KCGM Hidden Secret Project
EPA Section 38 Referral and DMP Mining Proposal

Tenements:
M26/131and M26/353

Prepared for:
Kalgoorlie Consolidated Gold Mines Pty Ltd

Prepared by:
ENVIRON Australia Pty Ltd

Date:
November 2014

Project Number:
AS110740

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This document is issued to Kalgoorlie Consolidated Gold Mines as Referral document to the Environmental Protection Authority of Western Australia under part IV the *Environmental Protection Act 1986* and as a Mining Proposal under the Western Australian *Mining Act 1978* for developing the Hidden Secret Project east of Mt Charlotte Underground Mine. It should not be used for any other purpose.

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VERSION CONTROL RECORD

Document File Name	Date Issued	Version	Author	Reviewer
AS110740_KCGM Hidden Secret Project Referral_MP_D1	28 July 2014	Draft 1	JD	BB
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Mining Proposal Checklist

Mining Proposal Checklist		Y/N NA	Page No	Comments
Public Availability				
1	Are you aware that this mining proposal is publically available?	Y	NA	
2	Is there any information in this mining proposal that should not be publically available?	N	NA	
3	If 'No' to Q2, do you have any problems with the information contained within this mining proposal being publically available?	N	NA	
4	If 'Yes' to Q2, has confidential information been submitted in a separate document/section?	NA	NA	
5	Has the mining proposal been endorsed? See last page Checklist.	Y	iv	
Mining Proposal Details				
6	Have you included the tenement number(s), site name, proposal overview and date in the title page?	Y	NA	Included in title page
7	Who authored the mining proposal?	NA	i	ENVIRON Australia / KCGM
8	State who to contact for enquires about the mining proposal?	NA	4	Michelle Berryman mberryman@kalgold.com.au
9	How many copies were submitted to the DMP?	NA	NA	Hard Copies: 0 Electronic:1
10	Is the mining proposal to support lease application?	N	NA	
11	Has a geological resource statement been included (refer to section 4.3.2 of mining proposal guidelines)	Y	9	Refer to Section 3.2.4 Resource Statement
12	Will more than 10 million tonnes of ore and waste be extracted per year?	N	NA	
13	Will more than 2 million tonnes of ore be processed per year? State total throughput?	N	NA	
14	Is the mining proposal located on pre-1899 Crown Grant lands? (not subject to the Mining Act)	N	NA	
15	Is the mining proposal located on reserve land? If 'Yes' stated reserve types in space below:	NA	NA	
16	Will the mining proposal occur within or affect a declared occupied town site?	Y	3	The Project is within 2 km of a declared town site (City of Kalgoorlie-Boulder). However, the Project is well below ground level there will be no change in surface clearing.
17	Is the mining proposal within 2 km of the coastline or a Private Conservation Reserve?	N	NA	

	Mining Proposal Checklist	Y/N NA	Page No	Comments
18	Is the mining proposal wholly or partially within a World Heritage Property, Biosphere Reserve, Heritage Site or Soil Reference Site?	N	NA	
Tenement Details				
19	Are all mining operations within granted or applied for tenement boundaries?	Y	4	
20	Are you the tenement holder of the all the tenements?	N	4	KCGM is the Joint Venture Manager of the tenements which are held by Barrick (Australia Pacific) Limited and Kalgoorlie Lake View Pty Ltd
21	If 'No' at Q20, do you have written authorisation from the tenement holder(s) to undertake the mining proposal activities? (Refer to section 4.2.1 of the Mining Proposal Guidelines)	Y	NA	KCGM has received permission from the tenement holders to submit a Mining Proposal the Hidden Secret Project.
22	If 'Yes' at Q21, then is a copy of the authorisation contained within the mining proposal?	N	NA	This has previously been provided to DMP.
23	Have you checked for compliance against tenement conditions?	Y	17	
Location and Site Layout Plans				
24	Have you included location plans showing tenement boundaries and mining operations?	Y	Fig 3	
25	Have you included site layout plans showing all mining operations and infrastructure in relation to tenement boundaries?	Y	Fig 3	
26	Have you included Area of Disturbance Tables for all tenements impacted by mining operations?	Y	14	The Project is well below ground level therefore no additional surface clearing is required.
Environmental Protection Act				
27	Does the mining Proposal require referral under part IV or the MOU? If 'Yes' describe why in space below:	Y	1	The Mining Proposal Project is within 2km of a declared town site (Kalgoorlie).
28	Has the EPA set a level of assessment? If yes state:	N	NA	KCGM has referred this Proposal to the EPA for assessment.
29	Is a clearing permit required? If 'No' then explain why in the space below:	N	11	The Project is well below ground level therefore no additional surface clearing is required.
30	If 'Yes' at Q29 then has a permit been applied for?	NA	NA	
31	Is a works approval required by the DER?	N	3	
32	Has a Works Approval been submitted to the DER?	NA	NA	
Stakeholder Consultation				
33	Have the following stakeholders been consulted? (use NA if not relevant)			
	Shire?	Y	24	

	Mining Proposal Checklist	Y/N NA	Page No	Comments
	Pastoralist?	NA		
	Main Roads?	NA		
	Near neighbours/businesses?	Y	24	
	Others? (specify): CRG, OEPA, DMP, GEDC, KBCCI, CME, Local Politician	Y	24	
Environmental Assessment and Management				
34	Is the mining proposal wholly or partially within DPAW managed areas?	N	NA	
35	If 'Yes' at Q34 then has DPAW been consulted?	NA	NA	
36	Is the mining proposal wholly or partially within a red book area or a bush forever site?	N	NA	
37	Will the mining proposal impact upon a water source area, water reserve, declared or proposed catchment, groundwater protection area, significant lake or wetland?	N	NA	
38	Is a water or de-watering licence required?	N	NA	
39	If 'Yes' at Q38 then has the licence(s) been applied for?	NA	NA	
40	Does the mining proposal include new tailings storage or changes to existing tailings storage?	N	NA	
41	Has an AMD assessment been undertaken?	NA	NA	
42	Have flora and fauna checks been undertaken?	N	NA	
43	Are any rare species present?	NA	NA	
44	Has a preliminary closure plan has been included?	N	23	The KCGM Mine Closure Plan is currently under review and will be resubmitted in 2015. This review will consider if any changes are required for the Hidden Secret Project.

I hereby certify that to the best of my knowledge the above checklist accurately reflects the information contained within this mining proposal.

Name: Ian Butler

Signed: IM Butler

Date: 5/11/2014

Position: General Manager - Kalgoorlie Consolidated Gold Mines Pty Ltd

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Acronyms, Abbreviations and Glossary

CME:	Chamber of Minerals and Energy
CRG:	KCGM Community Reference Group
DMP:	Department of Mines and Petroleum (Western Australia)
EP Act:	*Environmental Protection Act 1986* (Western Australia)
EPA:	Environmental Protection Authority (Western Australia)
GEDC:	Goldfields-Esperance Development Commission
GMD:	Golden Mile Deposit
GMF:	Golden Mile Fault
g/t:	grams per tonne
KBCCI:	Kalgoorlie-Boulder Chamber of Commerce and Industry
KCGM:	Kalgoorlie Consolidated Gold Mines
km:	kilometre
m:	metre
MCP:	Mine Closure Plan
mg/L:	milligrams per litre
mm/s:	millimetres per second
MP:	Mining Proposal
Mt:	Mount
Mining Act	*Mining Act 1978* (Western Australia)
NEPM:	National Environmental Protection Measure
OEPA	Office of the Environmental Protection Authority (Western Australia)
oz:	ounces
SOB:	Southern Ore Body
t:	tonnes
WA:	Western Australia

Summary and Commitments

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) operations include the Fimiston Open Pit, Mt Charlotte Underground Mine and the Fimiston and Gidji Processing Plants. The Fimiston Operations (including Mount (Mt) Charlotte) are located adjacent to the City of Kalgoorlie-Boulder approximately 600 kilometres (km) east of Perth, Western Australia (WA). The Gidji Operation is located approximately 20 km north of Kalgoorlie-Boulder. KCGM is the management company of the Kalgoorlie Operations for the Joint Venture Owners; Barrick Australia Pacific Ltd (Barrick; 50%) and Newmont Asia Pacific Ltd (Newmont; 50%).

KCGM has been conducting exploration drilling along an area known as the Central Corridor since 2010. This drilling is exploring historical mining areas for potentially mineable underground resources between Fimiston and Mt Percy. KCGM has identified an underground resource named 'Hidden Secret', due to its proximity to historic open pit and underground mining operations of the same name.

The Hidden Secret ore body has been classified as a resource based on its geologic certainty and economic value in accordance with set standards. This resource is currently estimated to be 665,000 tonnes (t) at 3.56 grams per tonne (g/t), equating to 76,000 ounces (oz) of gold.

Mining of the Hidden Secret resource is only considered possible due to its proximity to the Mt Charlotte Underground Mine and associated infrastructure. KCGM proposes to extend current underground operations to include the Hidden Secret resource in 2015. The extension will increase the life of Mt Charlotte by two years to around 2018 and create 11 new jobs.

Hidden Secret is predominantly located to the east of Williamstown (a suburb of the City of Kalgoorlie-Boulder), around 350 metres (m) east of the existing Mt Charlotte Operation. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown.

Whilst mining the Hidden Secret resource KCGM will utilise the current Mt Charlotte surface infrastructure, such as the mine ventilation system. Existing underground mobile equipment will also be used, with the addition of a jumbo, truck and loader. Hidden Secret will be accessed by extending an existing exploration drive (at 225 m depth) and developing a second access drive (at 400 m depth). Ore will be transported to the Fimiston Processing Plant via the Sam Pearce Decline and waste rock will be used for void backfill.

As the project will be mined entirely underground and utilise existing surface infrastructure from the adjoining Mt Charlotte Underground Mine, environmental impacts will be minimal. Geotechnical stability and blast vibration are considered to be the main environmental impacts for the Project and have been assessed (Table 1). Hidden Secret is in an area classified geotechnically as being a very good rock mass and the stope void will be progressively backfilled. Controlled blasting practices and seismic monitoring will be necessary to manage seismicity in the Hidden Secret area as such additional seismic sensors will be installed.

Independent modelling of blast vibration has indicated a 90% confidence that vibration levels will be below 2.5 millimetres per second (mm/s), similar to current blasting levels. These are

well below regulatory limits (5 and 10 mm/s) which consider both human tolerance and structural integrity. KCGM currently monitors blast vibration and informs residents of larger production blasts at Mt Charlotte. It is planned to install one additional blast vibration monitoring site at the surface near the Hidden Secret area.

KCGM has a well-established community engagement process which is an essential part of operations for one of Australia's largest gold mines, located in close proximity to a City of 30,000 people. The range of communication channels and information provided ensures that KCGM has a strong understanding of the impacts the community experiences from its operations.

KCGM has undertaken consultation for the Hidden Secret Project with key stakeholders including the Community Reference Group, Williamstown Residents, Government Agencies, Local Council and Business Organisations.

Table 1: Potential Impacts, Management and Commitments

Existing Environment	Potential Impacts of Proposal	Proposed Management	Commitments
Geotechnical Stability			
Overall the rock mass surrounding the Mt Charlotte Underground Mine comprises well interlocked blocks and is classified geotechnically as very good. The underground stopes at Mt Charlotte are backfilled with crushed rock for long term stability.	Geotechnical stability has been assessed and Hidden Secret is also in an area classified geotechnically as being a very good rock mass.	KCGM will continue to monitor and manage underground stope void backfilling activities.	KCGM will progressively backfill the Hidden Secret stope void.
The Goldfields is subject to above average seismic activity, partly due to the structural geology of the area which contains many large faults and amalgamated fault complexes.	Seismicity associated with fault slip and diminishing pillars has been identified as a medium risk in the Hidden Secret area.	Controlled blasting practices and seismic monitoring will be undertaken including installation of additional seismic sensors in the Hidden Secret area.	KCGM will install additional seismic monitoring sensors.
Blast Vibration			
Routine blasts are undertaken at the Mt Charlotte Underground Mine and vibration is well below regulatory limits. KCGM currently monitors blast vibration and informs residents of larger production blasts at Mt Charlotte.	Independent modelling of Hidden Secret blast vibration has indicated a 90% confidence that vibration levels will be below 2.5 mm/s, similar to current blasting.	Vibration management will continue to be undertaken in accordance with comprehensive systems established and refined based on 25 years' experience. Monitoring will be undertaken using the existing network with one additional monitoring site installed. The KCGM Noise and Vibration Monitoring and Management Programme will be reviewed and updated.	KCGM will install one additional blast monitor. KCGM will review, update and continue to implement the Noise and Vibration Monitoring and Management Programme.

1 Introduction

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) Operations include the Fimiston Open Pit, Mt Charlotte Underground Mine and the Fimiston and Gidji Processing Plants. The Fimiston Operations (including Mt Charlotte) are located adjacent to the City of Kalgoorlie-Boulder approximately 600 km east of Perth, WA (Figure 1).

KCGM has identified an underground resource named 'Hidden Secret', due to its proximity to historic open pit and underground mining operations of the same name. The Hidden Secret ore body has been classified as a resource based on its geologic certainty and economic value in accordance with set standards. This resource is currently estimated to be 665,000 t at 3.56 g/t, equating to 76,000 oz of gold.

Underground mining of Hidden Secret is considered possible only because of its proximity to the Mt Charlotte Underground Mine and that most of the infrastructure already exists. KCGM proposes to extend current underground operations to mine Hidden Secret in 2015. The extension will increase the life of Mt Charlotte by two years to around 2018 and create 11 new jobs.

Hidden Secret is predominantly located to the east of Williamstown (a suburb of the City of Kalgoorlie-Boulder); around 350 m east of the Mt Charlotte Underground Mine. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown (Figure 2).

KCGM has a well-established community engagement process which is an essential part of operations for one of Australia's largest gold mines, located in close proximity to a City of 30,000 people. The range of communication channels and information provided ensures that KCGM has a strong understanding of the impacts the community experiences from its operations.

It is understood that the Hidden Secret Project (the Project) will require referral under Part IV of the *Environmental Protection Act 1986* (EP Act) due to its proximity to the declared City of Kalgoorlie-Boulder town site (Williamstown Suburb). The Project will use existing ore processing facilities and is not considered a Prescribed Premises under Part V of the EP Act. Therefore, the Project will not require a Works Approval or any change to Licence conditions. The Department of Mines and Petroleum (DMP) has indicated that a Mining Proposal should be submitted for the Project.

This document has been prepared as a combined EPA Referral and DMP Mining Proposal (MP).

2 Background Information

2.1 Project Objectives

The objective of this EPA Referral / DMP MP document is to seek approval to extend current underground operations to mine the Hidden Secret ore body, located east of the Mt Charlotte Underground Mine.

2.2 Ownership

The Proponent for this proposal is KCGM which is the management company that operates the Kalgoorlie Operations for the Joint Venture Owners, Barrick (Australia Pacific) Ltd (Barrick; 50%) and Newmont Asia Pacific Ltd (Newmont; 50%).

Contact details for the proposal are:

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2.3 Location

The Hidden Secret ore body is predominantly located to the east of Williamstown, around 350 m east of the Mt Charlotte Underground Mine. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown (Figure 2). The Project area will extend underground across two active mining leases (Table 2 and Figure 3).

Whilst the backfilled Hidden Secret Open Pit is located immediately south of the underground ore body, neither it nor the historic underground workings located within the area, extend into the Hidden Secret ore body.

Hidden Secret will be accessed by extending an existing exploration drive (at 225 m depth) and developing a second access drive (at 400 m depth). Approximately 200 m of the exploration drive has already been completed as part of the exploration drilling programme.

Tenement details are shown in Table 2 and on Figure 3.

Table 2: Tenement Details for Hidden Secret Project

Tenement No.	Holders
M26/131	Barrick (Australia Pacific) Limited
M26/353	Kalgoorlie Lake View Pty Ltd (a subsidiary of Newmont Asia Pacific Ltd)

2.4 Existing Facilities

Mt Charlotte uses a modified 'retreat stoping under rockfill' underground mining method to extract remnant ore blocks from around historic mining areas. The existing Mt Charlotte underground mobile equipment fleet consists of Atlas Copco Mine Truck (6), Caterpillar Loader (4), Caterpillar Integrated Tool Carrier (3), Atlas Copco Twin Boom Jumbo (2), Atlas Copco Long Hole Drill (2) and Caterpillar Grader (1).

Mined ore is transported by underground trucks to the surface via the Sam Pearce Decline. Ore is treated at the Fimiston Processing Plant. Waste rock generated is used as stope backfill underground in void areas. No development waste rock from the underground operations is brought to the surface.

Waste rock backfill from the Fimiston Open Pit is crushed and transported via an overland conveyor and placed into the 'Glory Hole', a small open pit located near the Cassidy Headframe. The Glory Hole connects with the Mt Charlotte underground stopes and backfills the stopes by utilising a gravity feed system. Three different transfer points (surface passes) to other underground stope void areas are also fed using the conveyor system.

Construction of the Cassidy Shaft was completed in 1986 and the Cassidy Headframe is a prominent feature of the Kalgoorlie-Boulder skyline. It is 50 m high and is served by two winders - one for hoisting ore to the surface, the other for raising and lowering employees and equipment. The last ore hoisted by the Cassidy Shaft was in March 1999 and all ore is now transported to the surface via the Sam Pearce Decline. The Cassidy Shaft is still occasionally used for transporting employees and equipment and is available for emergency egress.

Development of the Sam Pearce Decline commenced in January 1997 and was completed in December 1997. The Sam Pearce Decline made it feasible to mine lower grade remnant ore in the upper mine when deeper reserves were exhausted or abandoned in 1998. The portal is located at the northern most part of the Fimiston Open Pit and the 3 km decline breaks through at the Cassidy Shaft 900 level. The 5.5 m high by 6 m wide decline provides access to additional ore body areas near Mt Charlotte, allows ore to be trucked directly to the surface and provides increased efficiencies in mine ventilation and equipment maintenance.

Ventilation in an underground mine is of critical importance to the occupational health and safety of underground employees. Vertical shafts (sometimes called raise bores) extend to the surface and have fans installed as part of the mine ventilation system. There are three surface ventilation (vent) fans installed for the Mt Charlotte Underground Mine. These include the Charlotte Ore Body (COB), Northern Ore Body (NOB) and Southern Ore Body (SOB) vent fans.

The vent fans are used to draw in fresh air and exhaust the same air within which KCGM underground employees work. The gases and dust in this air have been diluted or other controls implemented in order to meet occupational health and safety requirements. Each vent fan is engineered to ventilate different areas of the Mt Charlotte Underground Mine. Fresh air is also delivered underground via the Cassidy Shaft and the Sam Pearce Decline. Underground mine air flows are controlled and directed by a system of walls, doors, fans and ventilation ducts.

The surface release of post-firing blast fumes from specific development areas is managed by switching off the SOB vent fan until the blast fumes have had adequate time to dissipate in the mine. Turning off the vent fan also results in the flow in the raise bore reversing so blast fumes are not released on the surface from the SOB vent fan which is located near Williamstown.

Mt Charlotte currently employs approximately 60 people, of whom around 40 people work underground. The remainder of employees involved in technical and administrative support on the surface.

Since 2010, KCGM has been conducting exploration drilling along an area known as the Central Corridor (near Mt Charlotte). This drilling is exploring historical mining areas for potentially mineable underground resources between Fimiston and Mt Percy.

KCGM exploration drilling has identified an underground resource named ‘Hidden Secret’. Underground mining of Hidden Secret is considered possible only because of its proximity to the Mt Charlotte Underground Mine and that most of the mining fleet and infrastructure already exists.

2.5 History

The discovery of gold near Mt Charlotte in 1893 by three Irish prospectors Hannan, Flanagan and O’Shea started the biggest gold rush in Western Australia’s history. While Mt Charlotte was not part of the gold reef to the south, known as the "Golden Mile", the discovery drew enormous attention to the Eastern Goldfields.

The surface gold was quickly exhausted, so underground shafts were sunk to access the deeper ore. Underground mining at Mt Charlotte occurred intermittently, and by 1945, small scale workings had progressed to a depth of 215 m. However it was only in 1954 that geologists defined the large low grade ore body that was to become the Mt Charlotte Underground Mine.

Large scale, or bulk underground mining, didn’t begin until 1963 when Gold Mines of Kalgoorlie took over the lease. Bulk underground mining became feasible when the then Department of Minerals and Energy allowed diesel engines and machinery to be used underground for the first time in WA. Mt Charlotte was one of the first mines in Australia to use mechanised equipment underground.

An original open cut about 30 m deep was mined in the early 1900s, known as the “Glory Hole” at the top end of Hannan Street. Around 1964 the underground workings were linked to the Glory Hole, which was expanded to provide back fill for the underground workings. The backfilling of old stopes is important to ensure long-term stability of the underground workings and reduce seismic activity.

During the 1970’s the Goldfields mining industry experienced a severe depression. A plummeting gold price resulted in economic pressure that was felt throughout the entire region. Most mines throughout Kalgoorlie-Boulder were affected by cost cutting measures and by November 1975, all of the high cost Golden Mile operations had closed. A decision was made to close Mt Charlotte on the 10th December 1976 but the decision was reversed when the gold price rallied on the 9th December, a day before the closure was scheduled.

As the gold price continued to rise Mt Charlotte experienced a full refurbishment, which included a new crusher, ore pass system and shaft. The Cassidy Shaft, named after Jim Cassidy a goldfields pioneer prospector, was commissioned in May 1985. The movement of the shaft cage is controlled by the shaft winder using steel cables. The Cassidy Headframe is 50 m high and remains an iconic feature in the City of Kalgoorlie-Boulder. In the 1980's the Cassidy Shaft was sunk to a depth of 1184 m to increase the scope of the operation.

The Sam Pearce Decline joined Mt Charlotte underground to the Fimiston Open Pit in December 1997. The decline named after Sam Pearce who is credited with discovering the Golden Mile, made it feasible to mine lower grade remnant ore from the upper levels of the Mt Charlotte. The Cassidy Shaft ceased the transportation of underground ore with the last deep ore hoisted in March 1999.

Mt Charlotte was expected to close in 2001; however the mine life was extended as remaining reserves proved more than expected. The mine is currently at a depth of 1.2 km, and is producing an average 3,740 oz of gold every month. Over 50 years of continuous operation, the Mt Charlotte Underground Mine has produced around 5 million oz of gold.

3 Existing Environment

3.1 Regional Setting

The Mt Charlotte Underground Mine is located adjacent to the City of Kalgoorlie-Boulder approximately 600 km east of Perth, WA (Figure 1). The Hidden Secret ore body is predominantly located to the east of Williamstown, around 350 m east of the Mt Charlotte Underground Mine. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown (Figure 2).

3.2 Geology

3.2.1 Stratigraphy

The Kalgoorlie-Boulder stratigraphy lies within the Archaean aged Norseman-Wiluna Greenstone Belt of WA. Gold-bearing lodes are found in mafic to ultramafic sills that have intruded into the sequence. One of these sills, the Golden Mile Dolerite (GMD) is the host for most of the gold mineralisation in the Golden Mile Deposit.

Depending on the mineral concentration and textures of the GMD, the layer is separated into a further ten units, some which host the Mt Charlotte-based Fimiston Deposit. The general stratigraphic profile of the deposits consists of a lower mafic-ultramafic volcanic sequence with sub volcanic sills overlain by a thick sequence of sedimentary and intermediate to felsic volcaniclastic rocks. The Hidden Secret ore body is located in the lower GMD stratigraphy, which also holds the main Mt Charlotte-based Fimiston Deposit, and has expressions in the southern portion of the greenstone belt.

3.2.2 Structural Geology

The structural geologic chronology of the area is still under scientific conjecture however the main folding events are clear. The Fimiston Deposit is dominated by the large Kalgoorlie Anticline/Syncline system which causes deformation to the original stratigraphic sequence. Many faults occur including the main pervasive mineral rich fault line, the Golden Mile Fault (GMF) which is directly associated with the GMD. The GMF strikes sub-parallel to the main stratigraphic sequence boundaries. Smaller, cross cutting faults are also present throughout the geological layers. Deformation occurred over a period of 60 million years, beginning 2,670 million years ago (ENVIRON, 2006).

Faults and fractures, created by tectonic stresses, produce natural regions of instability within rocks. Minor movements due to these instabilities interacting with gravity, referred to as subsidence, can occur during the mining process. Geotechnical stability assessments were conducted for the Project to ensure that subsidence risk is managed.

Overall the rock mass surrounding the Mt Charlotte Underground Mine comprises well interlocked blocks and is geotechnically classified as very good. The underground stopes at Mt Charlotte are backfilled with crushed rock for long term stability. Geotechnical stability has been assessed and the Project is in an area classified geotechnically as being a very good rock mass and the stope void will be progressively backfilled.

3.2.3 Seismicity

The Goldfields region is subject to above average seismic activity, in relation to the rest of Australia. This is partly due to the structural geology of the area which contains many large faults and amalgamated fault complexes. Natural large scale tectonic stresses act on these large fault areas, causing movement on the weakest areas. The Kalgoorlie Fault Complex is one such area, as these natural weaknesses were pivotal in the creation of the GMD. The last significant earthquake to strike the City of Kalgoorlie-Boulder occurred on 20 April 2012 with a recorded magnitude of 5.0 on the Richter scale.

Anthropogenic seismic events as a result of mining are also known to occur in the Kalgoorlie-Boulder area. These events generally occur close to the mine workings, are normally very small and are associated with the redistribution of natural stresses around mine areas. The Mt Charlotte Underground Mine is designed with careful consideration of how planned rock extraction will alter the ability of the surrounding rock mass to re-distribute pre-existing ground stress levels.

Seismic vibration will often feel similar to blast vibration and many people would be unable to tell the difference between a small seismic event and a small blast. The two events have significant differences; they usually come from different areas, are of different frequencies, and generally do not occur at the same time. Seismic sensors are designed and installed to detect these differences, to identify the source locations of both kinds of vibration and report this data to a central computer for analysis.

In 1994, KCGM installed an underground seismic monitoring system at Mt Charlotte to help technical personnel better understand and manage near mine seismicity. At that time it was the first underground mine seismic monitoring system to be installed in Australia. During 2005 this system was upgraded with increased data accuracy and processing power. In 2013, a new “state of the art” system was installed to record low-level seismicity associated with underground mining operations in current and proposed mining areas.

In 2008 a similar seismic monitoring system was installed approximately 650 m below the Fimiston Open Pit, and was upgraded in November 2010 to enhance the network and increase the accuracy when determining event locations. During 2013 there were a number of low magnitude events recorded by the seismic network within the mining lease and surrounding district, with some 175 events recorded (KCGM, 2013).

3.2.4 Resource Statement

The Hidden Secret underground gold resource is currently estimated to be 665,000 t at 3.56 g/t, equating to 76,000 oz of gold (at a 1.90 g/t cut-off grade). This ore body has been classified in accordance with NI 43-101 national instrument for the Standards of Disclosure for Mineral Projects within Canada (Table 3). The NI 43-101 (equivalent to the Australasian Joint Ore Reserves Committee Code) sets standards for the public release of information regarding reserve, resource and exploration results and is the binding code of KCGM JV Owners Barrick and Newmont.

Table 3: Hidden Secret Gold Resource Category			
Category	**Tonnes (t)**	**Grade (g/t)**	**Ounces (oz)**
Measured	200,542	3.517	22,675
Indicated	464,408	3.573	53,356
Measured and Indicated	664,950	3.556	76,031

3.3 Hydrology

3.3.1 Groundwater

Prior to large-scale mining the Golden Mile was a south-plunging ridge of mostly mafic and ultramafic rocks forming part of the Kalgoorlie-Kambalda Greenstone Belt. The main rock units are the GMD and the Paringa Basalt. These formations are expected to have a very low primary permeability, and are not expected to store or transmit large quantities of groundwater except through major secondary structures. The hydrogeology of the greenstones is poorly understood as they do not form major aquifers and have not been studied in detail. The permeability of these rocks is likely to have a large variation (Peter Clifton & Associates, 2014).

The greenstones along the Golden Mile are overlain by tertiary and younger sedimentary deposits to the west, south, and east. Groundwater often occurs in these deposits at shallow depths, and there is a major regional paleochannel aquifer located about 10 km south of Kalgoorlie-Boulder beneath Hannans Lake. Groundwater in the sedimentary deposits ranges in quality between saline and hypersaline (20,000 milligrams per litre (mg/L) to 200,000 mg/L total dissolved salts concentration) (Peter Clifton & Associates, 2014).

Some exchange of groundwater would occur between the tertiary sedimentary deposits and the older greenstones which form the Golden Mile, and other bedrock formations in the Kalgoorlie-Boulder area. The degree of interconnection between these units is expected to be quite variable, and dependent on the local permeability of the bedrock formations. Leakage of groundwater from the bedrock is thought to supply a significant proportion of groundwater produced from the extensive palaeochannel aquifers in the Kalgoorlie-Boulder area (Peter Clifton & Associates, 2014).

The Mt Charlotte Underground Mine is not connected with the extensive underground developments along Kalgoorlie's Golden Mile which lie beneath the Fimiston Open Pit. Dewatering of the underground workings along the Golden Mile has probably occurred to some extent for most of the last century. KCGM has dewatering facilities at the Fimiston Open Pit that pump water from underground voids and maintain the water level beneath the floor of the pit (Peter Clifton & Associates, 2014).

There is a small scale dewatering operation at the Mt Charlotte Underground Mine which keeps the active working areas dry. The Department of Water (DoW) has issued KCGM with a Licence to Take Water GWL63553(3) to allow dewatering of the Mt Charlotte Underground Mine. GWL63553(3) is valid until June 2015 (Peter Clifton & Associates, 2014).

Dewatering at the Mt Charlotte Underground Mine has occurred from the 1960s. The deepest pumping station at Mt Charlotte is located 1,190 m below the surface, and other pumping stations are located at overlying levels close to the shaft. KCGM is currently mining between depths of 320 m and 600 m at Mt Charlotte. Water is pumped into the mine from the surface to operate machinery such as drilling rigs. A large proportion of the introduced water gravitates to the bottom of the mine and is pumped back to the surface. The discharge from the Mt Charlotte dewatering operations is directed to the Fimiston Plant and is used in the ore processing circuit (Peter Clifton & Associates, 2014).

Mt Charlotte has been described as a "dry mine" by KCGM geotechnical staff, and seepage through rock faces is noted to be rare. Several exploration boreholes located towards the bottom of the mine are noted to seep groundwater from the collars (Peter Clifton & Associates, 2014).

The hydrogeological conditions for the Project area indicate a dry environment with minimal ground inflows. The dewatering activities associated with the existing Mt Charlotte Underground Mine have effectively dewatered the Project area.

3.3.2 Surface Water

3.3.2.1 Climate Setting

Kalgoorlie-Boulder is characterised by hot dry summers and mild winters with the average maximum daily temperatures ranging from 33.7°C in January to 16.7°C in July. Rainfall in the area is influenced by the tropical monsoonal system in summer, with occasional cyclonic storms moving through to the Goldfields. Winter rainfall generally originates from broad frontal lows that move in from the south west. The mean annual rainfall for Kalgoorlie-Boulder is 267 mm, with the maximum rainfall occurring in February.

The mean rate of evaporation in January is 12.6 mm per day, while on a hot, windy day the evaporation can be over 20 mm. The average evaporation rates exceed the average precipitation for all months of the year. During the winter the average daily evaporation rate decreases to around 3 mm. The relative humidity averages less than 30% at 3pm during summer while the 9am winter figures are typically around 70%.

3.3.2.2 Surface Runoff

Low relief and low annual rainfall in the region produces poorly-defined surface drainage within the Kalgoorlie-Boulder area. KCGM Operations are managed to ensure that there is no direct transportation of contaminated mine stormwater into the surrounding off-site environment.

The Project is well below ground level and therefore will not require any changes to the existing storm water management controls implemented by KCGM.

3.4 Flora and Vegetation

The Mt Charlotte Underground Mine is located within the Coolgardie Botanical District in the southwest inter-zone (Beard, 1990). This botanical district is characterised by eucalypt woodland which becomes sparse in more calcareous soils, with a cover of saltbush-bluebush. Extensive clearing occurred in the Kalgoorlie-Boulder area at the turn of the 20th century for mineshaft supports and for firewood (Muir Environmental, 1994).

The Project is well below ground level and therefore will not require any clearing or result in any impact on flora and vegetation.

3.5 Fauna

The area around the Mt Charlotte Underground Mine has been disturbed by historical mining, pastoral and urbanisation activities. These disturbances have resulted in the disruption to, or removal of many fauna habitats in the Kalgoorlie-Boulder area.

The Project is well below ground level and therefore will not result in any impact on fauna.

3.6 Social Environment

The population of Kalgoorlie-Boulder was 30,842 during the 2011 census with 52% of the population being male. Mining continues to be the largest industry for employment in Kalgoorlie-Boulder and the Goldfields. Kalgoorlie-Boulder has also developed as a regional centre providing government and infrastructure services to the Goldfields – Esperance Region as well as supporting tourism. The City of Kalgoorlie-Boulder has good amenities for residents and most local mines employ personnel who are residentially based.

The Project is predominantly located to the east of Williamstown (a suburb of the City of Kalgoorlie-Boulder), around 350 m east of the Mt Charlotte Underground Mine. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown (Figure 2).

The Mt Charlotte Underground Mine has been operating continuously for more than 50 years, and has been managed by KCGM since 1989. KCGM has a long association with Williamstown, and the relationship with some residents has ongoing challenges. In January 2004 an extensive report was released regarding a “Review of Environmental and Public Safety Impacts of Mining in the Kalgoorlie Area” within which Williamstown concerns were raised and later assessed by State Government.

The relationship between KCGM and some Williamstown residents has also been identified and commented on in previous Social Impact Assessments; conducted in 2004, 2007 and 2010 by Coffey Environments. It is a long term issue which is complex and not easily resolved. KCGM Stakeholder Engagement Plans do not aim to “fix” this relationship, but aim to ensure that past KCGM mistakes are not repeated. Open and honest communication regarding the Project is a key part of the engagement process.

Further discussion on consultation and community engagement is outlined in Section 8.

3.6.1 Aboriginal Heritage

An ethnographic survey was undertaken in 1989 in conjunction with the Aboriginal Site Survey undertaken by O’Connor and Quartermaine (1989) for the original Consultative Environmental Review for KCGM Fimiston Operations. Additional surveys have been conducted by O’Connor and Quartermaine in 2000, 2001 and 2004 (ENVIRON, 2006).

Archaeological surveys indicate that the KCGM mining area was originally not favoured for Aboriginal habitation due to a lack of natural resources such as water and stone. Ten sites of ethnographic significance have been identified in close proximity to KCGM Operations. These sites are all included in the WA Department of Aboriginal Affairs (DAA) Register of Aboriginal Sites (KCGM, 2012).

In consultation with the DAA, KCGM has developed an Aboriginal Cultural Heritage Management Plan, which details how Aboriginal heritage sites are managed. The objectives of the Aboriginal Heritage Management Plan are to ensure that:

- Aboriginal sites that lie within the vicinity of KCGM Operations are properly respected and protected;
- Significant heritage sites are preserved; and
- All such sites are identified and locations and access conditions communicated to the employees and contractors as appropriate.

Within the Aboriginal Cultural Heritage Management Plan, KCGM commits to abiding by the laws that protect culturally significant sites and doing all it can to assist in the protection and respect of any such sites that fall within KCGM areas of influence. A copy of the Aboriginal Cultural Heritage Management Plan can be found in the KCGM Mine Closure Plan.

As the Project, is well below ground level, and requires no clearing, it will not result in any impact on Aboriginal heritage sites.

4 Project Description

4.1 Overview of Operations

KCGM Operations include the Fimiston Open Pit, Mt Charlotte Underground Mine and Fimiston and Gidji Processing Plants. The Fimiston Operations (including Mt Charlotte) are located adjacent to the City of Kalgoorlie-Boulder approximately 600 km east of Perth, WA (Figure 1).

KCGM has identified an underground ore body named 'Hidden Secret', which has been classified as a resource based on its geologic certainty and economic value. This resource is currently estimated to be 665,000 t at 3.56 g/t, equating to 76,000 oz of gold.

Underground mining of Hidden Secret is considered possible only because of its proximity to the Mt Charlotte Underground Mine and that most of the infrastructure already exists. KCGM proposes to extend current underground operations to mine Hidden Secret in 2015. The extension will increase the life of Mt Charlotte by two years to around 2018 and create 11 new jobs.

Hidden Secret is predominantly located to the east of Williamstown, around 350 m east of the Mt Charlotte Underground Mine. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown (Figure 2). The Project will be mined using underground methods and so occurs well below ground level with no surface clearing. Geotechnical stability and blast vibration are considered to be the main environmental impacts for the Project. KCGM has conducted vibration and geotechnical stability assessments which indicate that both aspects can be managed.

4.2 Area of Disturbance Table

The Hidden Secret ore body is located just east of the current Mt Charlotte Underground Mine, and is under two active mining leases (M26/131 and M26/353).

The Project occurs well below ground level with no surface clearing. Table 4 shows the total area for the mining lease and reflects the absence of surface clearing on both leases.

Table 4: Area of Surface Disturbance Hidden Secret Project

Tenement	Area (Ha)	Area of Disturbance (Ha)
M26/131	232.9	0.0
M26/353	174.3	0.0
Total Project Surface Disturbance Area		0.0

4.3 Mining Operations for Hidden Secret

4.3.1 Infrastructure and Equipment

Underground mining of Hidden Secret is considered possible only because of its proximity to the Mt Charlotte Underground Mine and that most of the mining fleet and infrastructure already exists. Hidden Secret will utilise current Mt Charlotte surface infrastructure, such as the ventilation system. Existing underground mobile equipment will be used, with the addition of an Atlas Copco Jumbo, Atlas Copco Mine Truck and Caterpillar Loader.

The Project requires the development of two drives under Williamstown to provide access to the ore body from the Mt Charlotte Underground Mine. These two drives also provide the ability for KCGM to ventilate the Hidden Secret operations using the existing Mt Charlotte Underground Mine infrastructure.

The existing SOB vent fan is the closest to the project area and will be used to redirect airflow into the Hidden Secret access drives via automatic steel doors. The doors will regulate the required airflow between the existing Sam Pearce Decline, Cassidy Shaft and Hidden Secret area. Internal air flow regulators will be installed in each drive as mining development progresses in the Project area.

4.3.2 Drive and Mining Development

The Project requires the development of two drives under Williamstown to provide access to the ore body from the Mt Charlotte Underground Mine. Hidden Secret will be accessed by extending an existing exploration drive located at 225 m depth and this will be the main access for the mining area. A second access drive at 400 m depth will be developed near the lowest point of the Hidden Secret ore body development area.

Both access drives will be around 350 m in length and around 200 m of the upper drive has already been developed as part of the exploration drilling programme. The two drives provide the ability for KCGM to ventilate the Hidden Secret operations using the existing Mt Charlotte Underground Mine infrastructure.

Stope and fill mining methods will be used to develop the Hidden Secret ore body. Drive advancement will use a Jumbo drill and blast procedures and ore drive direction will be under geology control. This follows the same method and procedures implemented at the existing Mt Charlotte Underground Mine.

The Project will include around 4,061 m of ore drive development to access stope areas. Primary narrow vein stope mining utilises a combination of Downhole and Uphole Bench and Fill techniques sourcing fill from development waste. Secondary wider span stope mining utilises Uphole Open Stope, Uphole Trough Undercut and Downhole Open Stope together with transferred waste from the Mt Charlotte backfill system. Tertiary mining utilises Stope Under Rock Fill methods which recover rib pillars under the backfilled secondary stopes, with backfill topped up as extraction takes place. Existing underground mobile equipment will be used, with the addition of an Atlas Copco Jumbo, Atlas Copco Mine Truck and Caterpillar Loader.

The Mt Charlotte Underground Mine currently operates on a 9 shift week Monday to Friday. Work days consist of 10 hrs per shift with handover occurring at 6 am. Development rounds are fired twice a day; 5:45am to 6am and 3:45pm to 4pm, stope rounds are fired during the afternoon firing time only.

Preliminary blast categories and designs have been determined (Table 5) in order to undertake an independent assessment of predicted ground vibration (Appendix A). The designed Maximum Instantaneous Charge (MIC) weights (kg) for blasts in the Hidden Secret area are estimated to be less than 3% of the MIC required to reach the 5mm/s limit for 1 in 10 consecutive blasts.

Table 5: Hidden Secret Blast Category and Designs

Category	Hole Diameter (m)	Hole Length (m)	Charge Length (m)	Anfo Density	Typical Maximum Instantaneous Charge (kg)	Minimum stope distance from nearest dwelling (m)	Typical Frequency of Blasting
Development	0.045	3.8	3.42	0.95	5	240	2 per shift
Primary Stope	0.076	25	22.5	0.95	97	230	2 per week
Secondary Stope	0.076	25	22.5	0.95	97	240	2 per week
Trough Undercut	0.076	25	22.5	0.95	97	302	3 per week
Long Hole Open Stope	0.076	30	27	0.95	116	282	2 per week
Pillar	0.076	25	22.5	0.95	97	322	1 per month

4.3.3 Support Facilities

4.3.3.1 Emergency Egress and Refuge

Emergency egress for the Project will be via the Cassidy Shaft or the Sam Pearce Decline portal. There will be a refuge chamber established midway along the Hidden Secret access drive, along with fresh air bases and other refuge chambers distributed throughout the Sam Pearce Decline. The distance between refuge areas is designed to be within the normal traverse time under self-rescuer conditions.

Stench gas canisters are located at the Sam Pearce Decline portal for emergency evacuation purposes. Stench gas will reach the Hidden Secret area of the mine in less than 10 minutes.

4.3.3.2 Power

Power will be distributed from the Mt Charlotte Underground Mine via the two access drives. The Project will not have a significantly greater energy requirement than the existing operations.

4.3.3.3 Air and Water Services

Compressed air reticulation services will be distributed from the existing Mt Charlotte infrastructure via the two access drives.

Air is supplied by a surface compressor and distributed throughout the underground mine. Capacity of the compressed air services reticulation and supply has been maintained at historical levels over the life of Mt Charlotte Underground Mine. Therefore no changes are required as current operations have excess capacity which could accommodate double the current Mt Charlotte production rate.

Water enters the mine via three different sources depending on destination and pressure required. The Project will utilise water fed from the surface water main that enters at the Cassidy Shaft and is distributed from the 900 and 1400 levels.

4.3.3.4 Workforce

Underground mining of the Project will increase the life of Mt Charlotte by two years to around 2018 and create 11 new jobs.

4.3.3.5 Transportation Corridors

Mined ore from the Project will be transported by the underground haulage fleet to the surface via the existing Sam Pearce Decline.

4.4 Compliance with Legislation and Other Approvals

The Project has been referred under Part IV of the EP Act as it is within 2 km of a declared town site. This document has been prepared in accordance with the Environmental Protection Authority's referral document checklist. The Referral Form under Section 38 of EP Act is provided in Appendix B.

The DMP has also stated that a Mining Proposal (MP) is required under the Mining Act 1978. This document also seeks to satisfy all requirements of a MP. Tenement conditions have been reviewed and the Project will meet the requirements of all applicable conditions.

5 Environmental Impacts and Management

The Project is well below ground level and will utilise existing infrastructure associated with Mt Charlotte Underground Mine. Therefore the potential for additional environmental impacts to occur as a result of the Project are expected to be limited to:

- Geotechnical Stability; and
- Blast Vibration.

5.1 Geotechnical Stability

5.1.1 Potential Impacts

A geotechnical assessment was conducted by KCGM to assess the current and predicted stability of the Project area. The assessment indicates the risks associated with stability, subsidence and seismicity are similar to those managed at the existing Mt Charlotte Underground Mine.

5.1.2 Management

The rockmass within the Hidden Secret ore body typically has intact strengths in the ‘very high’ range and mean geotechnical Rockmass Rating values in the ‘very good rockmass’ range. A few lower quality sections are associated with fault zones although these are limited to several metres in ‘thickness’. As such general stope and fill ground support requirements, used in the management of the lower quality sections at Mt Charlotte, will be appropriate for the Project. Fault zones will require additional support including mesh extension and dynamic ground support similar to existing practices at Mt Charlotte.

Numerical modelling indicates that the mine design and schedule are acceptable from a stability view point. The scheduling of mine waste backfill will be an important control of overall stability. Management of the stability of the stope void will be achieved by observation and management of fill placement, with the backfilling schedule monitored and adhered to.

Seismicity associated with fault slip and diminishing pillars has been identified as a medium risk in the Project area. To mitigate this risk controlled blasting practices and additional seismic monitoring will be undertaken throughout the duration of the Project. Additional seismic sensors will be installed in the Hidden Secret area, to supplement the existing network at Mt Charlotte. Geological and geotechnical data collection and interpretation on new openings and drill holes will also be used to provide important updates about faults and trends in the rock mass. The geotechnical model will be regularly updated with seismic and structural data collected during the life of the Project.

5.2 Blast Vibration

5.2.1 Impacts

An Independent Consultant was used to conduct a review of Mt Charlotte blasting data and develop a predictive model for blast vibration from the Hidden Secret area (Appendix A). This model was used to predict the likely vibration for the different types of blasts planned for the Project (Table 5).

Independent modelling of blast vibration has indicated a 90% confidence that vibration levels will be below 2.5 mm/s, similar to current Mt Charlotte blasting activities (Appendix A). These blast vibration levels are well below the regulatory limits of 5 mm/s (9 in any 10 consecutive blasts less than) and 10 mm/s (no blast greater than) which consider both human tolerance and structural integrity. The designed Maximum Instantaneous Charge (MIC) weights (kg) for blasts in the Hidden Secret area are estimated to be less than 3% of the MIC required to reach the 5mm/s limit for 1 in 10 consecutive blasts.

5.2.2 Management

KCGM aims to protect the amenity of the nearby residents from impacts resulting from Mt Charlotte blasting activities by ensuring vibration levels meet statutory requirements and acceptable standards. To manage the varying personal perception of vibration, regulatory limits have been established that consider both human tolerance and structural integrity.

In society there is a wide variation in vibration tolerance, depending on social and cultural factors, psychological attitudes and an expected interference with privacy and an increase in the awareness of rights of the individual. Some people are concerned about vibration at levels slightly above perception levels, i.e. as soon as they feel it. Others become accustomed to and tolerate relatively high levels of vibration, e.g. residents in close proximity to railway lines and freeways.

Some of the reactions to vibration include a ‘fright’ factor or being startled by a sudden vibration event. To address this, KCGM has an existing notification process whereby close neighbours to the Mt Charlotte Underground Mine are informed via letter drop of production blasts greater than 4,500 t.

The Mt Charlotte permanent blast monitoring network was extended by KCGM in 1998 and upgraded in 2010 to a newer model of Blastronics Remote Blast Monitors. Blast vibration data from these surface monitors is used to track developments and improvements in underground blast design. Vibration management will continue to be undertaken in accordance with comprehensive systems established and refined based on 25 years experience. Vibration monitoring will be undertaken using the existing network with one additional monitoring site installed (Appendix A).

KCGM manages blasting at Mt Charlotte in accordance with Ministerial levels set for the Fimiston Operations as part of the Noise and Vibration Monitoring and Management Programme. Through implementation of this programme, KCGM commits to undertake all reasonable, practicable and safe measures to minimise vibration from its blasting operations. KCGM will review, update and continue to implement the Noise and Vibration Monitoring and Management Programme for the Project.

6 Social Impacts and Management

6.1 Social Environment

6.1.1 Potential Impacts

Hidden Secret is predominantly located to the east of Williamstown (a suburb of the City of Kalgoorlie-Boulder); around 350 m east of the Mt Charlotte Underground Mine. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown (Figure 2).

The Project requires the development of two drives under Williamstown to provide access to the ore body from the Mt Charlotte Underground Mine. Hidden Secret will be accessed by extending an existing exploration drive located at 225 m depth and this will be the main access for the mining area. A second access drive at 400 m depth will be developed near the lowest point of the Hidden Secret ore body development area. Both access drives will be around 350 m in length and around 200 m of the upper drive has already been developed as part of the exploration drilling programme.

KCGM has a well-documented public interaction system including feedback, enquiries or complaints regarding its operations. This information ensures that KCGM has a strong understanding of the impacts the community experiences from its operations. A review of the Public Interaction Line (PIL) database interactions with Williamstown residents between 1 January 2011 and 31 October 2014 shows:

- 49 complaints from 16 residents
    - 31 related to noise from 11 residents
        - 17 regarding the SOB vent fan from 1 resident, now rectified
    - 8 related to dust, clearing or fumes from 4 residents
    - 8 related to blasting from 3 residents.
    - 2 related to communications from 1 resident
- 13 opportunities, 11 related to property purchase and 2 regarding exploration
- 8 questions related to life of mine, blasting, drilling or land management

When compared to historical records there has generally been an overall decrease in complaints regarding the Mt Charlotte Operation.

6.1.2 Management

The Project is well below ground level, and no changes to surface activities are expected. However KCGM continues to manage community concerns regarding noise and dust from the Mt Charlotte Operation.

Noise levels for KCGM are set in the *Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2009* (NR17V Approval). KCGM manages noise in accordance with levels set for the Fimiston Operations (including Mt Charlotte) as part of the Noise and Vibration Monitoring and Management Programme.

Compliance environmental noise monitoring is undertaken each quarter by specialist noise consultants to determine compliance against the noise level standards set in the NR17V Approval at five reference locations. One of these reference locations is Barton Street Williamstown (BSW) - any place at or adjacent to the intersection of Barton Street and Baden Street, Williamstown.

Compliance noise monitoring data from Quarter 3 2009 to Quarter 3 2014 shows that at BSW noise levels from KCGM Operations have complied with the LA10 and LAmax approved standards. In 2010, two LA10 measurements at BSW were above the approved standard however these were influenced by a continuous industrial noise source in the area not related to KCGM Operations.

If the compliance noise monitoring measurements indicate levels higher than the approved noise standards, KCGM will immediately investigate and identify the source. When the source is identified, reasonable, practicable and safe action will be taken to reduce the noise where possible. Additional monitoring will also be undertaken to confirm that any remedial action has resulted in noise levels meeting the approved standards.

Results of the compliance noise monitoring in comparison to the approved noise level at the five reference locations are included in KCGM quarterly and annual noise reports. KCGM advertises compliance noise monitoring results in the Kalgoorlie Miner each quarter and results are also available on the KCGM website (http://www.superpit.com.au).

KCGM may also undertake additional noise monitoring based on feedback from the community. In October 2011, KCGM undertook a major upgrade of the SOB vent fan which included an evase diffuser to assist with dampening the noise as the air exits. Noise measurements indicated a reduction of more than 30 dBA, at 40m in the direction of the nearest noise sensitive premises. However following commissioning KCGM received an increase in noise complaints from one Williamstown resident despite the measured noise levels being significantly lower than the previous vent fan.

In response to the complaints, KCGM established a team including a specialist noise consultant, to determine why the resident was experiencing high noise levels despite the quieter fan being installed. This review included undertaking a noise assessment, investigating contributing environmental factors and assessing other noise contributors in the area.

During 2012 an acoustic camera assessment was undertaken to further determine the SOB vent fan noise sources. Following the assessment, an acoustic shield was designed and installed to reduce noise from the drive motor and gearbox. Noise measurements after installation indicated a further 7dBA reduction at the residents' property with no annoying characteristics, such as tonality. KCGM has received no further complaints from this resident regarding noise from the SOB vent fan since November 2012.

The Fimiston Air Quality Management Plan includes an ambient dust monitoring and management programme. The primary objective is to pro-actively manage its Fimiston Operations (including Mt Charlotte) to ensure that the 24-hour average PM10 concentrations are less than the National Environment Protection Measure (NEPM) guidelines at the monitoring locations.

A network of continuous PM_{10} monitors (including one at Mt Charlotte (MTC)) is operated to measure performance against the NEPM guideline. Monitoring results (24 hr averages) are made available in the Dust Monitoring Report which is available on the KCGM website (http://www.superpit.com.au) within 24 hours of the data being recorded.

Daily PM_{10} averages above the 50 $\mu g/m^3$ NEPM guideline are reported to the DER and Department of Health (DoH) within seven working days. A summary of monitoring results is also provided to the DER in the Annual Environment Report.

Continuous PM_{10} monitoring data from MTC between 26 June 2009 and 31 October 2014 indicates that five events have been recorded above the 50 $\mu g/m^3$ NEPM guideline. One event in 2009 was not related to KCGM Operations and the other four events were related to local dust storms (2 in 2010, 1 in 2011 and 1 in 2012).

In November 2012, KCGM completed a review of fumes from the SOB vent fan. KCGM considered concerns raised via complaints, the NEPM Ambient Air Quality criteria air pollutants and potential emissions from the underground operations. KCGM determined that NO_2 was likely to be the most significant criteria air pollutant of concern. The NO_2 NEPM standards are also much lower than those for the other relevant criteria pollutants (i.e. CO and SO_2).

Following the identification of NO_2 as a key criteria pollutant from the SOB vent fan, KCGM completed a short-term monitoring programme. This monitoring programme measured the hourly average concentration of NO_x (including nitric oxide [NO] and nitrogen dioxide [NO_2]) at the base of the SOB vent raise bore. Monitoring results were considered to be representative of typical operations at Mt Charlotte.

The results of the monitoring programme indicated that the concentrations of NO_2 measured at the base of the SOB vent raise bore were very low (< 0.0002 ppm). These results are significantly lower than the NEPM ambient air quality standard for NO_2 of 0.12 ppm (1-hour average). Therefore, it is considered extremely unlikely that the emissions of NO_2 from the SOB vent fan would be associated with any unacceptable ambient air quality impacts in residential areas. No significant change to these levels is expected as a result of the proposed Project.

The surface release of post-firing blast fumes from specific development areas is also managed by switching off the SOB vent fan until the blast fumes have had adequate time to dissipate in the mine. Turning off the vent fan also results in the flow in the raise bore reversing so blast fumes are not released on the surface from the SOB vent fan which is located near Williamstown.

6.2 Land Use

The Hidden Secret Project is well below ground level, however the land located above a portion of the Project area is residential in nature. The proposed Project will not result in any change to the surface land uses.

6.3 Workforce Induction and Training

KCGM anticipates there will be no change needed to the workforce induction or training as the scope of the Project is similar to existing operations at the Mt Charlotte Underground Mine.

7 Mine Closure

KCGM has an existing approved Mine Closure Plan (MCP) for its operations, prepared in accordance with the requirements of EPA Ministerial Statement 782 and the Guidelines for Preparing Mine Closure Plans (Department of Mines and Petroleum and Environmental Protection Authority, 2011). The MCP is reviewed and resubmitted for approval on a three year cycle.

The document identifies closure objectives and commitments, analyses existing closure data and identifies information gaps, presents completion criteria and provides information on financial provisioning for closure, closure implementation and closure monitoring and maintenance.

The Hidden Secret project has no surface expression beyond the existing Mt Charlotte infrastructure. The closure of the existing infrastructure is dealt with in detail in the MCP.

It is not anticipated that any additional backfill of voids will be required for closure, as the Hidden Secret voids will be backfilled as part of operational activities.

7.1 Post Mining Land Use

As the Project area is well below ground surface and there will be no change to surface land use as a result of the proposed Project.

7.2 Hidden Secret Mine Closure

The Hidden Secret Project will be incorporated as part of the Mt Charlotte Underground Mine component of the MCP.

8 Consultation

KCGM has a well-established community engagement process which is an essential part of operations for one of Australia's largest gold mines, located in close proximity to a city of 30,000 people. The range of communication channels and information provided ensures that KCGM has a strong understanding of the impacts the community experiences from its operations.

KCGM operates a Public Interaction Line (PIL) and Community Reference Group (CRG) to provide an opportunity for interested community members to raise queries and promote discussion. Membership of the CRG is on a self-selection basis when positions become available (KCGM, 2012).

8.1 Hidden Secret Project Engagement Plan

KCGM has developed a Stakeholder Engagement Plan for the proposed Project to guide engagement prior to and during the proposed underground mining of the Hidden Secret ore body. The Engagement Plan ensures that perceptions and concerns regarding the project are considered and managed and the community feels informed.

Key stakeholders that have been identified for Hidden Secret Project include:

- Office of the Environmental Protection Authority
- Department of Environment Regulation
- Department of Mines and Petroleum
- City of Kalgoorlie-Boulder
- Williamstown Residents Committee
- KCGM Community Reference Group
- Chamber of Commerce and Industry
- Chamber of Minerals and Energy
- Goldfields Esperance Development Commission
- Kalgoorlie Boulder Chamber of Commerce and Industry
- Williamstown Residents
- Kalgoorlie Boulder Community
- Local Politicians
- KCGM Employees and Contractors

Engagement undertaken as part of the development of this Project (Appendix C) has included:

Williamstown Residents Committee (WRC)

- KCGM approached the WRC Chairperson to meet. Purpose of meeting was to give initial overview of new resource and get input into ongoing communication. WRC requested the invitation be put into an email.
- WRC responded via email requesting all drilling results at the meeting.
- KCGM advised via email that all drilling results will not be released publicly.
- WRC faxed through a letter with 10 questions regarding the project and drill results, and also stated they would not meet with KCGM unless all drilling results were provided.
- KCGM emailed and posted a response and draft Information Sheet for their review.
- WRC faxed through a letter giving feedback on the draft Information Sheet and requesting information on project costs and equipment to be used.
- KCGM emailed and posted a response with the final Information Sheet.

Williamstown Residents

- Letter and Information Sheet hand delivered to all Williamstown residences. Feedback received:
    - 1 phone call asking about KCGM future plans for Williamstown.
    - 1 phone call offering to sell their property to KCGM.
    - 1 letter stating they will be moving from Williamstown.
    - 1 phone call asking about KCGM long-term plans for the area and offering to sell their property to KCGM.
    - 1 email from CRG representative who resides in Williamstown, with questions from residents regarding the ventilation system.
    - 2 emails from family members of an elderly resident seeking compensation as they believe nearby mining is having a negative impact on their lifestyle.
    - 1 email stating that KCGM is underestimating the resources in the area and that the ground is not stable to withstand further underground blasting.
    - 1 phone call from a Williamstown resident advising the views held by the Williamstown Residents Committee are not representative of all residents. Positive feedback regarding consultation on the Project and KCGM operations near Williamstown.

Community Reference Group

- Overview presentation given – positive feedback from attendees.
- Draft Information Sheet emailed to all CRG members for review.
- Media release and Information Sheet emailed to all members.

Local Government and Industry Bodies

- Media release and Information Sheet provided.
- Overview presentation by KCGM General Manager. Positive feedback from all attendees:
    - City of Kalgoorlie-Boulder (Mayor).
    - Kalgoorlie-Boulder Chamber of Commerce and Industry (CEO).
    - Goldfields Esperance Development Commission (Chair and CEO).
    - Chamber of Minerals and Energy (Regional Manager).
    - Local State Member of Parliament (Nationals).

KCGM Staff and Contractors (reside locally)

- General Managers Weekly Updates emailed to all staff, contractors and CRG.
- Memo and Information Sheet emailed to All KCGM.

Media Enquiries

- Media release and further information provided to:
    - Kalgoorlie Miner newspaper.
    - ABC Goldfields Radio.
    - The Australian newspaper.

State Government

- Meeting with DMP to establish required approvals.
- Meeting with the OEPA to give an overview of the proposed Project.

9 Principles of Environmental Protection

This section seeks to document the proposed Project's adherence to the Principles of Environmental Protection as described in the EPA Position Statement No. 7.

9.1 Precautionary Principle

The proposed Project is well below ground level and uses existing Mt Charlotte infrastructure to reduce potential environmental and community impacts.

This document outlines potential environmental and social impacts that could arise from the proposed Project. Management measures have been identified based on a geotechnical assessment to look at subsidence and seismicity; a blasting vibration assessment; and consideration of noise impacts. As a result of the investigation, changes were made to the proposed access drives for the Hidden Secret ore body such that a new ventilation exhaust fan would not be required, to avoid potential noise impacts at the surface.

9.2 Principle of Intergenerational Equity

The proposed Project is well below ground level and will not result in any change in surface clearing, utilising the existing Mt Charlotte and Fimiston infrastructure. The Project has been designed to maintain the amenity of the area for current and future generations through minimisation of noise, air quality and vibration impacts.

9.3 Principle of Conservation of Biological Diversity and Ecological Integrity

The proposed Project is well below ground level and is in an area that has already been dewatered by the existing Mt Charlotte operations. Therefore, the proposed Project will have no impact on biological or ecologic diversity of the environment.

9.4 Principle of Improved Valuation, Pricing and Incentive Mechanisms

KCGM has taken the cost of managing potential environmental impacts into account in the costs for the Project. KCGM will use existing infrastructure to minimise the use of natural resources, and provide a cost-effective way of managing vibration and geotechnical impacts from the Project.

9.5 Principle of Waste Minimisation

The principles of waste minimisation were employed for the proposed Project. The use of existing infrastructure at the Mt Charlotte Underground Mine means that minimal waste will be created as a result of the proposed Project's development. The proposed Project will draw on systems and procedures that are already in place at Mt Charlotte.

10 Conclusion

Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM) operations include the Fimiston Open Pit, Mt Charlotte Underground Mine and the Fimiston and Gidji Processing Plants. The Fimiston Operations (including Mt Charlotte) are located adjacent to the City of Kalgoorlie-Boulder approximately 600 km east of Perth, Western Australia.

KCGM has been conducting exploration drilling along an area known as the Central Corridor since 2010 and has identified an underground resource named 'Hidden Secret'. The Hidden Secret ore body has been classified as a resource based on its geologic certainty and economic value in accordance with set standards. This resource is currently estimated to be 665,000 t at 3.56 g/t, equating to 76,000 oz of gold.

Underground mining of the Hidden Secret resource is considered possible only because of its proximity to the Mt Charlotte Underground Mine and that most of the infrastructure already exists. KCGM proposes to extend current underground operations to mine Hidden Secret in 2015. The extension will increase the life of Mt Charlotte by two years to around 2018 and create 11 new jobs.

Hidden Secret is predominantly located to the east of Williamstown (a suburb of the City of Kalgoorlie-Boulder), around 350 m east of the existing Mt Charlotte Operation. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties in Williamstown.

The project will be mined entirely underground and utilise existing surface infrastructure from the adjoining Mt Charlotte Underground Mine. Geotechnical stability and blast vibration are considered to be the main environmental impacts for the Project. Geotechnical stability has been assessed and Hidden Secret is in an area classified geotechnically as being a very good rock mass and the stope void will be progressively backfilled. Controlled blasting practices and seismic monitoring will be necessary to manage seismicity in the Hidden Secret area and additional seismic sensors will be installed.

Independent modelling of blast vibration has indicated a 90% confidence that vibration levels will be below 2.5 mm/s, similar to current blasting. These are well below regulatory limits (5 and 10 mm/s) which consider both human tolerance and structural integrity. KCGM currently monitors blast vibration and informs residents of larger production blasts. It is planned to install one additional blast vibration monitoring site at the surface near the Hidden Secret area.

KCGM has undertaken consultation for the Hidden Secret Project with key stakeholders including the Community Reference Group, Williamstown Residents, Government Agencies, Local Council and Business Organisations.

The proposed Project provides the opportunity for KCGM to access and mine the Hidden Secret ore body with no unacceptable or unmanageable environmental or social risks identified.

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12 Limitations

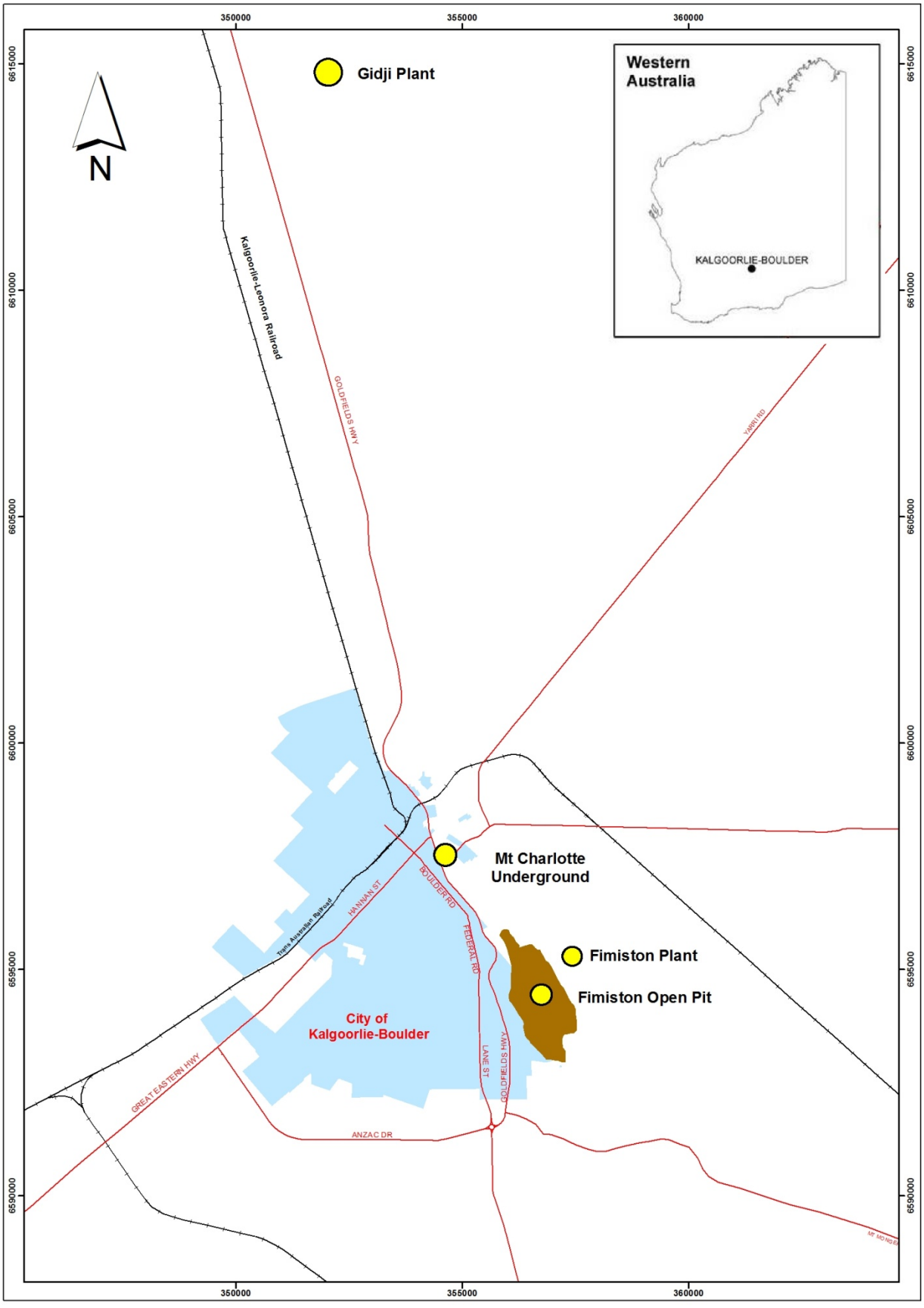
ENVIRON Australia prepared this report in accordance with the scope of work as outlined in our proposal to Kalgoorlie Consolidated Gold Mines Pty Ltd dated 9 July 2014 and in accordance with our understanding and interpretation of current regulatory standards.

The conclusions presented in this report represent ENVIRON's professional judgment based on information made available during the course of this assignment and are true and correct to the best of ENVIRON's knowledge as at the date of the assessment.

ENVIRON did not independently verify all of the written or oral information provided to ENVIRON during the course of this investigation. While ENVIRON has no reason to doubt the accuracy of the information provided to it, the report is complete and accurate only to the extent that the information provided to ENVIRON was itself complete and accurate.

This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

Figures



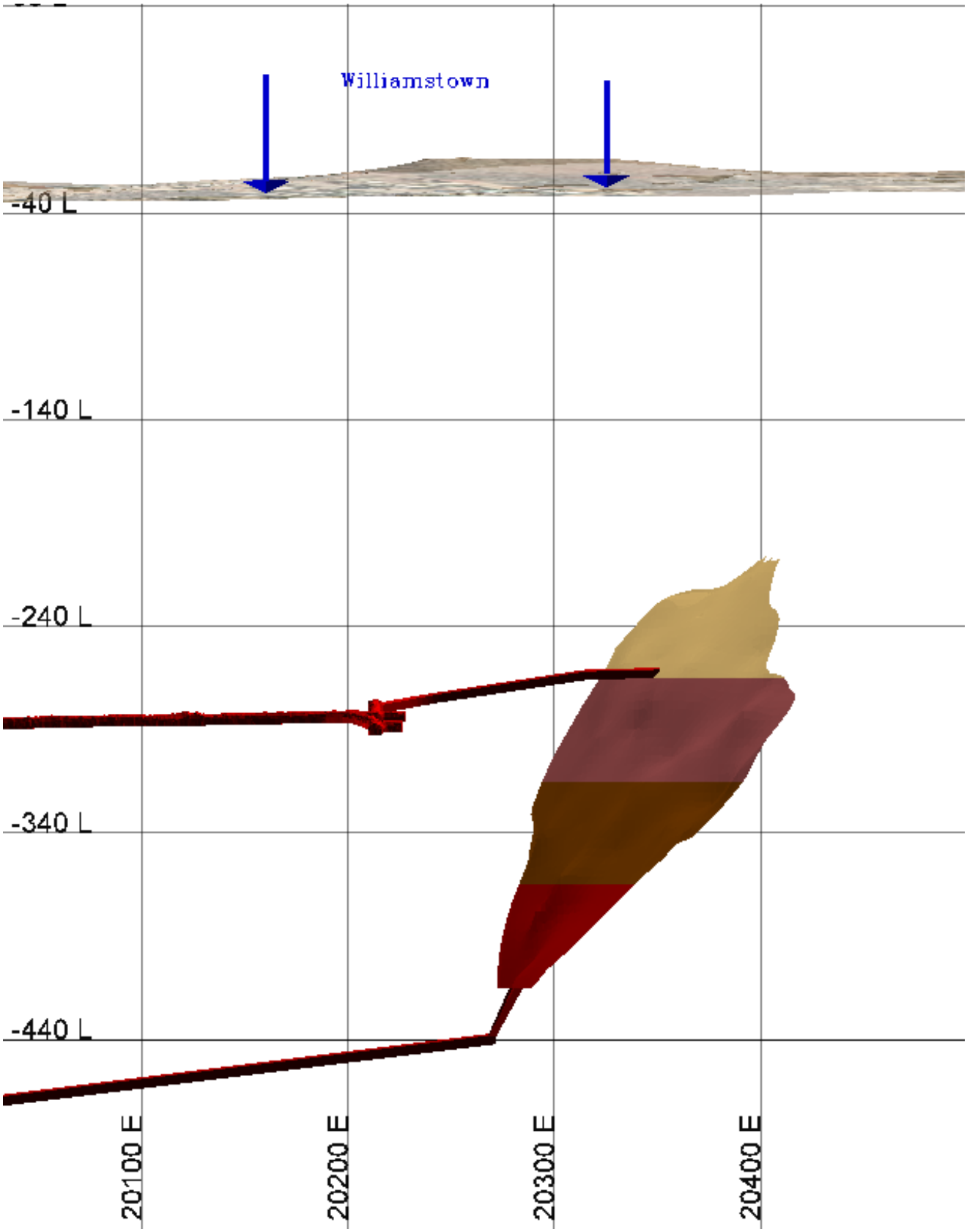
KCGM

EPA Referral/MP

Hidden Secret Project

City of Kalgoorlie-Boulder and KCGM Operations Location Plan

ENVIRON JOB NO: AS110740 DATE: 6/11/2014 **FIGURE 1**



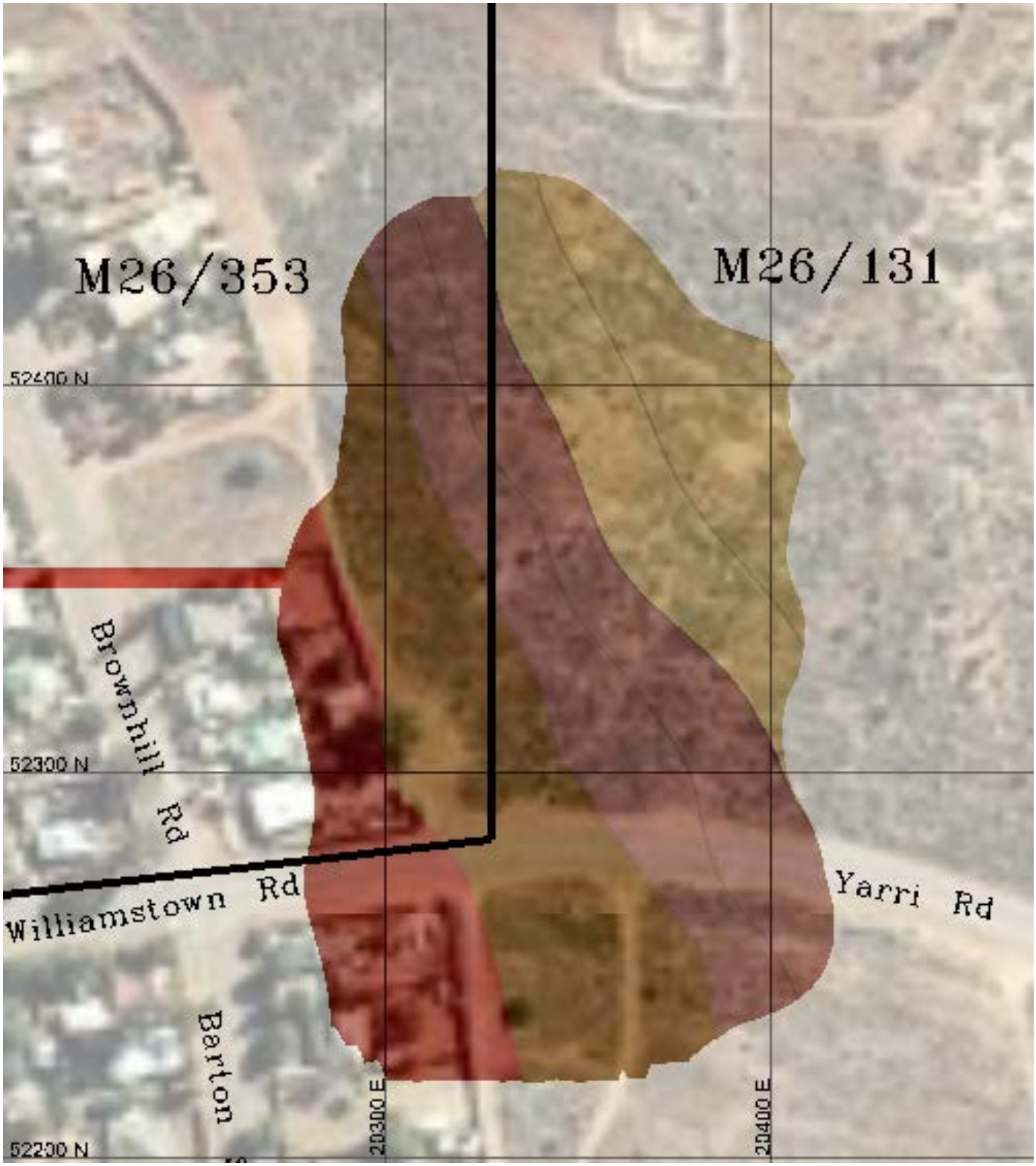
KCGM

EPA Referral/ MP

Hidden Secret Project

Hidden Secret Ore Body and Williamstown Location Plan

ENVIRON JOB NO: AS110740 DATE: 6/11/2014 **FIGURE 2**



KCGM

EPA Referral/ MP

Hidden Secret Project

Mining Tenements for the Hidden Secret Project

ENVIRON JOB NO: AS110740 DATE: 6/11/2014 **FIGURE 3**

Appendix A

Independent Blast Vibration Report

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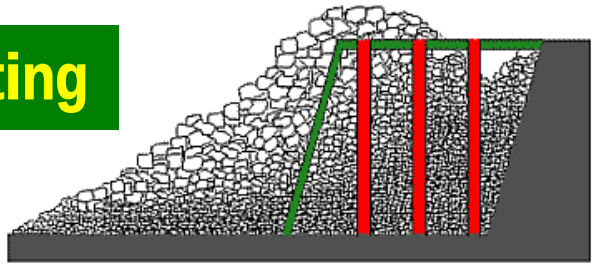


Prediction of Blast-Induced Ground Vibration for the Hidden Secret Undergound Mining Project

Kalgoorlie WA

KCGM

October 2014

1. Introduction

At the request of Kalgoorlie Consolidated Gold Mines (KCGM), George Boucher Consulting (GBC) conducted a review of previous Mt Charlotte blasting data and developed a predictive model for blast-induced ground vibration. This model was used to predict the likely blast-induced ground vibration amplitude for the different types of blasts planned for the Hidden Secret underground mining project.

2. Blast-Induced Ground Vibration

2.1 Introduction

Best Practice for blasting operations is defined within the Australian Standard AS2187.2(2006) which describes the phenomena of blast-induced ground vibration in the following way:

"*Ground vibration from blasting is the radiation of mechanical energy within a rock mass or soil. It comprises various vibration phases travelling at different velocities. These phases are reflected, refracted, attenuated and scattered within the rock mass or soil, so that the resulting ground vibration at any particular location will have a complex character with various peaks and frequency content.*"

The magnitude of the ground vibration, together with ground vibration frequency, is commonly used to define likelihood of annoyance of near neighbours and potential for damage criteria. Studies and experience show that well designed and controlled blasts are unlikely to create ground vibrations of a magnitude that causes damage to structures. AS2187.2(2006) – Appendix J further states:

"*It is recognised that ground vibration and airblast produced by blasting falls into two categories-*

(a) Those causing human discomfort; and

(b) Those with the potential for causing damage to structures, architectural elements and services.

Generally, human discomfort levels set by authorities are less than the levels that are likely to cause damage to structures, architectural elements and services. Ground vibration and airblast levels are influenced by a number of factors, some of which are not under the control of the shotfirer."

Cracks in buildings may be attributable to causes other than ground vibration, including ground or foundation movements (settlement and swell) associated with natural progressive deterioration of buildings over time and/or cyclical expansion/contraction of reactive clay soils during periods of prolonged dry or wet weather.

2.2 Prediction of Ground Vibration for the Hidden Secret Mine

Many site-based factors including rock type, structure, topography, explosive type, blast design and geometry determine the vibration level that will be transmitted to a particular location remote from the blast location. Consequently the accurate prediction of ground vibration by calculation requires the use of site measurements to quantify the site factors represented in the prediction formula.

The Australian Standard AS2187.2 (2006) Appendix J provides a prediction equation in the form:

$$\mathbf{V = K\,(R/Q^{1/2})^{-b}}$$

Where:

V = peak particle velocity (ppv) in mm/sec

K & b = Site Constants (specific to the attenuation character of the rock between the blast and monitoring locations)

R = Range (distance) to structure (m)

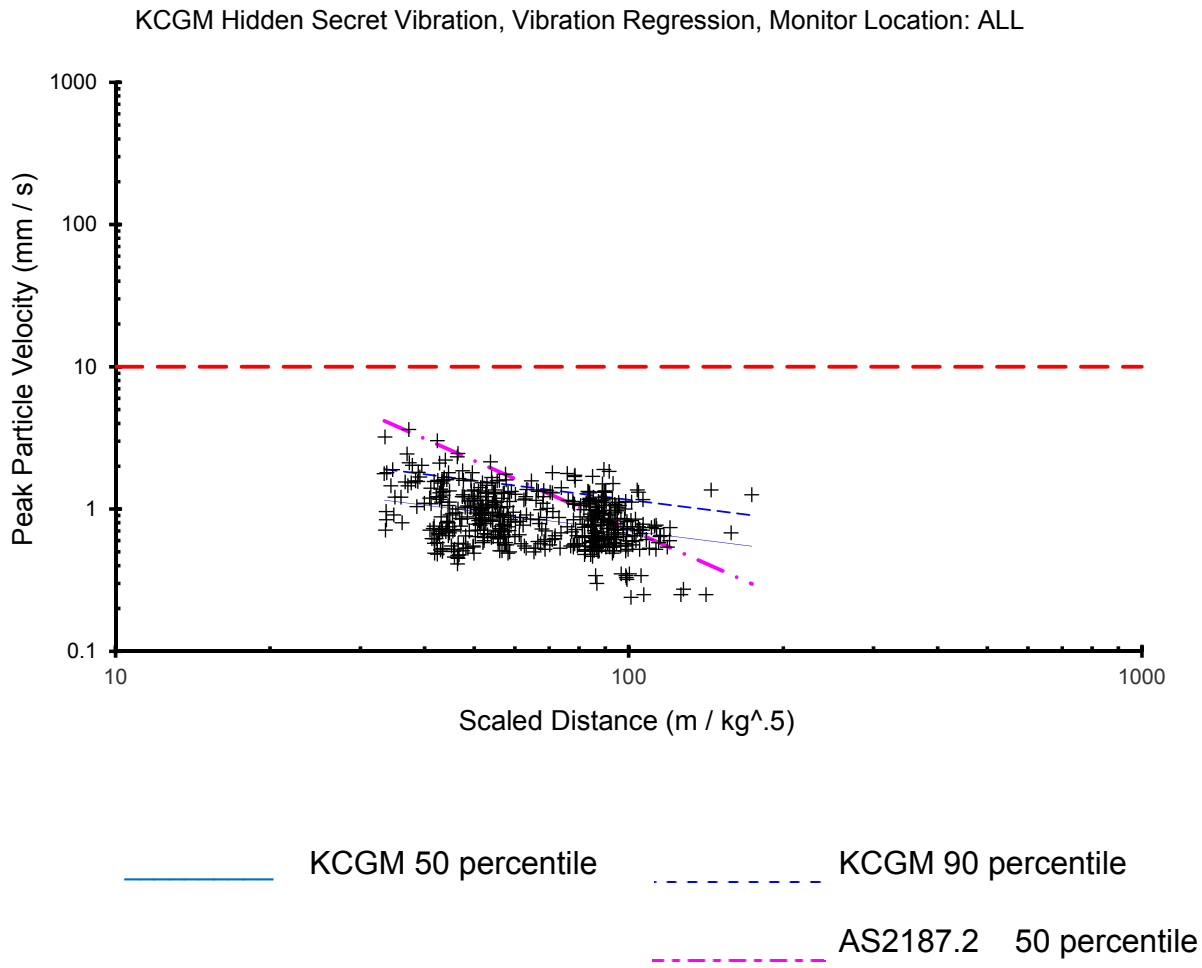
Q = Charge mass per delay (Often expressed as Maximum Instantaneous Charge or MIC) (kg)

AS2187 states that, where no data from previous blasting is available, K=1140 and b=-1.6 are applicable to prediction of mean ppv (i.e. 50% Confidence Limit) for "Free face-average rock" (Refer to paragraph J7.3).

However, the compliance limits set for ground vibration in Western Australia are usually specified in terms of 90% compliance. The statutory authorities in Western Australian specify that 90% of blasts not exceed 5mm/s and no blast exceeds 10mm/s.

GBC conducted a review of actual blast vibration measurements from KCGM recent underground mining activity. Data from all blasting monitored during 2010-2013 was supplied by KCGM and this data was used to establish attenuation coefficients for the prediction equations (for 50% and 90% confidence limits).

The data was represented in a log-log scale graph as shown below.



The 50% and 90% lines of best fit for the data were calculated and then represented by square root scaled distance equations (as per AS2187.2). These equations were:

50% Confidence Limit $\mathbf{V= 5.688(R/Q^{1/2})^{-0.45}}$

90% Confidence Limit $\mathbf{V= 9.366(R/Q^{1/2})^{-0.45}}$

The r squared, correlation coefficient or "goodness of fit" value for this data set was 0.132 which is relatively low. This was most likely due to:

- The data set including several different types of blast (with various MIC, timing, confinement and other factors)
- The data from several different monitoring locations and numerous blast locations – resulting in numerous different vibration attenuation paths (with presumably different geology and attenuation characteristics)
- The data set being so large (527 data points)

However, these factors only enhance the conservatism of the vibration predictions which can be derived from the prediction equations and help define the equations as representing a "worst case" prediction.

KCGM provided data on their intended blast categories and designs for the Hidden Secret Mine. This data is shown in the table below:

Table 2.1: Blast categories/designs provided by KCGM for the study

Blast Category	Hole Diameter (m)	Hole Length (m)	Charge Length (m)	Anfo Density (g/cc)	Typical Maximum Instantaneous Charge (MIC) (kg)	Minimum slope distance from nearest dwelling (m)	Typical Frequency of Blasting (eg each shift, day, week etc)
Development	0.045	3.8	3.42	0.95	5	240	2 per shift
Primary Stope	0.076	25	22.5	0.95	97	230	2 per week
Secondary Stope	0.076	25	22.5	0.95	97	240	2 per week
Trough Undercut	0.076	25	22.5	0.95	97	302	3 per week
Long Hole Open Stope	0.076	30	27	0.95	116	282	2 per week
Pillar	0.076	25	22.5	0.95	97	322	1 per month

Note that the minimum distance shown is the shortest/slope distance (in 3 dimensions) and is longer than the plan distance.

Based upon the derived prediction equations and the (slope) distance and MIC data provided by the KCGM, the predicted vibration amplitude and proportion of the statutory limit are shown in the table below:

Table 2.2: Predicted ppv at the closest residence for blast designs derived in the study

Blast Category	Typical Maximum Instantaneous Charge (MIC) (kg)	Minimum slope distance from nearest dwelling (m)	50% Confidence Limit PPV @ Minimum Distance (mm/s)	90% Confidence Limit PPV @ Minimum Distance (mm/s)	90% Prediction Proportion of 90% PPV Limit
Development	5	240	0.69	1.14	23%
Primary Stope	97	230	1.37	2.25	45%
Secondary Stope	97	240	1.34	2.2	44%
Trough Undercut	97	302	1.21	1.99	40%
Long Hole Open Stope	116	282	1.3	2.14	43%
Pillar	97	322	1.17	1.93	39%

The relationships between charge mass distance and vibration amplitude are not linear. Consequently the following generalisations can be made:

- Doubling of charge mass (as MIC) will not result double the vibration at the same distance – the increase will be much less than double
- Doubling of distance will reduce vibration amplitude by much more than 50%

To illustrate the margin between the vibration predicted for the proposed Hidden Secret blast designs, the prediction equations were also used to back-calculate the charge mass (as MIC) that would be (predicted to be) needed at the minimum distance to reach the statutory vibration limit for 90% of blasts (i.e. 5mm/s). The predicted charge mass and proportion of intended charge mass for each blast category are shown in the table below:

Table 2.3: Charge mass required at minimum distance to reach statutory PPV limit and proportion of designed charge mass for each blast category

Blast Category	Typical Maximum Instantaneous Charge (MIC) (kg)	Minimum slope distance from nearest dwelling (m)	Backcalculated MIC required to reach 90% PPV Limit (kg)	Design MIC as a proportion of MIC required to reach 90% PPV Limit (%)
Development	5	240	3606	0.14%
Primary Stope	97	230	3298	2.94%
Secondary Stope	97	240	3613	2.68%
Trough Undercut	97	302	5700	1.70%
Long Hole Open Stope	116	282	4959	2.35%
Pillar	97	322	6501	1.49%

While the structure of statutory limits for ground vibration in WA are linked to prediction of vibration using a 90% confidence equations, the data set was analysed to establish a 99% confidence limit equation. The use of this prediction equation constitutes ***an extremely cautious engineering approach***. The equation provides predictions of ground vibration that will exceed the actual vibration of 99% of blasts.

Table 2.4: Predicted ppv at the closest residence for blast designs derived in the study

Blast Category	Typical Maximum Instantaneous Charge (MIC) (kg)	Minimum slope distance from nearest dwelling (m)	99% Confidence Limit Predicted PPV @ Minimum Distance (mm/s)	99% Prediction Proportion of 5mm/s PPV Limit
Development	5	240	1.14	23%
Primary Stope	97	230	2.25	45%
Secondary Stope	97	240	2.2	44%
Trough Undercut	97	302	1.99	40%
Long Hole Open Stope	116	282	2.14	43%
Pillar	97	322	1.93	39%

When this equation was applied to the MIC for the closest blasts planned for the Hidden Secret Mine, the predicted ground vibration was still lower than the 5mm/s limit allowed for 90% of blasts and did not approach the higher 10mm/s limit allowed for the remaining 10% of blasts.

3. Proposed Vibration Monitoring

While predictions of PPV for the Hidden Secret Mine suggest that compliance with statutory vibration limits and hence control of disturbance of neighbours is likely by a very large margin, it is standard practice for mining operations to conduct vibration monitoring to measure actual vibration amplitude throughout the life of mining activities. KCGM already has several fixed monitoring locations surrounding both the open pit and underground mining operations at Fimiston and Mt Charlotte respectively. The new Hidden Secret mine would require a new fixed monitoring location to be established.

The criteria applicable to selection of a new monitoring location include:

- Close enough to near neighbour dwellings to effectively represent the vibration amplitude which would be measured at the dwelling
- Far enough from near neighbour dwellings to prevent ambient/background vibration emissions from normal human activity triggering vibration instruments and being measured/recorded
- Secure enough to ensure that instrumentation will not be damaged or stolen
- Remote enough to prevent disruptions to other established land use

Appendix 1 shows the locations of the existing blast monitoring sites and the proposed location of the one additional monitoring site.

4. Conclusions

1. The data used to derive prediction equations for the Hidden Secret Project included many vibration pathways and consequently represents a "worst case scenario" and hence very cautious approach to the blasting planned for the eventual mining activities.
2. Based upon several years of underground blasting records from the adjacent Mt Charlotte operation and the consequent prediction equations derived within this study, the planned blasting is very likely to comply with statutory vibration limits by a considerable margin.
3. The maximum charge per delay planned for the Hidden Secret Mine varies from 0.14% to 2.94% of the charge predicted to be required to reach the statutory limit for 90% of blasts (i.e. 5mm/s)
4. Even where a 99% confidence limit equation was applied, the closest blasts where predicted to comply with statutory vibration limits by a large margin.

DISCLAIMER OF LIABILITY

The contents of this document are for general information only.

The information upon which the analyses in this document are based, has been either partly or entirely sourced from other parties. The reliability of these sources cannot be absolutely proven and George Boucher Consulting does not represent or warrant that the information is correct.

The contents of this document may be inter-related and consequently invalid if considered individually or out-side of context of the over-all situation.

The principals and employees of George Boucher Consulting do not accept any liability for any claim arising out of or in connection with any reliance on the information or the derived analyses, conclusions or recommendations contained in this document.

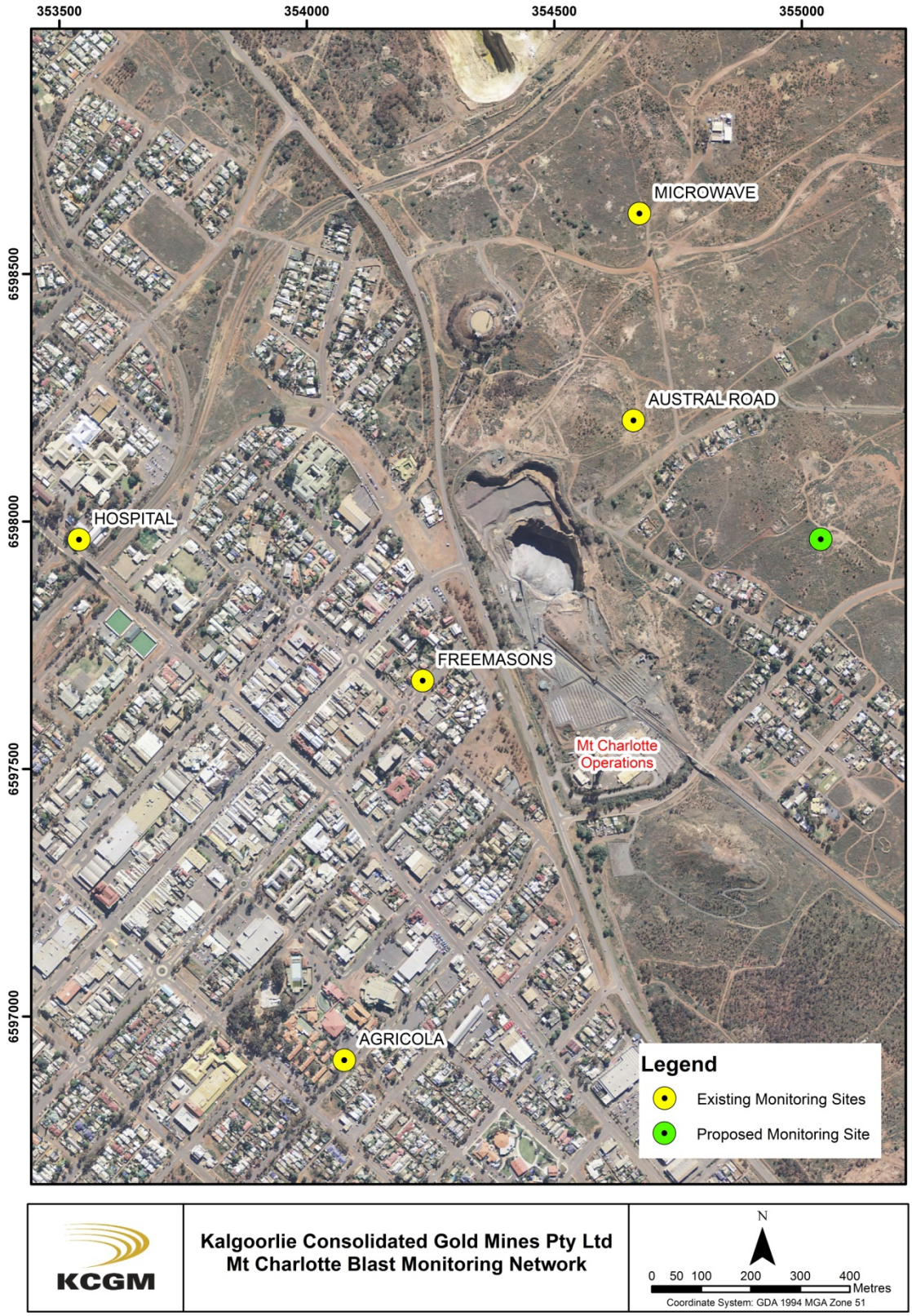
Before using the information or blast designs contained in this document in a particular situation it is essential that, amongst other things, the following criteria be taken into account:

- whether the particular technique proposed to be used is appropriate for the circumstances;
- whether the persons using it have the necessary competency and experience;
- the environmental conditions in which it is to be used;
- the specific aims intended to be achieved and whether those aims are achievable in the particular circumstances; and
- the sequence of steps which need to be followed in the particular circumstances.

George Boucher
Principal Consultant
George Boucher Consulting

21st October 2014

Appendix 1
Existing Mt Charlotte & Proposed Hidden Secret Vibration Monitor Locations


353500
354000
354500
355000
6598500
6598000
6597500
6597000
MICROWAVE
AUSTRAL ROAD
HOSPITAL
FREEMASONS
Mt Charlotte Operations
AGRICOLA
Legend
Existing Monitoring Sites
Proposed Monitoring Site
KCGM
Kalgoorlie Consolidated Gold Mines Pty Ltd
Mt Charlotte Blast Monitoring Network
N
0 50 100 200 300 400
Metres
Coordinate System: GDA 1994 MGA Zone 51
140912MAR

Appendix 2
Mt Charlotte Vibration Records
2010-2013

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
2-Feb-10	214-216	604	112.1	0.9 mm/s	Austral
2-Feb-10	214-216	483	112.1	0.5 mm/s	Free
2-Feb-10	325 & Collars	497	131.5	0.5 mm/s	Free
2-Feb-10	325 & Collars	590	131.5	0.9 mm/s	Austral
4-Feb-10	217	966	137.9	0.5 mm/s	Agricola
4-Feb-10	326	978	125.0	0.5 mm/s	Agricola
9-Feb-10	206 Drags	490	133.6	0.5 mm/s	Free
9-Feb-10	206 Drags	971	133.6	0.5 mm/s	Agricola
9-Feb-10	206 Drags	991	133.6	0.7 mm/s	Micro
9-Feb-10	206 Drags	594	133.6	1.0 mm/s	Austral
10-Feb-10	219	966	137.9	0.5 mm/s	Agricola
10-Feb-10	219	491	137.9	0.6 mm/s	Free
10-Feb-10	219	998	137.9	0.8 mm/s	Micro
10-Feb-10	219	599	137.9	1.0 mm/s	Austral
11-Feb-10	206	974	133.6	0.5 mm/s	Agricola
11-Feb-10	220	964	137.9	0.5 mm/s	Agricola
11-Feb-10	206	991	133.6	0.5 mm/s	Micro
11-Feb-10	220	998	137.9	0.5 mm/s	Micro
11-Feb-10	206	487	133.6	0.6 mm/s	Free
11-Feb-10	220	491	137.9	0.6 mm/s	Free
11-Feb-10	206	596	133.6	0.9 mm/s	Austral
11-Feb-10	220	602	137.9	0.9 mm/s	Austral
15-Feb-10	221	965	137.9	0.6 mm/s	Agricola
15-Feb-10	327	981	112.1	0.6 mm/s	Agricola
15-Feb-10	221	491	137.9	0.8 mm/s	Free
15-Feb-10	327	499	112.1	0.8 mm/s	Free
15-Feb-10	221	996	137.9	0.8 mm/s	Micro
15-Feb-10	327	987	112.1	0.8 mm/s	Micro
15-Feb-10	221	604	137.9	1.0 mm/s	Austral
15-Feb-10	327	588	112.1	1.0 mm/s	Austral
16-Feb-10	3021-3031	473	82.7	0.9 mm/s	Free
16-Feb-10	3021-3031	970	83	1.2 mm/s	Micro
16-Feb-10	3021-3031	573	83	1.2 mm/s	Austral
18-Feb-10	222	492	137.9	0.5 mm/s	Free
18-Feb-10	328	497	99.1	0.5 mm/s	Free
18-Feb-10	222	966	137.9	0.6 mm/s	Agricola
18-Feb-10	328	983	99.1	0.6 mm/s	Agricola
18-Feb-10	222	995	137.9	0.6 mm/s	Micro
18-Feb-10	328	986	99.1	0.6 mm/s	Micro
18-Feb-10	222	605	137.9	0.8 mm/s	Austral
18-Feb-10	328	586	99.1	0.8 mm/s	Austral

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
19-Feb-10	207	490	**133.6**	0.6 mm/s	Free
19-Feb-10	207	973	**133.6**	0.6 mm/s	Agricola
19-Feb-10	207	996	**133.6**	0.6 mm/s	Micro
19-Feb-10	207	595	**133.6**	1.1 mm/s	Austral
22-Feb-10	329	993	**101.3**	0.5 mm/s	Micro
22-Feb-10	223	966	**137.9**	0.5 mm/s	Agricola
22-Feb-10	329	589	**101.3**	0.7 mm/s	Austral
22-Feb-10	223	503	**137.9**	0.7 mm/s	Free
22-Feb-10	223	1,004	**137.9**	0.8 mm/s	Micro
22-Feb-10	223	604	**137.9**	0.9 mm/s	Austral
23-Feb-10	208	976	**131.5**	0.5 mm/s	Agricola
23-Feb-10	208	498	**131.5**	0.5 mm/s	Free
23-Feb-10	208	992	**131.5**	0.6 mm/s	Micro
23-Feb-10	208	595	**131.5**	0.9 mm/s	Austral
25-Feb-10	224	505	**137.9**	0.5 mm/s	Free
25-Feb-10	224	1,003	**137.9**	0.6 mm/s	Micro
25-Feb-10	224	606	**137.9**	1.0 mm/s	Austral
26-Feb-10	209	974	**129.3**	0.5 mm/s	Agricola
26-Feb-10	209	993	**129.3**	0.5 mm/s	Micro
26-Feb-10	209	596	**129.3**	0.9 mm/s	Austral
1-Jun-10	228	517	**137.9**	0.7 mm/s	Free
1-Jun-10	228	633	**137.9**	0.8 mm/s	Austral
7-Jun-10	320	503	**138.9**	0.7 mm/s	Free
7-Jun-10	320	594	**138.9**	0.9 mm/s	Austral
8-Jun-10	321	596	**125.0**	0.9 mm/s	Austral
10-Jun-10	322	504	**116.4**	0.5 mm/s	Free
10-Jun-10	322	597	**116.4**	1.1 mm/s	Austral
14-Jun-10	323	505	**118.5**	0.5 mm/s	Free
14-Jun-10	323	598	119	1.4 mm/s	Austral
17-Jun-10	2041	1,164	**82.7**	0.3 mm/s	Hospital
17-Jun-10	2041	616	**82.7**	0.7 mm/s	Austral
17-Jun-10	2041	950	**82.7**	0.8 mm/s	Agricola
17-Jun-10	2041	468	83	1.4 mm/s	Free
18-Jun-10	324	981	**129.3**	0.6 mm/s	Agricola
18-Jun-10	324	997	**129.3**	1.0 mm/s	Micro
22-Jun-10	325	999	**90.5**	0.5 mm/s	Micro
22-Jun-10	325	601	**90.5**	0.9 mm/s	Austral
23-Jun-10	301	624	**115.2**	0.8 mm/s	Austral
23-Jun-10	301	968	115	1.2 mm/s	Agricola
23-Jun-10	301	511	115	1.3 mm/s	Free
25-Jun-10	302	1,019	**125.0**	0.6 mm/s	Micro
25-Jun-10	302	626	**125.0**	0.9 mm/s	Austral

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
25-Jun-10	302	520	**125.0**	1.0 mm/s	Free
25-Jun-10	302	971	**125.0**	1.0 mm/s	Agricola
29-Jun-10	303	628	**125.0**	0.6 mm/s	Austral
29-Jun-10	303	515	**125.0**	0.9 mm/s	Free
29-Jun-10	303	977	**125.0**	1.0 mm/s	Agricola
3-Aug-10	750 MH2 Slash	950	**91.6**	0.8 mm/s	Agricola
3-Aug-10	750 MH2 Slash	510	**91.6**	1.0 mm/s	Free
4-Aug-10	328	995	**112.3**	0.6 mm/s	Agricola
4-Aug-10	328	998	**112.3**	0.9 mm/s	Micro
4-Aug-10	328	604	112	1.3 mm/s	Austral
6-Aug-10	329	519	**125.0**	0.4 mm/s	Free
6-Aug-10	329	999	125	1.2 mm/s	Micro
6-Aug-10	Shash 2	614	95	1.2 mm/s	Austral
6-Aug-10	329	606	125	1.5 mm/s	Austral
11-Aug-10	330	520	**125.0**	0.5 mm/s	Free
11-Aug-10	330	1,046	**125.0**	0.6 mm/s	Agricola
11-Aug-10	330	1,000	**125.0**	0.6 mm/s	Micro
11-Aug-10	330	607	**125.0**	1.0 mm/s	Austral
13-Aug-10	Shash 3	517	**142.2**	0.7 mm/s	Free
13-Aug-10	Shash 3	997	142	1.3 mm/s	Micro
13-Aug-10	Shash 3	608	142	1.3 mm/s	Austral
17-Aug-10	331	1,004	**125.0**	0.6 mm/s	Micro
17-Aug-10	331	610	125	1.3 mm/s	Austral
20-Aug-10	404	1,004	**125.0**	1.1 mm/s	Micro
20-Aug-10	404	614	**125.0**	1.1 mm/s	Austral
20-Aug-10	404	990	125	1.1 mm/s	Agricola
20-Aug-10	404	522	125	1.6 mm/s	Free
24-Aug-10	332	520	**125.0**	0.5 mm/s	Free
24-Aug-10	332	1,009	**125.0**	0.5 mm/s	Micro
24-Aug-10	332	613	125	1.1 mm/s	Austral
27-Aug-10	333	994	**130.0**	0.5 mm/s	Agricola
27-Aug-10	333	522	**130.0**	0.5 mm/s	Free
27-Aug-10	333	1,112	**130.0**	0.8 mm/s	Micro
27-Aug-10	333	617	130	1.7 mm/s	Austral
5-Oct-10	210	1,009	**129.3**	0.6 mm/s	Micro
5-Oct-10	210	614	**129.3**	0.6 mm/s	Austral
5-Oct-10	210	957	129	1.1 mm/s	Agricola
5-Oct-10	210	487	129	1.3 mm/s	Free
7-Oct-10	338	537	**137.7**	0.5 mm/s	Free
7-Oct-10	338	1,012	**137.7**	0.6 mm/s	Micro
7-Oct-10	338	618	**137.7**	1.1 mm/s	Austral
11-Oct-10	211	623	**125.0**	0.6 mm/s	Austral

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
11-Oct-10	211	479	125	1.2 mm/s	Free
13-Oct-10	411	533	**122.8**	0.6 mm/s	Free
13-Oct-10	411	990	**122.8**	0.8 mm/s	Agricola
13-Oct-10	411	622	**122.8**	0.9 mm/s	Austral
15-Oct-10	339	544	**147.8**	0.7 mm/s	Free
15-Oct-10	339	997	**147.8**	0.7 mm/s	Agricola
15-Oct-10	339	1,014	**147.8**	0.8 mm/s	Micro
15-Oct-10	339	620	**147.8**	0.8 mm/s	Austral
18-Oct-10	212	619	**135.9**	0.7 mm/s	Austral
18-Oct-10	212	963	**135.9**	1.1 mm/s	Agricola
18-Oct-10	212	478	136	1.2 mm/s	Free
20-Oct-10	340	549	**138.9**	0.6 mm/s	Free
20-Oct-10	340	999	**138.9**	0.6 mm/s	Agricola
20-Oct-10	340	1,016	**138.9**	0.7 mm/s	Micro
20-Oct-10	340	622	139	1.3 mm/s	Austral
22-Oct-10	213	942	**125.0**	1.0 mm/s	Agricola
22-Oct-10	213	486	125	1.3 mm/s	Free
28-Oct-10	341	550	**133.0**	0.6 mm/s	Free
28-Oct-10	341	1,018	**133.0**	0.8 mm/s	Micro
28-Oct-10	341	626	**133.0**	1.0 mm/s	Austral
3-Dec-10	219	940	**125.0**	1.0 mm/s	Agricola
7-Dec-10	103B	1,110	**125.0**	0.3 mm/s	Hospital
7-Dec-10	103B	574	**125.0**	0.8 mm/s	Austral
7-Dec-10	103B	965	**125.0**	0.9 mm/s	Agricola
9-Dec-10	220	948	**125.0**	0.9 mm/s	Agricola
9-Dec-10	220	500	**125.0**	1.1 mm/s	Free
10-Dec-10	102 DRAG 1	985	**129.3**	0.5 mm/s	Hospital
10-Dec-10	102 DRAG 1	893	129	1.7 mm/s	Micro
10-Dec-10	102 DRAG 1	540	129	1.9 mm/s	Austral
10-Dec-10	102 DRAG 1	1,017	129	1.9 mm/s	Agricola
10-Dec-10	102 DRAG 1	421	129	2.4 mm/s	Free
14-Dec-10	104B	1,106	**125.0**	0.3 mm/s	Hospital
14-Dec-10	104B	966	**125.0**	0.6 mm/s	Micro
14-Dec-10	104B	579	**125.0**	0.8 mm/s	Austral
14-Dec-10	104B	963	**125.0**	1.0 mm/s	Agricola
14-Dec-10	104B	435	125	1.8 mm/s	Free
15-Dec-10	415	992	**125.0**	0.7 mm/s	Agricola
15-Dec-10	415	628	**125.0**	0.9 mm/s	Austral
17-Dec-10	103A	1,120	**112.1**	0.3 mm/s	Hospital
17-Dec-10	105B	1,104	**125.0**	0.3 mm/s	Hospital
17-Dec-10	103A	962	**112.1**	0.8 mm/s	Agricola
17-Dec-10	105B	961	**125.0**	0.8 mm/s	Agricola

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
17-Dec-10	103A	975	**112.1**	1.0 mm/s	Micro
17-Dec-10	105B	967	**125.0**	1.0 mm/s	Micro
17-Dec-10	103A	582	**112.1**	1.1 mm/s	Austral
17-Dec-10	105B	581	**125.0**	1.1 mm/s	Austral
17-Dec-10	103A	443	112	1.6 mm/s	Free
17-Dec-10	105B	434	125	1.6 mm/s	Free
21-Dec-10	221	644	**125.0**	0.6 mm/s	Austral
21-Dec-10	221	497	**125.0**	1.1 mm/s	Free
21-Dec-10	221	940	125	1.2 mm/s	Agricola
22-Dec-10	305	629	**120.7**	0.6 mm/s	Austral
22-Dec-10	305	977	121	1.3 mm/s	Agricola
4-Jan-11	SLR224/226	1,210	**91.6**	0.3 mm/s	Hospital
4-Jan-11	104A	1,122	**125.0**	0.4 mm/s	Hospital
4-Jan-11	106B	1,100	**129.3**	0.4 mm/s	Hospital
4-Jan-11	SLR224/226	644	**91.6**	0.6 mm/s	Austral
4-Jan-11	104A	978	**125.0**	0.6 mm/s	Micro
4-Jan-11	106B	970	**129.3**	0.6 mm/s	Micro
4-Jan-11	SLR224/226	952	**91.6**	0.7 mm/s	Agricola
4-Jan-11	104A	959	**125.0**	0.8 mm/s	Agricola
4-Jan-11	106B	959	**129.3**	0.8 mm/s	Agricola
4-Jan-11	104A	589	**125.0**	0.8 mm/s	Austral
4-Jan-11	106B	583	**129.3**	0.8 mm/s	Austral
4-Jan-11	SLR224/226	510	**91.6**	1.2 mm/s	Free
4-Jan-11	104A	442	**125.0**	2.0 mm/s	Free
4-Jan-11	106B	431	**129.3**	2.0 mm/s	Free
5-Jan-11	222	1,196	**125.0**	0.3 mm/s	Hospital
5-Jan-11	222	494	**125.0**	0.8 mm/s	Free
5-Jan-11	222	940	**125.0**	0.9 mm/s	Agricola
7-Jan-11	311	638	**125.0**	0.6 mm/s	Austral
7-Jan-11	311	961	**125.0**	0.9 mm/s	Agricola
11-Jan-11	105A	957	**177.3**	0.7 mm/s	Agricola
11-Jan-11	105A	445	**177.3**	1.8 mm/s	Free
12-Jan-11	223	497	**125.0**	0.8 mm/s	Free
12-Jan-11	223	939	**125.0**	1.1 mm/s	Agricola
14-Jan-11	106	1,172	**68.6**	0.3 mm/s	Hospital
14-Jan-11	104 INT	980	**129.3**	0.3 mm/s	Hospital
14-Jan-11	106	609	**68.6**	0.5 mm/s	Austral
14-Jan-11	106	953	**68.6**	0.6 mm/s	Agricola
14-Jan-11	104 INT	892	**129.3**	1.1 mm/s	Micro
14-Jan-11	104 INT	539	**129.3**	1.2 mm/s	Austral
14-Jan-11	104 INT	1,018	**129.3**	1.3 mm/s	Agricola
14-Jan-11	104 INT	417	**129.3**	1.6 mm/s	Free

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14-Jan-11	106	477	**68.6**	1.8 mm/s	Free
18-Jan-11	312	517	**133.6**	0.7 mm/s	Free
18-Jan-11	312	964	**133.6**	0.9 mm/s	Agricola
18-Jan-11	224	499	**120.7**	0.9 mm/s	Free
18-Jan-11	224	938	**120.7**	1.2 mm/s	Agricola
19-Jan-11	416	1,021	**116.4**	0.6 mm/s	Micro
19-Jan-11	416	990	**116.4**	1.0 mm/s	Agricola
19-Jan-11	416	632	**116.4**	1.1 mm/s	Austral
21-Jan-11	225	501	**125.0**	0.9 mm/s	Free
21-Jan-11	225	936	**125.0**	1.1 mm/s	Agricola
26-Jan-11	417	635	**118.5**	0.6 mm/s	Austral
26-Jan-11	417	995	**118.5**	0.9 mm/s	Agricola
28-Jan-11	226	651	**125.0**	0.5 mm/s	Austral
28-Jan-11	226	500	**125.0**	0.8 mm/s	Free
28-Jan-11	226	938	**125.0**	1.1 mm/s	Agricola
1-Apr-11	110	879	**103.4**	0.6 mm/s	Micro
1-Apr-11	110	529	**103.4**	0.6 mm/s	Austral
1-Apr-11	107	477	**76.8**	0.6 mm/s	Free
1-Apr-11	110	419	**103.4**	1.1 mm/s	Free
6-Apr-11	108	479	**109.3**	0.7 mm/s	Free
12-Apr-11	110	486	**76.2**	0.6 mm/s	Free
13-Apr-11	111	530	**135.9**	0.7 mm/s	Austral
13-Apr-11	111	885	**135.9**	0.8 mm/s	Micro
13-Apr-11	111	420	**135.9**	1.2 mm/s	Free
15-Apr-11	111	490	**106.4**	0.5 mm/s	Free
19-Apr-11	112	970	**125.0**	0.3 mm/s	Hospital
19-Apr-11	112	1,031	**125.0**	0.8 mm/s	Agricola
19-Apr-11	112	874	**125.0**	0.8 mm/s	Micro
19-Apr-11	112	524	**125.0**	0.9 mm/s	Austral
19-Apr-11	112	418	**125.0**	2.1 mm/s	Free
21-Apr-11	112	1,006	**91.6**	0.7 mm/s	Micro
21-Apr-11	113	874	**122.8**	0.7 mm/s	Micro
21-Apr-11	112	616	**91.6**	0.9 mm/s	Austral
21-Apr-11	113	524	**122.8**	0.9 mm/s	Austral
21-Apr-11	112	497	**91.6**	1.5 mm/s	Free
21-Apr-11	113	418	**122.8**	1.5 mm/s	Free
27-Apr-11	113	499	**105.6**	0.5 mm/s	Free
28-Apr-11	114	1,033	**114.6**	0.6 mm/s	Agricola
28-Apr-11	114	875	**114.6**	1.0 mm/s	Micro
28-Apr-11	114	526	**114.6**	1.0 mm/s	Austral
28-Apr-11	114	419	**114.6**	1.7 mm/s	Free
29-Apr-11	424	1,027	**125.0**	0.5 mm/s	Micro
29-Apr-11	114	1,010	**116.4**	0.5 mm/s	Micro
29-Apr-11	424	557	**125.0**	0.6 mm/s	Free

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
29-Apr-11	114	487	**116.4**	0.6 mm/s	Free
29-Apr-11	424	637	**125.0**	0.9 mm/s	Austral
29-Apr-11	114	615	**116.4**	0.9 mm/s	Austral
29-Apr-11	424	999	**125.0**	0.9 mm/s	Agricola
29-Apr-11	114	968	**116.4**	0.9 mm/s	Agricola
6-Jul-11	120	948	**91.6**	0.6 mm/s	Agricola
6-Jul-11	120	495	**91.6**	1.0 mm/s	Free
19-Jul-11	103	476	**82.7**	0.7 mm/s	Austral
19-Jul-11	103	919	**82.7**	0.8 mm/s	Micro
19-Jul-11	103	449	**82.7**	1.3 mm/s	Free
20-Jul-11	122/123	948	**177.3**	1.0 mm/s	Agricola
20-Jul-11	122/123	494	**177.3**	1.5 mm/s	Free
22-Jul-11	104	480	**90.5**	0.9 mm/s	Austral
22-Jul-11	104	919	**90.5**	0.9 mm/s	Micro
22-Jul-11	104	453	**90.5**	1.6 mm/s	Free
29-Jul-11	126	960	**103.4**	0.6 mm/s	Agricola
29-Jul-11	126	508	**103.4**	1.0 mm/s	Free
13-Oct-11	102	1,021	**120.7**	0.5 mm/s	Agricola
13-Oct-11	102	937	**120.7**	0.6 mm/s	Micro
13-Oct-11	102	471	**120.7**	0.7 mm/s	Free
18-Oct-11	103	1,026	**120.7**	0.5 mm/s	Hospital
18-Oct-11	103	1,025	**120.7**	1.5 mm/s	Agricola
18-Oct-11	103	935	**120.7**	1.7 mm/s	Micro
18-Oct-11	103	470	**120.7**	2.1 mm/s	Free
18-Oct-11	103	591	**120.7**	2.2 mm/s	Austral
22-Oct-11	104	1,017	**120.7**	0.7 mm/s	Hospital
22-Oct-11	104	1,022	**120.7**	1.2 mm/s	Agricola
22-Oct-11	104	466	**120.7**	3.0 mm/s	Free
25-Oct-11	137	974	**159.6**	0.6 mm/s	Agricola
25-Oct-11	137	523	**159.6**	0.6 mm/s	Free
25-Oct-11	137	635	**159.6**	0.6 mm/s	Austral
27-Oct-11	138	1,229	**147.8**	0.2 mm/s	Hospital
27-Oct-11	138	635	**147.8**	0.6 mm/s	Austral
02-May-12	171 + drag	1,264	**153.7**	0.6 mm/s	Agricola
08-May-12	501	923	**34.0**	0.7 mm/s	Micro
08-May-12	501	1,013	**34.0**	1.3 mm/s	Agricola
10-May-12	502-503B	1,016	**100.5**	1.1 mm/s	Agricola
14-May-12	503B-508	1,018	**108.7**	0.7 mm/s	Agricola
15-May-12	302	955	**170.2**	0.9 mm/s	Micro
15-May-12	302	1,024	**170.2**	1.7 mm/s	Agricola
18-May-12	504	932	**116.4**	1.0 mm/s	Agricola
07-Jun-12	507-509	927	**86.2**	0.5 mm/s	Agricola
07-Jun-12	507-509	640	**86.2**	0.7 mm/s	Austral
07-Jun-12	507-509	485	**86.2**	0.7 mm/s	Free
07-Jun-12	507-509	1,029	**86.2**	0.7 mm/s	Micro
07-Jun-12	209	437	**102.2**	1.5 mm/s	Free
12-Jun-12	210	569	**100.5**	0.8 mm/s	Austral
12-Jun-12	210	918	**100.5**	0.8 mm/s	Micro
12-Jun-12	210	436	**100.5**	1.6 mm/s	Free

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18-Jun-12	510	919	**81.9**	0.6 mm/s	Agricola
18-Jun-12	510	650	**81.9**	0.6 mm/s	Austral
20-Jun-12	211	567	**127.1**	0.8 mm/s	Austral
20-Jun-12	211	916	**127.1**	0.8 mm/s	Micro
20-Jun-12	211	433	**127.1**	1.6 mm/s	Free
26-Jun-12	212, 501A	1,012	**165.5**	1.6 mm/s	Agricola
26-Jun-12	212, 501A	914	**165.5**	1.8 mm/s	Micro
26-Jun-12	212, 501A	565	**165.5**	2.2 mm/s	Austral
26-Jun-12	212, 501A	431	**165.5**	3.2 mm/s	Free
28-Jun-12	511-511C	647	**94.6**	0.6 mm/s	Austral
28-Jun-12	511-511C	1,036	**94.6**	0.7 mm/s	Micro
28-Jun-12	511-511C	914	**94.6**	1.0 mm/s	Agricola
28-Jun-12	511-511C	475	**94.6**	1.1 mm/s	Free
02-Jul-12	173	690	**125.0**	0.6 mm/s	Free
02-Jul-12	173	1,257	**125.0**	0.8 mm/s	Agricola
10-Jul-12	rescue	912	**70.9**	0.6 mm/s	Micro
10-Jul-12	rescue	955	**70.9**	0.7 mm/s	Austral
10-Jul-12	rescue	438	**70.9**	1.0 mm/s	Free
13-Jul-12	174	768	**125.0**	0.6 mm/s	Austral
13-Jul-12	174	968	**125.0**	0.7 mm/s	Micro
13-Jul-12	174	688	**125.0**	0.9 mm/s	Free
13-Jul-12	174	1,163	**125.0**	1.4 mm/s	Agricola
18-Jul-12	511-511C	475	**82.7**	0.6 mm/s	Free
25-Jul-12	109	1,036	**120.7**	0.7 mm/s	Agricola
25-Jul-12	109	920	**120.7**	1.2 mm/s	Micro
25-Jul-12	109	472	**120.7**	1.2 mm/s	Free
25-Jul-12	109	579	**120.7**	1.3 mm/s	Austral
09-Aug-12	110	1,031	**120.7**	0.7 mm/s	Agricola
09-Aug-12	110	923	**120.7**	1.3 mm/s	Micro
09-Aug-12	110	582	**120.7**	1.5 mm/s	Austral
09-Aug-12	110	467	**120.7**	1.6 mm/s	Free
29-Aug-12	DH Rise	1,172	**97.0**	0.5 mm/s	Micro
29-Aug-12	DH Rise	789	**97.0**	0.6 mm/s	Austral
29-Aug-12	DH Rise	593	**97.0**	0.8 mm/s	Free
29-Aug-12	DH Rise	886	**97.0**	1.3 mm/s	Agricola
31-Aug-12	110A,111	1,031	**177.3**	0.7 mm/s	Agricola
31-Aug-12	110A,111	923	**177.3**	1.0 mm/s	Micro
31-Aug-12	110A,111	467	**177.3**	1.2 mm/s	Free
31-Aug-12	110A,111	583	**177.3**	1.7 mm/s	Austral
07-Sep-12	702-704	889	**90.5**	0.5 mm/s	Agricola
07-Sep-12	702-704	592	**90.5**	0.8 mm/s	Free
28-Sep-12	710-714D	911	**109.9**	0.7 mm/s	Agricola
28-Sep-12	710-714D	600	**109.9**	0.8 mm/s	Free
18-Oct-12	503B	432	**100.5**	0.9 mm/s	Free
24-Oct-12	505	430	**99.3**	0.7 mm/s	Free
24-Oct-12	111	447	**115.2**	0.7 mm/s	Free
06-Nov-12	714	897	**112.1**	0.7 mm/s	Agricola

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06-Nov-12	714	592	**112.1**	0.7 mm/s	Free
14-Nov-12	715	897	**107.3**	0.6 mm/s	Agricola
14-Nov-12	715	590	**107.3**	0.7 mm/s	Free
19-Nov-12	217	903	**165.5**	0.6 mm/s	Micro
19-Nov-12	217	434	**165.5**	0.8 mm/s	Free
19-Nov-12	217	556	**165.5**	1.1 mm/s	Austral
21-Nov-12	716	589	**110.3**	0.7 mm/s	Free
21-Nov-12	716	898	**110.3**	0.9 mm/s	Agricola
21-Nov-12	716	777	**110.3**	1.4 mm/s	Austral
26-Nov-12	112	922	**183.2**	1.1 mm/s	Micro
26-Nov-12	112	1,032	**183.2**	1.2 mm/s	Agricola
26-Nov-12	112	466	**183.2**	1.5 mm/s	Free
27-Nov-12	717	1,157	**104.7**	0.5 mm/s	Micro
27-Nov-12	717	587	**104.7**	0.7 mm/s	Free
27-Nov-12	717	897	**104.7**	1.0 mm/s	Agricola
12-Dec-12	719	1,146	**98.7**	0.7 mm/s	Micro
12-Dec-12	719	586	**98.7**	0.8 mm/s	Free
12-Dec-12	719	907	**98.7**	0.8 mm/s	Agricola
13-Dec-12	219	1,030	**121.2**	0.7 mm/s	Agricola
13-Dec-12	219	440	**121.2**	1.1 mm/s	Free
18-Dec-12	507	1,018	**108.7**	0.7 mm/s	Agricola
18-Dec-12	507	561	**108.7**	0.9 mm/s	Austral
18-Dec-12	507	907	**108.7**	0.9 mm/s	Micro
18-Dec-12	507	429	**108.7**	1.4 mm/s	Free
21-Dec-12	220	900	**171.4**	0.5 mm/s	Micro
21-Dec-12	220	1,028	**171.4**	0.6 mm/s	Agricola
21-Dec-12	220	441	**171.4**	1.0 mm/s	Free
21-Dec-12	220	553	**171.4**	1.2 mm/s	Austral
27-Dec-12	720	1,146	**90.9**	0.6 mm/s	Micro
27-Dec-12	720	584	**90.9**	0.7 mm/s	Free
27-Dec-12	720	905	**90.9**	0.8 mm/s	Agricola
04-Jan-13	113	1,035	**129.3**	0.6 mm/s	Agricola
04-Jan-13	113	466	**129.3**	0.7 mm/s	Free
04-Jan-13	113	917	**129.3**	1.1 mm/s	Micro
04-Jan-13	113	576	**129.3**	1.2 mm/s	Austral
04-Jan-13	113	1,012	**129.3**	1.5 mm/s	Hospital
08-Jan-13	508	1,020	**97.5**	0.6 mm/s	Agricola
08-Jan-13	508	559	**97.5**	0.7 mm/s	Austral
08-Jan-13	508	904	**97.5**	0.8 mm/s	Micro
08-Jan-13	508	430	**97.5**	1.3 mm/s	Free
15-Jan-13	221	1,032	**133.0**	0.8 mm/s	Agricola
15-Jan-13	221	446	**133.0**	1.0 mm/s	Free
15-Jan-13	221	898	**133.0**	1.1 mm/s	Micro
15-Jan-13	221	552	**133.0**	1.2 mm/s	Austral
17-Jan-13	721	1,143	**90.1**	0.7 mm/s	Micro
17-Jan-13	721	582	**90.1**	0.8 mm/s	Free
17-Jan-13	721	906	**90.1**	1.0 mm/s	Agricola

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
30-Jan-13	722723	897	**66.8**	0.5 mm/s	Agricola
01-Feb-13	222	1,033	**127.1**	0.6 mm/s	Agricola
01-Feb-13	222	552	**127.1**	0.7 mm/s	Austral
13-Feb-13	223	446	**101.3**	0.8 mm/s	Free
13-Feb-13	223	1,038	**101.3**	0.9 mm/s	Agricola
13-Feb-13	223	546	**101.3**	1.1 mm/s	Austral
14-Feb-13	731	899	**105.6**	0.6 mm/s	Agricola
07-Mar-13	733-736	1,162	**105.6**	0.8 mm/s	Micro
07-Mar-13	733-736	910	**105.6**	1.1 mm/s	Agricola
07-Mar-13	733-736	607	**105.6**	1.3 mm/s	Free
28-Mar-13	403-405	896	**100.5**	0.6 mm/s	Micro
28-Mar-13	403-405	552	**100.5**	0.7 mm/s	Austral
28-Mar-13	403-405	436	**100.5**	1.3 mm/s	Free
02-Apr-13	756-758	595	**150.7**	1.1 mm/s	Free
08-Apr-13	116	913	**165.5**	0.6 mm/s	Micro
08-Apr-13	116	573	**165.5**	0.7 mm/s	Austral
08-Apr-13	116	466	**165.5**	0.8 mm/s	Free
12-Apr-13	759-760	768	**147.8**	0.5 mm/s	Austral
12-Apr-13	759-760	590	**147.8**	0.9 mm/s	Free
16-Apr-13	117	912	**177.3**	0.6 mm/s	Micro
16-Apr-13	117	464	**177.3**	0.9 mm/s	Free
17-Apr-13	406	547	**97.0**	0.6 mm/s	Austral
17-Apr-13	406	893	**97.0**	0.7 mm/s	Micro
17-Apr-13	406	436	**97.0**	1.6 mm/s	Free
19-Apr-13	762	585	**135.9**	1.1 mm/s	Free
23-Apr-13	407	546	**94.8**	0.5 mm/s	Austral
23-Apr-13	407	891	**94.8**	0.6 mm/s	Micro
23-Apr-13	407	436	**94.8**	1.3 mm/s	Free
01-May-13	408	547	**88.7**	1.0 mm/s	Austral
01-May-13	408	890	**88.7**	1.1 mm/s	Micro
01-May-13	408	436	**88.7**	2.3 mm/s	Free
03-May-13	763	763	**135.9**	0.5 mm/s	Austral
03-May-13	763	583	**135.9**	1.2 mm/s	Free
07-May-13	408A	440	**60.3**	0.5 mm/s	Free
17-May-13	765	579	**130.0**	0.7 mm/s	Free
22-May-13	410	888	**100.5**	0.8 mm/s	Micro
22-May-13	410	545	**100.5**	0.8 mm/s	Austral
22-May-13	410	437	**100.5**	1.6 mm/s	Free
12-Jun-13	411	885	**135.9**	1.8 mm/s	Micro
12-Jun-13	411	542	**135.9**	2.5 mm/s	Austral
12-Jun-13	411	435	**135.9**	3.6 mm/s	Free
14-Jun-13	767-769,726A	577	**106.4**	0.9 mm/s	Free
28-Jun-13	201	593	**111.6**	0.7 mm/s	Free
28-Jun-13	201	1,004	**111.6**	1.0 mm/s	Micro
02-Jul-13	202/202 IN/203	1,001	**109.9**	0.7 mm/s	Micro
02-Jul-13	202/202 IN/203	703	**109.9**	0.8 mm/s	Austral
04-Jul-13	203 IN/204/204 IN/205	596	**90.5**	0.6 mm/s	Free

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
04-Jul-13	203 IN/204/204 IN/205	702	**90.5**	0.7 mm/s	Austral
05-Jul-13	205 IN/206/206 IN/207	700	**77.6**	0.6 mm/s	Austral
08-Jul-13	412	881	**79.8**	0.6 mm/s	Micro
08-Jul-13	412	440	**79.8**	1.0 mm/s	Free
12-Jul-13	176	1,097	**153.7**	0.6 mm/s	Agricola
12-Jul-13	176	997	**153.7**	0.9 mm/s	Micro
12-Jul-13	176	700	**153.7**	1.0 mm/s	Austral
12-Jul-13	176	595	**153.7**	1.0 mm/s	Free
18-Jul-13	177	1,101	**112.1**	0.7 mm/s	Agricola
18-Jul-13	177	996	**112.1**	1.1 mm/s	Micro
18-Jul-13	177	699	**112.1**	1.2 mm/s	Austral
18-Jul-13	177	599	**112.1**	1.2 mm/s	Free
24-Jul-13	178	1,097	**107.8**	0.7 mm/s	Agricola
24-Jul-13	178	699	**107.8**	1.0 mm/s	Austral
24-Jul-13	178	996	**107.8**	1.1 mm/s	Micro
24-Jul-13	178	594	**107.8**	1.3 mm/s	Free
29-Jul-13	179	997	**109.9**	0.8 mm/s	Micro
29-Jul-13	179	591	**109.9**	0.8 mm/s	Free
29-Jul-13	179	700	**109.9**	0.8 mm/s	Austral
30-Jul-13	200C/200D/200E	976	**156.6**	0.5 mm/s	Agricola
01-Aug-13	181182	1,099	**116.4**	0.8 mm/s	Agricola
01-Aug-13	181182	591	**116.4**	1.3 mm/s	Free
01-Aug-13	Slash2, R03	562	**38.8**	1.3 mm/s	Austral
01-Aug-13	Slash2, R03	902	**38.8**	1.4 mm/s	Micro
13-Aug-13	183184	694	**100.5**	0.9 mm/s	Austral
13-Aug-13	183184	597	**100.5**	1.0 mm/s	Free
13-Aug-13	183184	987	**100.5**	1.0 mm/s	Micro
20-Aug-13	Slash4, 120	1,040	**177.3**	1.1 mm/s	Agricola
20-Aug-13	Slash4, 120	570	**177.3**	1.2 mm/s	Austral
20-Aug-13	Slash4, 120	908	**177.3**	1.2 mm/s	Micro
20-Aug-13	Slash4, 120	462	**177.3**	1.9 mm/s	Free
06-Sep-13	R737-R738	788	**101.7**	0.6 mm/s	Austral
11-Sep-13	R121	906	**189.1**	0.5 mm/s	Micro
11-Sep-13	R121	462	**189.1**	0.7 mm/s	Free
16-Sep-13	R312	971	**135.9**	1.3 mm/s	Micro
16-Sep-13	R312	583	**135.9**	1.4 mm/s	Free
16-Sep-13	R312	673	**135.9**	1.6 mm/s	Austral
19-Sep-13	R311	1,109	**186.2**	0.6 mm/s	Agricola
19-Sep-13	R311	970	**186.2**	1.3 mm/s	Micro
19-Sep-13	R311	587	**186.2**	1.4 mm/s	Free
19-Sep-13	R311	673	**186.2**	1.6 mm/s	Austral
25-Sep-13	R310	968	**122.8**	1.1 mm/s	Micro
25-Sep-13	R310	587	**122.8**	1.2 mm/s	Free
25-Sep-13	R750-R752	777	**135.9**	1.3 mm/s	Austral
26-Sep-13	Drag 4	608	**107.8**	0.5 mm/s	Austral
26-Sep-13	Drag 4	500	**107.8**	0.5 mm/s	Free
26-Sep-13	Drag 4	977	**107.8**	0.6 mm/s	Micro

Date	Blast Number	Distance to Monitor (m)	MIC (kg)	PPV (mm/s)	Monitor Location
30-Sep-13	R309	966	**114.2**	1.1 mm/s	Micro
30-Sep-13	R309	668	**114.2**	1.2 mm/s	Austral
30-Sep-13	R309	586	**114.2**	1.3 mm/s	Free
01-Oct-13	R302,303	467	**81.9**	1.0 mm/s	Free
04-Oct-13	R308	963	**101.3**	1.1 mm/s	Micro
04-Oct-13	R308	586	**101.3**	1.3 mm/s	Free
04-Oct-13	R308	666	**101.3**	1.4 mm/s	Austral
09-Oct-13	R307	1,114	**94.8**	0.6 mm/s	Agricola
09-Oct-13	R307	961	**94.8**	1.1 mm/s	Micro
09-Oct-13	R307	586	**94.8**	1.3 mm/s	Free
09-Oct-13	R307	665	**94.8**	1.4 mm/s	Austral
16-Oct-13	R313	972	**124.1**	0.6 mm/s	Micro
16-Oct-13	R313	669	**124.1**	0.6 mm/s	Austral
16-Oct-13	R313	1,094	**124.1**	0.9 mm/s	Agricola
16-Oct-13	R313	573	**124.1**	1.2 mm/s	Free
22-Oct-13	R295 to R306	1,115	**109.3**	0.8 mm/s	Agricola
22-Oct-13	R295 to R306	662	**109.3**	1.4 mm/s	Austral
22-Oct-13	R295 to R306	585	**109.3**	1.6 mm/s	Free
22-Oct-13	R295 to R306	958	**109.3**	1.8 mm/s	Micro
30-Oct-13	R314,R315	672	**133.0**	0.9 mm/s	Austral
30-Oct-13	R314,R315	1,028	**133.0**	0.9 mm/s	Agricola
30-Oct-13	R314,R315	573	**133.0**	1.2 mm/s	Free
01-Nov-13	112	1,029	**100.5**	0.7 mm/s	Agricola
01-Nov-13	216	1,020	**165.5**	0.7 mm/s	Agricola
01-Nov-13	506	1,018	**75.4**	0.7 mm/s	Agricola
01-Nov-13	112	903	**100.5**	1.3 mm/s	Micro
01-Nov-13	216	905	**165.5**	1.3 mm/s	Micro
01-Nov-13	506	908	**75.4**	1.3 mm/s	Micro
01-Nov-13	112	556	**100.5**	1.6 mm/s	Austral
01-Nov-13	216	556	**165.5**	1.6 mm/s	Austral
01-Nov-13	506	562	**75.4**	1.6 mm/s	Austral
01-Nov-13	112	447	**100.5**	1.8 mm/s	Free
01-Nov-13	216	435	**165.5**	1.8 mm/s	Free
01-Nov-13	506	431	**75.4**	1.8 mm/s	Free

Appendix B

Referral Form under Section 38 of *Environmental Protection Act 1986*

Environmental Protection Authority

GOVERNMENT OF WESTERN AUSTRALIA

EPA REFERRAL FORM PROPONENT

Referral of a Proposal by the Proponent to the Environmental Protection Authority under Section 38(1) of the *Environmental Protection Act 1986*.

PURPOSE OF THIS FORM

Section 38(1) of the *Environmental Protection Act 1986* (EP Act) provides that where a development proposal is likely to have a significant effect on the environment, a proponent may refer the proposal to the Environmental Protection Authority (EPA) for a decision on whether or not it requires assessment under the EP Act. This form sets out the information requirements for the referral of a proposal by a proponent.

Proponents are encouraged to familiarise themselves with the EPA's *General Guide on Referral of Proposals* [see Environmental Impact Assessment/Referral of Proposals and Schemes] before completing this form.

A referral under section 38(1) of the EP Act by a proponent to the EPA must be made on this form. A request to the EPA for a declaration under section 39B (derived proposal) must be made on this form. This form will be treated as a referral provided all information required by Part A has been included and all information requested by Part B has been provided to the extent that it is pertinent to the proposal being referred. Referral documents are to be submitted in two formats – hard copy and electronic copy. The electronic copy of the referral will be provided for public comment for a period of 7 days, prior to the EPA making its decision on whether or not to assess the proposal.

CHECKLIST

Before you submit this form, please check that you have:

	Yes	No
Completed all the questions in Part A (essential).	✓	
Completed all applicable questions in Part B.	✓	
Included Attachment 1 – location maps.	✓	
Included Attachment 2 – additional document(s) the proponent wishes to provide (if applicable).	✓	
Included Attachment 3 – confidential information (if applicable).		✓
Enclosed an electronic copy of all referral information, including spatial data and contextual mapping but excluding confidential information.	✓	

Following a review of the information presented in this form, please consider the following question (a response is optional).

Do you consider the proposal requires formal environmental impact assessment?		
☐ Yes	☒ No	☐ Not sure
If yes, what level of assessment?		
☐ Assessment on Proponent Information	☐ Public Environmental Review	

PROPONENT DECLARATION (to be completed by the proponent)

I, **Ian Keith Butler**, *(full name)* declare that I am authorised on behalf of **Kalgoorlie Consolidated Gold Mines Pty Ltd** (being the person responsible for the proposal) to submit this form and further declare that the information contained in this form is true and not misleading.

Signature IKButler	Name (print) **Ian Butler**
Position: **General Manager**	Company: **Kalgoorlie Consolidated Gold Mines Pty Ltd**
Date 6/11/2014	

PART A - PROPONENT AND PROPOSAL INFORMATION
(All fields of Part A must be completed for this document to be treated as a referral)

1 PROPONENT AND PROPOSAL INFORMATION

1.1 Proponent

Name	**Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM)**
Joint Venture parties (if applicable)	
Australian Company Number (if applicable)	**ABN 97 009 377 619**
Postal Address (where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State)	**Black Street** **PMB 27** **Kalgoorlie WA 6433**
Key proponent contact for the proposal: • name • address • phone • email	**Michelle Berryman** **KCGM Environment and Social Responsibility Manager** **Black Street** **PMB 27** **Kalgoorlie WA 6433** **Tel: (08) 9022 1340** **mberryman@kalgold.com.au**
Consultant for the proposal (if applicable): • name • address • phone • email	**Not Applicable**

1.2 Proposal

Title	**KCGM Hidden Secret Project EPA Section 38 Referral and DMP Mining Proposal**
Description	**Underground mining of the Hidden Secret gold resource from the Mt Charlotte Underground Mine**
Extent (area) of proposed ground disturbance.	**Mining will be between 215 and 440 m below ground surface and therefore will not require any clearing**
Timeframe in which the activity or development is proposed to occur (including start and finish dates where applicable).	**Current plans indicate from 2015 to 2018 (subject to approval timelines)**
Details of any staging of the proposal.	**Not Applicable**
Is the proposal a strategic proposal?	**No**
Is the proponent requesting a declaration that the proposal is a derived proposal? If so, provide the following information on the strategic assessment within which the referred proposal was identified: • title of the strategic assessment; and • Ministerial Statement number.	**No**
Please indicate whether, and in what way, the proposal is related to other proposals in the region.	**The Project will form part of the existing KCGM operations which include the Fimiston Open Pit, Mt Charlotte Underground Mine and the Fimiston and Gidji Processing Plants** **The Fimiston Operations (including Mt Charlotte) are located adjacent to the City of Kalgoorlie-Boulder approximately 600 km east of Perth, WA. The Gidji Operation is located approximately 20 km north of Kalgoorlie-Boulder**

Does the proponent own the land on which the proposal is to be established? If not, what other arrangements have been established to access the land?	**Mining will be between 215 and 440 m below surface extending underground across two active Mining Leases M26/131 and M26/353 held by KCGM Joint Venture Owners - Barrick (Australia Pacific) Limited and Kalgoorlie Lake View Pty Ltd (a subsidiary of Newmont Asia Pacific Ltd)**
What is the current land use on the property, and the extent (area in hectares) of the property?	**The lease areas are 232.9 Ha (M26/131) and 174.3 Ha (M26/353)** **Mining will be between 215 and 440 m below surface, with the deeper operations located under part of the declared City of Kalgoorlie-Boulder town site**

1.3 Location

Name of the Shire in which the proposal is located.	**City of Kalgoorlie-Boulder**
For urban areas: • street address; • lot number; • suburb; and • nearest road intersection.	**Hidden Secret is predominantly located to the east of Williamstown (a suburb of the City of Kalgoorlie-Boulder); around 350 m east of the Mt Charlotte Underground Mine. Mining will be between 215 and 440 m below surface, with the deeper operations located under some residential properties** **Refer to Figure 3 - Williamstown / Yarri Road, Kalgoorlie-Boulder**
For remote localities: • nearest town; and • distance and direction from that town to the proposal site.	**Not Applicable**

Electronic copy of spatial data - GIS or CAD, geo-referenced and conforming to the following parameters: • GIS: polygons representing all activities and named; • CAD: simple closed polygons representing all activities and named; • datum: GDA94; • projection: Geographic (latitude/longitude) or Map Grid of Australia (MGA); • format: Arcview shapefile, Arcinfo coverages, Microstation or AutoCAD.	Enclosed?: **No** **Mining will be between 215 and 440 m below ground surface** **Specific spatial data can be supplied upon request**

1.4 Confidential Information

Does the proponent wish to request the EPA to allow any part of the referral information to be treated as confidential?	**No**
If yes, is confidential information attached as a separate document in hard copy?	**No**

1.5 Government Approvals

Is rezoning of any land required before the proposal can be implemented? If yes, please provide details.		**No**	
Is approval required from any Commonwealth or State Government agency or Local Authority for any part of the proposal? If yes, please complete the table below.		**Yes**	
Agency/Authority	Approval required	Application lodged	Agency/Local Authority contact(s) for proposal
Department of Mines and Petroleum	**Mining Proposal**	**Yes**	**Ian Mitchell** **08 9222 3441** **ian.mitchell@dmp.wa.gov.au**

PART B - ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

2. ENVIRONMENTAL IMPACTS

Describe the impacts of the proposal on the following elements of the environment, by answering the questions contained in Sections 2.1-2.11:

2.1 flora and vegetation;

2.2 fauna;

2.3 rivers, creeks, wetlands and estuaries;

2.4 significant areas and/ or land features;

2.5 coastal zone areas;

2.6 marine areas and biota;

2.7 water supply and drainage catchments;

2.8 pollution;

2.9 greenhouse gas emissions;

2.10 contamination; and

2.11 social surroundings.

These features should be shown on the site plan, where appropriate.

For all information, please indicate:

(a) the source of the information; and

(b) the currency of the information.

2.1 Flora and Vegetation

2.1.1 Do you propose to clear any native flora and vegetation as a part of this proposal?

[A proposal to clear native vegetation may require a clearing permit under Part V of the EP Act (Environmental Protection (Clearing of Native Vegetation) Regulations 2004)]. Please contact the Department of Environment and Conservation (DEC) for more information.

(please tick) ☐ Yes **If yes**, complete the rest of this section.

☑ **No** **If no, go to the next section**

2.1.2 How much vegetation are you proposing to clear (in hectares)?

Not Applicable

2.1.3 Have you submitted an application to clear native vegetation to the DEC (unless you are exempt from such a requirement)?

☐ Yes ☐ No **If yes**, on what date and to which office was the application submitted of the DEC?

Not Applicable

2.1.4 Are you aware of any recent flora surveys carried out over the area to be disturbed by this proposal?

☐ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey(s).

If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.

Not Applicable

2.1.5 Has a search of DEC records for known occurrences of rare or priority flora or threatened ecological communities been conducted for the site?

☐ Yes ☐ No If you are proposing to clear native vegetation for any part of your proposal, a search of DEC records of known occurrences of rare or priority flora and threatened ecological communities will be required. Please contact DEC for more information.

Not Applicable

2.1.6 Are there any known occurrences of rare or priority flora or threatened ecological communities on the site?

☐ Yes ☐ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

Not Applicable

2.1.7 If located within the Perth Metropolitan Region, is the proposed development within or adjacent to a listed Bush Forever Site? (You will need to contact the Bush Forever Office, at the Department for Planning and Infrastructure)

☐ Yes ☐ No **If yes**, please indicate which Bush Forever Site is affected (site number and name of site where appropriate).

Not Applicable

2.1.8 What is the condition of the vegetation at the site?

Not Applicable

2.2 Fauna

2.2.1 Do you expect that any fauna or fauna habitat will be impacted by the proposal?

(please tick) ☐ Yes **If yes**, complete the rest of this section.

☑ **No** **If no, go to the next section.**

2.2.2 Describe the nature and extent of the expected impact.

Not Applicable

2.2.3 Are you aware of any recent fauna surveys carried out over the area to be disturbed by this proposal?

☐ Yes ☐ No **If yes**, please attach a copy of any related survey reports and provide the date and name of persons / companies involved in the survey(s).

If no, please do not arrange to have any biological surveys conducted prior to consulting with the DEC.

Not Applicable

2.2.4 Has a search of DEC records for known occurrences of Specially Protected (threatened) fauna been conducted for the site?

☐ Yes ☐ No (please tick)

Not Applicable

2.2.5 Are there any known occurrences of Specially Protected (threatened) fauna on the site?

☐ Yes ☐ No **If yes**, please indicate which species or communities are involved and provide copies of any correspondence with DEC regarding these matters.

Not Applicable

2.3 Rivers, Creeks, Wetlands and Estuaries

2.3.1 Will the development occur within 200 metres of a river, creek, wetland or estuary?

(please tick) ☐ Yes **If yes**, complete the rest of this section.

☑ **No** **If no, go to the next section.**

2.3.2 Will the development result in the clearing of vegetation within the 200 metre zone?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

Not Applicable

2.3.3 Will the development result in the filling or excavation of a river, creek, wetland or estuary?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

Not Applicable

2.3.4 Will the development result in the impoundment of a river, creek, wetland or estuary?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

Not Applicable

2.3.5 Will the development result in draining to a river, creek, wetland or estuary?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

Not Applicable

2.3.6 Are you aware if the proposal will impact on a river, creek, wetland or estuary (or its buffer) within one of the following categories? (please tick)

Not Applicable

Conservation Category Wetland	☐ Yes	☐ No	☐ Unsure
Environmental Protection (South West Agricultural Zone Wetlands) Policy 1998	☐ Yes	☐ No	☐ Unsure
Perth's Bush Forever site	☐ Yes	☐ No	☐ Unsure
Environmental Protection (Swan & Canning Rivers) Policy 1998	☐ Yes	☐ No	☐ Unsure
The management area as defined in s4(1) of the *Swan River Trust Act 1988*	☐ Yes	☐ No	☐ Unsure
Which is subject to an international agreement, because of the importance of the wetland for waterbirds and waterbird habitats (e.g. Ramsar, JAMBA, CAMBA)	☐ Yes	☐ No	☐ Unsure

2.4 Significant Areas and/ or Land Features

2.4.1 Is the proposed development located within or adjacent to an existing or proposed National Park or Nature Reserve?

☐ Yes ☑ **No** **If yes**, please provide details.

2.4.2 Are you aware of any Environmentally Sensitive Areas (as declared by the Minister under section 51B of the EP Act) that will be impacted by the proposed development?

☐ Yes ☑ **No** **If yes**, please provide details.

2.4.3 Are you aware of any significant natural land features (e.g. caves, ranges etc) that will be impacted by the proposed development?

☐ Yes ☑ **No** **If yes**, please provide details.

2.5 Coastal Zone Areas (Coastal Dunes and Beaches)

2.5.1 Will the development occur within 300metres of a coastal area?

(please tick) ☐ Yes **If yes**, complete the rest of this section.

☑ **No** **If no, go to the next section.**

2.5.2 What is the expected setback of the development from the high tide level and from the primary dune?

Not Applicable

2.5.3 Will the development impact on coastal areas with significant landforms including beach ridge plain, cuspate headland, coastal dunes or karst?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

Not Applicable

2.5.4 Is the development likely to impact on mangroves?

☐ Yes ☐ No **If yes**, please describe the extent of the expected impact.

Not Applicable

2.6 Marine Areas and Biota

2.6.1 Is the development likely to impact on an area of sensitive benthic communities, such as seagrasses, coral reefs or mangroves?

☐ Yes ☑ **No** **If yes**, please describe the extent of the expected impact.

2.6.2 Is the development likely to impact on marine conservation reserves or areas recommended for reservation (as described in *A Representative Marine Reserve System for Western Australia*, CALM, 1994)?

☐ Yes ☑ **No** **If yes**, please describe the extent of the expected impact.

2.6.3 Is the development likely to impact on marine areas used extensively for recreation or for commercial fishing activities?

☐ Yes ☑ **No** **If yes**, please describe the extent of the expected impact, and provide any written advice from relevant agencies (e.g. Fisheries WA).

2.7 Water Supply and Drainage Catchments

2.7.1 Are you in a proclaimed or proposed groundwater or surface water protection area?

(You may need to contact the Department of Water (DoW) for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☐ Yes ☑ **No** **If yes**, please describe what category of area.

2.7.2 Are you in an existing or proposed Underground Water Supply and Pollution Control area?

(You may need to contact the DoW for more information on the requirements for your location, including the requirement for licences for water abstraction. Also, refer to the DoW website)

☐ Yes ☑ **No** **If yes**, please describe what category of area.

2.7.3 Are you in a Public Drinking Water Supply Area (PDWSA)?

(You may need to contact the DoW for more information or refer to the DoW website. A proposal to clear vegetation within a PDWSA requires approval from DoW.)

☐ Yes ☑ **No** **If yes**, please describe what category of area.

2.7.4 Is there sufficient water available for the proposal?

(Please consult with the DoW as to whether approvals are required to source water as you propose. Where necessary, please provide a letter of intent from the DoW)

☑ **Yes** ☐ No (please tick)

2.7.5 Will the proposal require drainage of the land?

☐ Yes ☑ **No** **If yes**, how is the site to be drained and will the drainage be connected to an existing Local Authority or Water Corporation drainage system? Please provide details.

2.7.6 Is there a water requirement for the construction and/or operation of this proposal?

(please tick) ☐ Yes **If yes**, complete the rest of this section.

☑ **No** **If no**, go to the next section.

2.7.7 What is the water requirement for the construction and operation of this proposal, in kilolitres per year?

Not Applicable

2.7.8 What is the proposed source of water for the proposal? (e.g. dam, bore, surface water etc.)

Not Applicable

2.8 Pollution

2.8.1 Is there likely to be any discharge of pollutants from this development, such as noise, vibration, gaseous emissions, dust, liquid effluent, solid waste or other pollutants?

(please tick) ☑ **Yes** **If yes**, complete the rest of this section.

☐ No **If no**, go to the next section.

Outlined in Section 5.2 of Referral Document

2.8.2 Is the proposal a prescribed premise, under the Environmental Protection Regulations 1987?

(Refer to the EPA's *General Guide for Referral of Proposals to the EPA under section 38(1) of the EP Act 1986* for more information)

☐ Yes ☑ **No** **If yes**, please describe what category of prescribed premise.

2.8.3 Will the proposal result in gaseous emissions to air?

☐ Yes ☑ **No** **If yes**, please briefly describe.

2.8.4 Have you done any modelling or analysis to demonstrate that air quality standards will be met, including consideration of cumulative impacts from other emission sources?

☑ **Yes** ☐ No **If yes**, please briefly describe.

In November 2012, KCGM completed a review of fumes from the SOB vent fan. KCGM considered concerns raised in complaints, NEPM Ambient Air Quality criteria air pollutants and potential emissions from the underground operations.

Results were significantly lower than the NEPM ambient air quality standard for NO_2. Therefore, it is considered extremely unlikely that the emissions of NO_2 from the SOB vent fan would be associated with any unacceptable ambient air quality impacts in residential areas. No significant change to these levels is expected as a result of the proposed Project.

Further detail is provided in Section 6.1.2 of the EPA Referral Document

2.8.5 Will the proposal result in liquid effluent discharge?

☐ Yes ☑ **No** **If yes**, please briefly describe the nature, concentrations and receiving environment.

2.8.6 If there is likely to be discharges to a watercourse or marine environment, has any analysis been done to demonstrate that the State Water Quality Management Strategy or other appropriate standards will be able to be met?

☐ Yes ☑ **No** **If yes**, please describe.

2.8.7 Will the proposal produce or result in solid wastes?

☐ Yes ☑ **No** **If yes**, please briefly describe the nature, concentrations and disposal location/ method.

Waste rock generated is used as stope backfill underground in void areas. No development waste rock from the underground operations is brought to the surface.

2.8.8 Will the proposal result in significant off-site noise emissions?

☐ Yes ☑ **No** **If yes**, please briefly describe.

2.8.9 Will the development be subject to the Environmental Protection (Noise) Regulations 1997?

☐ Yes ☑ **No** **If yes**, has any analysis been carried out to demonstrate that the proposal will comply with the Regulations? Please attach the analysis.

Noise levels for KCGM are set in the *Environmental Protection (Fimiston Gold Mine Noise Emissions) Approval 2009*. KCGM manages noise in accordance with levels set for the Fimiston Operations (including Mt Charlotte) as part of the Noise and Vibration Monitoring and Management Programme.

2.8.10 Does the proposal have the potential to generate off-site, air quality impacts, dust, odour or another pollutant that may affect the amenity of residents and other "sensitive premises" such as schools and hospitals (proposals in this category may include intensive agriculture, aquaculture, marinas, mines and quarries etc.)?

☑ **Yes** ☐ No **If yes**, please describe and provide the distance to residences and other "sensitive premises".

The Project is well below ground level and will utilise existing infrastructure associated with Mt Charlotte Underground Mine. Vibration from blasting has been identified as a potential impact to the amenity of nearby residents.

Independent modelling of blast vibration has indicated a 90% confidence that vibration levels will be below 2.5 mm/s, similar to current Mt Charlotte blasting activities. These blast vibration levels are well below regulatory limits of 5 mm/s (9 in any 10 consecutive blasts less than) and 10 mm/s (no blast greater than) which consider both human tolerance and structural integrity. The designed Maximum Instantaneous Charge (MIC) weights (kg) for blasts in the Hidden Secret area are estimated to be less than 3% of the MIC required to reach the 5mm/s limit for 1 in 10 consecutive blasts.

KCGM manages blasting at Mt Charlotte in accordance with Ministerial levels set for the Fimiston Operations as part of the Noise and Vibration Monitoring and Management Programme. Through implementation of this programme, KCGM commits to undertake all reasonable, practicable and safe measures to minimise vibration from its blasting operations. KCGM will review, update and continue to implement the Noise and Vibration Monitoring and Management Programme for the Project.

Further detail is provided in Section 5.2 and Table 5 of the EPA Referral Document

2.8.11 If the proposal has a residential component or involves "sensitive premises", is it located near a land use that may discharge a pollutant?

☐ Yes ☑ **No** ☐ Not Applicable

If yes, please describe and provide the distance to the potential pollution source

2.9 Greenhouse Gas Emissions

2.9.1 Is this proposal likely to result in substantial greenhouse gas emissions (greater than 100 000 tonnes per annum of carbon dioxide equivalent emissions)?

☐ Yes ☑ **No** **If yes**, please provide an estimate of the annual gross emissions in absolute and in carbon dioxide equivalent figures.

2.9.2 Further, if yes, please describe proposed measures to minimise emissions, and any sink enhancement actions proposed to offset emissions.

Not Applicable

2.10 Contamination

2.10.1 Has the property on which the proposal is to be located been used in the past for activities which may have caused soil or groundwater contamination?

☐ Yes ☑ **No** ☐ Unsure **If yes**, please describe.

Not Applicable

2.10.2 Has any assessment been done for soil or groundwater contamination on the site?

☐ Yes ☑ **No** **If yes**, please describe.

Not Applicable

2.10.3 Has the site been registered as a contaminated site under the *Contaminated Sites Act 2003*? (on finalisation of the CS Regulations and proclamation of the CS Act)

☐ Yes ☑ **No** **If yes**, please describe.

Not Applicable

2.11 Social Surroundings

2.11.1 Is the proposal on a property which contains or is near a site of Aboriginal ethnographic or archaeological significance that may be disturbed?

☐ Yes ☑ **No** ☐ Unsure **If yes**, please describe.

2.11.2 Is the proposal on a property which contains or is near a site of high public interest (e.g. a major recreation area or natural scenic feature)?

☐ Yes ☑ **No** **If yes**, please describe.

2.11.3 Will the proposal result in or require substantial transport of goods, which may affect the amenity of the local area?

☐ Yes ☑ **No** **If yes**, please describe.

3. PROPOSED MANAGEMENT

3.1 Principles of Environmental Protection

3.1.1 Have you considered how your project gives attention to the following Principles, as set out in section 4A of the EP Act? (For information on the Principles of Environmental Protection, please see EPA Position Statement No. 7, available on the EPA website)

1. The precautionary principle.	☑ Yes	☐ No
2. The principle of intergenerational equity.	☑ Yes	☐ No
3. The principle of the conservation of biological diversity and ecological integrity.	☑ Yes	☐ No
4. Principles relating to improved valuation, pricing and incentive mechanisms.	☑ Yes	☐ No
5. The principle of waste minimisation.	☑ Yes	☐ No

3.1.2 Is the proposal consistent with the EPA's Environmental Protection Bulletins/Position Statements and Environmental Assessment Guidelines/Guidance Statements (available on the EPA website)?

☑ **Yes** ☐ No

3.2 Consultation

3.2.1 Has public consultation taken place (such as with other government agencies, community groups or neighbours), or is it intended that consultation shall take place?

☑ **Yes** ☐ No **If yes**, please list those consulted and attach comments or summarise response on a separate sheet.

KCGM has undertaken consultation for the Hidden Secret Project with key stakeholders including the Community Reference Group, Williamstown Residents, Government Agencies, Local Council and Business Organisations.

Further detail is provided in Section 8 of the EPA Referral Document

Appendix C

Stakeholder Engagement Information

INFORMATION SHEET

HIDDEN SECRET

KCGM has identified an underground resource named ‘Hidden Secret’, due to its proximity to historic open pit and underground mining operations. This resource is currently estimated to be 665,000 tonnes at 3.56 g/t, equating to 76,000 oz.

KCGM proposes to extend current underground operations to mine Hidden Secret in 2015, subject to regulatory approvals. The extension will increase the life of Mt Charlotte by around two years to 2018 and create 11 new jobs.

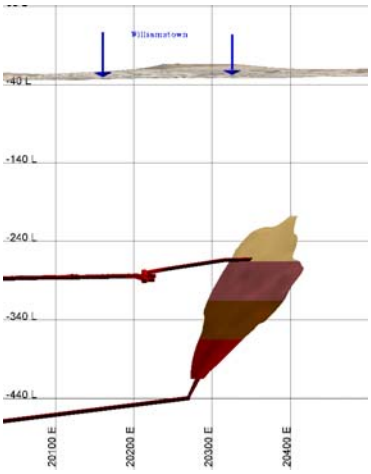
Identification

KCGM has been conducting exploration drilling along an area known as the Central Corridor since 2010. This drilling is exploring historical mining areas for potentially mineable underground resources between Fimiston and Mt Percy. To define the Hidden Secret ore body around 30,000 metres (115 holes) of drilling was undertaken from the surface and underground at a cost of $4.5 million.

Location

Hidden Secret is predominantly located to the east of Williamstown, around 350 metres east of the Mount Charlotte Operation.

Mining will be between 215 and 440 metres below surface, with the deeper operations located under some properties in Williamstown.



Operations

Hidden Secret will utilise current Mt Charlotte surface infrastructure, such as the ventilation system. Existing underground mobile equipment will also be used. An additional jumbo, truck and loader will be required at a capital cost of around $6 million.

Hidden Secret will be accessed by extending an existing exploration drive (at 225m depth) and developing a second access drive (at 400m depth). Ore will be transported to the Fimiston Mill via the Sam Pearce Decline and waste rock will be used for void backfill.

Monitoring

Blast vibration management is a high priority. Independent modelling has indicated a 90% confidence that vibration levels will be below 2.5 mm/s, similar to current blasting. These are well below regulatory levels (5 and 10mm/s) which consider both human tolerance and structural integrity. KCGM currently monitors blast vibration and informs residents of larger production blasts.

Geotechnical stability has been independently assessed. Hidden Secret is in a very good rock mass area and the stope void will be progressively backfilled.

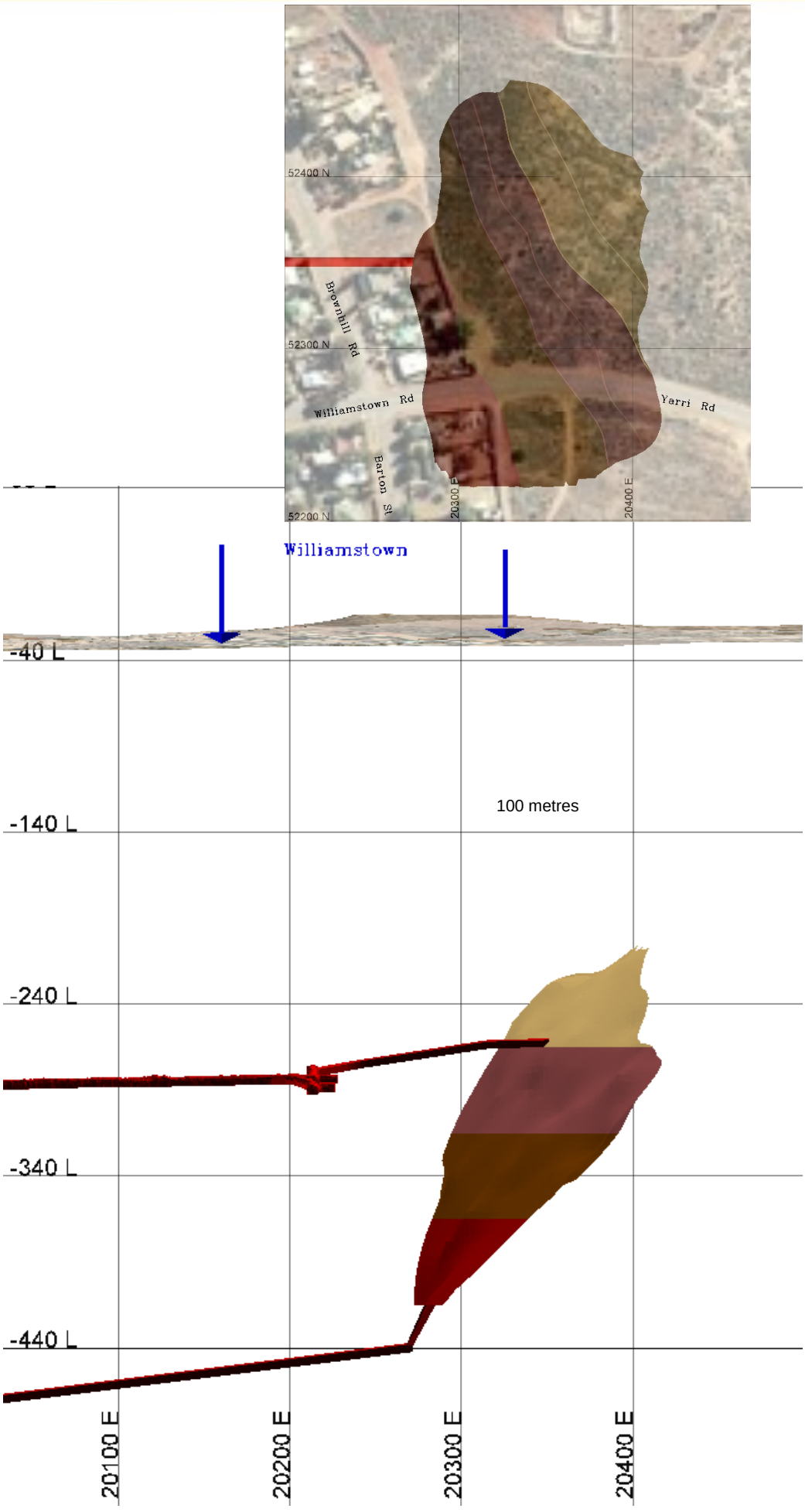
Future Plans

KCGM continues to look for opportunities to extend the life of its operations. Planning for further Central Corridor drilling in 2015 is underway.

Further Information

If you have questions or concerns regarding the Hidden Secret Project contact the KCGM Public Interaction Line on 9022 1100. Contact details for KCGM Community Reference Group members are available at www.superpit.com.au.

INFORMATION SHEET



KCGM

28 August 2014

Dear Resident,

As you would be aware, KCGM has been undertaking drilling as part of the Central Corridor Exploration Programme near Williamstown since 2010. This drilling is exploring for potentially mineable underground resources between Fimiston and Mt Percy.

KCGM has identified an underground resource named 'Hidden Secret' which can be mined from the existing Mt Charlotte Operation. Further information regarding the Hidden Secret Project is outlined in the attached Information Sheet.

Planning for the Hidden Secret Project has commenced and includes engagement with our key stakeholders. KCGM has been directly corresponding with the Williamstown Residents Committee regarding this project since 13 August 2014. Initial discussions have also been held with Regulatory Agencies regarding the required approvals processes.

As a near neighbour, we invite your initial feedback, questions or concerns regarding the proposed Hidden Secret Project by Friday 5 September 2014. Your feedback will be considered as part of the Project planning and incorporated into the environmental and social impact assessment. We hope to gain approval to allow mining operations to start in early 2015.

There are a number of avenues for you to provide feedback, and we encourage you to participate in the way you would feel most comfortable. Please feel free to phone our Public Interaction Line on 9022 1100 (manned 7 days a week, 24 hours a day); email us at crelations@kalgold.com.au; fax on 9022 1119 or write to us at General Manager, PMB 27, Kalgoorlie WA 6433.

You may wish to talk with one of our Community Reference Group Members, who can get in touch with KCGM on your behalf (anonymously if you prefer). Contact details of the KCGM CRG Members are available at www.superpit.com.au.

It is KCGM management's role to not only oversee the running of one of Australia's largest gold mines, but to look to further opportunities to extend the life of its operations. We aim to remain a strong economic contributor to the City of Kalgoorlie-Boulder and are proud to be part of the Kalgoorlie-Boulder community.

Yours sincerely,

RUSSELL COLE

GENERAL MANAGER

KALGOORLIE CONSOLIDATED GOLD MINES PTY LTD

KCGM

MEMO

TO: All KCGM **FROM:** Russell Cole

DATE: 28/08/2014 **PAGES:** 1

RE: Hidden Secret Project

KCGM has been undertaking drilling as part of the Central Corridor Exploration Programme near Williamstown since 2010. This drilling is exploring for potentially mineable underground resources between Fimiston and Mt Percy.

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Yours sincerely,

RUSSELL COLE

GENERAL MANAGER

Media Release

28 August 2014

KCGM Identifies 'New' Underground Resource

Exploration drilling conducted by KCGM has identified a mineable underground resource at the Hidden Secret Ore Body. The resource is estimated to be 665,000 tonnes at 3.56 grams per tone, equating to 76,000 ounces of gold.

The Hidden Secret resource was identified through KCGM's exploration of the Central Corridor and is around 350 metres east of Mount Charlotte. KCGM General Manager Russell Cole said proposed operations at Hidden Secret will be entirely underground.

"KCGM is currently developing a mining proposal to extend underground operations to the Hidden Secret Ore Body. The resource is between 215 and 440 metres underground.

Mining at Hidden Secret extends operations at Mount Charlotte by around two years and creates an additional 11 new positions.

We hope to gain the necessary approvals as soon as possible so operations can begin in early 2015."

Mr Cole said KCGM is sensitive to nearby residents and has designed the project to minimise any disturbance.

"Operations at Hidden Secret will utilise the existing infrastructure and services of Mount Charlotte, including the Sam Pearce Decline and current ventilation system.

The stope will be backfilled and blasts will be subject to KCGM's current monitoring and reporting program."

KCGM continues to explore opportunities to extend the Life of Mine and exploration drilling along the Central Corridor will continue.

“Surface and underground exploration was carried out along the Central Corridor between 2010 and 2013,” Mr Cole said.

“Further drilling for mineable underground resources in the Central Corridor will continue to the north east of Williamstown in 2015.”

While the Hidden Secret Ore Body presents a new opportunity to extend KCGM’s underground mining operations, the ore body itself has been previously identified and mined. The Hidden Secret Underground Mine operated around 1908 to 1925, and the Hidden Secret Open Pit was cut in the 1980s, prior to the formation of KCGM in 1989.

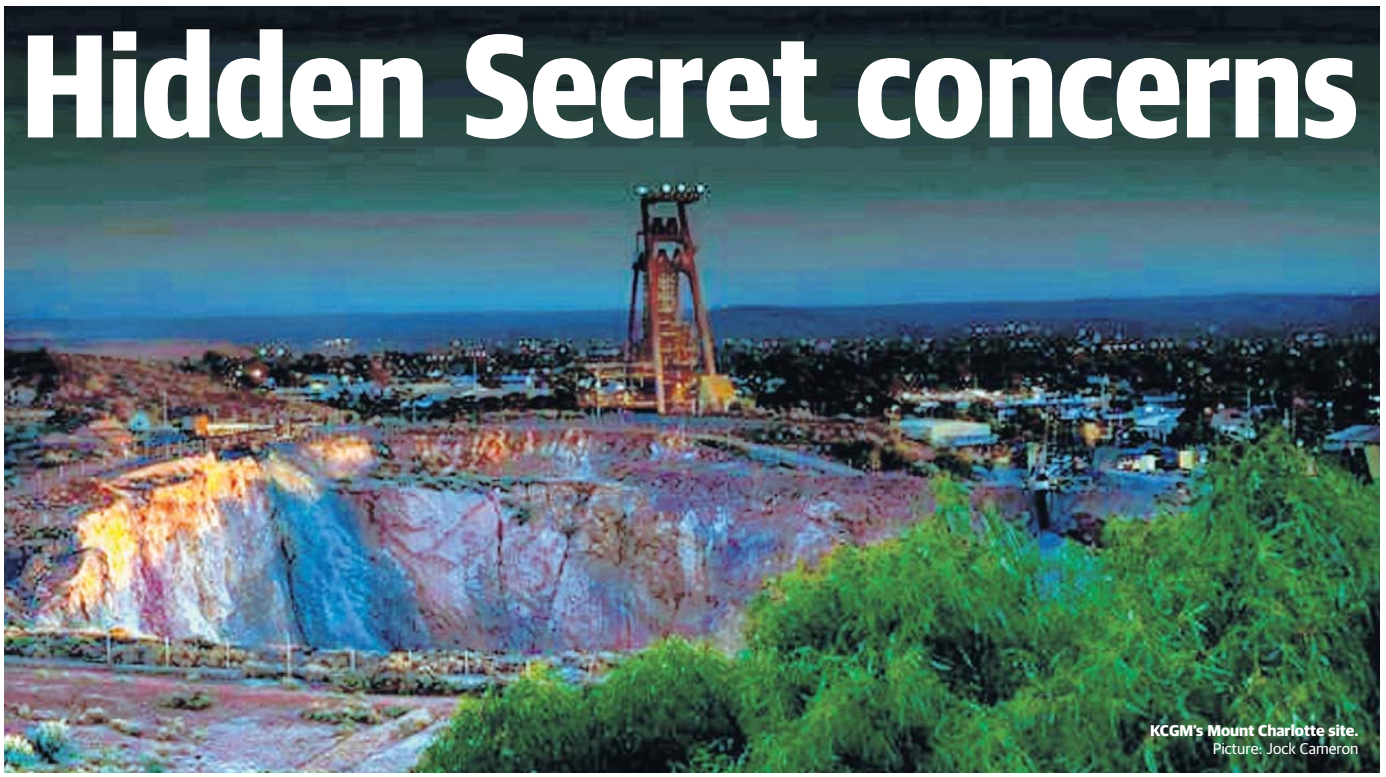
Media enquiries:
Jacqui Niemand
KCGM Community Relations Superintendent
jniemand@kalgold.com.au
Ph 0459 494 910

Kalgoorlie Miner, Kalgoorlie WA
29 Aug 2014, by Michael Dulaney

General News, page 1 - 706.00 cm²
Regional - circulation 4,677 (MTWTFS-)

ID 305050765 BRIEF KCGM INDEX 1

Hidden Secret concerns



KCGM's Mount Charlotte site.
Picture: Jock Cameron

Residents fear mine extension will cause damage in Williamstown

Michael Dulaney

Williamstown residents say a new underground mine extension at Mount Charlotte could destroy amenities in the area.

Documents obtained by the *Kalgoorlie Miner* this week detail KCGM's plan to mine the 76,000oz Hidden Secret resource, about 350m east of Mount Charlotte.

With part of the planned extension sitting under properties on Brownhill Road, an information sheet is due to be distributed to residents today.

It details environmental monitoring plans for the development, with the company looking to reassure locals blast vibration management would be a high priority.

But residents, many of whom have been long-term critics of KCGM's approach to the area, say they are not convinced.

Williamstown Residents Committee chairwoman Diane Mills said blasting and operations at the mine would be a detriment to those living in the area.

"Vibrations from current underground blasting already greatly impacts on residents' properties," she said.

"This new proposal has the potential to exacerbate damage to properties, which will be in serious jeopardy, and ultimately devalue prices."

Mining of the new ore body, expected to begin next year, will extend underground operations at Mt Charlotte by two years to 2018 and create 11 new jobs.

The ore body is between 215m and 440m underground, with deeper sections on its western flank lying beneath Williamstown.

KCGM general manager Russell Cole said the company was sensitive to the concerns of nearby residents and had designed the project to minimise any disturbance to them.

"Operations at Hidden Secret will utilise the existing infrastructure and services of Mount Charlotte, including the Sam Pearce Decline and current ventilation system," he said.

"The stope will be backfilled and blasts will be subject to KCGM's current monitoring and reporting program."

The new proposal raises fresh questions over the extent of the company's plans to mine ore bodies known to exist in the area.

Past debate over the future of the company, Kalgoorlie-Boulder's largest employer, has been politically sensitive.

Documents tabled in Parliament by Greens MLC Robin Chapple in 2011 suggested gold held in KCGM leases could add 20 years to the Super Pit's estimated operational life.

KCGM extended this to 2029 in February after an announcement it would process stockpiles of low-grade ore.

The company said yesterday it was exploring opportunities to ex-

Kalgoorlie Miner, Kalgoorlie WA
29 Aug 2014, by Michael Dulaney

General News, page 1 - 706.00 cm²
Regional - circulation 4,677 (MTWTFS-)

tend the life of the mine, with drilling to the north east of Williamstown set to continue throughout next year.

But Mrs Mills said the company was well aware of its resources in the area.

The residents' committee requested all drill results in the Central Corridor, but this was turned down by KCGM, which argued the results were commercially sensitive.

Mrs Mills said she believed the Hidden Secret mine was the first step towards expanded operations in the area.

"This proposal is an underhanded approach to mine Williamstown," she said.

KCGM said surface and underground exploration in the Central Corridor drilling program from 2010 to 2013 identified the Hidden Secret resource.

However, the ore body has been previously identified and mined, first as the Hidden Secret Underground Mine from 1908 to 1925.

This was followed by the Hidden Secret Open Pit cut in the 1980s, before the formation of KCGM.

Kalgoorlie Miner, Kalgoorlie WA
30 Aug 2014, by Michael Dulaney

General News, page 4 - 572.00 cm²
Regional - circulation 8,078 (MTWTFS-)

ID 305593679 BRIEF KCGM INDEX 1

Suburb's residents affected by mines

Michael Dulaney

On sunny afternoons, you can stand behind properties on Brownhill Road and watch KCGM trucks unload waste rock on the Super Pit's northern side.

Clouds of dust roll off the back of the trucks and over Williamstown.

It mixes with airborne particles kicked up by the heavy machines circling the pit or blown out of the extraction fans which dot the area.

One resident who has lived in the suburb for 30 years offers a piece of advice: "You don't wear a white shirt around here unless you want it to turn grey or brown".

Those extraction fans will have a heavier load to deal with when a new underground mine begins.

Pending regulatory approvals, KCGM plans to mine the 76,000oz Hidden Secret resource, about 350m east of Mount Charlotte.

The ore body sits beneath houses in Williamstown, with its western flank lying under properties on Brownhill Road and Barton Street.

The company says it will use existing surface infrastructure, including the Mt Charlotte ventilation system. A new access drive parallel to Williamstown Road will be developed.

Residents received an information sheet yesterday informing them of the proposal and its impact on their homes.

In 1997, KCGM announced its plan to mine gold from the Reward and Northern ore bodies.

A group of residents, concerned about noise, fly rock and other hazards, banded together as the Williamstown Residents Committee.

The committee was often pitted against not only two of the world's biggest mining companies, but also public opinion.

Members have been called the "whingers" and "whiners" who are opposed to the mining spirit of the Goldfields. This continued through the Cooke review in 2004, a State Government inquiry into the effect of mining operations on the suburb, and debates over expansion plans for the Super Pit in 2011.

There have been modest wins in the form of enhanced regulations or restrictions on KCGM's operations, but progress cannot be halted for an operation economically crucial to a city of 30,000 people.

It is felt Williamstown will now be literally undermined by KCGM to access an ore body.

Dianne Mills, who chairs the residents committee, said the confirmation of KCGM's plans this week was another step towards the company's bigger scheme — the open cut mining of Williamstown.

It is a rumour well known to many of the residents who live in the area, especially the handful who have lived there their entire lives.

Over the past 20 years, they have watched the mountainous form of the Super Pit and its waste dumps rising out of the ground.

It has brought a change in the landscape and, so they say, a change in the weather.

But these days, most of the old heads talk of all the young people moving to the neighbourhood.

News of the proposal is just another mine in the area and construction work to be expected from their richest neighbour.

Even though his house is nearly directly on top of the proposed Hidden Secret access drive, Ronnie Barrett shrugs when asked about the noise from drilling.

"It's a mining town, I've grown up here," he said.

"You can hear the vibrations from blasts, but I like it."

Ian Mitchell believes noise from drilling and blasting is worse than it was when he first moved to the area from Newcastle 30 years ago.

He likened KCGM to a neighbour who would not turn down their loud music at night, despite being visited by the police.

It's a grievance unlikely to be resolved once the new underground mine is developed.

Down the road, another resident is talking about cutting down the two overhanging peppercorn trees in her front yard.

She and her husband have lived in the area for 40 years and are used to the noise and the dust — they have lived through it for decades.

When asked about the prospect of blasting underneath her house, she said there was little recourse available.

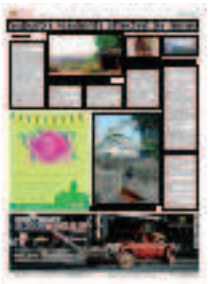
"Mining companies will do what the mining companies do," she said.

"We're too old to change and we can't afford to move anyway — we're pensioners.

"They're big and have got a lot more money than we do, so we'll just have to deal with it."

The people of Williamstown are used to living near mine sites.

A map shows the mine's expansion.



Kalgoorlie Miner, Kalgoorlie WA
30 Aug 2014, by Michael Dulaney

General News, page 4 - 572.00 cm²
Regional - circulation 8,078 (MTWTFS-)

ID 305593679 BRIEF KCGM INDEX 1

Work from KCGM's Super Pit can be seen from Williamstown.
Pictures: Mary Mills

Plans to mine the Hidden Secret resource are pending regulatory approvals.

Kalgoorlie Miner, Kalgoorlie WA
30 Aug 2014, by Sam Tomlin

General News, page 10 - 248.00 cm²
Regional - circulation 8,078 (MTWTFS-)

ID 305596563 BRIEF KCGM INDEX 1

Williamstown deserves transparency

EDITORIAL

Sam Tomlin

Though it might be small when compared to the company's overall output, Kalgoorlie Consolidated Gold Mines' revelation of a new resource at Mount Charlotte is a particularly welcome one for Kalgoorlie-Boulder.

Anything that produces more gold, more jobs and more available work for the City — particularly in the current climate — can only be a good thing.

But for all the benefits the town receives from the ongoing progress of the mining industry, its worth considering those who feel they have been left in its wake.

For all the criticism they have received over the years, the residents of Williamstown have battled manfully to have their interests acknowledged by KCGM — not to mention its titanic owners in Barrick and Newmont.

Living right next door to Australia's biggest open cut gold mine and watching it edge closer and closer to the rear fence can not have been a particularly easy experience.

That the company has launched a dialogue with the locals in the case of Hidden Secret is to be commended.

However, if the community is to effectively plan for the future, we are entitled to ask whether the company could be more open when it comes to its future plans.

It is an open secret that KCGM's northern tenements, stretching north of Mount Charlotte to the Australian Miners and Prospectors Hall of Fame, hold a considerable amount of gold — albeit of varying grade and quality.

While the company is ultimately answerable to its co-owners and their shareholders, a more transparent approach towards disclosing its intentions could only benefit it and the community.

And while no-one can sensibly argue the expansion should be halted, the residents deserve a square deal. An offer to buy the remaining residents out, following a fair assessment and valuation, is a way forward that should be further explored.

■

Colin Barnett's attempt to savage Moody's for its downgrade of WA's credit rating will no doubt ring a little bit hollow for those struggling with high utility prices and a host of other state charges.

But debt and deficit remains one of the perennially mischaracterised issues in local politics.

It ultimately all comes down to the end result, and the effectiveness of the government in question's plan for repayment.

In theory, debt to fund the sort of infrastructure being pushed by the Barnett Government is not the worst idea.

But with state debt set to stretch to $30 billion, the Premier and Treasurer need to demonstrate a concrete plan to bring it under control.

This week's announcement of an asset sale is a perfectly good start. But Mr Barnett and Mr Nahan need to ensure the fire sale mentality adopted by Eastern States Governments — where taxpayer-owned assets are sold off for bottom dollar — is not repeated here.

■ Sam Tomlin is Editor of the Kalgoorlie Miner.

Kalgoorlie Miner, Kalgoorlie WA
02 Sep 2014

General News, page 8 - 78.00 cm²
Regional - circulation 4,677 (MTWTFS-)

ID 306566898 BRIEF KCGM INDEX 1

Pit owners must talk to us

KCGM is a major employer in Kalgoorlie-Boulder.

Without the Super Pit, the town would be so much weaker.

That's why KCGM and its owners Barrick Gold and Newmont Mining have a moral obligation to keep the Kalgoorlie-Boulder community informed about the future mine life of this great asset.

It is unacceptable for the Super Pit owners to brief New York bankers on high-grade Kalgoorlie drilling results on the northern extremities of the Super Pit (as they have done recently), and not give the same briefing to the Kalgoorlie-Boulder community.

It's time for KCGM to step up to the plate and disclose to the Kalgoorlie-Boulder community what its true prospects are, rather than holding back on valuable information that can help boost business and consumer confidence in the city, and propel the whole region forward for decades.

Come clean with the people of Kalgoorlie-Boulder, Barrick and Newmont, and let's get on with the business of mining.

Matt Eggleston,
Kalgoorlie

Kalgoorlie Miner, Kalgoorlie WA
02 Sep 2014, by Mike Exell

General News, page 9 - 546.00 cm²
Regional - circulation 4,677 (MTWTFS-)

ID 306566603 BRIEF KCGM INDEX 1

Suburb affected by the pit

Mike Exell

Kalgoorlie-Boulder has a unique relationship with the Super Pit and operator Kalgoorlie Consolidated Gold Mines.

While the mine brings in millions of dollars a year, residents of Williamstown have had a tumultuous relationship with the local mining giant.

Cornered between KCGM's Mount Charlotte operations and the Super Pit, the small suburb's welfare is intrinsically linked to the company.

One of the biggest points of contention was the conveyor belt to transport ore from the underground mine to the Fimiston treatment plant.

The idea was first floated in 1991, but by 1994 plans had begun to build a $5 million belt as part of a major restructuring of the Super Pit operations.

KCGM chief executive at the time Bob Crew said the belt would be covered to prevent spillage on windy days.

"One of the options would be to go over Williamstown Road and under Boorara Road," he said.

"Clearly, that has some visual impact.

"We need the appropriate approvals and we need to undertake discussions with Williamstown residents."

Initial meetings between the Williamstown Residents Committee and the mine operator were very successful, with the groups releasing a joint statement spruiking their agreement.

The original plans were to build a bridging facility across Williamstown Road, designed and constructed to take into account the aesthetic impact on the residential area.

However, action by Williamstown resident Cathie Gilbert caused the project to come to a halt in June, 1995.

Mrs Gilbert had threatened to take out a Supreme Court injunction to stop work on the conveyor belt because she believed the development would decrease what she claimed was her already poor standard of living.

KCGM stopped work on the 3.5km conveyor belt the next month after receiving advice from the Crown Law Department it was acting in contravention of the Mining Act.

A drawn-out legal battle was nipped in the bud in August after the company agreed to relocate Mrs Gilbert and her family to a house in Lamington.

This settlement allowed construction on the conveyor belt to resume and it became operational a week later.

"Although we were not totally happy with the whole process, we feel the outcome was in the best interests of KCGM and Williamstown residents," KCGM mining manager at the time Allan King said.

We need the appropriate approvals and we need to undertake discussions with Williamstown residents.

Bob Crew

Kalgoorlie Miner, Kalgoorlie WA
02 Sep 2014, by Mike Exell

General News, page 9 - 546.00 cm²
Regional - circulation 4,677 (MTWTFS-)

ID 306566603 BRIEF KCGM INDEX 1

Williamstown in the shadow of the Super Pit. Picture: Tracey Nearmy

Kalgoorlie Miner, Kalgoorlie WA
03 Sep 2014

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ID 307039295 BRIEF KCGM INDEX 1 PAGE 1 of 1

Open up on Williamstown's hidden secret

Saturday's *Kalgoorlie Miner* made very interesting reading. It appears that the company suddenly thinks that the Hidden Secret does indeed have a hidden secret. I can recall Matt Eggleston saying three years ago that this area had enormous potential.

This was also the view of George Compton, who probably understood the Golden Mile better than anyone

KCGM is no different to most big companies, which are always prepared to use the requirement of reporting to the stock exchange to avoid concrete commitments to the community, and indeed, their smaller shareholders.

If the company were to look under the slime dumps it would find a lot more gold and by its own admission, or rather failure to deny it, the Super Pit could be expanded northwards well past the Mining Hall of Fame. It has been postulated that there is good gold underlying Campbell St.

The business of Kalgoorlie is mining, and KCGM. should remember this. What has the company got to lose by being up front and frank with the public? Whatever it is, it is insignificant compared with the value of having the community on side and supportive. I have travelled Australia and Kalgoorlie-Boulder is different. It is non-judgmental, it is a tough, gutsy town. It has had its share of knocks but it always keeps going.

It would not breach any legal matters if the company were to say that with its knowledge of the area it believed that if costs could be contained and the prize remain viable, the life of the mine would be perhaps 50 years.

Such an announcement would do wonders for confidence in the town. It would probably push housing prices up, this would be a good thing and there are so few houses left in Williamstown that they should not be a big issue.

Graeme Campbell, Kalgoorlie

Kalgoorlie Miner, Kalgoorlie WA
06 Sep 2014

General News, page 12 - 193.00 cm²
Regional - circulation 8,078 (MTWTFS-)

ID 308797377 BRIEF KCGM INDEX 1

Let's get on with reality

SLAMMIN' DAWS

Doug Daws

I nearly choked on my breakfast this week when I read the Williamstown Whingers are at it again.

I reckon this mob would whinge if they won lotto!

Now the tourist so-called industry has jumped on board — but it apparently won't be on the Indian Pacific as the operator has "pulled the pin" on stopping over at Kalgoorlie on the west-bound trip.

If there are to be no stopovers by the east-west passenger trains, a large obstacle to relocating the interstate rail route is removed and we can finally begin the correction needed to the historic and unnecessary impediment to expansion of our mining industry to the east of our city.

And simultaneously aid rail traffic by elimination of the grade issues confronting the long trains trying to pull over the "hump" at the Mount Percy-Mount Charlotte ridge.

Not to mention the removal of the potential rail-road conflicts at the Parkeston, Killarney, Hare and Sutherland Street crossings.

Even a dog will eventually move if he is uncomfortable and annoyed, but apparently not so the Williamstown Whingers.

The simple truth is that mining in the area came first, and it is still first and foremost the very reason for the existence of this city.

You can forget all the nonsense that we will survive untouched by any closure of our mining industry, including the Super Pit.

Even with just a slow-down in exploration and mining activity, as has occurred over the past couple of years, there has been a drastic impact on local commerce and trade.

You surely cannot ignore the numbers of vacant shops that confront our gaze when visiting Hannan and Burt Streets.

The simple truth is that Williamstown has been an anachronism from the day it was built and it should go the way of other similar early suburbs such as Trafalgar and Brown Hill.

I say let's get on with the reality of the situation and turn it to our collective advantage.

Remove the rail route from the Kalgoorlie railway station east and allow the rail track corporation to build a new, flat rail bypass around either the north or south of the city.

More jobs for more people and ongoing productivity and prosperity for the City of Kalgoorlie-Boulder.

That's my opinion. What do you think?

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THE AUSTRALIAN

Kalgoorlie locals in the dark on drilling by Super Pit owners

ANDREW BURRELL THE AUSTRALIAN SEPTEMBER 08, 201412:00AM

THE multinational owners of Kalgoorlie's famous Super Pit goldmine have briefed investors in the US about "exciting" drilling results near the town but have refused to reveal anything to local residents who say they are being kept in the dark.

The Australian, Australia
08 Sep 2014, by Andrew Burrell Mining

Business News, page 15 - 650.00 cm²
National - circulation 116,854 (MTWTF)

ID 309321994

Kalgoorlie's golden secret sent offshore

EXCLUSIVE

ANDREW BURRELL
MINING

THE multinational owners of Kalgoorlie's famous Super Pit goldmine have briefed investors in the US about "exciting" drilling results near the town but have refused to reveal anything to local residents who say they are being kept in the dark.

Residents living within a few hundred metres of the massive goldmine say the owner, Kalgoorlie Consolidated Gold Mines, has consistently declined to reveal its exploration results or any long-term plans for its operations in the town.

KCGM, which is owned by US mining giants Barrick Gold and Newmont Mining, rejected suggestions it had breached disclosure rules by briefing selected analysts about the positive drilling results without telling the market.

KCGM general manager Russell Cole said the company could only provide an overview of its new underground resource, which it has labelled "Hidden Secret", and would not be providing drill results.

But at an investor briefing in New York in September 2011, Barrick Gold's then head of Australia-Pacific operations, Gary Halversen, discussed at length the results of the underground drilling through an area near the Super Pit known as the Central Corridor.

Residents and community leaders have long suspected that KCGM wants to ultimately merge its underground operations around the suburb of Williamstown with the adjacent Super Pit to form one giant open pit.

According to documents seen by *The Australian*, Mr Halversen told analysts at the briefing that drilling in 2011 along the Central Corridor had broad intersection containing "high-grade intervals including 71m at just under 5 grams per tonne".

"So it's an exciting new target area for us," he said.

Mr Halversen also revealed that a drilling program at a nearby area known as Eight Mile Dam had been successful.

"One of the first holes we put into it came back with an intercept of 229m at 1.64 grams per tonne," he said.

Williamstown Residents Committee chairwoman Dianne Mills said KCGM had a moral and a legal obligation to keep the community informed about its results and its long-term plans.

She said her group had asked KCGM for all drill results in the Central Corridor area.

But she said KCGM had said it could not release the results because its parent companies prevented them from doing so.

She was angry that Barrick Gold had been "quite happy" to provide these drill results to investment bankers in the US.

"They are not being open; they should tell us the bigger picture," she said. "They are keeping the whole Kalgoorlie-Boulder community in the dark."

Former Kalgoorlie federal MP Graeme Campbell said KCGM would create an enormous confidence boost in the town if it released its exploration results.

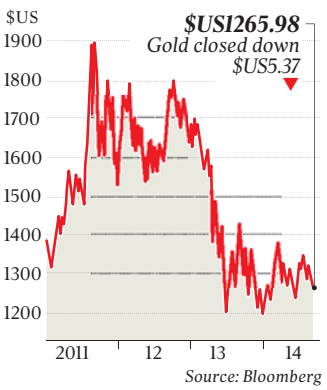
"The senior management of KCGM have a lot to answer for," he said. "If this town has a 50-year life there would be an enormous explosion of interest.

"If they can brief financiers in New York, why can't they make the results available here?"

Mr Cole said KCGM's joint venture owners were conscious of complying with American stock market regulations. He noted that drilling results were valuable intellectual property.

"Drilling results are used to identify prospective areas and to guide/focus our exploration and this detailed information is confidential and commercially sensitive," he said.

Mr Cole said KCGM would ensure that the impact of all mining on residents was minimised.



The Australian, Australia
08 Sep 2014, by Andrew Burrell Mining

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ID 309321994

Barrick Gold, which owns Kalgoorlie Consolidated Gold Mines, has briefed US investors on its drill results, but won't say anything to the local community

Kalgoorlie Miner, Kalgoorlie WA
24 Sep 2014, by Michael Dulaney

General News, page 1 - 223.00 cm²
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ID 317126248 BRIEF KCGM INDEX 1 PAGE 1 of 1

KCGM denies Super secret

Michael Dulaney

KCGM general manager Russell Cole has fired back at critics who say the company is withholding information about known gold reserves northeast of Kalgoorlie-Boulder.

The latest round of questions over mining potential north of the Super Pit was kicked off after the *Kalgoorlie Miner* revealed KCGM's plan to mine the Hidden Secret resource beneath Williamstown.

KCGM's critics, including former Kalgoorlie MLA Graeme Campbell and ex-Kalgoorlie Liberal Party branch president Matt Eggleston, say the company is sitting on resources which would enable "another Super Pit" to be developed in the area.

But Mr Cole yesterday said although KCGM had strong results in the area, these did not necessarily prove a mine was feasible.

"There have been claims that KCGM is withholding information about known reserves in the Williamstown/Mt Charlotte area," he said.

"While there have been high-grade drill holes historically documented in the area, these do not necessarily make a mine.

"Exploration is only the first step in the process towards a sustainable mining operation.

"There are many factors that must be considered including gold price, capital and operating costs, infrastructure relocation, and equipment."

Mr Campbell and Mr Eggleston both referenced "spectacular" drill results undertaken by KCGM and its predecessor companies which showed "abundant" gold in the area north of the current mine site.

"In my view this would possibly give the Super Pit operations a 50-year mine life which is fantastic for the WA Government and the economy as a whole," Mr Campbell said.

However, Mr Cole said the results were mostly at shallow depths, meaning further work needed to be undertaken to identify underground resources now favoured by the company.

He said work in the central corridor, which identified the Hidden Secret resource, would continue through 2015.

"Historical drilling has been undertaken in many locations and depths and requires interpretation, these results alone simply indicate mineral occurrence," Mr Cole said. "KCGM is undertaking deeper drilling.

"This is to identify any potential resources which may be able to be economically mined."

■ Tell us what you think. Email news@kalminer.com.au or send us a letter.