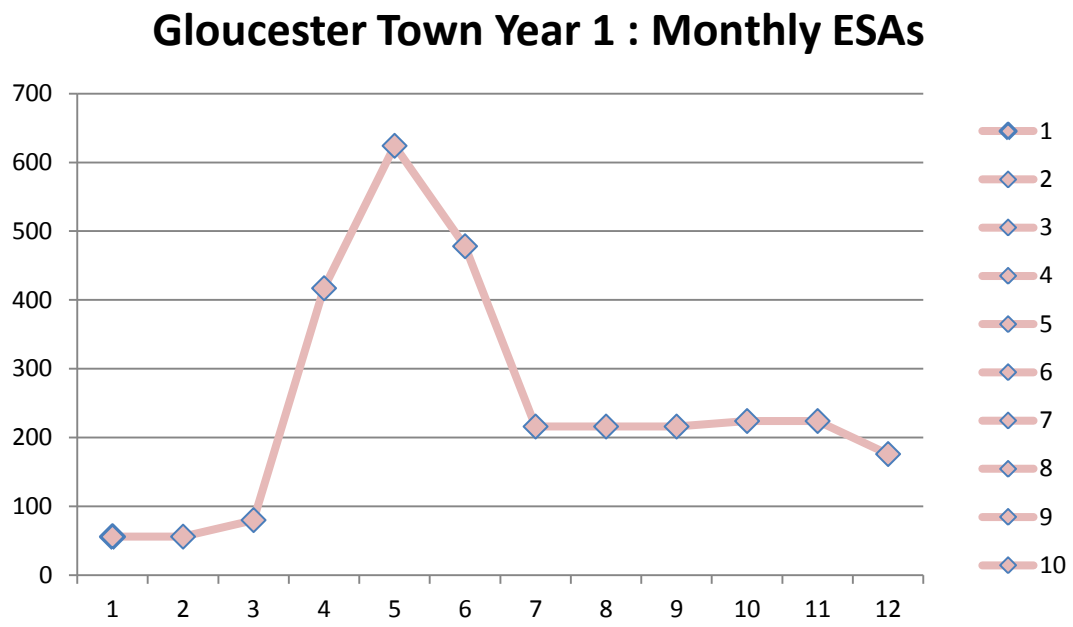
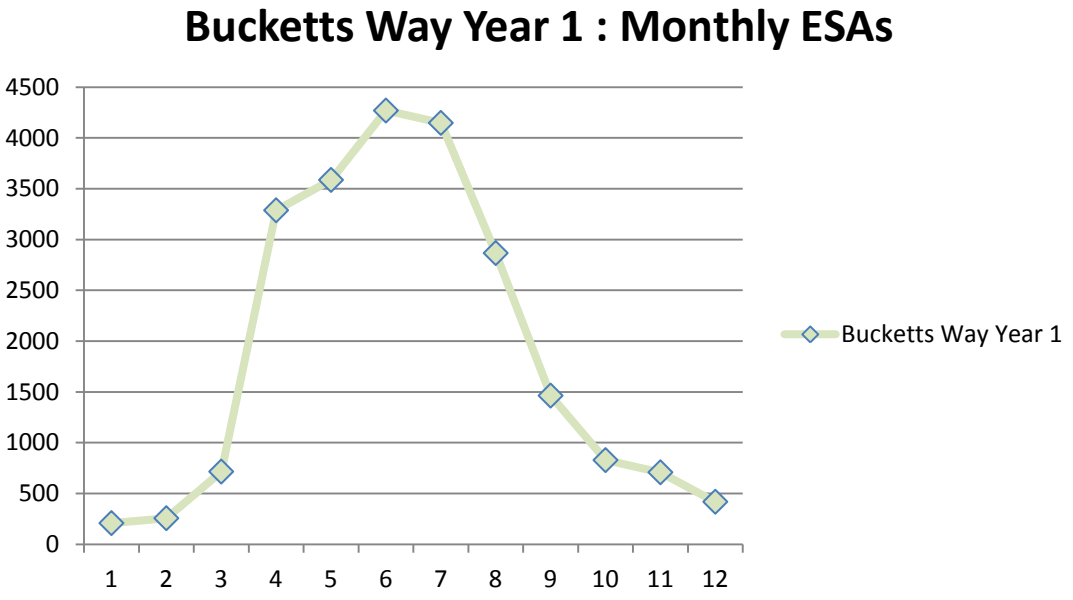


Figure 5.6 **Six month ESA Peak during Construction Phase: Scenario B**





5.5.2 ESA Impacts during the Operational Life of the Mine

The tables below show the ESA figures in total and summary for both Scenarios.

Table 5.15 ESA Values for Heavy Vehicle Movements: Scenario A from the East

ESAs VEHICLES OVE 2t (inbound-towards mine) Scenario A						
Vehicle Type	Operational Year					Total
	1	2-4	5-8	9-14	15-16	
Cement truck [1] Loaded	991					991
Semi trailer [2] Loaded	2462	6260	8346	12519	2383	31970
Oversize Semi trailer Loaded [3]	473	120	96	72	634	1395
Dog and Trailer [4] Loaded	13615					13615
	13615					13615
Semi Trailer Fuel Tanker [5] Inbound	963	3812	6990	10384	963	23112
	963					963
Contractors Vehicle Over 2t [6] inbound	6238	3120	4160	6240	6238	25996
	1032	514	686	1030	1032	4294
Totals	**13615**					**13615**
	10136	**13312**	**19592**	**29215**	**10218**	**82473**
	16601	**514**	**686**	**1030**	**1032**	**30081**
Annual Average	**13615**					
	10136	**3328**	**4898**	**4869**	**5109**	
	16601	**171**	**171**	**171**	**516**	

Table 5.16 ESA Value Summary for Heavy Vehicle Movements: Scenario A from the East

SUMMARY ESAs (inbound towards mine) Scenario A					
Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck Loaded					991
Semi trailer Loaded	31970				
Oversize Semi trailer Loaded	1395				
Dog and Tipper Loaded			13615		13615
Semi Trailer Fuel Tanker Inbound	23112				963
Contractors Vehicle Over 2t inbound	25996				4294
Total	**82473**		**13615**		**19863**

Gloucester Town		Bucketts Way		Bucketts Way East	

Table 5.17 ESA Values for Heavy Vehicle Movements: Scenario B from the South

ESAs VEHICLES OVE 2t YEARS 1-16 (inbound-towards mine) Scenario B						
Vehicle Type	Operational Year					Total
	1	2-4	5-8	9-14	15-16	
Cement truck [1] Loaded	991					991
Semi trailer [2] Loaded	2462	6260	8346	12519	2383	31970
Oversize Semi trailer Loaded [3]	473	120	96	72	634	1395
Dog and Trailer [4] Loaded	13615					13615
Semi Trailer Fuel Tanker [5] Inbound	963	3812	6990	10384	963	23112
	963					963
Contractors Vehicle Over 2t [6] inbound	6238	3120	4160	6240	6238	25996
	1032	514	686	1030	1032	4294
Totals						
	23751	**13312**	**19592**	**29215**	**10218**	**96088**
	2986	**514**	**686**	**1030**	**1032**	**6248**
Annual Average						
	23751	**3328**	**4898**	**4869**	**5109**	
	2986	**171**	**171**	**171**	**516**	

Table 5.16 ESA Value Summary for Heavy Vehicle Movements: Scenario B from the South

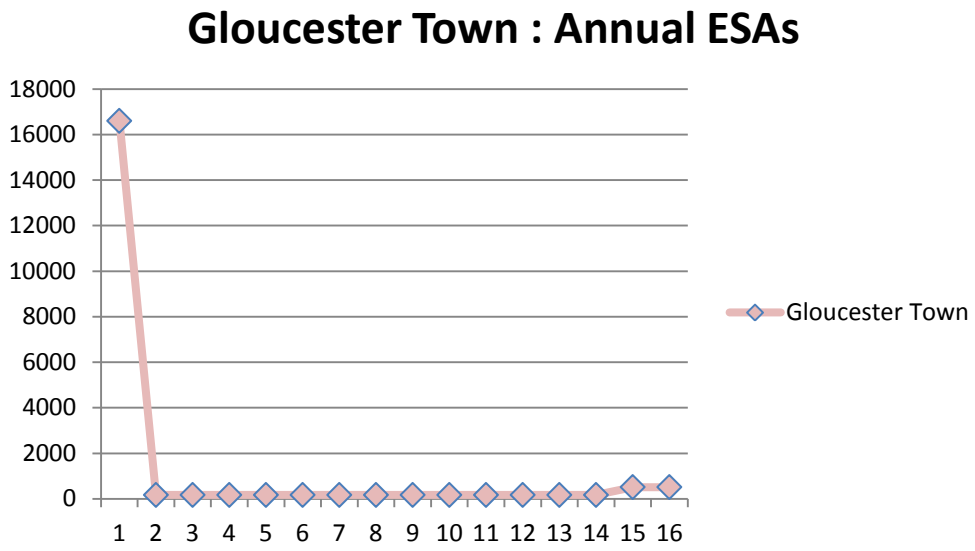
SUMMARY ESAs YEARS 1-16 (inbound towards mine) Scenario B					
Vehicle type	Affected Roads				
	Bucketts Way		Bucketts Way East		Gloucester Township
	Inbound	Outbound	Inbound	Outbound	
Cement truck Loaded					991
Semi trailer Loaded	31970				
Oversize Semi trailer Loaded	1395				
Dog and Tipper Loaded	13615				
Semi Trailer Fuel Tanker Inbound	23112				963
Contractors Vehicle Over 2t inbound	25996				4294
Total	**96088**				**6248**

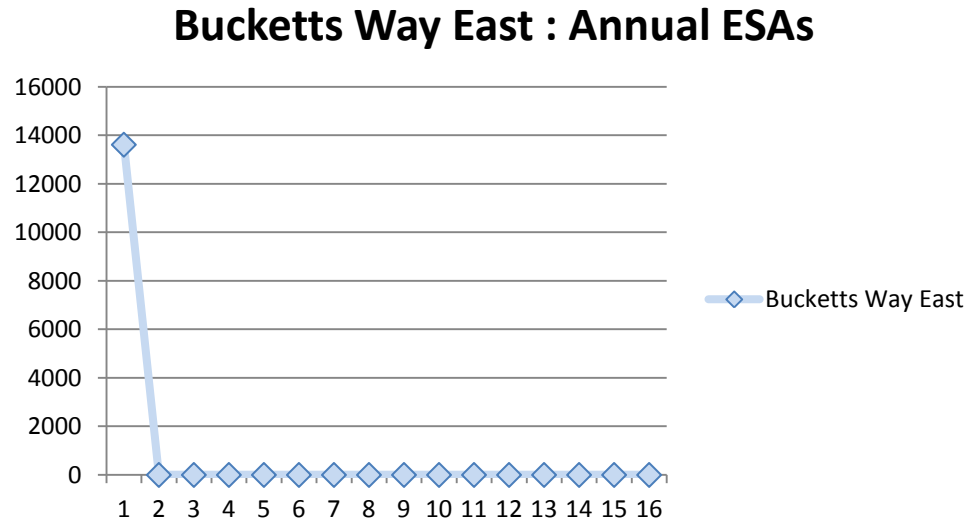
Colour Coding Used:

Gloucester Town		Bucketts Way		Bucketts Way East	

The tables above again indicate the large impact the source location of quarry materials has and the significant impact of the construction phase.

Figure 5.7 ESA Peaks over the Operational Life of the Mine: Scenario A





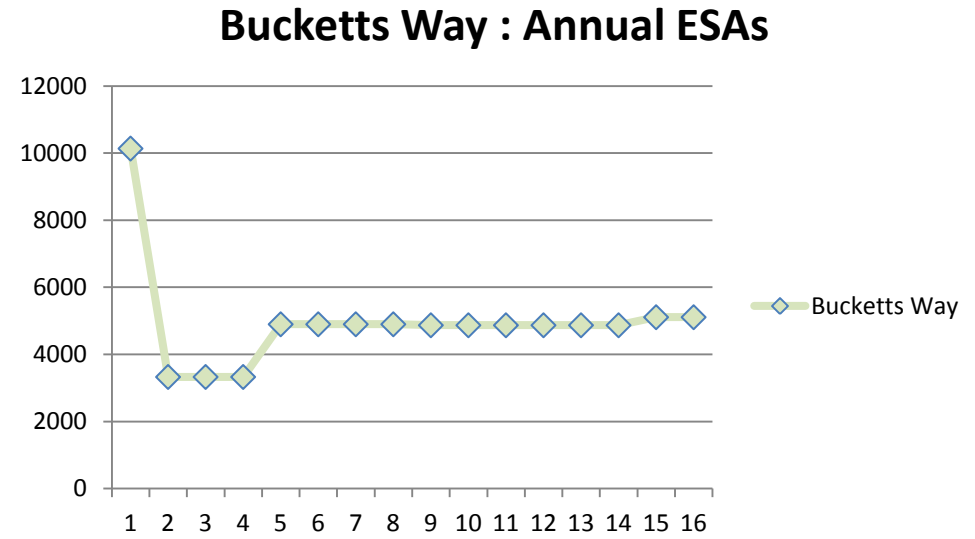
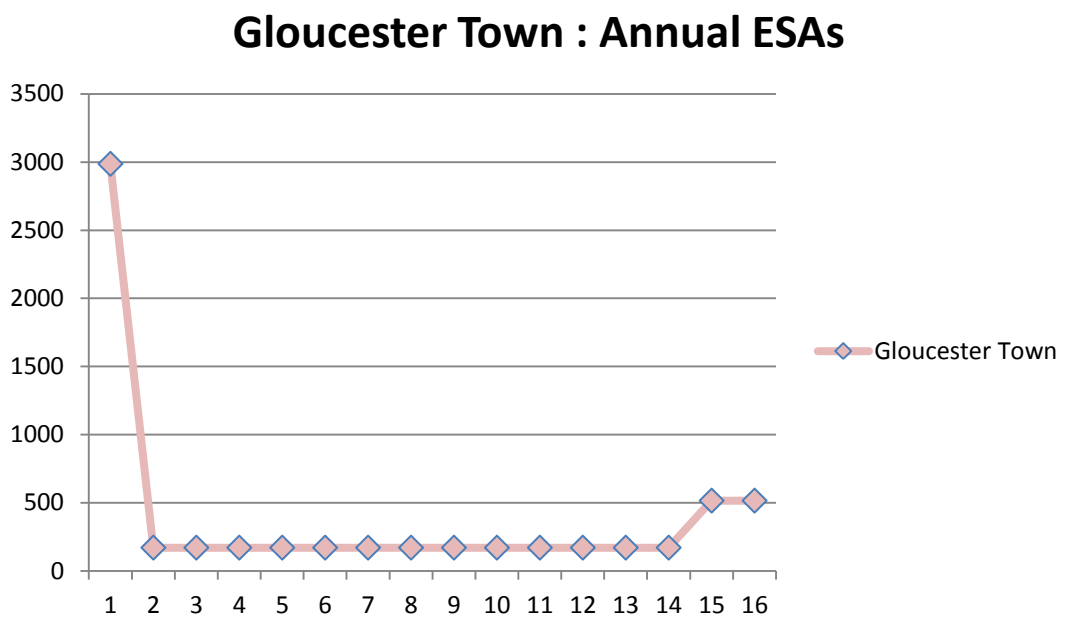
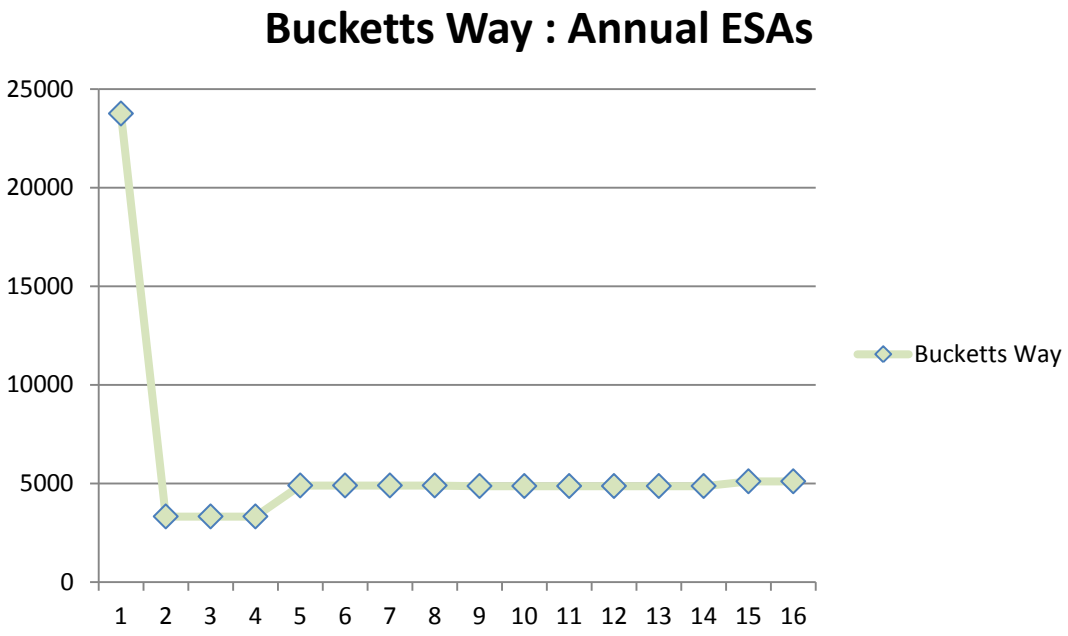


Figure 5.8 ESA Peaks over the Operational Life of the Mine: Scenario B





5.5.3 The Effect of Heavy Vehicle Movements on Access Routes.

As shown previously (section 5.3.2), The Bucketts Way maintenance has been carried out in accordance with the original design criteria of 1.41E+05 equating to 7050 ESA's annually.

In April 2011, for a period of 14 working days, Gloucester Shire Council placed "vehicle classification" monitors at the Shire boundaries on Bucketts Way South and in 2012 similarly at the Shire boundary on Bucketts Way East.

Figure 5.9 Vehicle Movements by Classification Bucketts Way South 2011

	VEHICLE CLASS												
	LIGHT UNDER 2t			HEAVY									
YEAR	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
2011	875	18030	992	1253	330	88	47	105	104	467	160	8	22459
AADT	63	1288	71	90	24	6	3	8	7	33	11	1	1604
AADT LANE	31	644	35	45	12	3	2	4	4	17	6	0	802

	RIGID	SEMI-TRAILER	TIPPER & QUAD DOG	
AADT LANE	60	26	6	
ESA	2	8.025	8.01	
ESA's PER DAY	119	207	48	TOTAL
ESA'S PER YEAR (5x52=260)	31033	53876	12496	97405

Figure 5.10 Vehicle Movements by Classification Bucketts Way East 2012

	VEHICLE CLASS												
	LIGHT UNDER 2t			HEAVY									
YEAR	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
2012	440	11650	546	1175	158	35	47	28	57	153	47	3	14339
AADT	31	832	39	84	11	3	3	2	4	11	3	0	1024
AADT LANE	16	416	20	42	6	1	2	1	2	5	2	0	512

	RIGID	SEMI-TRAILER	TIPPER & QUAD DOG	
AADT LANE	49	10	2	
ESA	2	8.025	8.01	
ESA's PER DAY	98	82	14	TOTAL
ESA'S PER YEAR (5x52=260)	25406	21238	3719	50362

The above figures show clearly that the Bucketts Way, both South and East, is currently under tremendous stress with current ESA annual totals far exceeding design criteria – resulting in continuously unsatisfactory and unsafe road conditions. The original design speed limit of 100kph has been reduced to a maximum of 90kph with many kilometres at 80kph reflecting the safety concerns of authorities due to the road's condition.

5.5.4 The Impact due to the Rocky Hill Mine on Access Routes

The figures below outline the increase in ESAs due to the Rocky Hill Mine. The source location again plays a significant part and scenarios A (from the east) and B (from the south are both shown. Divisions have been made to show the impact during construction, the 6 month peak period during construction and the 16 year total.

Figure 5.11 Rocky Hill Mine's Impact on Bucketts Way South: Scenario A

	VEHICLE CLASS												
	LIGHT UNDER 2t			HEAVY									
YEAR	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**TOTAL**
2011	875	18030	992	1253	330	88	47	105	104	467	160	8	22459
AADT	63	1288	71	90	24	6	3	8	7	33	11	1	1604
AADT LANE	31	644	35	45	12	3	2	4	4	17	6	0	802

	RIGID	SEMI-TRAILER	TIPPER & QUAD DOG	
AADT LANE	60	26	6	
ESA	2	8.025	8.01	
ESA's PER DAY	119	207	48	**TOTAL**
ESA'S PER YEAR (5x52=260)	31033	53876	12496	97405
ESA's 6 MONTH PERIOD				48702
ESA'S 16 YEARS				1558478

ROCKY HILL YEAR 1 (TOTAL)	10139	Total ESA'S	107544
% of ESA's during construction year due to Rocky Hill mine			9.43%
ROCKY HIL YEAR 1 (MONTHS 4-9)	7406	Total ESA's	56108
% of ESA's for 6 month peak period during construction due to Rocky Hill Mine			13.20%
ROCKY HILL TOTAL (16 YEARS)	82473	Total ESA's	1640951
% of ESA's for 16 year operational life due to Rocky Hill Mine			5.03%

Figure 5.12 Rocky Hill Mine's Impact on Bucketts Way East: Scenario A

	VEHICLE CLASS												
	LIGHT UNDER 2t			HEAVY									
YEAR	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**TOTAL**
2012	440	11650	546	1175	158	35	47	28	57	153	47	3	14339
AADT	31	832	39	84	11	3	3	2	4	11	3	0	1024
AADT LANE	16	416	20	42	6	1	2	1	2	5	2	0	512

	RIGID	SEMI-TRAILER	TIPPER & QUAD DOG	
AADT LANE	49	10	2	
ESA	2	8.025	8.01	
ESA's PER DAY	98	82	14	**TOTAL**
ESA'S PER YEAR (5x52=260)	25406	21238	3719	50362
ESA's 6 MONTH PERIOD				25181
ESA'S 16 YEARS				805796

ROCKY HILL YEAR 1 (TOTAL)	13215	Total ESA'S	63577
% of ESA's during construction year due to Rocky Hill mine			20.79%
ROCKY HIL YEAR 1 (MONTHS 4-9)	13215	Total ESA's	38396
% of ESA's for 6 month peak period during construction due to Rocky Hill Mine			34.42%
ROCKY HILL TOTAL (16 YEARS)	13215	Total ESA's	819011
% of ESA's for 16 year operational life due to Rocky Hill Mine			1.61%

Figure 5.13 Rocky Hill Mine's Impact on Bucketts Way South: Scenario B

	VEHICLE CLASS												
	LIGHT UNDER 2t			HEAVY									
YEAR	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
2011	875	18030	992	1253	330	88	47	105	104	467	160	8	22459
AADT	63	1288	71	90	24	6	3	8	7	33	11	1	1604
AADT LANE	31	644	35	45	12	3	2	4	4	17	6	0	802

	RIGID	SEMI-TRAILER	TIPPER & QUAD DOG	
AADT LANE	60	26	6	
ESA	2	8.025	8.01	
ESA's PER DAY	119	207	48	
ESA'S PER YEAR (5x52=260)	31033	53876	12496	97405
ESA's 6 MONTH PERIOD				48702
ESA'S 16 YEARS				1558478

ROCKY HILL YEAR 1 (TOTAL)	23754	Total ESA'S	121159
% of ESA's during construction year due to Rocky Hill mine			19.61%
ROCKY HIL YEAR 1 (MONTHS 4-9)	19618	Total ESA's	68320
% of ESA's for 6 month peak period during construction due to Rocky Hill Mine			28.71%
ROCKY HILL TOTAL (16 YEARS)	96088	Total ESA's	1654566
% of ESA's for 16 year operational life due to Rocky Hill Mine			5.81%

There would be no impact on Bucketts Way East under Scenario B

The impact on the access routes to the Rocky Hill Mine will be profound.

During the first year:

Scenario A, with quarry products being sourced from the east:

- **Bucketts Way East / Avalon Rd & Wallanbah Rd** would experience an increase of 34.42% in the peak 6 months with 20.79% over the construction year.

- **Bucketts Way South to Stroud Hill Road** would experience an increase of 13.2% in the peak 6 month period and 9.43% over the construction year.
  Depending on the source of quarry products from either Martins Creek or Newcastle

- **Bucketts Way South to Twelve Mile Creek** would continue to feel the same impact.

- **Stroud Hill Rd / Clarence Town Road & Dungog Road** would experience an even greater percentage increase in heavy vehicle traffic than Bucketts Way South.

Scenario B, with quarry products being sourced from the south:

- **Bucketts Way South** would experience an increase of 28.71% in the peak 6 month period and 19.61% over the construction year.

  Depending on the source of quarry products from either Martins Creek or Newcastle

- **Bucketts Way South to Twelve Mile Creek** would continue to feel the same impact.

- **Stroud Hill Rd / Clarence Town Road & Dungog Road** would experience an even greater percentage increase in heavy vehicle traffic than Bucketts Way South.

This traffic increase, on a road that is already operating at far beyond its design criteria and 13 years past the end of its design life, will totally destroy the carriageway - causing an insurmountable problem for the three affected Councils currently struggling to maintain what is already, in large parts, a patchwork road surface.

- **Bucketts Way East / Avalon Rd & Wallanbah Rd** would require total and immediate replacement.

- **Bucketts Way South to Stroud Hill Road** would require total and immediate replacement.

- **Bucketts Way South to Twelve Mile Creek** would require total and immediate replacement if quarry products were sourced from Newcastle.

- **Stroud Hill Road / Clarence Town Road and Dungog Road** may require partial replacement but at least substantial repair. The road's lifespan will be significantly reduced requiring earlier than planned replacement.

5.5.5 The Impact of the Rocky Hill Mine on Town Road Networks

As with the impact on the access roads the impact on the local road networks of Gloucester, Dungog (if quarry products are sourced from Martins Creek) and Stroud will be substantial.

The figures in the table below have been extracted from those in section 5.5.1 and 5.5.2

Table 5.16 Increased ESA loads on Town Network Roads

Town	**Gloucester**		**Dungog***		**Stroud***	
Scenario	**A**	**B**	**A**	**B**	**A**	**B**
Year1	16601	2986	n/a	13615*	2986	16601*
6 months	15382	6167	n/a	13615*	2167	15382*
Lifetime	19863	6248	n/a	13615*	6248	19863*

*only one Scenario B will be relevant depending on quarry products source of supply

The Town Road Networks of both Gloucester and Dungog have design criteria simply cannot absorb the 6 month peak figure. Both heavy vehicle routes in Gloucester require fully laden heavy vehicles to come to a halt at the bottom of steep hills prior to turning or passing through a roundabout. Heavy vehicles pass through several intersections before proceeding along Dungog's wide main commercial road through a roundabout and then over a level crossing of the main north railway line.

The Stroud Town Road network, as part of Bucketts Way South, has the same design criteria and will suffer the same effect.

Damage to pavement will require constant repair by the three affected Councils and a significant shortening of the road network's lifespan.

There is no provision to meet either of these massive costs.

5.6 The Financial Cost of Road Infrastructure Damage.

The access roads, as discussed previously, are classified "regional roads" and as such Councils receive a subsidy for maintenance based on the average vehicle numbers for the lengths of roads within a shire. At $8340 per km, per annum currently this is insufficient to cover the minor potholing and heavy patching required to maintain a level of vehicle safety.

The only solution to the ongoing issue of exceeded design life of the manifestly inadequate Bucketts Way is to replace it with one with the necessary design standard. This design standard would apply to the entire length of Bucketts Way South from Twelve Mile Creek to Gloucester and then Bucketts Way East to Krambach. (*The remaining portion of Bucketts Way East from Krambach to Taree, whilst also in dire need of upgrading, would be done so to a different set of criteria and does not form part of this submission*). Avalon Road and Wallanbah Road from Krambach to Nabiac also require the same upgrade - as it now acts as the link between Bucketts Way East and the Pacific Highway.

Each of the two quarry source scenarios covers different lengths and parts of Bucketts Way. The table below outlines the affected road lengths.

Table 5.17 Access and Town Road Network Lengths

	Scenario A[1]		Scenario B[2]	
Heavy Vehicle Route			Option 1[3]	Option 2[4]
Wallanbah Road	5.2			
Avalon Road	6.7			
Bucketts Way East	35.6			
Gloucester Town Route A[5]	6.15			
Gloucester Town Route B[6]	7.25			
Bucketts Way South Fairbairns Rd to Rail Load Out Facility	1.7			
Bucketts Way South Rail Load Out Facility to Stroud Hill Road			38.8	38.8
Stroud Hill Road			23	
Dungog Town			2.45	
Clarence town Road			6.4	
Dungog Road			18.4	
Bucketts Way South Stroud Hill Road to Stroud Town				3.1
Stroud Town				3.7
Bucketts Way South Stroud Town to Pacific Highway				30.4
Access Road Total	**51.6**		86.6	72.3
Town Road Total	**6.15**	**7.25**	2.45	3.7

[1] Quarry products sourced from the East
[2] Quarry products sourced from the South
[3] Quarry products sourced from Martin's Creek, Dungog
[4] Quarry products sourced from Newcastle area
[5] Gloucester heavy vehicle route eastern side of town to Fairbairns Road, Forbesdale
[6] Gloucester heavy vehicle route western side of town to Fairbairns Road, Forbesdale

Obviously a project of this massive scale cannot be completed overnight but must be completed as a matter of absolute priority.

Two separate costing areas exist.

- **Repair and Maintenance of the existing carriageway by Local Councils**:
  - During the design and tender processes for the re-construction.
  - Ongoing on the existing carriage way during its re-construction.
- **Re-construction of the Bucketts Way by outside contractors.**
  - Engineering design and tendering for construction.
  - Construction of the roadway.

This will be expensive and will take several years at best to complete. However, it must must be started immediately to avoid massive degradation of road and safety conditions.

5.6.1 The Cost of Repairs and Maintenance.

The current amount of $8340 per km for Regional Roads is totally inadequate. Gloucester Shire's cost of maintaining smaller local roads is currently $5000 per km with a rehabilitation cost of $25,000 per km totalling $30,000 per km to maintain the standard required for a good local road. The current figure for Bucketts Way should be increased to at least this figure, particularly during the Rocky Hill mine's construction year.

Table 5.18 Access and Town Road Network Repair and Maintenance Costs Year 1

	Scenario A[1]		Scenario B[2]	
Heavy Vehicle Route			**Option 1[3]**	**Option 2[4]**
Wallanbah Road	$156000			
Avalon Road	$201000			
Bucketts Way East	$1068,000			
Gloucester Town Route A[5]	$184500			
Gloucester Town Route B[6]	$217500			
Bucketts Way South Fairbairns Rd to Rail Load Out Facility	$51000			
Bucketts Way South Rail Load Out Facility to Stroud Hill Road			$1164000	$1164000
Stroud Hill Road			$690000	
Dungog Town			$73500	
Clarence town Road			$192000	
Dungog Road			$552000	
Bucketts Way South Stroud Hill Road to Stroud Town				$93000
Stroud Town				$111000
Bucketts Way South Stroud Town to Pacific Highway				$912000
Access Road Total	**$1548000**		**$2598000**	**$2169000**
Town Road Total	**$184500**	**$217500**	**$73500**	**$111000**
Total Cost	**$1,732,500**	**$1,765,500**	**$2,671,500**	**$2,280,000**

[1] Quarry products sourced from the East
[2] Quarry products sourced from the South
[3] Quarry products sourced from Martin's Creek, Dungog
[4] Quarry products sourced from Newcastle area
[5] Gloucester heavy vehicle route eastern side of town to Fairbairns Road, Forbesdale
[6] Gloucester heavy vehicle route western side of town to Fairbairns Road, Forbesdale

The cost of maintaining Town Road Networks varies considerably depending on the Town.

- Gloucester: Route A: 4.8km Bucketts Way South plus 1.35km local roads.
  Route B: 4.8km Bucketts Way South plus 2.45km local roads.
- Stroud: (Berkeley & Cowper Streets) Bucketts Way South
- Dungog Local roads.

The local roads are of a lesser design criteria and as such would require repairs and maintenance at a lower cost. However, the frequency of repair would be far higher and therefore the $30000 per km access road figure would essentially be the same.

Table 5.19 Access and Town Road Network Repair and Maintenance Costs 16year Lifetime

	Scenario A[1]		**Scenario B[2]**	
Heavy Vehicle Route			**Option 1[3]**	**Option 2[4]**
Wallanbah Road	$2.496M			
Avalon Road	$3.216M			
Bucketts Way East	$17.088M			
Gloucester Town Route A[5]	$2.952M			
Gloucester Town Route B[6]	$3.480M			
Bucketts Way South Fairbairns Rd to Rail Load Out Facility	$0.816M			
Bucketts Way South Rail Load Out Facility to Stroud Hill Road			$18.624M	$18.624M
Stroud Hill Road			$11.040M	
Dungog Town			$1.176M	
Clarence town Road			$3.072M	
Dungog Road			$8.832M	
Bucketts Way South Stroud Hill Road to Stroud Town				$1.488M
Stroud Town				$1.776M
Bucketts Way South Stroud Town to Pacific Highway				$14.592M
Access Road Total	**$24.768M**		**$41.568M**	**$34.704M**
Town Road Total	**$2.952M**	**$3.480M**	**$1.176M**	**$1.776M**
Total Cost	**$27.720M**	**$28.248M**	**$42.744M**	**$36.480M**

[1] Quarry products sourced from the East
[2] Quarry products sourced from the South
[3] Quarry products sourced from Martin's Creek, Dungog
[4] Quarry products sourced from Newcastle area
[5] Gloucester heavy vehicle route eastern side of town to Fairbairns Road, Forbesdale
[6] Gloucester heavy vehicle route western side of town to Fairbairns Road, Forbesdale

5.6.2 The Cost of Reconstruction

The Snowy Mountains Engineering Corporations design in 2012 whilst prepared for the Gloucester Council to cover that part of Bucketts Way that fell within the Shire it is equally applicable for the entire length including the Avalon Road – Wallanbah link to the Pacific Highway at the eastern end. The estimated cost of reconstruction to this design was $1.3M per km.

This figure does not include the significant cost of the roads design, engineering and the tendering process that would be required prior to construction.

Table 5.20 Bucketts Way Road Distances and Reconstruction Cost

Bucketts Way South	**Distance**	**Cost**
Pacific Highway (Twelve Mile Ck) to Stroud	30.4	$39.52M
Stroud Town	3.7	$4.81M
Stroud to Jacks Road	43.5	$56.55M
Jacks Road to Gloucester	2.5	$3.25M
Sub Total	**80.1**	**$104.13M**
Bucketts Way East		
Gloucester to Krambach	35.6	$46.28M
Avalon Road	6.7	$8.71M
Wallanbah Road to Pacific Highway, Nabiac	5.2	$$6.76M
Sub Total	**47.5**	**$61.75M**
Total	**127.6**	**$165.88M**

5.6.3 The impact of the Rocky Hill Mine on the Financial Cost

The Bucketts Way will require repairs, maintenance and reconstruction to new design criteria regardless of the Rocky Hill Mine. The impact of the Rocky Hill Mine will be to cause extensive damage to the existing carriage way during the construction year forcing the reconstruction to become an early and absolute necessity.

The impact due to the Rocky Hill Mine in financial terms could be related to the amount of usage attributable to the mine.

Table 5.21 Financial Impact on Repairs and Maintenance due to the Rocky Hill Mine

	Year 1		Lifetime (inc Year 1)		Year 2-16	
	Route A	**Route B**	**Route A**	**Route B**	**Route A**	**Route B**
Scenario A	$1.733M	$1.766M	$27.72M	$28.248M	$25.987M	$26.482M
Rock Hill Mine %	20.79%		1.61%		0.33%	
$ Impact	$0.360M	$0.367M	$0.446M	$0.455M	$0.086M	$0.088M
Average	**$0.364M**		**$0.451M**		**$0.087M**	
	Option 1	**Option 2**	**Option 1**	**Option 2**	**Option 1**	**Option 2**
Scenario B	$2.672M	$2.280M	$42.744M	$36.480M	$40.072M	$34.200M
Rock Hill Mine %	19.61%		5.81%		4.89%	
$ Impact	$0.524M	$0.447M	$2.483M	$2.120M	$1.959M	$1.673M
Average	**$0.486M**		**$2.302M**		**$1.816M**	
Total	**$0.85M**		**$2.753M**		**$1.903M**	

The reconstruction of Bucketts Way would occur after the construction year allowing at least one year for the design process to occur and as such the impact of the mine could be considered to have no impact during that year. Scenario A basically only exists during the construction phase and could similarly be discounted. Scenario B's two option would cease to be separate and traffic coming from the south would be assumed to travel the full length of Bucketts Way South.

However it could be equally considered that the need for reconstruction of Bucketts Way East, Avalon Rd and Wallanbah Rd was as a direct result of the construction year when up to 34.42% of all Heavy Vehicles in the peak six months of construction were carrying quarry products to the mine. Whilst no reconstruction would occur during the first year the design phase itself has a very significant cost and to this point has not been included in the figures. This can be estimated simply by using a 16 year construction period and the same percentages as for repairs and maintenance.

Table 5.22 Financial Impact on Reconstruction due to the Rocky Hill Mine

	Year 1	Lifetime (inc Year 1)	Year 2-16
	Bucketts Way East	**Avalon Road**	**Wallanbah Road**
Scenario A	$3.859M	$61.750M	$57.891M
Rock Hill Mine %	20.79%	1.61%	0.33%
$ Impact	**$0.802M**	**$0.994M**	**$0.192M**
Scenario B	$6.508M	$104.130M	$97.622M
Rock Hill Mine %	19.61%	5.81%	4.89%
$ Impact	**$1.276M**	**$6.050M**	**$4.774M**
Total	**$2.078M**	**$7.044M**	**$4.966M**

The total "Financial Impact" of the Rocky Hill Mine is a combination of:

- The proportionate costs of repairs and maintenance for the 16 year period in which the mine intends to operate.
- The proportionate cost of reconstruction to a suitable design standard with reconstruction to begin as soon as practical and to be completed within the 16 year period of the mines operation.
- The proportionate cost of design, engineering and tendering process that would occur during the construction year

Table 5.23 The Total Financial Impact due to the Rocky Hill Mine

	Year 1	Lifetime (inc Year 1)	Years 2-16
Repairs and Maintenance	**$0.850M**	**$2.753M**	**$1.903M**
Reconstruction	**$2.078M**	**$7.044M**	**$4.966M**
Total	**$2.928M**	**$9.797M**	**$6.869M**

The Roads and Maritime Services Authority will need to provide this funding as it would be impossible for local Councils to do so.

They would also be required to provide the increase in funding from the totally inadequate $8,340 per km maintenance subsidy to the $30,000 per km used in these calculations to enable safety standards on the Bucketts Way and other access roads to be maintained. This would require additional funding of **$1.029M** in the construction year and **$16.461M** over the mine's lifetime for Bucketts Way East and **$1.735M** in the construction year and **$27.760M** over the mine's lifetime for Bucketts Way South. This increased funding necessity will have occurred primarily due to the devastation of The Bucketts Way during the Rocky Hill Mine construction year

In the construction year, the NSW Govt will need to urgently contribute $5.692M – as a direct result of the Rocky Hill mine.

Over the mine's operational life, the NSW Govt will need to contribute $54.017M - as a direct result of the Rocky Hill mine.

The figures and costs shown are representative of Heavy Vehicles loaded and inbound to the Rocky Hill mine site or the Rocky Hill Mine Rail Load-Out Facility. They do not include the return journeys nor do they include the hundreds of thousands of journeys, inbound and outbound, made by vehicles under 2t to the two destinations.

6 The Economic Impact of the Rocky Hill Mine

6.1 General

In Section 6.4.3 of the EIS GRL outlined the economic impacts locally, to the State and nationally from the operation of the Rocky Hill Mine during the 14 years of its operation and 2 year rehabilitation.

The economic impact is reflected in dollar terms as an amount of expenditure by employees or by GRL on materials and services to be used by the Rocky Hill mine.

6.2 Local Economic Impact

The economic impact on the local community derives from two sources.

- The employment opportunity at the Rocky Hill Mine and the expenditure by employees in the local community.
- The local purchase of various commodities used by the mine during the life of the mine.

6.2.1 Economic Impact due to Employment.

The economic impact locally from the Rocky Hill Mine is based on:

- The number of employment opportunities at the mine
- The wages those employees are paid
- The portion for those wages to be spent in Gloucester
- The ratio of local residents, 'weekly local employees'* and drive-in-drive-out employees at the mine and their relevant spending habits

**employees who spend their "on shift" time in Gloucester and travel home elsewhere on their "weekends".*

The impact, stated by GRL in the EIS, will be the 'creation' of 100 jobs during the construction phase increasing to 150 jobs at peak production and the decreasing to 50 during the final 2 years of rehabilitation.

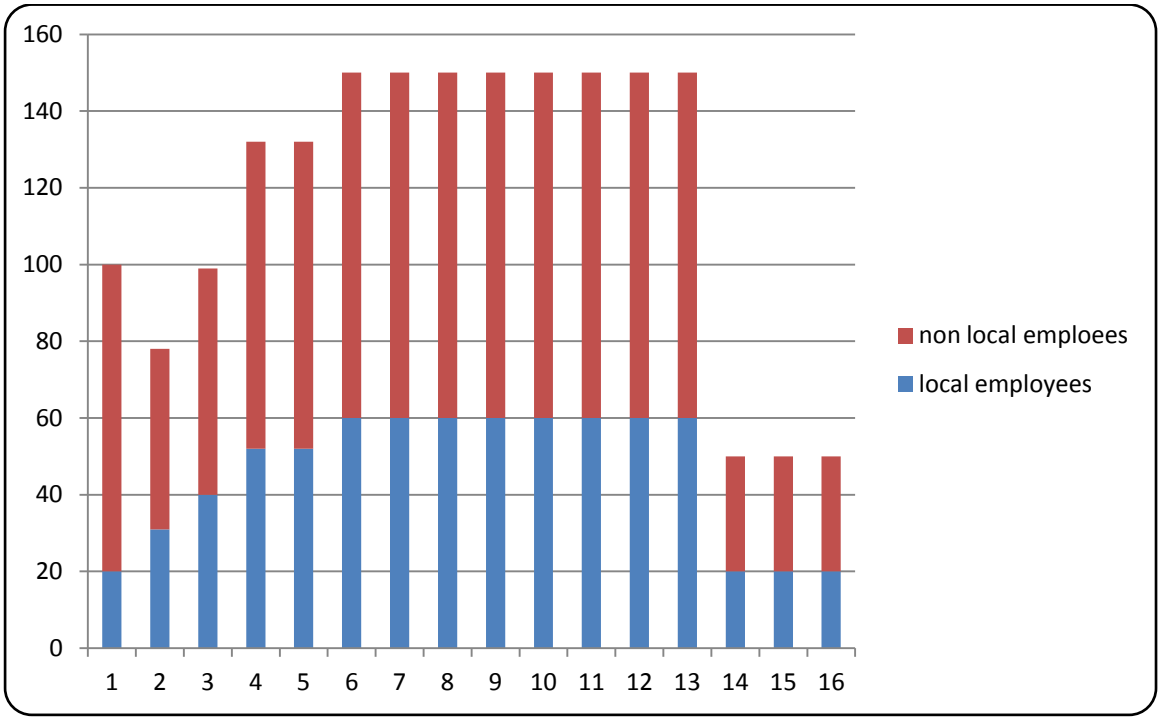
GRL has stated that it will employ locals at the Rocky Hill Mine. How many employment opportunities exist for perhaps unqualified locals as opposed to the qualified imported workforce has remained unanswered. The outcome of recruitment is a key element in determining the number of local employees – upon which is based some aspects of employee expenditure.

The Yancoal owned Stratford Coal Mine adjacent to the proposed Rocky hill Mine site also has the same local employment objective. After many years of operation the local area component of their workforce is 40% with the remaining 60% travelling in an out of the area on a daily basis spending no more time in the area than is necessary. It would be highly unlikely therefore that the Rocky Hill Mine would hold a greater appeal or have more

employment opportunities suitable to locals than does the Stratford Mine. It is possible that the pool of local workers might shift and rebalance between the two mines. GRL might therefore claim some local recruitment but that might well be at the expense of Yancoal's local employee numbers.

The chart below represents the spread of employees outlined by GRL. The maximum coal output years 6-13 of 2 million tonnes with 150 employees represents 13,333 tonne per employee. This ratio has been assumed for the remaining years. The construction year is highly likely to require a greater number of employees with "set up" skills rather than "production skills". Employees with these skills will be imported with the local to non-local employee ratio of 40% becoming evident in the subsequent years.

Figure 6.1 Local and Non Local Employment



Over the 16 year life of the mine 735 local employee years or an average of 46 employees per year and 1156 non-local employee years or an average of 72 employees per year would be employed giving an average total of 118 employees annually.

GRL use a different methodology and arrive of at an average employee number of 123. This higher average is due to not including the final 2 rehabilitation years in the calculation.

The Economic Impact due to Employment according to GRL is as follows:

Gloucester Resources Limited estimates that between $3.08 million and $8.00 million annually would be spent directly in the local economy by employees of the mine.

These figures are based on the calculation of the average wage during the operational phase of the mine and proportioned for the different employee categories:

Local employee	**$115,200 PA to be spent locally**
Weekly local employee	**$28,800 PA to be spent locally**
Drive in – drive out employee	**$14,40PA to be spent locally**

THESE FIGURES ARE IMPLAUSIBLY HIGH
THEY DEFY LOGIC AND APPEAR TO BE DELIBERATELY INFLATED

The Figures used by Gloucester Resources Limited to determine the amount spent locally are flawed:

- **The method by which they calculate the amount to be spent makes no allowance for the payment of income tax.**
- **The assumption that 80% of a local mine employee's income would be spent in Gloucester is ludicrous. This in turn influences Key insights calculated 20% and 1% spending of the other employee categories as defined below.**

1. Allowance for Income Tax

Key Insights in Section 6.4.1 of the SCSC "**Economic Impact during Operational Phase-Wage Spending"** estimate 123 employees on average will work at the mine during the operational phase. They will earn on average $144,000 PA each totalling $17,670 million dollars annually.

Key Insights present three scenarios to calculate the effect on the local economy based on the percentages of local, weekly and DIDO employees and the proportion of their income they will spend in Gloucester (80% local, 20% weekly, 1% DIDO). The scenarios: **High** (61 local, 31 weekly and 31 DIDO); **Moderate** (31 local, 46 weekly and 46 DIDO); **Low** (13 local, 55 weekly and 55 DIDO).

Key Insight's resulting calculations give a high figure of $7.996 million dollars, a medium figure of $4.926 million dollars and a low figure of $3.083 million dollars to be spent locally annually.

These figures are erroneous - calculated on the employee's pre-tax income of $144,000 PA

Income tax and Medicare levy payable on $144,000 is $43,387 leaving a disposable income of $100,613. **Thus local expenditure from employee wages should be calculated on the employee's after tax income of $100,613PA.** This figure itself is a very generous figure in that it does not take into account tax incentives for superannuation.

2. 80% of a local mine employee's income would be spent in Gloucester.

It would be impossible for people currently employed in any capacity in Gloucester to spend 80% of their after tax income in Gloucester. Gloucester is a small country town supplying the day by day needs of the community by the way of supermarkets and pharmacy, hairdressers and beauticians. Entertainment is restricted to the town's 3 registered clubs, 2 hotels and several cafes. Household appliances and furniture are available with one small outlet for each. Fuel is also available.

The Australian Bureau of Statistics conducted a survey in 2009-2010 on Household Expenditure.

The salary figure of $144,000 PA places the employee in the highest gross income quintile of $112,320 PA assuming they are the sole provider to the family's income. Families in this quintile earn over $112,320PA contain on average 3.4 persons and spend 55% or $61776 of their gross family income on goods and services.

There is no reason to assume that mine employees and their families would be substantially different from the Australian average for their income range. Therefore they would spend 55% of $144,000 or $79,200 annually on the items listed in the table below. The categories and % rates have been extracted from the ABS survey and the dollar equivalents calculated.

Table 6.1 Goods and Services as a % of Total Expenditure

Good or Service	% of Expenditure	$
Transport[1]	17.3	$13,702
Current Housing cost[2]	17.1	$13,543
Food and non-alcoholic beverages	14.3	$11,326
Recreation	14.0	$11,088
Miscellaneous goods and services[3]	10.8	$8,554
Household Furnishings	5.2	$4,118
Medical Care and Health Expenses[4]	5.2	$4,118
Household services and operation[5]	4.6	$3,643
Clothing and footwear	3.9	$3,089
Alcoholic Beverages	2.7	$2,138
Domestic fuel and power	2.0	$1,584
Personal Care	1.9	$1,505
Tobacco products	1.0	$792

[1] Includes purchase and all running costs for motor vehicles plus taxis and public transport.
[2] Includes mortgage and insurance payments
[3] Includes all telephone, internet and television accounts
[4] Includes Medical, Dental and Pharmacy services
[5] Includes domestic help and gardening services

The table below outlines the probable expenditure in Gloucester.

Table 6.2 % Ratio of possible Expenditure locally and Other

Good or Service	% of Expenditure		% of Expenditure	
	Gloucester	Other	Gloucester	Other
Transport[1]	20	80	$2740	$10,962
Current Housing cost[2]	0	100	$0	$13543
Food and non-alcoholic beverages	90	10	$10,193	$1,133
Recreation	20	80	$2,218	$8,870
Miscellaneous goods and services[3]	0	100	$0	$8,554
Household Furnishings	10	90	$412	$3,706
Medical Care and Health Expenses[4]	50	50	$2,059	$2,059
Household services and operation[5]	100	0	$3,643	$0
Clothing and footwear	5	95	$155	$2,934
Alcoholic Beverages	90	10	$1,924	$214
Domestic fuel and power	0	100	$0	$1,584
Personal Care	90	10	$1,355	$150
Tobacco products	90	10	$713	$79
Total			**$25,412**	**$53,788**

Key insights (the GRL employed Socio-Economic Consultants) state that "Given the nature of the retail offer in Gloucester it is assumed that 80% of income received by local residents employed at the mine, new and existing, would be spent locally". The table above presents the hard facts: about 25% is able to be spent locally.
However the table does not indicate that due to personal preference, convenience or necessity many residents of Gloucester spend at least a portion of their income outside of Gloucester. Those with higher incomes are more inclined to travel and to spend in larger centres where greater choice is offered. Mining families should be expected to make similar choices.

The figures show that for a mine employee on the average gross salary of $144,000PA who clears $100613 after tax and who spends in the same pattern as the rest of Australia would result in:

A maximum of $25,412PA being spent locally.
NOT the 80% of $144,000 or $115,200PA used by GRL

The figure used by GRL for non-local employees makes the assumption that 50% of the non-local employees would reside in Gloucester on a weekly basis travelling home on their "weekends" only and 50% being drive-in-drive-out. Again, based on the after tax income of $100,613PA the 'weekly local', according to GRL, was calculated to spend $20,122PA and the DIDO $1006.

The 'weekly local' would have need of accommodation and pay for food and entertainment for the days that they were 'Gloucester locals'. Accommodation would most likely take the form of a shared house or low cost weekly caravan rental.

The average cost of rental of a three bedroom house in Gloucester is $250 per week or $13,000PA. Sharing with 2 others would mean an expense of $4,333PA each for accommodation. That would leave $15,789PA for food, needs and entertainment.

The employee that would benefit most from this type of "weekly local" living is one who works long shifts including night work. These are typically the operators and trades involved with mine excavation and extraction operations (average of 94 at the Rocky Hill mine).

These employees typically work a rotating 10.5 hour night and day shift comprising 14 days in a 28 day period. Allowing that they also have 4 weeks annual leave, the 'at Gloucester' accommodation period per year for 'weekly locals' is 24 weeks per year. Food and entertainment expenditure locally then would be

$15789 divided by 24 weeks = $658 per week for food and entertainment only

For many Australians, including many in Gloucester, this figure represents more than they have to spend weekly let alone on food and entertainment only.

This expenditure would be a challenge. The nature, time and duration of rotating shifts would mean that many meals are provided for the employee. Restrictions on blood alcohol levels for operators would restrict heavy drinking at local hotels and clubs. At a worst case scenario an employee who eats a main meal at the bistro with a couple of beers, breakfast at a cafe and a paper to read and a couple of sandwiches and a drink for lunch would spend $25 + $15 + $15 = $55/day or $385 per week. If the worker chose to provide these at home, the cost would be about $15 + $10 + $5 = $30/day or $210 per week. Assuming the employee chooses a combination of both 'eat-in' and eat-out', expenditure is likely to be about $298 per week.

The total annual local expenditure for a "weekly local" would be $4333 for accommodation plus $7152 for food and entertainment.

Total Local Expenditure by 'weekly locals' therefore is approximately $11485
NOT the 20% of $144,000 or $28800 claimed by GRL

The daily drive-in-drive-out employee may well spend the 1% as indicated but again this should be 1% of after tax income.

This equals $1006. NOT 1% of $144000 or $1440 claimed by GRL

The other part of the equation on determining the value of local expenditure is the assumed percentage of local, weekly local and daily DIDO employees.

Stratford mine has attained a consistent 40% local employee ratio across its range of operations. The 60% of non-locals primarily represents DIDO employees who travel daily, often car pooling, from the beachside locations of Forster, Tuncurry and Nelson Bay or from the suburbs of Maitland and Newcastle.

Road distances are (sourced using www.whereis.com.au)

• Forster / Tuncurry	84km	1h 10min
• Nelsons Bay	111km	1hr 20min
• Raymond Terrace	84km	1hr
• Maitland	102km	1hr 15min
• Newcastle (Hamilton)	109km	1hr 15min

These roads have varying speed limits and road conditions but can all be travelled comfortably within the posted speed restrictions. The travel times shown are estimates obtained from local transport companies who use these roads on a daily basis and locals who travel the routes regularly.

Many thousands of people within the Sydney metropolitan area experience daily travel times of a similar nature getting to work in peak hour traffic. They typically work a 7hr shift 5 days per week 48 weeks a year, 480 journeys per year.

It is entirely reasonable to assume that mine employees will make the DIDO choice - to travel out of peak hour on uncrowded roads for just 24 weeks per year worth of 10.5hr shifts or a total of 336 journeys.

A quick check of local real estate agents will reveal very few leased properties with sharing "weekly local" tenants. A check of the local caravan park, motels, hotels and other accommodation facilities will yield the same result.

It is unreasonable to assume non-local employees of the Rocky Hill mine will behave in any way different from their Stratford Mine counterparts 5km away. Thus, based on the Stratford Mine experience the following would appear far more likely percentages of employee type:

- **High 40% local 12% weekly 48% dido**
- **Moderate 25% local 15% weekly 60% dido**
- **Low 10% local 18% weekly 72% dido**

A far more accurate assessment therefore of the impact on the local community during the operational phase of the Rocky Hill mine's operation would be based on:

- An after tax income of $100,613PA
- An average workforce over the construction, operation and rehabilitation phase of 118 employees.
- An annual expenditure based on ABS figures of 55% of Gross Income $79200 and percentages as indicated in table 6.1:
    - $25,412 per local employee
    - $11,485 per weekly employee
    - $1006 per drive-in-drive-out employee
- Employee Type scenarios of:
    - High 40% local(47), 12% weekly(14), 48% dido(47)
    - Moderate 25% local(30), 15% weekly(18), 60% dido(70)
    - Low 10% local(19) 18% weekly(21), 72% dido(78)

RESULT:

Table 6.3 Local Annual Economic Impacts of Mine Employee Expenditure

$'million	High Scenario	Moderate Scenario	Low Scenario
Local Expenditure	**$1.402**	**$1.040**	**$0.802**

The impact of employee expenditure accruing to NSW has similarly been overstated by using the pre taxation income of employees.

The table below outlines the economic impact of the mine employees after tax income of $100,613PA. It is highly unlikely that this expenditure would occur solely within NSW. Payments to mortgage providers, national insurance companies, holidays within other states and overseas would all see a reduction in the NSW expenditure of approximately 10% or $10,000 annually this then being attributed nationally

Table 6.4 Total Annual Economic Impacts of Mine Employee Expenditure

$'000	**High Scenario**	**Moderate Scenario**	**Low Scenario**
	Direct	**Direct**	**Direct**
Local	**$1.402**	**$1.040**	**$0.802**
NSW	$9.29	$9.652	$9.89
Total NSW	**$10.692**	**$10.692**	**$10.692**
National	$1.18	$1.18	$1.18
Australia	**$11.872**	**$11.872**	**$11.872**

6.2.2 Economic Impact due to spending on Materials and Equipment.

The construction phase, the operational phase and the rehabilitation phase of the mine all have very different characteristics unlike the employment impact locally as previously discussed which has basically only a number quantifier.

6.2.2.1 The Construction Phase

In Table 17 Section 14 of the SCSC Key Insights estimate 10% of the total infrastructure works cost to be spent locally. With reference to the concepts in the EIS outlining the layout and design of the mine operational area and the rail load-out facility, there are only two services that the local area could provide of any significance:

- Premixed concrete for footings, piers and building slabs.
- Quarry products required for the rail load-out facility.

The detail in the EIS indicates that approximately 1700 cubic metres of concrete would be required. This could be sourced from the local Gloucester Batching plant operated by Holcim. The cost of the concrete based on $250 per cubic metre would be $425,000.

The requirement for quarry products covers Structural Fill 12000m^3, rail ballast 15000m^3 and track capping 4800m^3. There may be local quarries capable of supplying the structural fill depending on what quality would be required. If we assume 60m^3$ including delivery by local contractors this would total $720,000.

Thus, Total Local Supply $1,145,000

The closest quarry able to supply rail ballast and track capping is the Martin's Creek quarry operated by Metromix located almost 80km away at Dungog and as such would not be considered local.

Key Insights state a local spend figure of $9,300,000 leaving a shortfall of $8,155,000.

There is no guarantee that this expenditure will occur as the structural fill is on an "if needed basis" and a commercial decision will be made by GRL on the successful tender for the supply of concrete.

If the expenditure does occur there is no assurance that it will be local.

Table 6.5 Apportionment of Capital / Construction Expenditure ($'millions)

	Local	NSW	Total NSW	Australia	Total Australia	Imported
Infrastructure	**$1.145**	$73.255	$74.4	$16.7	$91.1	$1.9
Equipment	**0**	$14.63	$14.63	$34.13	$48.75	$48.75
Total	**$1.145**	$87.885	$89.03	$50.83	$139.86	$50.65

6.2.2.2 The Operational Phase

In Table 24 section 14 of the SCSC key insight lists the annual average spend values on materials and services to be purchased during the operational phase. Four of the listed categories have local components:

- Consumables $5,800,000
- Fuel $1,400,000
- Administration / Other $4,000,000
- Equipment Hire $1,000,000

This gives a prospective annual local expenditure of $12,200,000

Expenditure on Consumables:

The consumables that make up the amount as listed are undefined in the information provided by Key Insights in their analysis. In Gloucester there are two Hardware Stores, two Rural Stores, two Engineering supply / workshops and two Specialist Tyre outlets that could supply products broadly described as 'mine consumables'.

It would be reasonable to assume that the requirement for consumables at the Yancoal owned Stratford mine, being of similar size, design and output would be similar to that what would be required at the Rocky Hill mine.

Estimates would suggest that consumable spending from these outlets would be:

- Hardware Stores $10,000PA
- Rural Stores $10,000PA
- Engineering supplies $40,000PA
- Tyre outlets $10,000PA

Total Estimated Local Consumable Spend $70,000PA

Expenditure on Fuel:

There are 5 outlets supplying fuel and related products in Gloucester.

In section 2.9.3 Gloucester Resources Limited outlines its intention to construct as part of the mine operational area a fuel storage facility for diesel fuel. This fuel will be used by the plant and equipment at the mine.

Key insights suggest $1,400,000 will be spent in Gloucester by GRL on fuel annually. This figure represents GRL's use and not that which may be purchased by their employees for personal use. At $1.50 per litre this equates to

Over 933,000 litres per year or over 250/70 litre tank loads per week!

This figure becomes even more improbable. GRIP notes that the smaller mine vehicles (typically 4WD utilities) that could travel on public roads to Gloucester to refuel, are likely to be diesel. They would refuel at the mine's own facility. THis leaves just a few company cars with the task of consuming nearly 1 million litres of fuel annually.

Expenditure on Administration / Other

As with 'consumables', the administration and other expenditures are undefined by Key Insights. There are no outlets or service providers in Gloucester that could supply anything but the most basic of administrative needs. Stationery, computer, printer and photocopier consumables, cleaning products and food requirements could be provided but, again using the Stratford experience, these would amount to less than $20,000 annually.

Other providers of maintenance services, for example plumbers and electricians, might be used with an annual cost of no more than $30,000 or the equivalent of over 425 hours labour.

The use of local transport companies being used to supply products from other parts of the Hunter region, in particular Newcastle, would appear the one significant expense.

There are two transport companies that provide a daily service to Newcastle. One of them also services Sydney on a weekly basis. Two courier companies provide a daily service to Taree for parcels and small deliveries. One also provides a daily truck service for larger items.

The freight rates vary from company to company but the two providers of the daily Newcastle service charge approximately $80 per pallet space (1.2m x 1.2m) on the truck. After allowing for the expenditure outlined previously of $50,000 that would leave

Transport expenditure of $3,950,000PA

This equates to 49375 pallets or over 4900 truck loads annually!

Both transport companies currently service the Stratford Mine and the Gloucester region operating 3 trucks / 5 days per week or 780 trips annually. If we assume 1/2 truck did nothing but service the Stratford Mine (a highly exaggerated figure) that would equate to 5 pallets per day, 1300 annually at a cost of $104,000

The combined local administrative expenditure including transport provided by local carriers would total $154,000

GRL list in the table of mine salaries a total of 14 mine staff. These presumably are employed in the administration section of the mine. For these 14 persons to spend $4 million ($286,000 average per person) annually is extremely unlikely.

Equipment Hire:

There exists in Gloucester one equipment hire outlet. For hire are two older cars and a selection of equipment geared towards domestic and farm use. This is run as an adjunct to one of the tyre outlets and not as a stand-alone business. The owners will be ecstatic to learn of the massive increase in turnover that will occur due to the Rocky Hill mine.

It would be highly unlikely that the mine would need to hire any equipment of the type carried by the hire business. All machinery or equipment suitable for use in the mine would need to come from Newcastle or Taree. The local expenditure will be zero.

A more realistic appraisal of all Rocky Hill mine annual local expenditure on materials and services is:

- **Consumables** **$70,000**
- **Fuel** **$10,000**
- **Administration / Other** **$154,000**
- **Equipment Hire** **$0**

This totals $234,000 or $11,966,000 less than the Key Insights assumptions.

Table 6.6 Revised Estimated Source of Materials and Services ($'millions)

Category	Annual Total	Local	NSW	Australia
Consumables	$19.3	**$0.070**	$19.23	$0
Fuel	$14.3	**$0.010**	$14.29	$0
Explosives	$10.0	**$0**	$10	$0
Rail & Port Charges	$10.7	**$0**	$8.2	$2.5
Administration / Other	$12.9	**$0.154**	$9.746	$3.0
Equipment Hire	$4.3	**$0**	$4.3	$0
Total	$71.5	**$0.234**	$65.766	$5.5

6.2.4 Economic Impact due to Rate Increases

Gloucester Resources Limited currently pay council rates on 12 properties applicable to farming which will change to that applicable to mining should approval be given to the Rocky Hill Mine. The increase in payable Council rates would amount to $3.79 million over the 14 year period that the mine would be in operation.

The rate difference is designed to reflect the increase in the burden on the Council as the use changes from farming to mining. The increase of $217,600 annually will be unlikely to cover the cost of increased road maintenance let alone the demands on the other Council services, facilities and assets and as such there would likely be a cost on Council finances even though an increase in revenue has occurred.

6.2.5 Summary of Local Economic Impact

The benefit to the local community due to the operation of the Rocky Hill Mine therefore can be closely approximated by the summation of the totals presented previously for each of the sections - with the following assumptions being made.

- Despite the different wages structure and employee type the construction phase and operational phase are considered equal in terms of their impact.
- That the equalling of that benefit takes into account any impact that may be experienced during the two rehabilitation years.
- That the moderate scenario of employee type is the most likely
- That there is virtually no impact from material and service provision during the two rehabilitation years.

Table 6.7 Economic Impact OVER THE LIFETIME OF THE ROCKY HILL MINE

Economic Impact from: ($'millions)	**Local**
Employment	**14.56**
Materials & Services during Construction	**1.145**
Materials & Services during Operation	**3.042**
TOTAL	**18.747**

A comparison with the" direct spend" figures presented by Key Insights in Part 14 Section 6.5 Table 28 of the SCSC shows :

Local Impact

- Figures as shown $18.747 million dollars
- Key Insights $253.66 million dollars
- **Difference** **$234.913 million dollars less**

6.3 State and National Economic Impact

In Part 14 Section 6.8, Key Insights outlines the Impacts on Government Finances, these are outlined in relation to the construction and operational phases of the mine and are split into four sections.

- Salaries
- Expenditure on Equipment and Materials
- Company Profits
- Royalties

6.3.1 Economic Impact of Salaries

The Economic impact of salaries comes through the payment of Payroll Tax to the State and the payment of Personal Income Tax by the mine employees. The Key Insight figures in relation to these taxes are outlined in the table below.

Table 6.8 Value to Governments from Salaries

	Value $'millions	**State Payroll Tax**	**Income Tax**
Direct Salaries Paid	$257.38	$6.739*	$71.09
Multiplier or Flow on Salaries	$414.39	$10.851*	$103.595
Total	**$671.77**	**$17.59**	**$174.685**

**figures not stated by Key Insights but proportioned from total*

In their assessment of the value of salaries to the Government finances they have included the Multiplier or Flow on Salaries. Are we to assume from this that the

- The 100* direct employees during year of construction and the 123* employees employed during the following 14 years of production, average over 15 years 121.36 employees, will earn **$141,387 each.**

- The 340* multiplier employees during year of construction and the 469* multiplier employees employed during the following 14 years production, average over 15 years 459.79 employees, will earn **$60,084 each.**

** As stated in tables 29 and 30, part 14 sections 6.6 & 6.7 of the SCSC.*

The figure of $141,387 to be paid to the direct employees over the lifetime of the mine reflects the disproportionately high incomes paid within that sector. The total multiplier figure of $414.39 million over the mine's lifetime represents a cascading value through the community including jobs in many varied sectors.

The Census of 2011 conducted by the Australian Bureau of Statistic revealed that the median income of employed persons in the Gloucester community was $422.00 per week or $21,944 annually, the NSW community was $561.00 per week or $29,172 annually and the national figure of $577.00 per week or $30,004 annually.

Without extraordinary new information, there is no basis to assume that 459.79 multiplier employees from the general employed community will be paid massively more than that reported in the 2011 Census.

The table below presents a more accurate assessment using the Census figures.

Table 6.9 Multiplier Benefit using 2011 Census Data.

Community	No Multiplier Employees	No of Multiplier employees in the community	Median annual wages per employee $'000	Total wages paid in 15 years of the mine's lifetime $'million
Local	77.47	77.47	$21.944	**$25.500**
NSW	433.3	355.83	$29.172	**$155.70**
Australia	459.79	26.49	$30.004	**$11.92**
Total	**459.79**			**$193.12**

This figure of $193.12 million over the mine lifetime is just 46.6% of the figure presented by GRL/Key Insights.

By proportioning the figures in table 6.8 as shown below a more accurate assessment of the economic impact from employee salaries can be obtained.

Table 6.10 Economic Impact of Employee Salaries.

	Value $'millions	State Payroll Tax	Income Tax
Direct Salaries Paid	$257.38	$6.739*	$71.09
Multiplier or Flow on Salaries	$193.12	$5.056	$48.275
Total	**$450.50**	**$11.795**	**$119.365**

6.3.2 Economic Impact of Expenditure on Equipment and Materials

The impact of this expenditure on the Government finances is by way of payment of GST on purchases - again divided into construction and operational phases.

Section 4 of Part 2 "Engineering, Financial and Meteorological deficiencies, anomalies and concerns" of this submission outlines the non-viability of the Rocky Hill mine and suggests four scenarios to rectify the position. One of these outlines the reduction of development expenditure by obviating the need for much of the mine's infrastructure.

If this option were to be pursued then the GST collection in the Construction period would be substantially reduced to as little as $1 million dollars.

The impact of expenditure during the operational phase would remain largely unchanged regardless of which option GRL chose.

6.3.3 The Economic Impact of Company Profits

Again, with reference to Section 4 of Part 2 "Engineering, Financial and Meteorological deficiencies, anomalies and concerns" of this submission, it would appear that the Rocky Hill Project as outlined in the EIS is not economically viable.

It would appear unlikely to be able to generate any profit let alone being able to generate the $916.67 million in company profits that would require the payment of the $275 million in company tax as indicated by Key Insights.

It should be remembered that this $916.67 million company profit on which the company tax is calculated will be minimised to as low as the company can legitimately declare - considering all deductions, depreciations, rebates etc.

$916.67 million profit appears impossible within the framework of the EIS as submitted.

The payment of the $275 million in company tax therefore would not occur.

6.3.4 The Economic Impact of Royalties.

Royalties are the main source of income for NSW from Rocky Hill mine. Key Insights claim a royalties figure of $186 million over the life of the mine based on the extraction of approximately 22 million tonnes of coal.

These royalties however are predicated by the fact that this amount of coal will be extracted. The economic fragility of the Rocky Hill Mine combined with economic uncertainty within the coal industry suggests that it may not.

Any reduction in the capacity of GRL to extract coal due to their own economic failure or the global markets would lead to a reduction in the amount payable in royalties.

6.3.5 Summary of State and National Economic Impact

The four sources outlined previously will have the following impacts (direct spending only):

Table 6.11 State and Federal Revenues

$'millions	**State Revenues**		**Federal Revenues**				
	Payroll Tax	**Royalties**	**Income Tax**	**GST**	**Company tax**	**Carbon Tax**	**Total**
State	$6.739	$186.00					**$192.739**
Federal			$71.09	$103.48	$0	$28.95	**$203.160***

These figures are the result of the determinations outlined in this submission. They vary for many reasons, previously outlined, from the Key Insights in the SCSC of

State:	$192.739 million	**no difference**
Federal:	$478.520 million	**$275.36 million less**

**If as suggested in section 6.3.2, the mine development is sold to Yancoal, the GST collected would reduce to $91.9 million dollars - reducing the total to $191.940 million dollars.*

The difference would increase to $286.58 million dollars less than the Key Insights figure.

Included in the Key Insights determinations and statements on revenues, multiplier impacts have been used on salaries. However, there has been no determinations made of any multiplier on expenditure and equipment.

With the multipliers used on salaries the following comparisons could be made.

State salary revenues:	$11,795 million	**$5.795 million less**
Federal salary revenues:	$119.365 million	**$55.32 million less**

It should be noted that all aspects of the revenue are predicated on the extraction of a given amount of coal over a fourteen year period in the manner outlined in the EIS. There would appear a strong argument that this will not be the case.

The poor outlook for coal prices and the fragile economic position of the Rocky Hill mine guarantee that the revenues stated will not be attained.

7 The Benefit or Loss due to the Rocky Hill Mine

If the Rocky Hill Mine is to have any merit at all then what is to be gained by the development and operation of the mine must be balanced against what will be lost. The benefit is derived during the mine's operation but the costs extend far beyond that time. The community bears very significant costs during the same period and continues after closure and rehabilitation. The current government's Draft Strategic Landuse Plan noted particularly the industry/employment/community 'adjustment' phase and state funding of it.

In section 6.4.3.2 "Economic Considerations" Gloucester Resources limited state:

"The economic issues identified with respect to the Proposal would invariably have both positive and negative impacts, with the key issues with respect to these impacts outlined below."

Amazingly it would appear that there are no negative impacts at all. Gloucester Resources Limited only identify the benefits.

This section of this submission will attempt to rectify that imbalance.

7.1 General

The benefits outlined by Gloucester Resources Limited fall into 2 groups:

- The benefit to the Local Region, the State and the Nation from the employment generated by the mine.

- The benefit to the Economy of the Local Region, The State and the Nation from the extraction of the coal and the taxes, royalties, fees and contributions paid due to that extraction.

In the previous section the inaccuracy and wrong assumptions that were evident in the Key Insights report in Part 14 Section 6 of the SCSC were addressed and it is these corrected figures that will be used in this section of the submission.

As the flow on and multiplier figures simply distort the actuality of the direct spending these will not be used until the end rather than mingled through the figures as in the Key Insights report.

7.2 Employment Generated Benefits or Losses

Gloucester Resources Limited claim that the Rocky Hill Mine will generate 100 jobs during the construction phase, 150 jobs at peak production during its 14 year life and 50 jobs during the 2 year rehabilitation phase. Figure 6.1 shows this to average 118 employees over the 16 year period.

There are no references to the employees in the rehabilitation phase or indeed to that phase at all. They have used an average of 123 persons over the life of the mine.

For ease of referencing the 123 employee 14 year period has been used.
To determine the benefit or loss from the employment generated by the mine, it is first necessary to determine.

- The actual employee numbers generated in relation to their origin and the loss of other employment positions due to employment shift and the impact of the mine

- The Economic Impact as a result of that generation and loss of employment

It is also essential when determining the benefits or otherwise of the development and operation of the mine to consider the situation after its closure and the local area adjusts, again both positively and negatively to "life after the Rocky Hill Mine".

To ascertain the effect, a 10 year period after the mine's closure has been used.

7.2.1 Employee Numbers Generated or Lost and their Origin

Gloucester Resources Limited states that it will create these 123 jobs at the Rocky Hill Mine. These jobs will be filled by a combination of local and non-local employees.

Using the moderate scenario outlined in 6.2.1 25% or 31 local residents would be employed at the mine. Whilst it is Gloucester Resources stated intention to employee locals, not all of these would be local. Some few may move into the area as a result of their employment. Equally some few locals now employed at the mine might choose to buy houses and live outside the area. For ease we assume the numbers would approximate each other. Thus we use a figure of 31 locally sourced and 92 sourced non-locally.

7.2.1.1 Generation of Locally Sourced Employee Positions

There exists in Gloucester only a small pool of potential employees who would satisfy the medical, skill set and qualification levels required by the mine. Most of these, if not all, would currently be employed or self-employed. So the "generation of jobs" as far as Gloucester is concerned is a misnomer: the new employees are likely to be lost from employment positions already existing in the town.

Some of these employment positions would be filled by unemployed locals or non-locals moving to Gloucester. But for many of the self-employed or those employed in family agricultural enterprises, this would not be the case. This has been the ongoing experience regarding local employment throughout the life of the Yancoal owned Stratford Mine and the locally sourced employees.

The impact of this employee shift rather than employment generation would be an actual loss of 5-10 employment positions in the town that would not be replaced.

The impact on the local employment due to the Rocky Hill Mine's position generation during its development and operational life time would be a nett loss of 8 employees.

After 14 years of operational life 31 local employment positions at the mine will cease to exist.

The $144,000PA mine employees are extremely unlikely, having grown accustomed to these high salaries, to return to their former $21,944 (Gloucester median wage). They would, as some did from other locations when the mine opened, move on immediately to the next employment opportunity at another mine.

This movement carries no impact to employment numbers within the mining sector at a State or National level. But it carries devastating impact at a local level. Gloucester Resources Limited strongly proclaimed the benefit they would bring in the form of local employment. Equally they must accept due blame in the loss of that employment whenever the Rocky Hill Mine closes.

The impact on the local employment due to the Rocky Hill Mine's closure would be a nett loss of 31 employees.

7.2.1.2 Generation of Non-locally Sourced Employee Positions.

There exists within the mining sector a pool of employees transiting for a variety of reasons from one employer to another. At the present time due to the impact of low coal prices and the outlook for the coal industry there is a large number of skilled mine employees looking for work.

The generation of another 92 non-local positions at Gloucester would mean not the generation of an additional 92 employment positions but rather the lack of the addition of 92 to the 'lost employment position' list.

The impact then of non-local employment due to the Rocky Hill Mine's position generation during its development and operational life time may well be a nett effect of Zero

It should also be noted that at the end of the 14 year operational life of the Rocky Hill Mine these jobs will disappear with same uncertainty of their transfer to another mine.

7.2.1.3 Loss of Local Agricultural based Employee Positions.

The 2011 census conducted by the Australian Bureau of Statistics lists 196 persons as being employed in the Gloucester area in Sheep, Beef Cattle and Grain Farming. As there is almost no sheep and grain farming in the Gloucester area, most of these employees will be in beef cattle farming. A conservative figure of 90% is used - which equates to 176 employees.

Section 3 of this part of the submission outlines the impact of the Rocky Hill Mine on the local beef cattle industry. This is estimated at $460,542 annually on an industry that contributes $14,000,000 annually to the local economy. This impact represents 3.29%. If this impact is then directly related to the 176 persons currently employed a loss of 6 employment positions is reasonable assumption.

The impact on the local agricultural employment due to the Rocky Hill Mine during its development and operational life time would be a nett loss of 6 employees.

After 14 years of operational life and the rehabilitation of the mine site Gloucester Resources claim that the land will return once again to the highly productive cattle farming land that it once was. If this is the case, and over the next ten years the properties are re stocked and run similarly to those in the rest of the region, then it would be reasonable to assume the jobs that were lost would also return.

GRIP acknowledges the 6 employment positions originally lost might be regenerated over the next 10 years - progressively reducing the loss from 6 to 0 in that time (an average loss of 3 positions per year).

(However GRIP notes that the soils and aquifers in the mine area will be permanently damaged, water system equilibrium is unlikely to be reached for centuries, and the 'rehabilitated' land – once flood plain and its slopes – will not tolerate dry spells and drought and will require more inputs to be productive. Agricultural efficiency will be lost – if economically viable landuse can indeed be established.)

The impact on the local agricultural employment due to the Rocky Hill Mine's closure would be an averaged loss of 3 employees per year.

7.2.1.4 Loss of Local Tourism Based Employee Positions.

A survey of local businesses by the Gloucester Visitor Information Centre in late 2012 concluded that 241 persons are employed in some capacity in the tourism industry. These ranged from self-employed owners (either fully engaged or supplementing their income) through to casual employees, usually students, employed a few hours per week.

Section 4.4 of this submission outlines a reduction in tourism of 25% in overnight stayers and a 30% drop in day-trippers as a direct result of the Rocky Hill mine. This would equate to a loss of 66 positions from the tourism employment numbers.

It would be reasonable to assume that the loss of positions would occur with the casual employees being the most affected. The least affected – for employment purposes -would be the self-employed owner. The table below represents that loss equated to full time positions.

Table 7.1 Tourism – Loss of Full Time Equivalent Positions

Employment Category	Number of Positions	Positions Lost	Weekly Hours Worked	Total Hours Lost	Full Time Equivalent Positions Lost
Self Employed	20	2	35	70	2.00
Self Employed Supplementary	44	4	10	40	1.14
Full Time	40	8	35	280	8.00
Part Time	25	5	20	100	2.86
Casual	106	45	10	450	12.86
Contractor	6	2	10	20	0.57
Total	**241**	**66**			**27.43**

The impact on the local tourism based employment due to the Rocky Hill Mine during its development and operational life time would be a nett loss of 27 full time equivalent employees.

After 14 years of operational life and the as promised total rehabilitation of the mine site to a degree that you would not know that it ever existed, the tourism industry would have an opportunity to regenerate. Over the next 10 years with the upgrading of The Bucketts Way and support from NSW Tourism, the local Council and the media the tourists should return. This would allow for the regeneration of the 27 full time positions over the 10 years as the word spreads that the Scenic Gloucester of old is back in business.

This regeneration will not be instant and the 27 lost employment positions would reduce to 0 over the 10 year period averaging 13 lost positions over that time.

The impact on the local tourism-based employment due to the Rocky Hill mine's closure would be an averaged loss of 13 employees per year.

7.2.1.5 Summary of Local and Non-Local Employee Positions Generated and Lost

The table below summarises the findings outlined previously:

Table 7.2 The Balance of Local and Non-Local Employment Generation and Loss

	14 year Operational Life			10 years after Closure		
Area of Employment	**Gained**	**Lost**	**Balance**	**Gained**	**Lost**	**Balance**
Local Rocky Hill Mine Employment	31	8	23	0	31	-31
Local Beef Cattle Industry Employment	0	6	-6	0	3	-3
Local Tourism Employment	0	27	-27	0	13	-13
Total	**31**	**41**	**-10**	**0**	**47**	**-47**
Non Local Rocky Hill Mine Employment	92	92*	0	0	0	0

*Positions lost within the mining industry generally and not directly attributable to the Rocky Hill Mine

7.2.2 The Economic Impact of the Generation and Loss of Employment

The economic impact on the Gloucester community of the employment of 123 mine employees is outlined previously in table 6.3 and using the moderate scenario, as suggested by Key Insights, values that impact as $1.04 million dollars per annum or $14.56 million dollars over the operational life of the mine.

The economic impact on the combined State / National community, excluding the Gloucester community, is shown in table 6.4 and values that impact as $10.832 million dollars per annum or $151.648 million dollars over the life of the mine.

When the employment figures, including the losses, outlined in section 7.2.1 are used, a totally different picture is revealed.

7.2.2.1 Economic Impact on the Gloucester Community

The economic value of a local mine employee earning $144,000PA to the local community, as outlined in section 6.2.1, is $25,412PA

Based on the 2011 census the median wage for Gloucester is $21,944PA the income tax payable on this amount is $406 leaving $21,538. The ABS household expenditure survey used previously indicates that households on this total income spend $559PW or $29068. This would indicate that these households have 2 incomes and that all of 1 at least could be spent locally.

The economic value of a local non-mine employee earning $21,944PA to the local community is $21,538

The total economic benefit to the Gloucester Community of the employment of 31 mine employees over the 14 year operational life of the mine $11,028,808. The total economic loss to the Gloucester Community of the loss of 41 currently employed persons in over the 14 year life of the mine $12,362,812.

A total loss to the community of $1,334,004

The total economic cost to the Gloucester community in the 10 years following the mine's closure from the loss of the 31 positions at the mine is $7,877,720. The total economic loss to the Gloucester Community of the gradual regeneration of cattle and tourism based employment as it occurs over the 10 years $3,446,080

A total loss to the community of $11,323,800

7.2.2.2 Economic Impact on the State/National Community

The economic impact on the State and Nation due to the salaries earned by Rocky Hill mine employees can be viewed in two ways:

- A collective impact as part of the pool of income received from employees within the mining sector, balancing gains from the Rocky Hill Mine against general losses within the industry.
- As a stand-alone benefit disregarding other losses within the mining sector.

The economic impact on the State and Nation stated by Key Insights assumes the second viewpoint and makes the following assumption:

X (the number of employees currently) **+ 92** (new employees at the Rocky Hill Mine) **= X+92**

Therefore increase in employees =92

The reality however is more correctly represented by the first:

X (the number of employees currently) **+ 92** (new employees at the Rocky Hill Mine) -**Y** (the hundreds of employees lost in NSW and Nationally due to low coal price) **=X-Y+92**

Therefore the increase of the 92 new employees is in reality not an increase in the employee pool but a reduction in the loss of employees within the sector.

As such, whilst there is an economic benefit to the state from the salaries earned by the Rocky Hill Mine employees, this is already being enjoyed from the 92 other mining sector employees who will lose their employment independently of the Rocky Hill Mine.

The impact on the State/National economy at best therefore is loss on one hand and a gain on the other amounting to:

A total benefit to the State and Nation of $0

As a standalone benefit, the figures outlined in table 6.4 should be used. The moderate scenario favoured by Key Insights would give

A total benefit to the State and Nation of $10,832,000

7.2.3 Summary of Employment Generated Benefits or Losses

The Local Community of Gloucester will suffer due to the advent of the Rocky Hill Mine.

The mine could employ 31 local people, some of whom might not have been local until the mine was developed. But Rocky Hill's arrival will cause the loss of 38 employment positions currently held by locals, primarily in the beef cattle and tourist sectors.

(Again due to resources constraints in GRIP, we acknowledge the very important tree-changer lifestyle retiree industry and its value to housing industry, retail, property equipment, furniture etc expenditure but are able to provide full analysis of its very positive local benefits.)

GRIP trusts that the PAC will fully explore this aspect which is essentially an importer of income and jobs with a very small number competing for jobs.

The State and Nation only benefit if the employment generated by the Rocky Hill Mine is viewed in isolation and not in the context of the mining sector as a whole. Rocky Hill is a small player in a large game.

Table 7.3 Employment Generated Benefits and Losses

	14 year Operational Life			10 years after Closure		
	Jobs Gained	**Jobs lost**	**Value**	**Jobs Gained**	**Jobs Lost**	**Value**
Gloucester local	31	41	-$1,334,004	0	47	-$11,323,800
State / National	92	92	0	0	0	
State / National standalone	92	0	$10,832,000	0	0	-$11,323,800

The total economic cost to the Gloucester Community over the 14 year operational life and the subsequent 10 years -$12,657,804

The total economic cost to the State / National Community over the 14 year operational life and the subsequent 10 years -$1,825,804

7.3 Economic Impacts on Government Finances

The Rocky Hill Mine will impact on the finances of all three levels of government. It will also impact on the community in general by way of the community grant to be established by Gloucester Resources Limited.

The positive impact on the finances of the various Governments will then be offset by the additional expenses that each will face solely due to the development and operation of the Rocky Hill Mine.

7.3.1 The Positive Economic Impact on Government and Community Finances.

The amount contributed to the respective governments is generated by:

- Payment of taxes and charges during the development and construction phase of the mine independent of any coal production.

- Payment of taxes and charges during the operational phase dependent either on
    - Salaries and expenditure not directly related to tonnages of coal extracted.
    - Taxes, fees and contributions directly related to tonnages of coal extracted.

- Payment of fees and charges levied independently of operational phase or production

Table 7.4 Taxes, Fees and Charges over the Lifetime of the Rocky Hill Mine

	Tax, fee or charge $'million	Construction, Development Phase	Operational Phase		Independent of phase
			Non Tonnage Related	Tonnage Related	
National					
Income Tax	$71.09	$2.5	$68.59		
GST	$103.48	$12.58	$90.90		
Company Tax	$0			$0.00	
Carbon Tax	$28.95		$28.95		
Total	**$203.52**	**$15.08**	**$188.44**		
State					
Royalties	$186.00			$186.00	
Payroll Tax	$6.739		$6.739		
COAL21 Levy	$3.00			$3.00	
Total	**$195.739**		**$6.739**	**$189.00**	
Local					
Rates	$3.79				$3.79
Total	**$3.79**				**$3.79**
Community					
GRL Fund	$8.00			$8.00	
Total	**$8.00**			**$8.00**	
Total	**$411.049**	**$15.08**	**$195.179**	**$197.00**	**$3.79**

The total value to the Federal, State and Local Finances including the contribution to the community by the Gloucester Resources Limited community fund is $408.049 million dollars.

This is made up of:

- **$15.08 million dollars** during the Construction and Development Phase. This figure is dependent on the approval and issuing of licences in relation to the Rocky Hill mine and the subsequent development and construction on the mine to the point of coal extraction as outlined in the EIS. Any sale of the approved development to Yancoal and the lack of infrastructure and capital expenditure required would dramatically reduce this figure.

- **$195.179 million dollars** during the operational phase of the mine independent of tonnage of coal extracted. This figure is dependent on the continued extraction of coal for the entire 14 year operational period of the Rocky Hill Mine as outlined in the EIS. Any early closure of the mine would result in a progressive reduction in payment of the taxes and charges outlined reducing their value to a proportionate amount relative to the prior period of operation. Reduction in employee numbers or variation to the operational guidelines due to on selling to Yancoal would also cause a reduction in this figure.

- **$197.00 million dollars** during the operational phase of the mine totally dependent of the tonnage of coal extracted. This figure is dependent of the continued

operation of the mine and the extraction of the coal quantities, regardless of by whom, as outlined in the EIS. The community grant is at GRL's discretion and may be altered or dropped at any time and has no obligation to be continued by any subsequent operator.

- **$3.79 million dollars** independent of the mine's phase. This figure is subject to rezoning of the affected properties and as such would commence after approval is given and continue until rezoning after the cessation of all mining activities.

This total of $411.049 million dollars values the contribution to Government Finances and the Local Community Fund compared to the Key Insights figure of $667.969 million dollars, a total of $256.920 million dollars less.

7.3.2 The Negative Economic Impact on Governments and Community Finances

The negative impact on the finances of each of the Governments varies considerably due to the differing areas of responsibility of each level of government and the impact being considered. In many cases the exact amount attributable to each is impossible for GRIP to discern and as such only the total impact has been used.

The impacts on the respective Governments relate directly to the increase in expenditure that each will incur due to the impact of the Rocky Hill mine on the community over the 14years of operation and the period of recovery that will follow for the 10 years after closure.

The impacts on government finances will be felt in two key areas:

- The economic impact on government finances due to the deterioration in community health as a direct result of the particulate matter generated by the Rocky Hill mine

- The economic impact on government finances due to the necessary replacement of The Bucketts Way due to the rapid deterioration that will occur - particularly during the construction phase of the Rocky Hill Mine.

The economic impact will be felt by the local community not as a difference between income received and expenses incurred but rather as a **loss of income generation** within the community. This in turn reflects itself as a loss of employment opportunities as discussed earlier. (Just as GRL used a multiplier, so too could GRIP. The distinction being that local incomes generate local jobs. So this impact is the more real to this community.)

This is most evident in the two key areas:

- Loss of income generation due to the Rocky Hill mine from the agricultural sector, notably beef cattle production.

- Loss of income generation due to the Rocky Hill mine from the tourism sector.

7.3.2.1 The Negative Impact of Health Costs on Government Finances

During the 14 year operational life of the Rocky Hill Mine 13216 tonnes of PM_{10} particulate matter from the extraction of 23 million tonnes of ROM coal and the removal of the overburden that made that possible. Of 13216 tonnes, 5154 tonnes, or 39%, will be carried by the prevailing valley winds over the township of Gloucester affecting the health of all those who live, work and attend school in the town. Children and the elderly are most at risk.

Section 2.3.4 of this submission identifies the health cost of this particulate pollution as **$408.06 million dollars.**

In November 2005 The NSW Department of Environment and Conservation prepared a report titled:

"AIR POLLUTION ECONOMICS – Health Costs of Air Pollution in the Greater Sydney Metropolitan Region"* [b]

(*Incorporates the airsheds of Sydney, Wollongong / Illawarra and Newcastle / Hunter)

It is this report, outlined in section 2.1 and 2.2 that forms the basis for these conclusions. The primary purpose as defined in the report is, **"To provide robust information on the health costs of ambient air pollution to assist decision making on proposals with the potential to affect air quality."** GRIP has applied it precisely to that purpose. It can be highly regarded as an effective and accurate method of calculation of the economic cost of health impacts.

Both State and Federal Governments bare costs associated with health but they fall largely within the domain of the State. To this end a proportioning of 90%-10% State to Federal has been used. It delivers the following figures:

- **Impact on the State Government $367.254 million dollars.**
- **Impact on the Federal Government $40.806 million dollars**

7.3.2.2 The Negative Impact of Infrastructure Costs on Government Finances

There will be a significant impact on the road network with a large number of heavy vehicle movements required during construction, operation and site rehabilitation of the Rocky Hill mine. Depending on the sources for materials, the Bucketts Way from the south and east, regional roads and the town road networks of Gloucester, Dungog and Stroud will all be affected.

The extent of this is detailed in section 5 of this submission.

The Bucketts Way will need to be replaced at a cost of $165.88 million dollars as a matter of urgency. The thousands of heavy vehicle movements required during the construction phase will ensure that this major access route to Gloucester deteriorates rapidly to a point where vehicle damage will become inevitable and more significantly lives will be lost. Ongoing repairs and maintenance at a far higher standard and frequency than is currently employed will be required to allow for safe use during the construction of the new roadway. Cost estimates place this between $27.72 and $42.744 million dollars dependent on supply sources chosen by GRL.

This cost will be borne by the NSW State Government and the local Councils of Gloucester, Dungog and Great Lakes. The local Councils are almost certainly unable to fund their share so the total cost will fall on the State Government.

The replacement of the Bucketts Way is required regardless of the Rocky Hill mine. However, Rocky Hill if approved hastens the need for the expenditure and compresses the time frame within which this must occur. The proportion directly attributable to the Rocky Hill mine is outlined in section 5.6.3 and is estimated at,

- Repairs $2.753 million dollars
- Reconstruction $7.044 million dollars
- **Total $9.797 million dollars over the mine's operational life.**

7.3.2.3 Summary of Negative Impacts on Government Finances

The table below outlines the economic impact of the Health and Infrastructure costs due to the development, operation and rehabilitation of the Rocky Hill Mine.

Table 7.5 Negative Impacts on Government Finances

($'million)	**State Government**	**Federal Government**
Health Costs	$367.254	$40.806
Infrastructure Costs	$9.797	N/A
Total	**$377.051**	**$40.806**

7.3.2.4 The Loss of Income Generation in the Beef Cattle Sector

The loss of income in the Beef sector of the Gloucester economy is a direct function of the loss of the productive land due to the actual mine operation and the reduced productive capacity of the remaining property owned by Gloucester Resources Limited. These losses are outline in section 3.1.3 of this submission.

Financially this amounts to a loss of $461,000 per annum or $6.454 million dollars over the 14 year operational life of the mine.

After the closure of the mine and the rehabilitation of the site to "open pasture" as suggested by GRL there is the potential for the productive capacity of the land to be returned – or not. If over the following 10 years there were a progressive return to zero impact, the economic loss during that period would also diminish.
Financially this amounts to a loss of $2.536 million dollars over the 10 year period following the mine's closure.

Any extension of the mine's operational life, for whatever reason would see a continuation of the economic loss at the annual rate for that period. Assuming the minimum life of the mine to be 14 years:

The total economic impact of the Rocky Hill Mine on the beef sector of the local economy equates to a loss of $8.990 million dollars.

7.3.2.4 The Loss of Income Generation in the Tourism Sector

The tourism sector has developed around the natural beauty of the area, the friendly country town atmosphere, the reputation of having one of the best motorcycle rides in the country and being the gateway to the heritage listed Barrington Tops. This has led to day-trippers and overnight-stayers becoming major contributors to the economy of Gloucester.

Their contribution to the economy is not measured in motel nights and cups of coffee alone but every cent spent on everything from meals to toilet paper.

The impact of the mine on this economy is outlined in section 4.4.1.

The impact of having Rocky Hill mine as the gateway to the area and the damage to the access route to the town during the mine's construction will see an almost immediate reduction in both overnight-stayers and day-trippers. The change of the town's feel and reputation to that of a mining town will see tourists find other more pleasant destinations and routes to take. This impact will continue for the mine's 14 year operational life and beyond.
Gloucester's Brand is a crucial to its businesses – and to its community's pride. Gloucester's brand will – MUST – be damaged by the intrusion and expansion of coal mining in this valley.

Financially this amounts to a loss $201.83 million dollars over the 14 year operational life of the mine.

Following the closure and the total removal of the mine's scar on the valley, tourists would return given sufficient promotional assistance from local and state governments. This return would be gradual over 10 years as confidence in the "Gloucester Brand" returned to the tourist community. The economic impact of the mine will still be felt however during this re-establishment period.

Financially this amounts to a loss $81.68 million dollars over the 10 year re-establishment period after the closure of the mine.

Any extension of the mine's operational life, for whatever reason, beyond the 14 years proposed, or any failure to remove all trace of the mine's operation from the area, would result in a continuation of the economic cost to the community.

The total economic impact of the Rocky Hill mine on the tourism sector of the local economy equates to a loss of $283.51 million dollars.

7.3.2.5 Summary of the Loss of Income Generation in the Local Economy

The table below outlines the loss of income to the local community due to the development and operation of the Rocky Hill mine. Unlike the advantages that may be experienced from the mine's operation, (which cease abruptly with the mine's closure) the loss of income generation in the local economy continues until re-establishment of the former circumstances or new self-sustaining equivalent circumstances are attained.

Table 7.6 Loss of Income Generation

$'million	Beef Cattle	Tourism	Total
Operational Life	$6.454	$201.83	$208.284
Re-establishment	$2.536	$81.68	$84.216
Total	**$8.99**	**$283.51**	**$292.50**

This figure represents the impact on only two of the income generating sectors of the Gloucester Local Economy and as such represents the **minimum** impact that can be expected.

Any extension in the mine's operational life would see the losses continue at the rates shown.

Any failure to rehabilitate the mine site to grazing land of equal quality and carrying capacity of that prior to mining would see losses continue.

Any failure to completely restore the mine site, including the removal of all infrastructure, would continue to reduce the appeal of the area to tourists and hence delay return to the current income generating capability.

7.4 Summary of Benefits and Costs

The cessation of operations at the Rocky Hill mine 14 years after the start of operations will see a corresponding cessation of all benefits that the mine may have been 'contributed':

- Employment will cease.
- Employment based economic benefit will cease.
- Income Tax payments will cease.
- GST collection will cease.
- Company tax payments will cease.
- Carbon tax payments will cease.
- Royalties will cease.
- Payroll Tax payments will cease.
- COAL21 levy payments will cease.
- Council Rates, after rezoning, will cease.
- Contributions to the Community Fund will cease.

After 14 years of operation any benefit that may have occurred to the State, the Nation or the Local Area will end. The legacy left by the mine's operation on the people and the economy of Gloucester will remain and continue for at least 10years:

- The increased effects of asthma and other diseases from the deposition of 5154 tonnes of PM_{10} and finer dust particles on the homes and workplaces of residents.
- The loss of employment and income generation within the Beef Cattle sector of the local economy as the re-establishment of grazing takes place on the now unwanted 3000ha of once prime grazing land owned by Gloucester Resources Limited.
- The loss of employment and income generation within the Tourism sector of the local economy as Gloucester tries to wash off the coal dust and re-establish the "Gateway to the Barrington Tops" to its former position and beyond.

The value of the Rocky Hill mine to the State, the Nation and the Gloucester community falls into three sections.

- Employment and employee expenditure generated economic benefit offset by employment losses in other parts of the mining sector.
- Financial benefits to the relevant Governments offset by the expenses in accruing the benefit
- Economic benefit to the region offset by the expenses in accruing the benefit.

Table 7.7 Summary of Benefits and Costs

$'million	**Employee Positions, Employee Expenditure**		**Financial Impact**		**Economic Benefit**	
	14 years operation	10 years after	14 years operation	10 years after	14 years operation	10 years after
Community						
Benefit	31 $11.029	0 -$0	$8.0	$0.0	$4.187	$0.0
Cost	-41 -$12.363	-47 -$11.324	$0.0	$0.0	-$208.284	-$84.216
Total	-10 -$1.334	-47 -$11.324	$0.0	$0.0	-$204.097	-$84.216
	-$12.658		**$8.00**		**-$288.313**	
Local						
Benefit	$0.0	$0.0	$3.79	$0.0	$0.0	$0.0
Cost	$0.0	$0.0	-$3.79	-$0.0	$0.0	$0.0
Total	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
	$0.0		**$0.00**		**$0.0**	
State						
Benefit	92* $151.648*	0 $0.0	$195.739	$0.0	$942.843*	$0.0
Cost	0 $0.0	-92* -$151.648*	-$377.051	$0.0	$0.0	$0.0
Total	92* $151.648*	-92 -$151.648	-$181.312	$0.0	$942.843*	$0.0
	$0		**-$181.312**		**$942.843***	
National						
Benefit	0 $0.0	0 $0.0	$203.52	$0.0	$193.83*	$0.0
Cost	0 $0.0	0 $0.0	$-40.806	$0.0	$0.0	$0.0
Total	0 $0.0	0 $0.0	$162.714	$0.0	$193.83*	$0.0
	$0.0		**$162.714**		**$193.83***	
Total	**-$12,658**		**-$10.598**		**$848.36**	

**These figures represent an increase due to the Rocky Hill mine. In terms of the State and National totals, they do not represent an increase rather a minimisation of losses in other areas of the coal mining sector. They also have only a 14 year shelf life after which they are gone and any benefit disappears.*

The economic impact on the Gloucester Community over the 14 year operational life of the mine and the 10 year re-establishment period thereafter:

A loss to the community of employment both during operation and after closure of 10 and 47 full time equivalent positions respectively

An economic loss to the community of $300.066 million dollars compensated by a production based grant from Gloucester Resources Limited of $8.0 million dollars.

The economic impact on the State of NSW over the 14 year operational life of the mine and the 10 year re-establishment period thereafter:

A financial cost to the State of $181.312 million dollars to be offset by expenditure on materials and services within the State of $942.843 million dollars excluding the Gloucester community.

The economic impact on the Nation over the 14 year operational life of the mine and the 10 year re-establishment period thereafter:

An increase to the Federal Government's finances of $162.714 million to be offset by expenditure on materials and services within the country of $193.83 million dollars excluding the State of NSW.

7.4.1 A Cautionary Note

The benefits and costs outlined above are predicated on the operation of the Rocky Hill Mine as outlined in the EIS extending for an operational period of 14 years. The impact of that operational period extending to the 21 applied for years would be on:

- **The Community:** A continuation of the cost due to employment of $0.84 million dollars annually for each additional year of operation. No increase in the tonnage related community fund. **An overall increase in the costs being incurred of $0.84 million dollars annually**

- **Local Government:** A continuation of increased rate collection with the corresponding expenditure increases also continuing. **No Change**

- **State Government:** An increase in payroll tax of $0.481 million annually offset by an increase in costs of $26.93 million annually. No increase in tonnage related royalty payments. Employee expenditure benefits would continue at $10.832 million dollars annually. No increase in economic benefits. **An overall increase in the costs to the State of $15.617 million dollars annually.**

- **Federal Government:** A continuation of revenue collection from income taxes of $5.078 million dollars annually. No increase in the economic benefit. **An overall benefit to the Federal finances of $5.078 million dollars annually.**

The longer the mine continues to operate, the only beneficiary will be the Federal Government to the tune of approximately $5.00 million annually.

This will come at a cost to the Community of $0.84 million dollars and State of $15.617 million dollars for every continued year of operation.

8 Curtailed Growth - Directly Impacted Housing Estates

In their EIS section 4.6 (and others), for purposes of calculating GRL's impacts, GRL have counted only existing dwellings on the directly affected estates south of Gloucester. GRL have excluded from the impact recognition those properties which, with time, would have been occupied had there been no coal mine. (Interestingly GRL also chose not include GRL-owned houses as being impacted. GRIP is not really surprised.)

New homes on these vacant properties would have contributed to local building industry activity, site work, new equipment purchases, home establishment expenditure – and new local income would have been injected via new residents' annual expenditure for the period occupied.

Those estates today are moribund. Property sales and home building starts have slumped.

GRIP has calculated some of the more easily accessed costs of this stop in economic growth - based on simple 10% increments of the base year – ie 5.1 houses per year for the next ten years (10% of 51 vacant blocks). We have then assumed a house building and fit-out expenditure of $250,000 per home. We have used relevant ABS employment, income and household expenditure to determine the local income generated for the Shire from this planned social investment.

We have used:

- 5.1 builds per year for 10 years to fill the estates.
- 25 years impact period – thus first year builds have 24 years impact on income
- $250,000 building costs
- $5,000 per annum home establishment and social establishment costs
- ABS data indicating 2.3 persons per dwelling
- Household Gloucester Expenditure of $25,000pa
- We have not included income that may be generated on land purchase activity
- We have not included 30 year full provision for failed/poor response from rehabilitation efforts nor recovery time for Gloucester brand sufficient to draw lifestyle residents back to Gloucester.
- We have assumed that 25% of new occupancies are absentee owners or Gloucester households upgrading. (They are therefore not part of income calculations.)

Cost of Curtailed Growth in Directly Impacted Housing Estates

Total Building Expenditure over ten years 51 dwelling and establishment costs	= $13,693,500
Total New Resident Expenditure over 24 years	= $18,646,875
Total Value To Gloucester (ie Negative Economic Impact)	**= $32,340,375**

It is unreasonable to suggest that there will be compensating purchasing responses in other less impacted estates. Potential residents make choices on more than what is available. Property views, proximity to town and services, land size and price in comparison to other estates and other townships all are important factors affecting this major decision.

Our view is that GRL's mining has the potential to adversely impact many more lifestyle property decisions than those represented by the 51 vacancies costed here. We regret that we do not have the resources or timeframe to analyse this in detail. But we will if our argument is rebutted.

Similarly, not all impacts of this lost growth - or lost momentum -have been considered and costed. This has resulted in what is likely to be a significant under–estimate of economic and social impact.

GRIP contends that this bright future has been curtailed for at least 25 years by the spectre of a nearby coal mine delivering noise, visual disruption, loss of housing value, health issues, and the uncertainty of undisclosed coal mine expansions. For a longer term (assessed at thirty years from construction start) the uncertainty of rehabilitation progress and outcomes and the need for Gloucester to again have a trusted reputation will both play heavily to minimise building choices post mining.

In the majority of cases, the likely demographic mix of 'lifestyle estates' participates widely in the community on a voluntary basis and tends to buy locally. Economically and socially these are very desirable features for Gloucester Shire's long term future.

This sort of growth brings new ideas and thinking to the community that can further define new development opportunities for Gloucester that fit with its environment and community needs and values. People of peaceful intent, contribute, participate and their industries aviod the necessity for State post-mining adjustment expenditure.

Given current urban growth and the desire to find rural peace, growth in these estates is assured – but only while ALL Gloucester estates indeed offer peace, vibrance and beauty. These values are not and can never be consistent with the intrusion of coal mining in this valley.

GRL's choice to not count these potential new homes in its EIS is tacit recognition that the bright future for Gloucester's natural growth - implied by those waiting properties has been eliminated for at least the life of mining activity in the area and a longer period providing for rehabilitation uncertainties, expansion uncertainties, and recovery of brand if possible. For this purpose GRIP has used 30 years from start of construction as a guide. Indeed GRIP would be justified in proposing that this cost should be calculated from the time GRL's purchasing actions became well understood and advised during property purchasing enquiries.

Again: Total value lost to Gloucester = $32,340,375