

# **APPLICATION FORM ITEM 3 ATTACHMENTS**

**Supporting Information to Accompany This Application**

## **ATTACHMENT 1**

**PLA Report (addressing matters set out in section 29(b) of the RPI Act**

# **Mount Morgan Gold Copper Project**

## **Carbine Resources Limited**

**Mount Morgan Priority Living Area, Central Queensland**

**Report Submitted to Support “Carrying out activities in a Priority Living Area”**



Prepared by  
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## **CONTENTS**

### **DEFINITIONS AND ABBREVIATIONS**

### **1.0 INTRODUCTION**

### **2.0 MOUNT MORGAN MINE SITE BACKGROUND**

### **3.0 PROPOSED RESOURCE ACTIVITY**

- Mining (Resource Extraction)
- Mineral Processing
- Pyrite Concentrate haulage
- Future Exploration, Mining and Rehabilitation

### **4.0 PROJECT PERMITTING**

- Priority Living Area
- Mining Leases
- Landowner Compensation Agreements
- Environmental Authority
- Heritage
- Pyrite Concentrate Road Haulage

### **5.0 CURRENT LAND STATUS**

- Surrounding Land Uses within the PLA

### **6.0 FUTURE LAND USE**

- Tourism
- Environmental Remediation
- Future Land Use without Resource Development Activity

### **7.0 COMMUNITY IMPACT AND MITIGATION**

### **8.0 DEMONSTRATION OF STAKEHOLDER CONSULTATION**

- Mount Morgan Community
- Rockhampton Regional Council
- Landowners
  - Rockhampton Regional Council
  - DNRM
  - Private landowners

- Easement Owner

## **APPENDICES**

### **APPENDIX 1**

- PHOTOS OF VISUAL IMPACT AREAS
- PHOTOS OF PROCESS PLANT VISUAL
- PHOTO OF AREA OF HERITAGE “MAKE SAFE” WORKS – UPPER WORKS

### **APPENDIX 2 - ASSESSMENT CRITERIA TABLE 1 AND 2**

### **APPENDIX 3 - MAP – CARBINE OPERATING AREAS, FUTURE EXPLORATION AND REHABILITATION AREAS**

### **APPENDIX 4 – LIST OF COMMUNITY COMMENT FROM COMMUNITY INFORMATION MEETING HELD AT MOUNT MORGAN 14<sup>th</sup> DECEMBER 2016**

## DEFINITIONS AND ABBREVIATIONS

**RIDA** (Regional Interests Development Approval) an approval under the Regional Planning Interests Act 2014 (RPI Act).

**Resource Activity** has the meaning given in the Environmental Protection Act 1994 (includes a mining activity).

AMD – Acid Mine Drainage is acidic water that is created when sulphide minerals are exposed to air and water and through a natural chemical reaction, produce sulphuric acid.

AMLPL – Abandoned Mine Land Program (State of Queensland)

Carbine – Carbine Resources Ltd (Mount Morgan mining lease operator)

DEHP – Department of Environment and Heritage Protection

DILGP – Department of Infrastructure and Local Government Planning

DNRML – Department of Natural Resources and Mines

EA – Environmental Authority

EPA Act – Environmental protection Act 1994

Mineral Exploration (exploration) - is the process of finding commercially viable concentrations of minerals to mine. In this report it may include activities such as: drilling, bulk sampling, mineral separation testing, geotechnical, geophysical and geochemical testing and other generally accepted industry practice techniques to achieve the stated purpose.

FS – Feasibility Study is the evaluation of a proposed mining project to determine whether the mineral resource can be mined economically at a high level of confidence. A Feasibility Study in this definition is the same as a Definitive Feasibility Study (DFS) or a Bankable Feasibility Study (BFS).

MRA Act – Mineral Resources Act 1989

Mining – As used in this report; has the same meaning as defined in the MRA Act. In this report it may include: extracting tailings by excavator or dredging, transport to a ROM Pad, processing tailings and other mineralised rock in a central process plant and disposing the waste discards into a Tailings Storage Facility (TSF). Mining includes

extracting mineral from former mine waste dumps (mullock) and extracting and stockpiling former mine slag.

MML – Mount Morgan Mine Limited

Norton – Norton Gold Fields Limited (Mount Morgan mining lease holder)

MPAD – Mount Morgan Promotion and Development Inc

Mine rehabilitation - is the restoration of the post-mined landscape to the intended post-mining land use.

ROM PAD – Run of Mine Pad – Stockpiled ore ready for processing

RRC – Rockhampton Regional Council

RRPS – Rockhampton Region Planning Scheme 2015

TSF – Tailings Storage Facility

TMC Tours – private tour operator for the Mount Morgan mine site

### **Requirement to obtain a Regional Interests Development Approval**

*Section 24 of the RPI Act provides an exemption from the provisions of the Act where the activity is pre-existing. A resource activity is considered to be 'pre-existing' if, immediately before the land becomes land in an area of regional interest, the activity may be carried out lawfully on the land.*

*A resource activity can be carried out lawfully on land if:*

- it is carried out under a resource authority or environmental authority; and*
- the application for either authority adequately detailed the location, nature and/or extent of the expected surface impacts of the activity; and*
- no further authority or approval is required to be obtained in relation to the location, nature or extent of the expected surface impacts of the activity.*

*Where a regional interest development approval is required for an activity located in a PLA, the applicant must make an assessment application to the chief executive of the Department of Infrastructure, Local Government and Planning (DILGP).*

*The RPI Act restricts the carrying out of resource activities where the activity is not exempt from the provisions of the Act or a regional interests development approval has not been granted.*

Carbine has prepared this application on the basis of advice from DILGP that the following approvals are outstanding and as such have triggered the requirement for a Resource Development Application in a Priority Living Area:

- Amendment to the approved Environmental Authority;
- State Heritage Development Application.

## **1.0 INTRODUCTION**

The RPI Act Guideline 04/14 – carrying out activities in a Priority Living Area describes a Priority Living Area (PLA) as “*an area of regional interest under the Regional Planning Interests Act 2014 (RPI Act)*”. PLA’s are identified through the regional plan making process under the Sustainable Planning Act 2009 and are shown on a map in a regional plan.

A PLA is an area that includes the existing settled area of a city, town or other community and other areas necessary or desirable:

- a) for the future growth of the existing settled area; and
- b) as a buffer between the existing or a future settled area and resources activities.
- c) The purpose of establishing PLAs as areas of regional interest is to provide greater certainty for investment in the development of a region’s towns or urban growth areas.”

The Central Queensland Regional Plan gazetted in 2013 defined a Priority Living Area around the town of Mount Morgan that included the mining leases covering the historic Mount Morgan Mine. The 2015 Rockhampton Regional Planning Scheme (RRPS) designated the mine site as “Mine Precinct” and described outcomes that accommodate future mining under conditions.

The Mount Morgan Mine site is located on land managed as an Abandoned Mine Land Project by the Queensland Department of Natural Resources and Mines (DNRM). Carbine Resources Limited (Carbine) has an agreement to acquire Raging Bull Metals who in turn has a con-current farm-in agreement with Norton Goldfields Limited (Norton) who is the owner of the mining leases at the former Mount Morgan Mine in Central Queensland. Norton has an agreement with the State that details the site management obligations of each party. The State currently holds the environmental and heritage management legacies from the former mine operator (Mount Morgan Mine Limited). Carbine has completed a Feasibility Study (FS) to re-treat tailings at the former Mount Morgan mine site to produce gold, pyrite and

copper sulphate. Carbine also has an agreement with DNRM to provide management services to operate the lime dosing water treatment plant currently existing at the mine site.

Carbine has prepared this report and the attached Assessment Criteria response tables as a requirement for submitting an Assessment Application for Carrying out a Resource Activity in a Priority Living Area. Carbine has obtained the authorization from Norton to prepare and submit this application (appended to the application form). This report accompanies the prescribed Application Form and supporting documents.

## **2.0 MOUNT MORGAN MINE SITE BACKGROUND**

The Mount Morgan Mine site is located at the township of Mount Morgan, 32 kilometres south-south west of Rockhampton, in Central Queensland. The mine site is adjacent to the Dee River which flows between the mine and the town. The Dee River then flows into the Don and Dawson Rivers and then into the Fitzroy River.

Mining commenced at the Mount Morgan site in 1882 to recover gold but considerable quantities of silver and copper were also produced. During the 108 year life of the mine, approximately 8.3 million ounces of gold, 1.2 million ounces of silver and 387,000 tonnes of copper was mined and recovered from 50 million tonnes of ore from underground and open cut operations. The mine closed in 1990.

Between 1886 and 1927, Mount Morgan Gold Mining Company Limited controlled the mining leases. The company went into liquidation in 1927 following a disastrous underground fire and deliberate flooding of the workings in 1925. The company was reformed as Mount Morgan Limited (MML) in 1928. MML began open cut mining in 1932 and by the time mining ceased in 1981 more than 145 million tonnes of ore and overburden had been mined. Between 1982 and 1990, a tailings re-treatment process operated whereby 26.7 million tonnes of tailings were treated and placed in the Mount Morgan open cut.

Because of its historical significance to the State of Queensland, a part of the Mount Morgan mine site became heritage listed with the proclamation of the Queensland Heritage Act in 1992.

In 1993, the mine leases were assigned to the Joint Venture of Perilya Mines NL and Aumin Technology and Development NL. The Joint Venture conducted an exploration and investigation program aimed at defining a viable mineral resource while being



indemnified against environmental impacts of previous mining. The Joint Venture ceased exploration activities in 1998.

In 2000, the State called for Expressions of Interest for mining companies interested in further reprocessing of mined waste rock and tailings which would complement rehabilitation. Moonraker Limited signed an agreement with the State in 2000 and commenced evaluation of the mineral resources. This agreement and the mining leases were subsequently transferred to Norton in 2004 who conducted further evaluation work. Carbine entered into a concurrent farm-in agreement with Norton in 2013. Carbine's has now completed the technical evaluation to define an economic mineral resource in the mine tailings and released the results of the Feasibility Study (FS) in December 2016. The FS shows that the project is economic over an initial mine life of 9.5 years. Project start is contingent upon approval of all statutory permitting requirements and successful project financing.

### **3.0 PROPOSED RESOURCE ACTIVITY**

Initial focus is to recover gold, copper and pyrite from historic tailings within the Mount Morgan mining leases. The FS completed by Carbine detailed the economic viability of mining and re-treating 10 million tonnes of historic tailings over a mine life of 9.5 years. In addition, there are significant tailings in the open cut pit and other additional historical dumps considered as targets that could extend the mine life for at least another 10 years. Test work has enabled the development of a mineral processing flowsheet that incorporates extraction of copper via a resin-in-pulp circuit, followed by a pyrite flotation circuit to produce a saleable unroasted iron pyrite concentrate and finally a carbon-in leach circuit for gold extraction.

The gold, copper and pyrite bearing tailings associated with the FS are located in historic mine tailings dumps at Mundic Gully, No. 2 Mill tailings dam, Shepherds tailings dam and Red Oxide. The Red oxide tailings underlie slag dumps produced from historical roasting processing circuits (Appendix 3 Map).

Processing facilities will be located within the mining leases in the vicinity of the former Sandstone Gully tailings dam outside the heritage listed area and in a location that will be topographically shielded from the town (Appendix 1 Photo: Planned Processing Plant Location). "Development by the State" heritage application will be submitted to disassemble, relocate or stabilise some heritage listed structures in the former Upper Works area where these structures are deteriorated and have been assessed by a heritage expert as a safety risk for site workers and visitors. This location is shown in Appendix 1 Photo (Area of "Heritage Make Safe" Works – Upper

Works). Tailings in the open cut pit and sulphide bearing mullock dumps (Grasstree Gully, B, C, K, Q, and Horsepaddock Dumps) are known to contain mineral bearing sulphides that may form part of future mineral resources and reprocessing activities. Other waste dumps (Shepherds, Airfield East and West, Western Dump and the historic blast furnace and reverberatory furnace slag dumps contain low levels of gold and copper which may form part of future mineral resources (Appendix 3 Map). Slag dumps were placed over the top of mineralised “Red Oxide” tailings discarded during the early years of mining the non-sulphide bearing zones in the upper portion of the mineral deposit.

Other locations within the mining leases that potentially contain historic tailings or sulphide bearing mineralisation may form future exploration targets and mining resources.

### **MINING (RESOURCE EXTRACTION)**

Mineral resources are located on granted mining leases held in the name of Norton Gold Fields Limited. Carbine is the project operator under agreement to Norton. Mineralised tailings will be mined by excavator and taken by truck to a ROM stockpile. The slag overlying the Red Oxide tailings is hard and compact and may require occasional blasting to break up the material in situ so it can be bulldozer ripped for removal. Haul roads will be constructed for truck and service vehicle movement. Existing roads will be used wherever possible and upgraded to ensure safe truck haulage. Overburden will be progressively removed during mining operations. Most of the overburden is located in the Mundic Gully and Red Oxide areas. Overburden will be placed in the Sandstone Gully Area to be utilised where possible for rehabilitation. A commercial market will be sought for the slag that overlies Red Oxide Tailings. The mining sequence proposed is as follows:

- Years 1 to 4: Mundic Gully and 2 Mill Tailings with Red Oxide blending;
- Years 5: No. 2 Mill Tailings with Red Oxide blending;
- Years 6 to 9: Shepherds Tailings with Red Oxide blending

Mining will be undertaken on a 12 hour/5.5 day week to minimise noise impacts.

### **MINERAL PROCESSING**

The mineral process flowsheet incorporates the following:

- Run of Mine Pad (ROM)
- Mineral Sizing

- Re-pulping of Tailings and Scrubbing
- Regrind Mill
- Copper Recovery Circuit (Resin in Pulp)
- Copper Crystallisation
- Copper Storage Area
- Regrind Classification
- Flotation Tailings Thickener
- Concentrate Thickener
- Pyrite Concentrate Leaching
- Pyrite Filtration
- Gold Recovery Leach (Carbon in Leach)
- Gold Recovery Elution
- Gold Room
- Reagent Storage Areas (Sodium Cyanide, Caustic, Quick Lime, Sulphuric Acid)
- Laboratory

There is a small mineral sizing unit placed prior to the repulping of tailings to ensure the tailings are suitably broken prior to re-pulping. A larger crushing circuit may be incorporated for future processing of waste dumps.

Mineral processing will be on a 12hr/365 day/annum basis. The process plant location is well shielded from residential areas by mine landforms that will reduce noise impacts.

Existing buildings will be utilised wherever possible including the heritage listed General Office and No. 1 Store and water tanks adjacent to the “Big Stack”. Carbine is operating DNRM’s Water Treatment Plant that treats contaminated open cut pit water improving water quality for release to the Dee River.

## **FUTURE EXPLORATION, MINING AND REHABILITATION**

The historic mining operation mined 143 million tonnes of rock and ore during its 108 year mine life. This was made up of 93 million tonnes of rock waste and 50 million tonnes of ore. Many of the waste dumps on the mine site contain low grade mineralisation of sulphide minerals in the form of pyrite that produce Acid Mine Drainage (AMD). Of the 50 million tonnes of ore processed, approximately 40 million tonnes of tailings was discarded on the mine site. The tailings contain acid producing sulphides when exposed to air and water. The sulphide bearing waste rocks in the overburden dumps and the tailings that were deposited in the open cut pit during the 1980’s constitute a potential mineral resource that hasn’t been fully evaluated. In

addition, there are areas on the mine site where AMD indicates sulphide contamination exists. These areas are also potential mineral resources that could be evaluated for future mining potential.

The Mount Morgan gold and copper bearing ore body was one of the richest in the world at the time of former mining. Although there has been a considerable amount of exploration drilling within the mining leases, new exploration technologies and concepts have developed over the last 20 years since exploration ceased. There is potential for future exploration and drilling activity to take place within the mining leases. Carbine's announced Resource and Exploration Targets Summaries are shown in Table 1 and 2 below (Carbine ASX Announcement 30 August 2016).

All areas that have been mined by Carbine require rehabilitation in accordance with Environmental Authority conditions and conditions as stated in the agreement between the mining lease owner and the State. Any material determined to be contaminated soils below mined resources will be removed to a depth of 0.6m below original ground surface and revegetated.

**Table 1: Mount Morgan Tailings JORC 2012 Mineral Resource Summary**

Area	Type	Category	Tonnage (Mt)	Gold (g/t)	Gold (Koz)	Copper (%)	Copper Metal (t)	Silver (g/t)	Silver Metal (kg)	Sulphur (%)	Pyrite Equiv. (wt %)
No 2 Mill	Sulphide	Indicated	2.71	1.11	97	0.12	3,184	1.14	3,078	13.7	25.6
	Oxide	Indicated	0.12	0.80	3	0.05	55	1.80	207	4.0	
Mundic Gully	Sulphide	Indicated	1.70	1.91	104	0.17	2,822	0.90	1,533	10.5	19.6
	Sulphide	Inferred	0.02	1.86	1	0.24	40	1.24	21	10.6	19.9
Shepherds	Sulphide	Indicated	4.83	0.84	131	0.17	8,195	1.42	6,889	12.4	23.2
Red Oxide	Oxide	Indicated	0.83	2.17	58	0.30	2,495	0.60	499	0.6	
	Oxide	Inferred	0.03	2.05	2	0.29	85	0.58	17	0.5	
Sandstone Gully	Sulphide	Inferred	0.25	0.85	7	0.07	175	1.20	301	12.0	22.4
	Oxide	Inferred	0.02	0.85	1	0.07	14	1.20	24	2.0	
In-Pit Tails	Sulphide	Inferred	26.67	0.52	446	0.07	18,672	1.38	36,884	11.3	21.1
<b>Total Indicated</b>	<b>Total Indicated</b>	<b>Indicated</b>	<b>10.19</b>	<b>1.20</b>	<b>394</b>	<b>0.16</b>	<b>16,750</b>	<b>1.20</b>	<b>12,207</b>	<b>11.4</b>	
	Sulphide	Indicated	9.24	1.12	333	0.15	14,200	1.24	11,500	12.4	23.2
	Oxide	Indicated	0.95	2.00	61	0.27	2,550	0.74	706	1.0	
<b>Total Inferred</b>	<b>Total Inferred</b>	<b>Inferred</b>	<b>26.99</b>	<b>0.53</b>	<b>456</b>	<b>0.07</b>	<b>18,986</b>	<b>1.38</b>	<b>37,246</b>	<b>11.3</b>	
	Sulphide	Inferred	26.94	0.52	454	0.07	18,887	1.38	37,205	11.3	21.1
	Oxide	Inferred	0.05	1.56	2	0.2	99	0.84	41	1.1	

(Carbine Resources Limited ASX announcements 18 July, 2016, 27 July, 2016, 1 Aug, 2016 and 9 Aug, 2016.  
Rounding errors can occur.)

**Table 2: Carbine 2016 Exploration Target Summary**

Category	Drillhole Number	Low Range					High Range				
		Tonnes (kt)	Au Grade (g/t)	Au (koz)	Copper %	Sulphur %	Tonnes (kt)	Au Grade (g/t)	Au (koz)	Copper %	Sulphur %
Oxide Waste Dumps	54	290	1.8	16	0.1	2	600	2.3	40	0.1	2
Oxide Slag Dumps	5	280	1.0	9	0.4	1	1,000	0.8	26	0.6	1
Oxide Tailings Dumps	34	220	1.0	7	0.1	3	700	0.9	22	0.1	3
<b>Total Oxide</b>	<b>93</b>	<b>800</b>	<b>1.3</b>	<b>32</b>	<b>0.2</b>	<b>2</b>	<b>2,300</b>	<b>1.2</b>	<b>88</b>	<b>0.3</b>	<b>2</b>
Sulphide Waste Dumps	34	430	1.2	17	0.1	12	600	1.4	30	0.1	13
Sulphide Tailings Dumps	10	660	1.0	22	0.1	9	2,000	1.2	77	0.1	12
<b>Total Sulphide</b>	<b>46</b>	<b>1,100</b>	<b>1.1</b>	<b>39</b>	<b>0.1</b>	<b>10</b>	<b>2,600</b>	<b>1.3</b>	<b>106</b>	<b>0.1</b>	<b>12</b>
<b>Total Sulphide and Oxide</b>	<b>139</b>	<b>1,900</b>	<b>1.2</b>	<b>70</b>	<b>0.2</b>	<b>6.7</b>	<b>4,900</b>	<b>1.2</b>	<b>190</b>	<b>0.2</b>	<b>7.5</b>

(The potential quality and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of the Mineral Resource. Rounding Errors will occur.)

## 4.0 PROJECT PERMITTING

### PRIORITY LIVING AREA

The former Mount Morgan Mine site and the mining leases covering Carbine's Project area fall within the Mount Morgan Priority Living Area included in the 2015 Rockhampton Region Planning Scheme (RRPS) (western boundary shown on Application Item 1 Appendix map). This planning scheme has recognised the impact of past mining and the importance of future mining. In the RRPS, the mine site is identified as *"Mine Precinct – Limited Development Constrained Land"*. In particular **RRPS Strategic Framework Section 3.3.13 Element – Specific use** states the following:

- (1) *"The Mount Morgan mine will continue to provide for tourist related uses. Further expansion of these uses is supported, provided that natural and environmental constraints posed by the site can be mitigated. The reuse of the site for mining and processing is supported provided that impacts on the surrounding community, scenic amenity and the environment are properly managed."*

#### *3.8.5 Element – Extractive and mineral resources*

- (1) *"The reuse of the Mount Morgan mine tailings is supported provided that sensitive land uses within Mount Morgan, scenic amenity and environmental values are not impacted upon."*

Appendix 2 consists of Table 1 and Table 2 that list PLA assessment criteria with a response to demonstrate the proposed project will satisfy prescribed solutions that: *"The activity (a) is unlikely to adversely impact on development certainty – (i) for land in the immediate vicinity of the activity; and (ii) in the PLA generally; and Carrying out the activity in the priority living area, and in the location stated in the application, is likely to result in community benefits and opportunities, including for example, ongoing financial and social benefits to the community"*.

The Rockhampton Regional Council has indicated ongoing strong support for Carbine's tailings re-treatment project as long as Carbine has obtained the required environmental, heritage, mining and road use approvals in addition to satisfying the criteria stated in the RRCPS above.

The status of Carbine's regulatory approvals is provided below:

## **MINING LEASES**

The project occupies 30 granted mining leases as detailed in Application Item Appendix 4 and shown in the Application Item Appendix 4 map. All mining leases have an expiry date of 31 August 2025. Leases can be renewed for additional duration prior to expiry.

Mining leases are currently held in the name of Norton Gold Fields Ltd. It is anticipated that if the project proceeds, leases will be transferred to Carbine under the terms contained in the farm-in agreement.

## **LANDOWNER COMPENSATION AGREEMENTS**

The real property descriptions and details of ownership, land classification, current use, proposed resource activity per lot and area of impact underlying the project mining leases are detailed in Application Item 2 Appendix 2 (Proposed Activities per Lot and Area of Disturbance).

There are 73 land titles underlying the Mount Morgan mining leases. Ownership is as follows:

Private Term Lease: 1 title

Rockhampton Regional Council Titles: 3 titles

State Land: 67 titles

Easements: 2 titles

Within the Mount Morgan PLA and within the mining leases, these titles cover an area of 613 hectares. Norton has satisfactorily completed compensation agreements with the relevant landowners as required under the MRA. These agreements are registered against the mining titles (*agreements submitted as Commercial-in-Confidence as part of this application*).

## **ENVIRONMENTAL AUTHORITY**

Norton holds Environmental Authority EPML00433013 (<http://www.ehp.qld.gov.au/management/env-authorities/pdf/epml00433013.pdf>) for the Mount Morgan Mine. Carbine's feasibility evaluation has updated components of the project that require amendment to the existing EA. Pre-lodgement meetings have been held with DEHP in January 2016 and in August 2016. Submission of the EA amendment application has been pending completion of the

FS. This will now proceed based on the current planned mining activity. The amendment is required because the location of the processing plant has changed to a location that has reduced heritage, environmental and visual impact than the former location. The current EA has provisions that stipulate criteria for mine rehabilitation, dust, noise, vibration, odours, water quality, waste management and financial assurance. This includes criteria that relate to “sensitive places” including schools, dwellings, residential allotments, motel/hotels, educational institutions, public parks or gardens, and places used as workplaces. Carbine’s Plan of Operation when completed will have to detail how planned mining activity satisfies EA conditions.

## **HERITAGE**

Parts of the mine site, including areas to be incorporated into Carbine’s operational areas, are within the area listed on the Queensland Heritage Register, (Site ID600751) the Register of the National Estate (4/3/189/0004/1) and the National Trust of Australia (Qld) (MTM2/4). A Conservation Management Plan was prepared in 2002, however, there has now been significant deterioration of some of the heritage listed buildings and structures to the point where they represent a serious safety and health risk to site visitors and site operational staff. The presence of environmental contamination producing AMD is considered a health risk that will be ongoing as long as sulphide bearing minerals are present in mine wastes. DNRM has prepared a “Development by the State” application to address these risks. The application includes impact of landscape within the heritage listed area.

## **PYRITE CONCENTRATE ROAD HAULAGE**

Carbine plans to produce between 150,000 and 250,000 tonnes of unroasted iron pyrite per annum as a commercial product for export from the Port of Gladstone. Mount Morgan unroasted iron pyrite is considered a premium product because of its high sulphur content (S-50%). Unroasted Iron Pyrite has commercial value primarily as a feedstock for producing sulphuric acid and also for industrial components like brake pads, grinding wheels and sulphur rods for welding. The unroasted iron pyrite concentrate will be hauled by truck to the Port of Gladstone. Although used in the manufacture of sulphuric acid, pyrite itself is benign and is not a regulated waste under the *Waste Reduction and Recycling Act (2011)*. However, as it is a product from a mine, the haulage tonnages proposed trigger a *Road Use Notification* as required under the *Mineral Resources Act (1989)*. The proposed haulage route to Gladstone is on roads under the control of the Department of Transport and Main Roads (TMR) and the Rockhampton Regional Council (RRC). Haulage using a truck

and dog with 40.6 tonne capacity could involve up to 32 heavy vehicle movements per day (16 loaded and 16 unloaded on the return) operating on a 12 hr/day/5.5 day per week basis. The preferred route to Gladstone is exiting the mining lease onto Gordon Lane north of the Mount Morgan town then the Burnett Highway, Razorback Range, Poison Creek Road, Burnett Highway then on the Bruce Highway to Gladstone. Alternative routes have also been considered and initially rejected for various layout and cost implications. Road upgrades may be required and Carbine has completed a preliminary Haul Route Safety Review and a Road Impact Assessment as part of the FS and ongoing discussions and consultation with RRC and TMR.

## **5.0 CURRENT LAND USE**

The State of Queensland owns the land underlying the mining leases in the location of Carbine's planned mining activity. The land is heavily impacted from historic mining with un-rehabilitated mine waste dumps and contaminated water impoundments. It is considered by many to be one of Australia's most contaminated legacy mine sites. The site is managed under DNRM's Abandoned Mine Land Program with active environmental remediation activities including contaminated water seepage interception, contaminated water treatment, heritage building maintenance and land and infrastructure management. The adjacent Dee River that runs through areas of the mining leases is heavily contaminated for up to 20 kilometres downriver from the mine site. As a watercourse, the Dee River is State owned land. Rockhampton Regional Council (RRC) owns land that forms parts of road reserves and other reserve land. RRC land within the mining leases forms part of the legacy mine site that contains waste dumps that are a source of AMD contamination. There is a portion of a private land lease underlying mining leases ML5633 and ML5589 to the south west of the mine site. The portion that underlies the Shepherds Tailings Dam is fenced off to prevent cattle entry.

DNRM has a site management team in addition to environmental scientists, management and support staff dedicated to project management of the Mount Morgan Mine site as an Abandoned Mine. Part of the former mine site is heritage listed and DNRM have a contract with a local tour operator who provides mine site tours. Up to 5,000 people take the tour annually.

### **SURROUNDING LAND USES WITHIN THE PRIORITY LIVING AREA**

Residential and rural residential land lies adjacent to the historic mining leases across the Dee River to the east. The town grew adjacent to the mine over 134 years as the



mine developed (similar to many historic Australian mining towns that grew within sight of the mining operations). The Mount Morgan town contains a number of “sensitive places” as defined in the EP Act including schools, dwellings, residential allotments, motel/hotels, educational institutions, public parks or gardens, and places used as workplaces. The Burnett Highway runs through the town of Mount Morgan. Surrounding land use to the east of the mining leases across the Dee River is composed of residential, rural residential and the commercial centre. The service centre of Mount Morgan is within 1 kilometre of Carbine’s closest planned operating area. Nearest residential areas are as follows:

2 Mill Tailings Mine Area: 300 metres

Shepherds Tailings Mine Area: 500 metres

Red Oxide/Mundic Area: 400 metres

Mineral Processing Plant: 1.4km from nearest residential area (this location has landform shielding between the town and the process plant site).

Mount Morgan prides itself on the long community history associated with the mine. The former smelter stack “Big Stack” is considered to be the icon for the town. Many of the former mine workers still live within the Mount Morgan community.

According to the RRC Mount Morgan Population and Household Forecasts for 2011-2036 Report, Mount Morgan District’s current population of 3,092 is expected to decline by 0.46% by 2012. In 2011, the age structure for persons in the Mount Morgan District of age 50-54 accounted for 8.4% of the total persons. The town’s museum, Visitor Information Centre and other points of tourist attraction have close association with the former mine. Carbine and Norton have made project information available to the community through regular updates published in the Mount Morgan Argus and Rockhampton’s Morning Bulletin, presentations to Rockhampton business development associations, Mount Morgan Promotion and Development meetings, public meetings, technical presentations (Central Queensland Australian Institute of Mining and Metallurgy), press releases and local television and radio interviews. Regular contact is kept with key stakeholders including presentation at an annual stakeholder meeting held in conjunction with DNRM. Carbine has a Community and Stakeholder Engagement Plan and maintains a register of community and stakeholder consultation (*submitted as Commercial-in-Confidence as part of this application*).

## **6.0 FUTURE LAND USE**

### **Tourism**

Carbine's planned activity will affect approximately 15% of the total land disturbed from the historic mining activity. The Mount Morgan mine site will remain a source of AMD because of the un-rehabilitated areas outside Carbine's planned activity. The un-rehabilitated area remains the environmental responsibility of the State. The obligations of Carbine and Norton (as the mining lease owner) are defined under agreement with the State whereby the State will retain environmental, land maintenance and heritage management liability for areas of the mine site outside Carbine's mine operations areas.

There is recognition in various Regional Development Plans - Central Queensland Tourism Opportunities Plan (2009-2019), "Dig the Tropics" initiative, the Capricorn Destination Tourism Plan 2014 and the Rockhampton Region Planning Scheme (2015), that tourism will have a significant role in Mount Morgan's future with an expected increase in business growth as tourism develops. Access to the Mount Morgan mine site for commercial tour operation is considered to be a key aspect for tourism interest in Mount Morgan. Carbine is working with the current commercial tour operator to incorporate information on future mine and mineral processing operations.

Historical mine tours are likely to expand because of renewed interest in mine site activity and the opportunity for visitors to view historical aspects of the former mine in conjunction with new mine activities. Although it is expected there will be some trade off with regard to existing heritage buildings and structures, there is opportunity for renewed focus on repairing and maintaining buildings with high heritage value. Carbine will repair and utilise existing heritage buildings and structures where amenable.

### **Environmental Remediation**

Norton currently holds an Environmental Authority for the project that covers the drilling and evaluation phase of the project. Carbine, working through their environmental consultants AARC Limited is preparing a submission to amend the existing EA in line with current project plans.

Water quality for downstream landowners has been a concern for many decades and DNRM has worked with stakeholders to improve downstream water quality in partnership with organisations such as the Fitzroy Basin Association and the Wowan

Dululu Landcare Group. DNRM's Water Treatment Plant is now managed by Carbine under a Service Management Agreement. Initial construction funding for the Water Treatment Plant in 2004 was provided by both State and Federal Government initiatives in partnership with the Fitzroy Basin Association. Carbine is now working with DNRM to maintain the relationship with downstream landowners and to assist in providing advice and information for stakeholder distribution.

Removal of AMD contaminant sources and remediation of Carbine's operational areas is expected to leave the Mount Morgan mine site in an improved condition with reduced levels of contamination in runoff. Should Carbine's project successfully progress to a 20 year mine life, it can be expected that in the order of 5 million tonnes of acid producing pyrite will be removed from the mine site. This will have a significant positive impact on water quality in the Dee River with benefit for the downstream landowners and the community.

### **Future Land Use without Resource Development Activity**

In DNRM's 2003 publication *"Rehabilitation Plan for the Mount Morgan Minesite, Central Queensland"*, DNRM described the State's long term rehabilitation objectives for the mine site as follows:

- Improve water quality downstream;
- Avoid having to manage ARD interception and treatment indefinitely;
- Manage the site in accordance with its significant mining heritage, and
- Develop and apply best-practice rehabilitation and management of this site.

The Rehabilitation Plan evaluates several rehabilitation options which include retreatment of contaminated mine tailings and recovery of economic mineral by a mining company with mine site rehabilitation contribution coming from that company. Future mining activity at the mine site has been contemplated by the State since the closure of MML in 1990 when the State acquired responsibility for mine site management. Without the contribution from a resource development activity, the following outcomes are likely to occur:

- The State will become solely liable for the environmental and heritage management legacies at the mine site;
- The financial environmental and heritage liability for mine site rehabilitation passing to the State could be in excess several hundred million dollars;

- Should the State obtain funding to commence large scale mine site rehabilitation, the economic gold, copper and pyrite mineral resources will become sterilised and unavailable for future resource extraction;
- If this rehabilitation doesn't proceed, contamination into the Dee River as currently occurring can be expected to continue for several hundred years;
- It is unlikely the open cut pit will be dewatered so the risk of uncontrolled spill of contaminated water into the Dee River will continue indefinitely;
- The cost to the State for site management for AMD seepage interception and water treatment will continue indefinitely;
- Unless significant funding becomes available, heritage listed buildings and structures will continue to deteriorate and ultimately be lost thereby diminishing the value of a tourism asset for the town of Mount Morgan;
- The current decline in Mount Morgan population growth will continue with decreased job and business growth opportunity.

## **7.0 COMMUNITY IMPACT AND MITIGATION**

Mount Morgan town residents may be impacted by increased noise, vehicle movement and a changing vista of the mine site during construction and operation.

These impacts are regulated under the Environmental Protection Act 1994, the Mineral Resources Act 1998 and the Queensland Heritage Act 1992. Carbine will have to satisfy any regulatory conditions imposed under the permitting application process under these Acts in addition to satisfying the requirements under the Regional Interests and Planning Act 2014.

In general, tailings mining is not expected to produce dust as the tailings are moist and soft. Dust suppression will be required if dust limits exceed EA criteria. Blasting may be required to facilitate the breakup of the slag dump overlying Red Oxide tailings. This will be minimal and won't involve open face blasting. The FS discusses the requirement of further detailed technical analysis for the best option for breaking and mining the slag material. Noise and dust suppression techniques will be implemented as required. Vibration limits are set in the EA. The process plant doesn't incorporate smelting which was a source of odour irritant during the former mining operation. Slag is available for haul road surfacing as was used in the former mining operation. There is water available on site for dust suppression. Mining will only be undertaken during daylight hours on a single 12 hour shift, 5.5 day a week basis to reduce noise from heavy plant equipment. A Plan of Operations must be prepared for regulatory approval prior to site work commencing. This plan sets out

what actions the operation will take to address environmental conditions set in the EA. Carbine's information sessions held within the community has demonstrated that job opportunity and business development opportunity is a key concern for residents. Carbine will draw from a local workforce living within the surrounding community.

Tables 1 and 2 in Appendix 2 address the specific impact criteria required as part of this application.

## **8.0 DEMONSTRATION OF STAKEHOLDER CONSULTATION**

Carbine is guided by a Stakeholder and Community Engagement Plan that is updated periodically. A record of stakeholder contact and engagement is maintained (*submitted as Commercial-in-Confidence as part of this application*). Company contact details are available on Carbine's website and have been distributed throughout the Mount Morgan community. The EA requires Carbine/Norton to maintain a Register of Complaint. There have been no complaints logged to date. A Community Information meeting was held in Mount Morgan on the evening of December 14<sup>th</sup>, 2016. The purpose of the meeting was to provide the community with an overview of Carbine's proposed project and to receive community comment about issues and impacts of concern. Notice of the meeting was placed in the Mount Morgan Argus newspaper in the November 30<sup>th</sup> - December 21<sup>st</sup> edition that was delivered to every household in Mount Morgan and was available electronically on MMPAD's website. A meeting notice was posted on the Mount Morgan Promotion Inc Facebook site and a notice placed on the Community Information Board in Mount Morgan's main street. Over 100 people attended the meeting. Community feedback comments are detailed in this report as Appendix 4. Outcome from the meeting was widely reported in the Rockhampton Morning Bulletin and in the Mount Morgan Argus newspaper. Strong support has been expressed for the positive business development and job opportunity the project will bring in addition to support for tourism and environmental remediation.

### **MOUNT MORGAN COMMUNITY**

Carbine and Norton have utilised the following methods for disseminating project information:

- Periodic project updates for publication in the Mount Morgan Argus newspaper;

- Information booths at local community events (Mount Morgan Show day, Mount Morgan Wattle Day);
- Television news and radio interviews;
- Mount Morgan Promotion and Development Inc, Rotary, Capricorn Enterprise and other organisations as requested;
- Community Information meeting (Carbine December 2016);
- Presentation as part of DNRM's annual stakeholder meetings;
- Carbine project information provided by the mine site tour operator TMC Tours;
- Project information at the mine site in the General Office that is incorporated into the daily commercial mine site tour;
- Carbine website ([www.carbineresources.com.au](http://www.carbineresources.com.au)) contains project information and company contact details;

Carbine has identified 25 organisations or community groups as key project stakeholders. Contact is maintained in accordance with Carbine's Stakeholder and Community Engagement Plan.

#### **ROCKHAMPTON REGIONAL COUNCIL**

- 2015 June: June 2015 Carbine's Managing Director gave a project presentation to RRC Councillors and Mayor;
- 2016 February: Carbine met with DNRM, RRC and TMR to discuss road use for pyrite haulage;
- 2016 March: Carbine met with RRC and TMR for further discussion on road use for pyrite haulage;
- 2016 May: Meeting with RRC Mayor and Mount Morgan RRC Councillor to discuss Carbine's project;
- 2016 June: RRC Mayor and DNRM meet with Carbine at the mine site to discuss Carbine's project.
- 2016 September: Carbine met with RRC Mayor, CEO and Snr Engineer to discuss Carbine's project;
- 2016 September: Carbine met with RRC Planners to discuss PLA application;
- 2016 November: Carbine met with RRC Snr Engineer, Business Development Executive and Acting Mayor at the mine site during a visit by DILGP Director General;
- 2016 December: Carbine met with RRC Mayor and Deputy Mayor, Business Development Executive and Snr Engineer to discuss the FS outcome and road haulage issues.

- Monthly project updates are provided to Mayor's office by email or as requested.

## **LANDOWNERS**

- *DNRM*
  - Carbine engages with DNRM's Abandoned Mine Land Unit on a daily, weekly, monthly basis;
  - Under the agreement with the State, Carbine provides a formal monthly written report to DNRM on Carbine's project activities;
  - Periodic meetings are held with DNRM in Brisbane, Rockhampton or at the Mount Morgan mine site to discuss issues as required;
  - Under the agreement with the State, Carbine's site activities require prior approval by DNRM prior to activity commencing;
  - DNRM's State Land Asset Management group have been advised of this application and a copy of the application will be provided to them.
- *Rockhampton Regional Council*
  - As above
- *Landowners*
  - Direct contact with the only private landholder relevant for this application. Contact includes hosting a mine site visit to discuss project impacts;
  - Wowan Dululu Landcare Group is a group of off-site down river landowners impacted by Dee River water quality. Project updates are provided on an annual or as requested basis by direct informal meeting.

## **ROAD USE**

Under the MRA Road Use Notification provisions, Carbine is required to obtain permission from the relevant road authority to haul mineral from a mining lease. Carbine intends to haul unroasted iron pyrite from Mount Morgan to the Port of Gladstone for export sale. Several meetings have been held with Rockhampton Regional Council, Transport and Main Roads and DNRM to discuss road use requirements. As a consequence, Carbine commissioned a Haul Route Safety Review by consulting engineers to identify safety issues on road route haulage options. These discussions are ongoing and will form the basis for Carbine's Road Use Notification when all required information has been compiled.

## **TELSTRA COMMUNICATION TOWER EASEMENT**

There is a Telstra communication tower easement located on RRC and DNRM land within mining leases ML5660, 5620 and 5635. There is a compensation agreement between Telstra, DNRM and RRC with respect to this easement. Direct contact was made with Telstra's customer service land management company. However, given Carbine has no plans to access or utilise the easement, no consent is required however, Carbine will provide Telstra with a copy of this application.



# **APPENDIX 1**

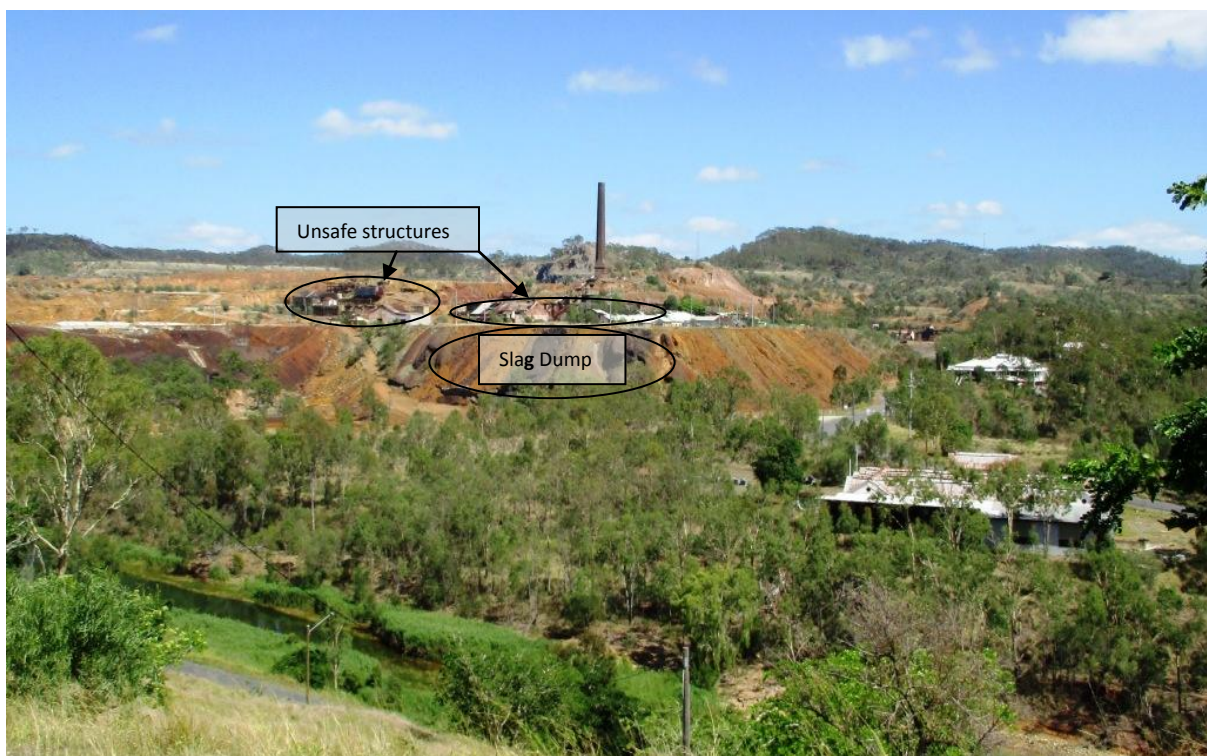
## **PRIORITY LIVING AREA RESOURCE DEVELOPMENT APPLICATION**

### **PHOTOS OF VISUAL IMPACT AREAS**

*Photo of Mine Site from Mount Morgan Arthur Timms Lookout (photo by Carbine)*



*Photo of Mine Site showing areas of visual impact (photo by Carbine)*





*Photo of unsafe structures - former Old Thickenner Building and Gold Room (photo by Carbine)*



*Photo of unsafe structures – former Workshop*





*Photo of AMD affected Dee River (photo by Carbine)*



*Photo of Planned Processing Plant Location (photo courtesy DNRM)*



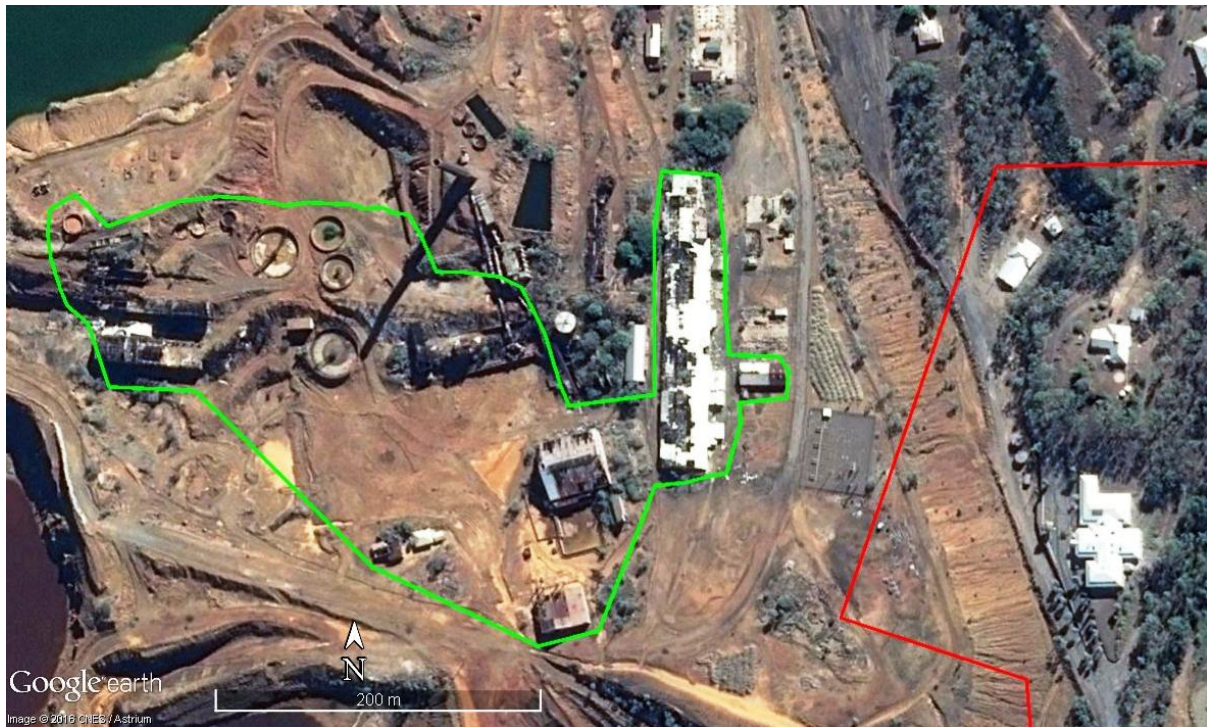


*Photo of Planned Processing Plant Location (photo courtesy DNRM)*



Process Plant Location

*Area of Heritage “Make Safe” Works – Upper Works (Photo Courtesy DNRM)*



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## **APPENDIX 2**

### **PRIORITY LIVING AREA RESOURCE DEVELOPMENT APPLICATION**

#### **ASSESSMENT CRITERIA TABLES**

TABLE 1

Priority Living Area	
<b>Prescribed Solution</b> Carrying out the activity in the priority living are, and in the location stated in the application, is likely to result in community benefits and opportunities, including, for example, financial and social benefits and opportunities.      a) Is unlikely to adversely impact on development certainty – (I.) For land in the immediate vicinity of the activity; and (II.) In the PLA generally	
<i>Prescribed Solution</i>	<i>Response to Prescribed Solution</i>
<b><i>a. The economic and social benefits that will be associated with the additional workforce (during both the construction and operation phases)</i></b>	<p>Development will employ an estimated 120 people during construction with an ongoing workforce of 70 direct employees. This doesn't include contract workers for unroasted iron pyrite concentrate truck haulage. Skilled and unskilled workers will be drawn from the local and regional population with no provision for fly-in fly-out or drive-in drive-out. Employees choosing to live in Mount Morgan, Gracemere, Rockhampton or other surrounding districts will add to the social fabric of the community. The Development will have a positive impact on the economy of the local region and the State through payment of rates, purchase of consumables, use of service industries and payment of royalties and taxes. It is estimated that Carbine's direct operating expenditure will contribute approximately \$40 million/annum into the local economy for a period of 9.5 years under the current operating plan and over a 20 year period if the operating life can be extended to 20 years. Capital cost for construction is estimated to be \$85 million. This will largely be injected into the local economy where supply and service capability is available. Regional Planning schemes acknowledge Mount Morgan mine associated tourism as a driver for economic growth. There is currently a private tour operator facilitating Tourism visits to the historic mine site (up to 5,000 people/annum). Development is expected to support and enhance the current mine site tours. Royalties paid to the State from mineral production are estimated to be between \$2.2M and \$3.2 million annually for the duration of the mine life.</p> <p>Carbine will make other community in-kind contributions to the community activities during the period of operations. In 2016 Carbine contributed to the Mount Morgan Show, SES, Rodeo Association, Rotary and Mount Morgan High School and Primary School.</p>

<b><i>Prescribed Solution</i></b>	<b><i>Response to Prescribed Solution</i></b>
<b><i>b. Direct contributions (monetary or in kind) towards:</i></b>	
<i>I. The improvement of trunk infrastructure (whether it be the capacity or the quality of the infrastructure)</i>	The agreement between the State and the mining lease owner stipulates that DNRM has a responsibility to upgrade power to the mine site to a level suitable for mine operations. Upgrades will provide a safer power distribution network that will assist DNRM future mine site activities. Road upgrades will be required at some locations along the selected parts of the pyrite concentrate road haul route. These upgrades will benefit all road users. As required Carbine will contribute to the maintenance of these roads.
<i>II. Public infrastructure (including public transport, health and education services, and cultural and social infrastructure such as parks, sport and recreation facilities, bikeways and walkways)</i>	End of mine life will provide an opportunity for the State to facilitate the public use of rehabilitated State land for recreational/heritage activity and will support the long term aspiration of Rockhampton Regional Council and the Mount Morgan community for the rehabilitated mine site for industrial tourism. The removal of 5 tonnes of AMD generating pyrite from the mine site (over a 20 year period) will make a significant contribution to improved water quality in the Dee River for the benefit of downstream land users. The re-opening of the Mount Morgan mine site presents an opportunity to establish suitable long term infrastructure at Mount Morgan that has potentially been dormant for some time.
<i>III. A community initiative or facility (for example public artwork, community notice board, community centre).</i>	Carbine engages the Mount Morgan Promotion and Development group and the Rockhampton Regional Council and will investigate ways to support Mount Morgan's social, sports and community programs. Carbine has been a sponsor supporting Mount Morgan's SES, Mount Morgan Show Society, Mount Morgan Rodeo Association, Mount Morgan Primary School and Rotary.



**TABLE 2**

<b>PRESCRIBED SOLUTION</b> <b>The activity a) Is unlikely to adversely impact on development certainty – (I) For land in the immediate vicinity of the activity; and (II) In the PLA generally</b>	
<b><i>Impact Criteria</i></b>	<b><i>Response to Prescribed Solution</i></b>
<i>a. Result in the loss of land available for urban development as identified in a local government planning scheme, development scheme or other applicable statutory planning instrument</i>	The activity will be contained within existing granted mining leases on land owned by the State at the former Mount Morgan mine site managed by DNRM as an Abandoned Mine Land site. The 2015 Rockhampton Regional Council Planning Scheme (RRPC) defines the area that contains the activity as "Mine Precinct - Constrained Land". There are no future urban development plans identified in the RRPC and verbal advice from RRC is that there are no plans for future urban development within the area of the current Mount Morgan mining leases. Areas outside the mining lease and within the PLA generally will remain unaffected other than an expected improvement in Dee River water quality for landowners adjacent to the Dee River.
<i>b. Prevent or delay the orderly expansion of planned urban development as identified in a local government planning scheme, development scheme or other applicable statutory planning instrument (for example, the life of the proposed resource activity may delay access to land and preventing timely development)</i>	There are no planned urban developments in the RRPC that will be restricted by the activity and none identified in discussion with RRC. Post Carbine activity, the mine site will remain under the management of DNRM's Abandoned Mine Land Program.
<i>c. Result in the discontinuation of an activity that is lawfully in existence under a local government planning scheme, development scheme or other applicable statutory planning instrument</i>	The mining lease owner is obliged to provide continued site access for tourism purposes under an existing agreement with the State. In fact, the activity will lead to enhanced tourism opportunities for the current authorised tourist operator with viewing access and interpretive descriptions of the tailings retreatment activity. Post Carbine mining activity, the former Mount Morgan mine site will continue to be managed by the State through DNRM's Abandoned Mine Land Program.
<i>d. Increase the cost of planned development (for example, changes to the existing landform could make the land more difficult or costly to develop)</i>	The former Mount Morgan Mine site will continue to be managed under DNRM's Abandoned Mine Land Program after Carbine's mining activity ceases. Although Carbine has a regulatory obligation to rehabilitate its operational areas after mining activity, the historical environmental and heritage management legacies from former mining will continue to be managed by the State through DNRM's Abandoned Mine Land Program. Carbine's post mine activity will make a substantial contribution to reducing the State's environmental and heritage management liabilities. Expected improvements in water quality in the Dee River downstream from the mine site may lead to enhanced utilisation of public areas adjacent to the river.

<b>Impact Criteria</b>	<b>Response to Prescribed Solution</b>
<i>e. Damage or otherwise affect existing infrastructure (for example, structural damage cause by subsidence)</i>	Carbine's tailings retreatment operation will not affect existing infrastructure. The proposed mining activity is essentially an environmental cleanup of historic tailings that are the source of AMD into the adjacent Dee River. Any changes to DNRM's site infrastructure will only be made in consultation with DNRM as set out in the existing agreement with the State. Carbine activity will considerably improve and upgrade existing mine site infrastructure.
<i>f. Result in additional demand on existing infrastructure or services (for example, town water)</i>	Town water won't be used for mining or mineral processing related purposes. There are adequate sources of water available within the mine site for Carbine's industrial needs. Town water is already supplied to the mine site for drinking and emergency personal wash down purposes. Any augmentation will be within the existing allocation for the mine site. DNRM has a contracted obligation to make electrical power available for Carbine's project. There is adequate existing electrical power available at the mine site. There is existing road infrastructure to the mine site. Any required road upgrades will be subject to negotiation with the relevant road authority under the provisions of a Road Use Notification under the Mineral Resources Act 1989.
<i>g. Negatively impact on the amenity of the PLA in general and on land in the immediate vicinity of the activity.</i>	It can be expected that increased activity at the former Mount Morgan Mine site may have some impact on residents and businesses within the PLA generally. Negative impacts could include noise, vibration, possible dust creation, vehicle movements and changes to the existing mine views. Noise, dust and vibration limits are regulated and are set in the Environmental Authority. Carbine is required to mitigate these potential impacts to conform to EA conditions. Mitigation Carbine proposes includes dust suppression water on light vehicle and haul roads, dust suppression at the process plant if required. Tailings are semi moist and are not expected to create dust. Carbine has located their process plant to a location that won't be visible to the town. Carbine has undertaken background noise and dust monitoring as a guide to determining noise impacts. Carbine commissioned a noise and vibration study to assess the construction and operational noise and vibration impacts on the amenity of the nearby identified sensitive receptors. Noise and vibration mitigation measures are planned to achieve predicted compliance with the relevant noise and vibration criteria. Tailings excavation will have restricted hours of operation (12 hr days 5.5 days per week). Unroasted Iron Pyrite haulage from the mine site will be restricted to daylight hours. Any changes to heritage listed buildings are subject to a heritage development application process. Although views of the mine site will change, the view will still be that of an historical mine site with heritage buildings including the iconic smelter stack still part of the visual

<i>Impact Criteria</i>	<i>Prescribed Solution</i>
	<p>landscape. Given Carbine's tailings retreatment at this stage only affects 4 tailings dumps; there will be little if any change to the historic waste dumps. Carbine's post mine rehabilitation including revegetation of former tailings areas will enhance the green space views for parts of the site. Much of the current landscape falls within the heritage listed area and as such, is subject to a Heritage Development approval. The Mount Morgan Mine site operated as a large scale mining and processing activity from 1882 until 1990. The site has been the location of continuous exploration, project evaluation and mine rehabilitation activity since that time. This includes extraction of 500,000 cubic metres of tailings from the Dee River in 2006 by DNRM; operation of a water treatment facility since 2006; operating heavy vehicle and earthmoving equipment to support DNRM's rehabilitation projects; operation of seepage interception systems and large mine water evaporators; mine site tours on a daily basis and the movement of people and support activity for DNRM's abandoned mine land program on a daily basis. Carbine has canvassed community concerns about impacts at information sessions during community events (Mount Morgan Show Day and Wattle Day) and at a community information session held in December 2006. Carbine has an active Community and Stakeholder Engagement Plan to ensure community concerns are recognised and appropriate responses provided.</p>

To determine the impact on amenity, the proposed activity should be evaluated against the following factors:	
<i>Impact Criteria</i>	<i>Prescribed solution</i>
<i>i. The compatibility of the activity with the surrounding activities</i>	<p>Mount Morgan mine operated between 1882 and 1990. The town owes its existence to the historic mining operation and the town identifies very strongly with its mining past through its tourist attractions and town festivals. TMC Tours provide generally twice daily mine site tours with regular visits arranged for school groups and community organisations. Many thousands of people worked at or had connections with Mount Morgan's mining past. Although the town grew up in close proximity to the mine, feedback Carbine has received from business and community organisations and from community information sessions show strong support for Carbine's tailings retreatment project. Carbine's activity will make substantial improvements to the degraded environmental state of the former mine site and improving water quality in the Dee River by removing AMD forming sulphide minerals. Improving Dee River water quality is expected to enhance the amenity of residential and rural residential properties within the PLA adjacent to the Dee River. The RRPC has designated the location of the development activity as "Mine Precinct" and includes the proposed development activity of "mining and mineral processing". Carbine maintains a strong relationship with Rockhampton Regional Council and regularly provides project updates and facilitates site visits. Specific aspects of discussion have included road haulage, heritage, environmental remediation and job and business opportunities.</p>
<i>ii. The nature and scale of the proposed activity and the extent of its intrusion on the predominant character of the surrounding area</i>	<p>Development takes place within existing granted mining leases at the site of former historic mining that has significant degraded environmental values. Post mine rehabilitation is expected to improve current contaminated site conditions and vegetation cover. DNRM have faced many challenges managing the former Mount Morgan Mine site as an abandoned mine. In 2003, DNRM published the Mount Morgan Mine Rehabilitation Plan. The plan incorporates options that include tailings re-treatment as a mining activity. Carbine's Project is compatible with and supported by DNRM as a way of implementing aspects of mine site rehabilitation without public purse expense. Rehabilitation activities including water management, tailings extraction and water treatment have been undertaken by the State since mine closure in 1990. Carbine's tailings retreatment project won't change the character of the surrounding area or even the nature of current and historical activities that have taken place at the mine site. The RRC has recognised this and incorporated into their planning scheme provision for mining and mineral processing at the mine site providing impacts on the</p>

<b>Impact Criteria</b>	<b>Prescribed Solution</b>
	surrounding community, scenic amenity and the environment are properly managed. These aspects are subject to regulatory approval based on Carbine's permitting applications for Heritage Development approval by the State, Environmental Authority amendment and Road Use Notification.
<i>iii. The extent of change to the volume or nature of traffic on the roads in the PLA</i>	There will be higher levels of impact with increased traffic through Mount Morgan town during a 9 month construction period. A Road Impact Assessment for unroasted iron pyrite haulage from the mine site to the Port of Gladstone is being considered. An initial Haul Route Safety Review report was prepared by Carbine's engineering consultants. This report has been reviewed by RRC and TMR with response recommendations. The road haulage is subject to a Road Use Notification process under the Mineral Resources Act. Existing road traffic to the mine site currently includes contractor access and heavy truck movements. Periodic construction activity has taken place at the mine site in recent years without conflict. Carbine has held and continues to hold ongoing discussion with DNRM, Department of Transport and Main Roads (TMR) and Rockhampton Regional Council (RRC) regarding impacts on roads under their respective jurisdiction. Carbine will be required to comply with any road use conditions and upgrades required under the Road Use Notification process.
<i>iv. The effect on the existing linkages between various parts of the PLA (for example, between residential areas and employment areas)</i>	Mount Morgan town developed as a result of the historic mine development. Town and mine are separated by the Dee River and Dairy Creek to the east of the mine site. Other surrounding areas are mostly designated rural. The RRPS has clearly identified the "Mine Precinct" from current and future residential areas. There is only one main access to the mine site (Meyenberg Crossing). There is ample provision for vehicular access and walking access to the mine site via the Meyenberg Crossing over the Dee River. Carbine's Project will provide suitable car parking and lay down areas for construction and workforce. Work hours will be between 6:00am and 6:00pm so additional vehicle movement at the start and end of each day will be outside school hours and main business hours. Heavy equipment used during construction (cranes etc) will remain on site during construction and won't be part of daily traffic movement. On any given work day, DNRM already utilise the services of contract plant and equipment including lime tanker haulage for the water treatment plant on a daily basis when the plant is operating.

<b>Impact Criteria</b>	<b>Prescribed Solution</b>
<p><i>v. Changes to the outlook from key vistas, nearby sensitive uses (for example, residential areas) or public facilities (for example, parks) and tourist attractions</i></p>	<p>Development will visually impact the view of the current historic mine site from residential and public access lookout locations. Tailings reprocessing changes won't include significant alteration to major waste dumps. The character of the view won't change as it will continue to be that of a mine site with historic buildings and waste dumps. Changes to the historic landscape within the heritage listed area are subject to heritage development approval. Post mining rehabilitation will increase vegetation cover blending in to a current bushland, rural background. The processing plant location is shielded from and won't be visible from the town.</p>
<p><i>vi. The effect on the sense of place, local cultural heritage values and perceptions of safety</i></p>	<p>Mount Morgan town identifies with the historic iconic smelter stack visible from the residential community and surrounding areas. This won't be impacted. The aesthetic character of the development area won't change from that of a mining and mineral processing location. Elements of historic structures will remain in addition to new mining and mineral processing structures. Any modifications to heritage listed structures will be subject to a Heritage Development application approval. Public and community feedback from Carbine's community information booths during Mount Morgan Show Day and Mount Morgan Wattle Day reinforce Carbine's view that re-initiation of mining activity at the former mine site will strengthen community view of the importance of both historical and new mining activity to the pride the town has in its mining related identity. The Heritage Development application proposes disassembly of some heritage listed former mine structures that have been assessed by heritage impact consultants to be "unsafe". Disassembly of these structures will facilitate safer mine site tours and current mine site activity that currently has to be discontinued when wind speeds exceed 25 kilometres per hour. The Heritage Development application approval process is being managed by the DNRM and involves a detailed application process including specific recommendations from independent heritage experts.</p>
<p><i>vii. Visual prominence of the site</i></p>	<p>Development will impact current visual aspects of mine waste dumps. These are currently partially revegetated but remain a source of contamination. Post mine rehabilitation will improve vegetation cover and visual amenity. Post mine rehabilitation impact to historic landscape is subject to DEHP heritage development approval. Retreating tailings and some of the waste dump material won't increase the visual prominence of the site as no new rock or ore material will be mined. Existing waste dumps and tailings impoundments will be modified with revegetation of post mined areas. Some unsafe deteriorated heritage buildings will be dismantled or made safe in accordance with heritage expert advice and in accordance with Heritage Development approval.</p>

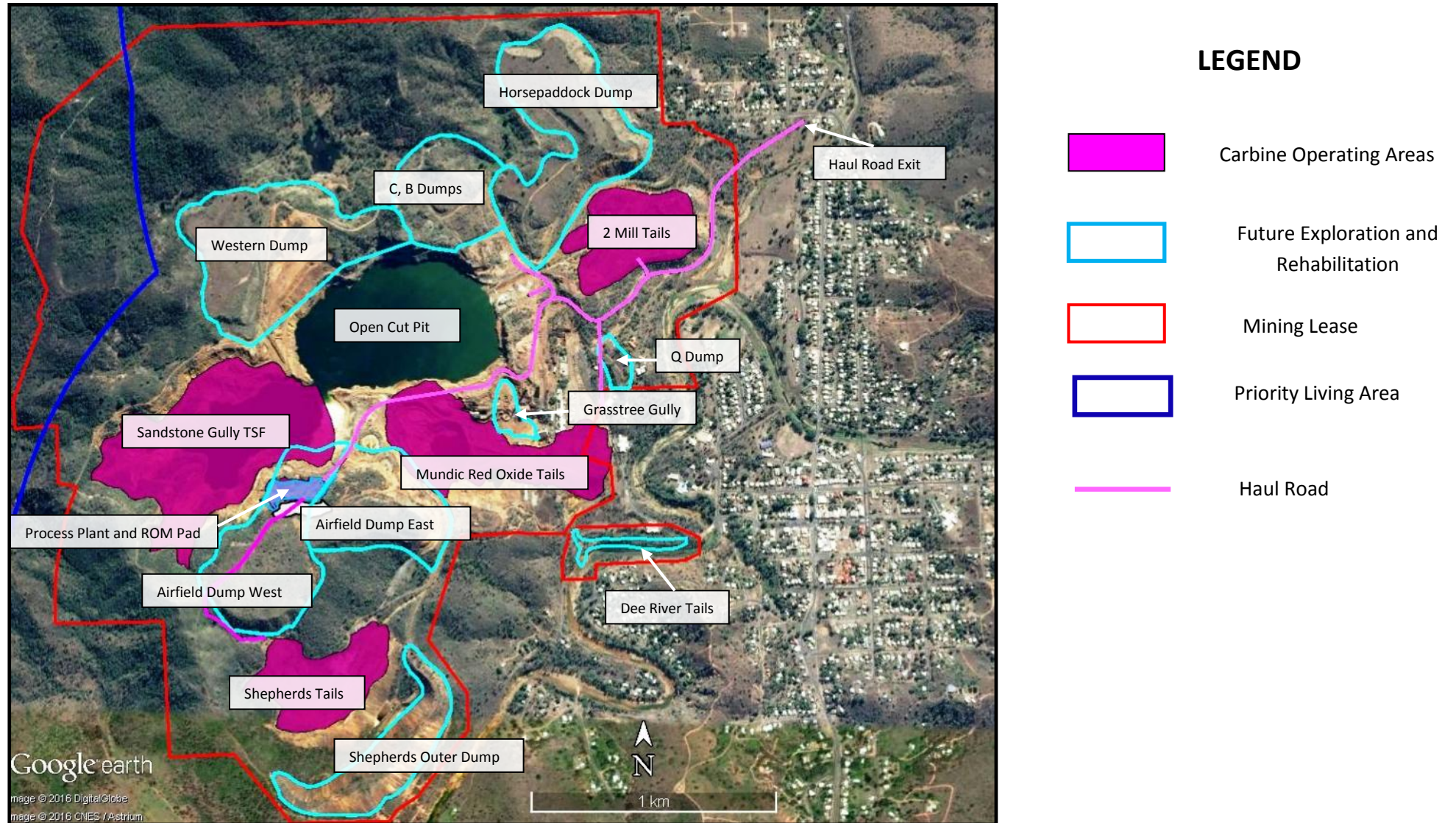
<b><i>Impact criteria</i></b>	<b><i>Prescribed Solution</i></b>
<i>viii. Proposed landscaping and enhancements</i>	Post mine revegetation and landscape rehabilitation including site drainage is subject to DEHP regulation under an Environmental Authority. Historical mine rehabilitation wasn't undertaken in accordance with current rehabilitation practices. Insufficient funding has led to significant deterioration of historic buildings. Carbine has regulatory obligations to rehabilitate operational areas according to current practice. Carbine has also committed to undertake restorative work to some of the heritage listed items as part of the Heritage Development approval.

## **APPENDIX 3**

### **MAP OF CARBINE OPERATING AREAS AND FUTURE EXPLORATION AND REHABILITATION AREAS**



## CARBINE OPERATING AREAS, FUTURE EXPLORATION TARGETS AND POSSIBLE REHABILITATION AREAS



**APPENDIX 4**

**LIST OF COMMUNITY COMMENT FROM**

**COMMUNITY INFORMATION**

**MEETING HELD AT MOUNT MORGAN 14th**

**DECEMBER 2016**

# Carbine Resources Ltd – Mount Morgan Community Information Meeting

14<sup>th</sup> December Mount Morgan School of Arts Building

## NOTES ON QUESTIONS TAKEN FROM THE FLOOR

Question From	Aspect of Interest	Question	Carbine Response
Resident	Noise	Commended Carbine on the quality of the presentation. How much noise will be produced and if locals find it excessive, can we compromise?	All components of the plant have been modelled for noise production to ensure compliance with regulatory requirements. Plant is located in an area that provides noise and visual shielding. If there are issues once the plant is operating Carbine will look to see how that can be addressed. Restricted hours for the mining operation.
Resident	Employment for locals	What will be your process for hiring particularly when you engage contractors	Recognition that there are experienced locals. Construction company to build plant and that will require specific expertise. Use of local people where skills available including labour. No provision for fly in fly out. Carbine won't be building a construction camp. Provision for training/apprenticeships once in operation. Carbine currently collecting resumes from locals. Contracts for mining will incorporate requirement for using local workforce where available. At the appropriate time a suitable recruitment process will be put in place.
Resident	Timeframe	What is the timeframe for raising project finance	Best case 3 months
Resident	Share price	Will there be future dividends	It will be a future management (Company Board) decision whether profits will be used to fund dividends or used to grow the company
Resident	Investment	Will multinationals be interested in Carbine as an investment	Unlikely to attract multinationals because the pyrite product is potentially a complication for large

Question From	Aspect of Interest	Question	Carbine Response
			companies. May change in future though once production starts.
Resident	Cyanide use in gold recovery	Has Carbine looked at other gold recovery techniques other than using cyanide	The use of cyanide to recover gold is a well known widely used and successful technique in Australia. Cyanide is expensive so Carbine will have a “detox” unit to recover and reuse cyanide. Cyanide use is subject to DEHP regulations. If there are other techniques available in future that are cost effective, Carbine would consider the alternatives.
Resident	Pyrite	Is it likely that the pyrite producer in Finland would be interested to take on Mount Morgan pyrite production	Carbine has held some talks with the Finnish producer but they haven’t expressed interest in Mount Morgan pyrite production. This is because the pyrite is typically produced as a genuine by-product and isn’t the primary focus of the company.
Resident	Pyrite	What are the risks associated with securing pyrite contracts for China	Carbine has an “off-take agreement” with a mineral trader subject to market pricing (Talana). Carbine will seek to establish long term contracts with pyrite buyers once the mine starts.
Resident	Project funding	Will Carbine use a combination of debt and equity to finance the project	Yes
Resident	Mining tailings	How will Carbine recover the tailing especially those that are under water	Dry mining where tailings are exposed and can be dewatered and dredging where tailings are under water(as did the former mine)
Resident	Revegetation	Will trees grow on mined out areas	It is a highly disturbed site. Trees do currently grow on disturbed areas. Carbine will be able to improve the current disturbed state of the site. DNRM investigations done on revegetation are available to Carbine.
Resident	Sulphuric acid production	Can Carbine make sulphuric acid on-site rather than sending pyrite to China	To build a sulphuric acid plant at the mine site would cost in the order of \$150 million. Carbine has no current plans to do so. That could change if chemical producers become interested in that option.

Question From	Aspect of Interest	Question	Carbine Response
			Agree that one logical option is to produce Sulphuric Acid on site.
Resident	Share price and financing	How does Carbine's share price affect project funding	Carbine's view is the company shares are currently undervalued. Capital costs are high for a 9.5 year mine life but project economics improve significantly with the 20 year base case.