

## Minutes

<b>Meeting:</b>	<b>Bowdens Silver Project CCC - Meeting 4</b>
<b>Date:</b>	Tuesday, 14 August 2018
<b>Location:</b>	Mid-Western Regional Council, 86 Market Street, Mudgee
<b>Time:</b>	5.00 – 7.00 PM

Attendees	
Mr Darryl Watkins (Independent Chair)	Mr Marc Snape (Minute Taker)
Mr Mick Boller (Lue Action Group)	Mr Keith Perrett (Silver Mines Ltd)
Mr Bradley Robert Bliss J.P. (Wellington Valley Wiradjuri Aboriginal Corporation)	Mr Tom Combes (Member)
Ms Sally Dryburgh (Member)	Mr John Lydiard (Member)
Mr Blake Hjorth (Bowdens Silver)	Mr Anthony (Tony) McClure (Silver Mines Ltd)
Mr Neville Bergin (Neville Bergin & Associates Pty Ltd)	
Apologies	
Mr James Armitage (Member)	Ms Jane Munro (Bowdens Silver Pty Limited)
Ms Sonia Christie (Member)	Mr John O'Neill (Mid-Western Regional Council)

Subject	Actions
<b>1. Welcome &amp; Introduction</b> Bradley Bliss delivered Welcome to Country.	➤ No actions.
<b>2. Apologies</b> The Chair noted apologies from James Armitage, Sonia Christie, Cr John O'Neill, and Jane Munro.	➤ No actions.
<b>3. Minutes and Actions of previous meeting (DW)</b> Minutes from Meeting 3 were all approved. The Chair reminded Committee members to advise any changes to pecuniary interests.	➤ No actions.
<b>4. Feasibility Study Briefing (Bowdens)</b> Neville Bergin gave a presentation on the Feasibility Study.  Neville advised his background is in Mining Engineering, and worked in a range of mining roles in a very broad career. He has been involved in several feasibility studies and implementations. His relevant project experience includes Waihi Gold Mine and Rosebery Mine. At Waihi Mine, Neville was the first mine superintendent. This project demonstrated that you can have a mine in the middle of town.	



Tasmania's Rosebery Mine was predominantly a zinc mine but there was also lead (along with silver, copper, and gold). Neville advised that his kids were sent to school within 1 km of the tailings dam. The operator was very conscious of blood levels in both the community and the workforce. Neville noted that no issues arose in relation to elevated blood lead levels. Proper protocols were introduced and followed, such as keeping everything on site, and washing dirty overalls on site to prevent possible lead transfer.

Neville outlined three stages of studies culminating in the Feasibility Study. A scoping study is "what could it be", outlining all different options for the project. A pre-feasibility study is "what should it be", honing in on the option to pursue in the feasibility study. A feasibility study is "what will it be", the option that is selected to pursue. The purpose is to demonstrate both technical feasibility and economic viability of a project.

Mr Bergin began going into the geotechnical details from the feasibility study. An open cut in mining is essentially a cone in the ground – how steep or flat those walls are depends on the geological makeup of the ground. There is nothing from a geotechnical perspective that is concerning about this pit. The slope can be reasonably steep – overall angle is approximately 45 degrees.

In terms of mine design, Neville advised it is fairly standard. The same design parameters exist on many mines around Australia. Neville also noted that mine design is based on the fleet of vehicles and equipment that will be used, which determines factors such as ramp width.

There is an optimisation process that needs to be considered. This includes mining costs, metal costs, processing costs, and other costs. The purpose of this optimisation process is to achieve the "best" design relative to a set of criteria or constraints.

96% of the Ore Reserve is in the "proved" category. The project is fortunate that it has had a significant amount of test work done previously. The team undertook some confirmatory metallurgical test work to confirm those earlier tests. He also advised that the water needs to be imported for the project, as the site is unable to provide sufficient water for the projects operation. This would require the development of a pipeline from the Ulan coalfields sitting primarily in public road easements.

Neville noted that there is a lot of interest in purchasing the silver/lead concentrate and zinc concentrate, and indicative terms have been provided that were used in the optimisation model. Regarding transport, it is anticipated that the silver/lead concentrate will go to Port Pirie (first to Parkes by road, then rail to Port Pirie). The zinc concentrate will be transported by road to Port Botany.

During the EIS approval process, the company will approach various engineering companies before going to tender. This will take about four months before an engineer is appointed. The time from award of contract to commissioning of the processing plant would be approximately eighteen months. Mr Bergin also advised that if they can get the work done locally during construction, then it will be.

The Chair thanked Neville for the presentation. A copy of Mr Bergin's presentation is available on the Bowdens Silver website.

The Chair then asked for questions from the Committee.



## 5. Q & A and Discussion

**Q1.** John Lydiard asked for clarification around the alternative to cyanide mentioned in the presentation.

**A1.** Mr Bergin advised there were three alternatives looked at. SMBS (sodium meta bisulphite), which didn't work in this case, sodium sulphite, and sodium sulphide. Sodium sulphide was the most promising, with similar lead/zinc grades but it failed on silver recovery. The conclusion was that the mine cannot operate unless cyanide is used. Mr Bergin noted that there will be low levels of cyanide used which poses no risk.

**Q2.** John Lydiard asked regarding the tailings dam design, whether it fills from the bottom or fills from the top?

**A2.** Neville Bergin advised that the design is called "Down Valley deposition". The tailings are discharged at the top of the valley. The dam essentially becomes a water storage dam.

**Q3.** Bradley Robert Bliss asked a question regarding the pipeline from Ulan. It was stated that the pipeline will be 56km and mostly in public road easement, but that the distance would be more like 86km.

**A3.** Blake Hjorth advised that the pipeline wouldn't be entirely on public roads, for example it wouldn't go the entire way along Lue Road.

Bradley also advised that the farms near Ulan are already requesting further water discharges from the mine as their bores have dropped. There is high salinity in the water at the moment according to a report from a couple of community meetings.

**Q4.** Tom Combes confirmed that the feasibility study used \$17.25/ounce sustaining cost. Tom asked what the silver price is currently?

**A4.** Neville Bergin advised the silver price is approximately \$21/ounce. The price used in the feasibility study has been intentionally set at a conservative price.

**Q5.** Tom Combes asked what the council contribution to the road and infrastructure would be, (i.e. a Voluntary Planning Agreement).

**A5.** Tony McClure advised that there is an assessment of that cost in the financial model, but that will be wrapped into General & Administrative costs. There is provision for those costs, however we are yet to complete those negotiations with council. With that said, we have a rough idea where it will be landing.

**Q6.** Tom Combes asked about dewatering, and how the water level decreases. Can you please explain why it does that?

**A6.** Neville Bergin advised that this is due to seepage flow occurring.

**Q7.** Tom Combes noted that there seems to be insufficient water on site, and asked what the requirement of the site is? What will be needed over and above the 2ML per day figure?

**A7.** Neville Bergin advised that the 2ML per day is how much water will seep into the pit. Neville took this question on notice.

**Q8.** John Lydiard asked regarding employment figures, whether the numbers in the feasibility study are only mine employees or whether they include all contractors as well?

**A8.** Neville Bergin advised that the figure is overall employees of the mine, so on top of that there may be contract workers, or for example contractors for the washing of overalls etc. Mostly ancillary support.

➤ Bowdens to Respond.  
Question on Notice.



Another example could be the processing plant, which will need to shut down the mills occasionally. Specialist contractors will need to be brought in to do that work. The employment numbers don't include those jobs.

Tony McClure advised there is a 2 x job multiplier – for every job created, 2 jobs are created in local services and contractors.

**Q9.** The Chair asked whether there are funds set aside for rehabilitation at the end of the mine, and whether these details will be part of the EIS?

**A9.** Neville Bergin advised that there are funds set aside, and yes it will be part of the EIS.

**Q10.** The Chair asked about whether there is a timeline on the EIS, and confirmed that the presentation from the meeting will be available on the website?

**A10.** Tony McClure advised that the timeframe is roughly end of year, and yes the presentation will be posted on the website.

**Q11.** The Chair asked in relation to the water pipeline going along the road easements, whether that will come under the Commonwealth EPBC Act?

**A11.** This question was taken on notice.

The Chair then read out three questions on behalf of CCC Member Sonia Christie, who was unable to attend the meeting.

**Q12.** Is SVL buying property that is deemed to be impacted by the mine should it ever become operational?

**A12.** Tony McClure advised that the mine site infrastructure area needs to be dealt with from a freehold point of view. Bowdens have various option agreements, and owns a considerable amount of freehold land directly. Option agreements have been put in place over time as required. In Silver Mines Limited's tenure of the project, have probably doubled our footprint, primarily driven by location of infrastructure. The proponent is not actually actively acquiring further land acquisitions with the community outside of the infrastructure footprint. The attachments provided by Sonia were recent agreements, and were disclosed on Silver Mines Limited's accounts.

As the response to question 1 from Sonia was 'No', questions 2 and 3 were deemed not relevant.

**Q13.** Tom Combes sought confirmation that there is no plan from the company to buy or compensate anyone that's impacted by the mine.

**A13.** Keith Perrett advised that at this stage, there are no active arrangements in place. The company has purchased land in the infrastructure footprint. There's no blanket yes or no. But at this stage there's no consideration of purchases due to any of those factors mentioned in Sonia's question at this stage. Obviously as the process and the EIS continues, there will be more understanding of some of this information.

**A13.** Tony McClure advised that he does not think there will be any relevance in that matter to the town of Lue directly.

**Q14.** Tom Combes noted there has been a lot of discussion within the community about the impact the lack of certainty around the project is having in the community. The EIS date keeps going forward, which comes with uncertainty of whether the project will get off the ground, whether

➤ Bowdens to respond.  
Question on Notice.



<p>individual properties will be impacted, and the uncertainty of the company not engaging in a program of “buying or not buying”. There is a lot of uncertainty out there and people are nervous.</p> <p><b>A14.</b> Tony McClure advised that there are of course ongoing discussions with people who have specific concerns, but the Bowdens team is free and open to discuss with anyone. If anyone has specific concerns, please recommend them to come up and have a discussion with our team.</p> <p>Keith Perrett added that the impact on Lue Village will be extremely minimal. But the specific questions (from Sonia Christie) was whether we are buying up land because we believe there will be an impact. The answer at this stage is no, but we are having ongoing discussions on an individual basis.</p>	
<p><b>6. Meeting Dates for the rest of 2018</b></p> <p>The Chair suggested that there should be one more meeting in 2018, and confirmed with the committee that they were comfortable with the Chair working with the proponent around a November timeframe? The committee agreed to this approach.</p> <p>The Chair suggested it would be beneficial for the committee to receive a briefing on the EIS prior to it being lodged.</p>	<ul style="list-style-type: none"> <li>➤ Chair to contact all members.</li> <li>➤ Chair to liaise with Bowdens on agenda.</li> </ul>
<p><b>7. Agenda Items for Meeting 5</b></p> <p>The Chair suggested that Meeting 5 focus on the EIS.</p> <p>Bradley Bliss requested the agenda address the Aboriginal archaeology of the site, referring to Dr Matt Cupper who did an overview. Brad reflected on previous surveys that have been undertaken on the land, and noted that the Wellington Valley Wiradjuri Aboriginal Corporation has never seen any report in relation to the surveys. Usually the Corporation would see a survey undertaken, and within two months a report would be presented to comment on as the local community. The process usually is that a company undertakes a survey, drafts a report to the local Aboriginal community, the community makes a comment, which then goes into the draft, and back to proponent.</p> <p>Keith Perrett advised that it is his understanding that once the EIS is lodged, it’s a public document.</p> <p>The 60 day consultation period will not be during the December/January holiday period. Regardless of when the EIS is lodged, consultation will start around end of January/beginning of February.</p> <p>The committee asked for confirmation of when the 60 days of public consultation will starts, whether the Department does an initial assessment before being on public display, and if the EIS is lodged towards end of December (for example), when will public consultation start? The Chair advised he would follow up with the Department and advise the committee.</p> <p>Keith Perrett advised that the expectation is that the EIS will be a thorough document, and no doubt the Department will review.</p> <p>The Chair suggested inviting Rob Corkery to discuss issues found, and how they dealt with them, but also talk about the planning to communicate the details to the community etc.</p>	<ul style="list-style-type: none"> <li>➤ Chair to liaise with Bowdens on agenda.</li> <li>➤ Chair to liaise with Bowdens on agenda.</li> <li>➤ Chair to speak with Department.</li> <li>➤ Chair to liaise with Bowdens on agenda.</li> </ul>



## 8. Feedback from the Community

The Chair asked the committee for any suggestions on how this group could better communicate or engage within the community.

Blake Hjorth states we've been doing the meetings and minutes, a new community newsletter that went out recently (and is published regularly), and updated information on the website.

Blake suggested that if committee members are hearing questions that as a CCC member they cannot answer, it is good to either guide community members to the website, or to suggest they get in touch directly.

Mick Boller advised the Lue Action Group is very happy with how the minutes have been presented.

Mick Boller raised a dust incident that was discussed in previous CCC meetings, with a report on dust raising from a drill.

Tony McClure advised that following investigations, it was confirmed that drills were operating on the day of this reported incident, but notes that the drill logs report nothing out of the ordinary happened that day.

Mick suggested the possibility that either the drilling operators omitted dust escaping from the drill rig, or that dust escaping is a common occurrence and we have to put up with that.

Tony McClure noted that there was no reporting from the driller to the company in that regard. Tony advised that a critical part of a drilling contract with a company is a comprehensive set of guidelines on how they conduct their business. Bowdens have used drilling companies for a number of years and had no complaints from the community outside of this incident. Tony noted that the image provided to the company is not conclusive, and could have been any number of incidents, such as dust from a truck. Tom Combes confirmed the dust was from a drill rig as he could see through a telescopic sight.

The Chair asked whether the incident was discussed with the drilling company.

Tony McClure advised that it was, but that no incident was recorded on that date.

Blake Hjorth advised that after the incident was raised in the CCC meeting, Tom Combes provided the photo to Bowdens. Scott Munro went back to the people that were working that day, and went back to the log book. Nothing was in the log that mentions drilling suppression went down or anything along those lines.

The Chair advised he would further discuss this with Bowdens.

Mick Boller noted that Rob Corkery was asked previously about testing sites to the east. They advised that one of those sites was a historic site. Corkery also mentioned a number of times about water testing BSW134 located east of Bowdens owned land. Mick requested confirmation of whose land that is on.

Blake Hjorth advised it is Gary Price's land.

Tony McClure advised that on all the monitoring sites, there is a huge amount of historical monitoring data. The data from these sites remains valid, and the data is captured as part of the background data.

➤ The Chair to discuss with Bowdens.



<p>Tom Combes asked how far back the data goes. Tony advised that first monitoring was from approximately eight years ago. Tony notes historical data is critically important for establishing a baseline.</p> <p>Mick Boller commented that he had previously provided historical data from a previous owner's report showing distance from the pit to houses. Keith Perrett advised that the Chair of the previous committee had ruled that she didn't want personal information provided without individuals being present. Further the mine design has altered.</p> <p>Mick Boller confirmed on behalf of a community member that the lead expert providing evidence in the EIS will be Jackie Wright. Tony McClure confirmed that was correct.</p>	
<p><b>9. CLOSE MEETING</b></p> <p>Meeting closed at 6.45PM</p>	





**BOWDENS**  
SILVER

# BOWDENS SILVER — FEASIBILITY STUDY

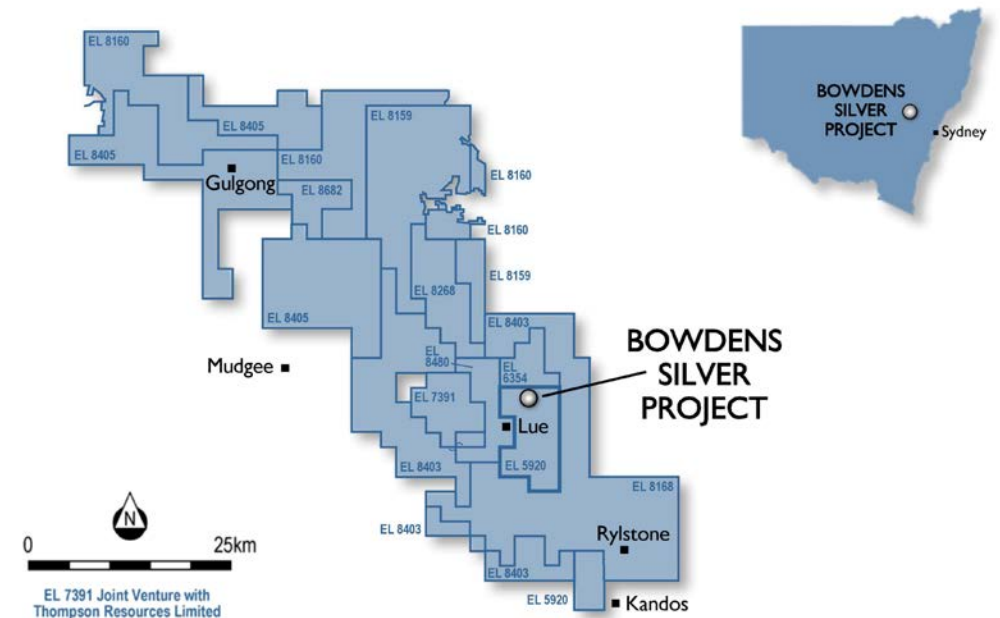
Community Consultative Committee - 14<sup>th</sup> August 2018

Neville Bergin — Feasibility Study Project Manager



## Brief History

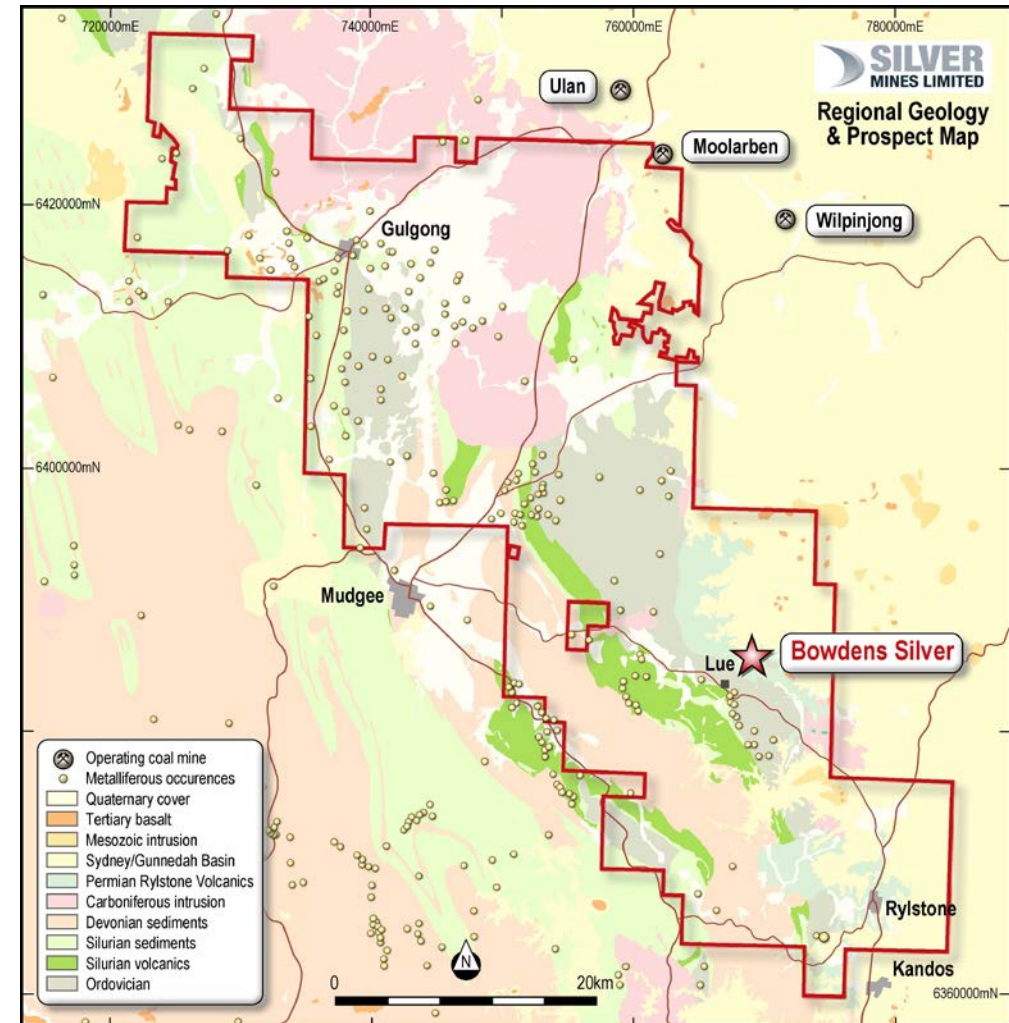
- Originally discovered by CRA, and drilled by Silver Standard and Kingsgate.
- Purchased by Silver Mines in June 2016.
- The largest undeveloped silver deposit in Australia and one of the largest globally.
- Approximately A\$70 million spent on the project to date.
- 80kms of strike of the highly mineralised Rylstone Volcanics
- Over 97,000 metres of drilling completed to date.
- Bowdens Silver has;
  - Completed 29,125 metres of drilling.
  - Completed Mineral Resource September 2017.
  - Completed Ore Reserve and Feasibility Study May/June 2018.
  - Environmental Impact Statement for completion late 2018.



# **GEOLOGY AND MINERAL RESOURCES**

# Regional Geology/Tenure

- Extensive tenement holding (2007 km<sup>2</sup> = 496,028 acres).
- Northeast corner of Lachlan Fold Belt, coal bearing Sydney and Gunnedah basins to the north and east.
- Wide range of prospective deposit types over different time periods (Siluro-Devonian, Carboniferous, Permian).
- Bowdens Silver epithermal, base metal Volcanic Massive Sulphide, Orogenic Gold, Intrusion Related Porphyry.



# Bowdens Silver Mineral Resource (as at September 2017)



30 g/t Ag Eq Cut	Tonnes (Mt)	Silver Eq. (g/t)	Silver (g/t)	Zinc (%)	Lead (% )	Million Ounces Silver	Million Ounces Silver Eq.
Measured	76	72	45	0.37	0.25	111	175
Indicated	29	59	31	0.38	0.25	29	55
<b>Measured &amp; Indicated</b>	<b>105</b>	<b>68</b>	<b>41</b>	<b>0.37</b>	<b>0.25</b>	<b>140</b>	<b>230</b>
Inferred	23	60	31	0.40	0.28	23	45
<b>Total</b>	<b>128</b>	<b>67</b>	<b>40</b>	<b>0.38</b>	<b>0.26</b>	<b>163</b>	<b>275</b>

Completed September 2017 by H&S Consultants - compared to the 2012 Mineral Resource Estimate this resource represents a:

- 51% increase in total silver equivalent ounces
- 22% increase in silver ounces
- 45% increase in total tonnes
- Measured and Indicated Resources increased from 59% to 82% of the total resource.



# Bowdens Silver Resource



Cut off g/t Ag Eq	Tonnes (Mt)	Silver Eq. (g/t)	Silver (g/t)	Zinc (%)	Lead (%)	Million Ounces Silver	Million Ounces Silver Eq.
0	397.2	30.7	17.6	0.18	0.12	225	392
10	261.7	43.7	25.2	0.26	0.17	212	368
20	185.2	54.6	31.7	0.32	0.21	189	325
<b>30</b>	<b>127.9</b>	<b>66.8</b>	<b>39.6</b>	<b>0.38</b>	<b>0.26</b>	<b>163</b>	<b>275</b>
40	89.2	79.7	48.6	0.43	0.29	139	229
50	63.6	92.8	58.4	0.47	0.33	119	190
<b>60</b>	<b>46.1</b>	<b>106.3</b>	<b>69.1</b>	<b>0.51</b>	<b>0.36</b>	<b>102</b>	<b>158</b>
70	33.7	120.8	80.9	0.54	0.39	87	131
<b>80</b>	<b>25.1</b>	<b>135.5</b>	<b>93.4</b>	<b>0.57</b>	<b>0.42</b>	<b>75</b>	<b>109</b>
90	19.2	149.9	105.6	0.59	0.45	65	93
<b>100</b>	<b>15.1</b>	<b>163.7</b>	<b>117.5</b>	<b>0.62</b>	<b>0.47</b>	<b>57</b>	<b>80</b>
120	9.6	192.3	141.4	0.67	0.53	44	59

# **ORE RESERVES AND FEASIBILITY STUDY**

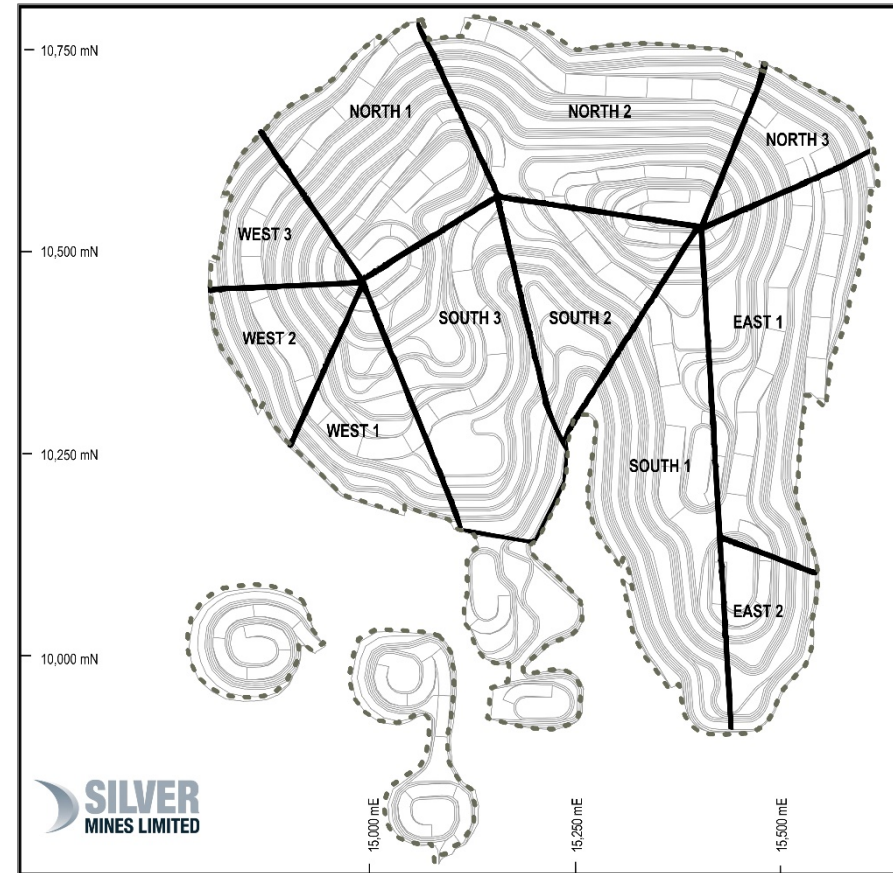
# Feasibility Study – Consultants



- 
- Overall study – GR Engineering Services Limited (GRES)
  - Geology & Resources – Bowdens Silver and H&S Consultants Pty Ltd (H&S)
  - Mining & Reserves – AMC Consultants (AMC)
  - Metallurgy & Processing – AMC testwork (JK Tech) supervision / GRES testwork interpretation and plant design
  - Tailings Storage Facility – ATC Williams (ATCW)
  - Water management – RW Corkery & Co Pty Limited (RWC)/GRES/Jacobs Group Australia Pty Limited (Jacobs)
  - Infrastructure – GRES
  - Road and site access – Barnson Pty Ltd (Barnson)
  - Power Supply – Energy Management Services Pty Ltd (EMS)
  - Product Marketing – Bill Cunningham & Associates Pty Ltd
  - Economics – Northshore Capital Advisors (NCA)

# Mining & Reserves

## Geotechnical





# Mining & Reserves

## Optimisation

---

- AMC modified H&S MIK model by creating sub-cells for the panels
- Gemcom Whittle Four-X implementation of the Lerchs-Grossman algorithm used for the optimisation
- Pit designs followed the optimisation shell outline that developed the largest undiscounted cash flow for the evaluation parameters, containing only Measured and Indicated Mineral Resources
- Reserve 29.9 Mt @ 69 g/t Ag containing 64 Moz of Ag metal in accordance with JORC 2012 guidelines

Reserve Category	Tonnes	Reserve Grades			Contained Metal		
		Ag	Zn	Pb	Ag Metal	Zn	Pb
	(Mt)	(g/t)	(%)	(%)	(Moz)	(kt)	(kt)
Proved	28.6	69.75	0.44	0.32	64.05	125.11	91.43
Probable	1.3	53.15	0.43	0.29	2.27	5.74	3.91
Total	29.9	69.01	0.44	0.32	66.32	130.84	95.33

# Mining & Reserves

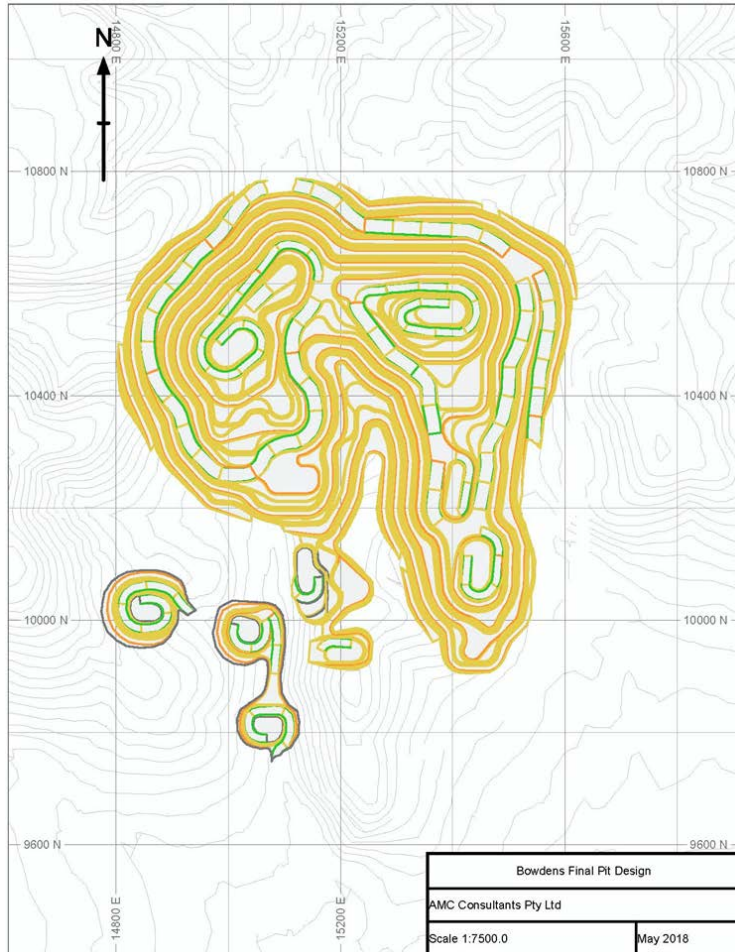
## Mine Design

---

- Design parameters for final pit design:
  - Dual lane ramps of 25 m wide at 10% gradient;
  - Single lane ramps of 15 m wide at 10% gradient;
  - Batter angle 65°;
  - 9 m berm every 25 m; and
  - 5 m bench height.
- Pit developed in six stages:
  - Stages 1 and 2 targeting higher grade outside of 300 m exclusion zone around the existing powerline;
  - Stage 3 – Eastern part of the main pit located at 200 m from existing powerline;
  - Stages 4 and 5 small satellite pits from the South of the main pit; and
  - Stage 6 – Western part of the main pit.

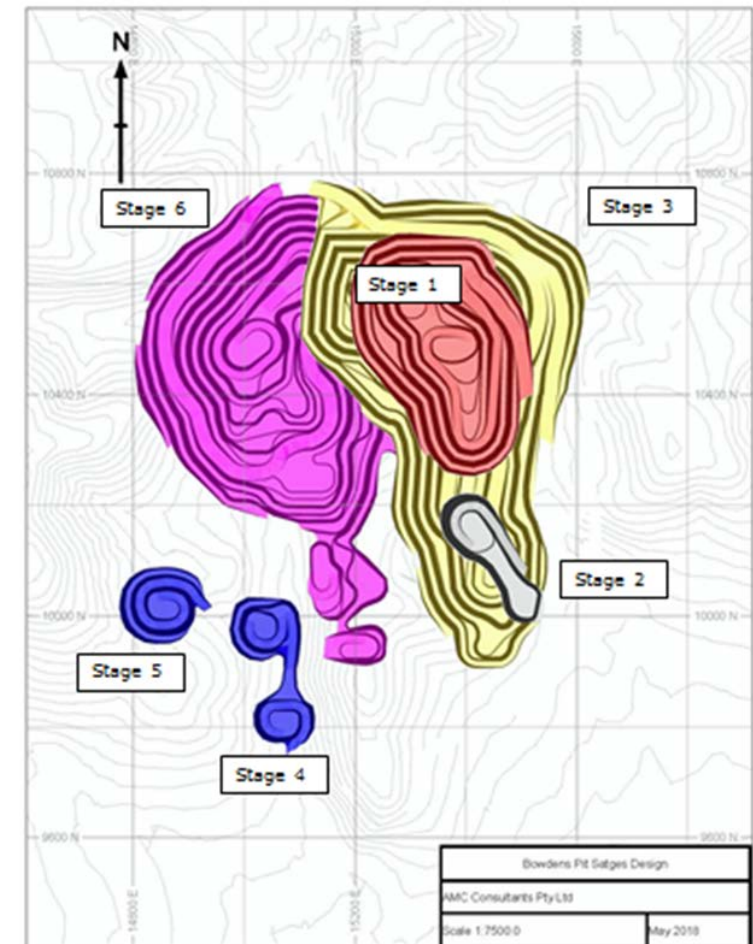
# Mining & Reserves

## Mine Design



← Final pit design

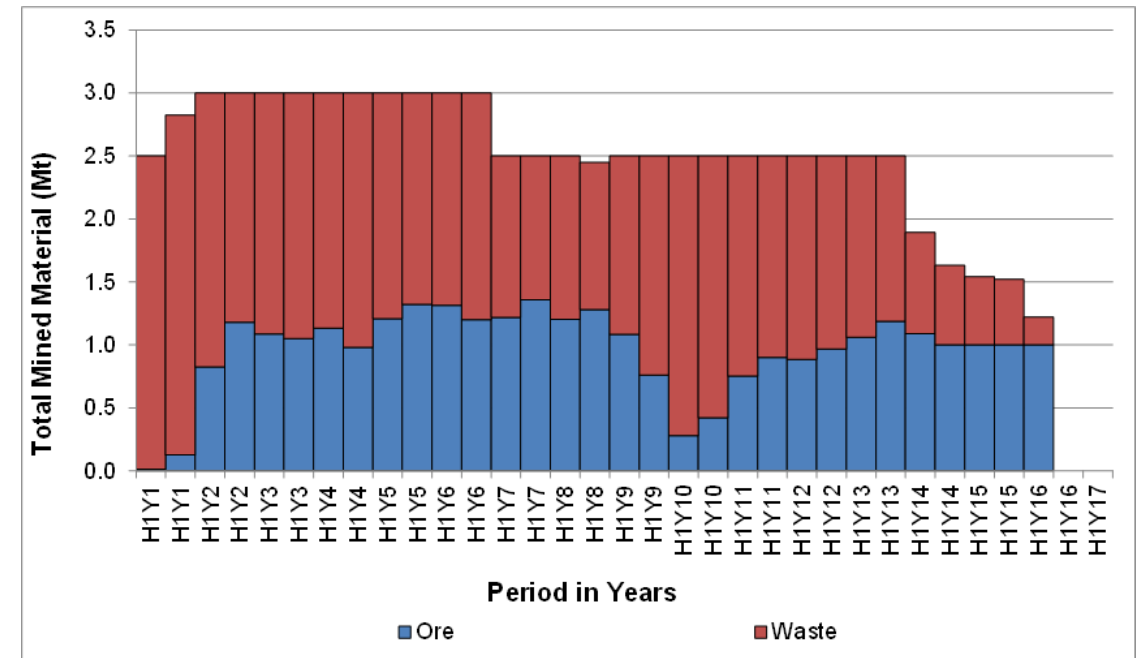
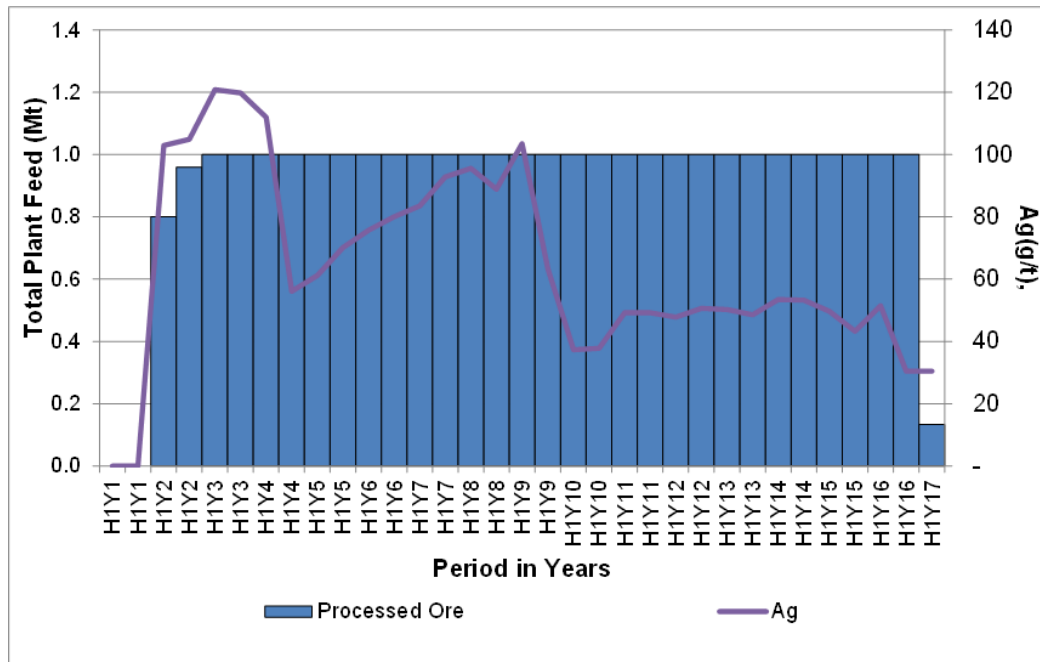
Stage design →



# Mining & Reserves

## Mining Schedule

- Minimax mine scheduling software used to sequence the pits to maximise NPV Schedule structured to deliver sufficient ore to ROM to meet annual throughput requirement (2 Mtpa) whilst meeting annual movement limits





# Mining & Reserves

## Mining Fleet

---

Equipment Type	Indicative Type	Quantity
Production excavators	Hitachi EX1900	1
Trucks	CAT 777G	4
Front end loader	CAT 992G	1
Hydraulic excavator	CAT 336DL RB	1
Track dozer	CAT D9T	2
Grader	CAT 16M	2
Fuel truck	Man 6 x 6	1
Water truck	Man 6 x 6	1
Tyre handler/stemming FEL	Cat 930H	1
Service/welding truck	Man 6 x 6	1
Pit bus		1
Troop carrier	LV-TC	2
Tool carrier	KOMATSU WA320	1
Light vehicles	Light Vehicles	7
Lighting plants	Lighting Plants	7
Drills	Atlas Copco ROC L8	2

# Metallurgy & Process Plant

## Metallurgical Testwork

---

- Testwork undertaken at JK Tech
- Seeking to:
  - Confirm earlier testwork
  - Provide greater insight into performance by host rock type
  - Optimise reagent regime
  - Investigate potential viscosity issue at higher pulp densities
  - Seek a viable alternative to cyanide as a depressant for zinc in the lead flotation circuit
- Findings:
  - Comminution testwork confirmed earlier findings – bond work index indicates moderately hard rock, SMC testwork indicates that ore is suitable for a SAG mill
  - Metallurgical recoveries generally in line with previous findings – in tests related to specific lithologies, the crystal tuff exhibited the poorest performance in recovery of silver into the lead concentrate and lead and zinc concentrate grades
  - Optimised reagent regime used to determine process operating cost
  - Viscosity increase noted above a solids density of 55%, used as a design criteria for plant design

# Metallurgy & Process Plant

## Process Plant Design

---

- 2 Mtpa ore throughput facility
- Producing 8,000 tonnes per annum silver/lead concentrate & 12,000 tonnes per annum zinc concentrate
- Process Flowsheet
  - Single Stage crushing
  - SAG and ball mill circuit (SAB)
  - Sequential flotation incorporating regrind to produce silver/lead concentrate and zinc concentrate
  - Concentrate dewatering using thickeners and filters to produce transportable concentrates
  - Tailings thickening and pumping to tailings storage facility





# Tailings Storage Facility (TSF)

## Investigations and Design Considerations

---

- Geotechnical site investigation undertaken by ATCW
- Thickening testwork undertaken by Outotec
- Design standards:
  - Australian National Committee on Large Dams (ANCOLD)
  - New South Wales Dam Safety Committee (NSW DSC)

Stage	Capacity (Mt)	Filling Duration (years)	Mine Life Years	Construction Timing
Stage 1 (start-up)	6.0	3	Year 2 to Year 5	1 <sup>st</sup> Half Year 2
Stage 2	10.0	5	Year 5 to Year 10	2 <sup>nd</sup> Half Year 4
Stage 3	14.0	7	Year 10 to Year 17	2 <sup>nd</sup> Half Year 9



# Water Management Principles

---

- Three surface water categories:
  - Clean – natural vegetation and ground cover undisturbed by mining activity, except for minor roads and tracks. May be discharged from mine site without treatment.
  - Sediment laden – natural vegetation and ground cover partially or totally disturbed by mining related activities. May only be discharged from mine site following capture, settling and/or treatment to meet regulatory water quality requirements.
  - Contact – disturbed catchment in which mining, processing and waste storage and handling occurs. Must be retained on mine site, stored and recycled for reuse in processing.

# Water Management

## Pit Dewatering

---

- Jacobs undertook 8 airlift recovery tests of RC drill holes and packer testing on 4 deep diamond drill holes
- This work supplemented earlier field testing
- A numerical groundwater model was created using USGS MODFLOW software
- The model has been peer reviewed
- A simulation was run using 6 monthly pit floor positions generated by AMC
- Findings:
  - Average total dewatering rate 2.15 ML/day
  - Inflows peak in Year 8 at ~4.5 ML/day declining over the subsequent two years to 2.0 ML/day
  - Four notional dewatering bores to be developed around the perimeter of the pit, two developed prior to the commencement of Stage 1 and two more prior to the development of Stage 3
  - All other seepage to be managed by in-pit sumps and pumps
- Pit dewatering and surface run-off will be insufficient in a normal year, to meet the water requirements of the mine so water must be imported

# Infrastructure

## General

---

- Internal access roads
- Communications system
- Transportable buildings: - offices, change rooms, lunch rooms and ablutions
- Steel framed buildings: - workshops, warehouse and storage
- Fuel storage
- Internal power reticulation
- Site fencing and security
- Waste water treatment plant
- Wheel wash system



# Infrastructure

## Three Significant

---

- Relocated Maloneys Road:
  - To be relocated to the west of the mine site re-joining the current alignment at the intersection with the mine access road to the north west of the mine
- 132 kV Power supply:
  - The preferred option involves a connection to the 132 kV busbar at the Ilford substation, approximately 40 km of 132 kV transmission line to the project site and a 132/11 kV substation on site
- Water supply pipeline:
  - Ulan coalfields has a surplus of water
  - In-principle agreement on utilising excess
  - Pipeline will be approximately 56 km long and buried for the majority of its length within public easements

# Economics

## Capital Costs

---

Construction of the project to be undertaken on an EPC basis (engineering, procurement and construction)

Area	Amount A\$M
Mining Capex (incl. Dewatering & Mobilisation)	4.5
Plant	62.6
Tailings Storage Facility	22.0
Roads	8.5
Water	12.7
Buildings	9.8
Power	38.7
Vehicles	4.0
First Fill	3.6
EPCM	42.0
Owners Capex	10.3
Communications	3.2
Capitalised Operating Costs	24.2
Total Initial Capital	246.0
Sustaining Capital (LOM)	53.9

# Economics

## Marketing & Transport

---

- Market interest in off-take of concentrates:
  - Port Pirie, S.A. is likely purchaser of silver/lead concentrate
  - Asia the most likely destination for the zinc concentrate
- Product will be bagged at site into 2 tonne bulk bags and loaded into standard ISO containers
- The silver/lead concentrate would travel by road to Bathurst or Parkes then via rail to Port Pirie
- The zinc concentrate would travel via road to the Port Botany container terminal for shipping to Asia or elsewhere

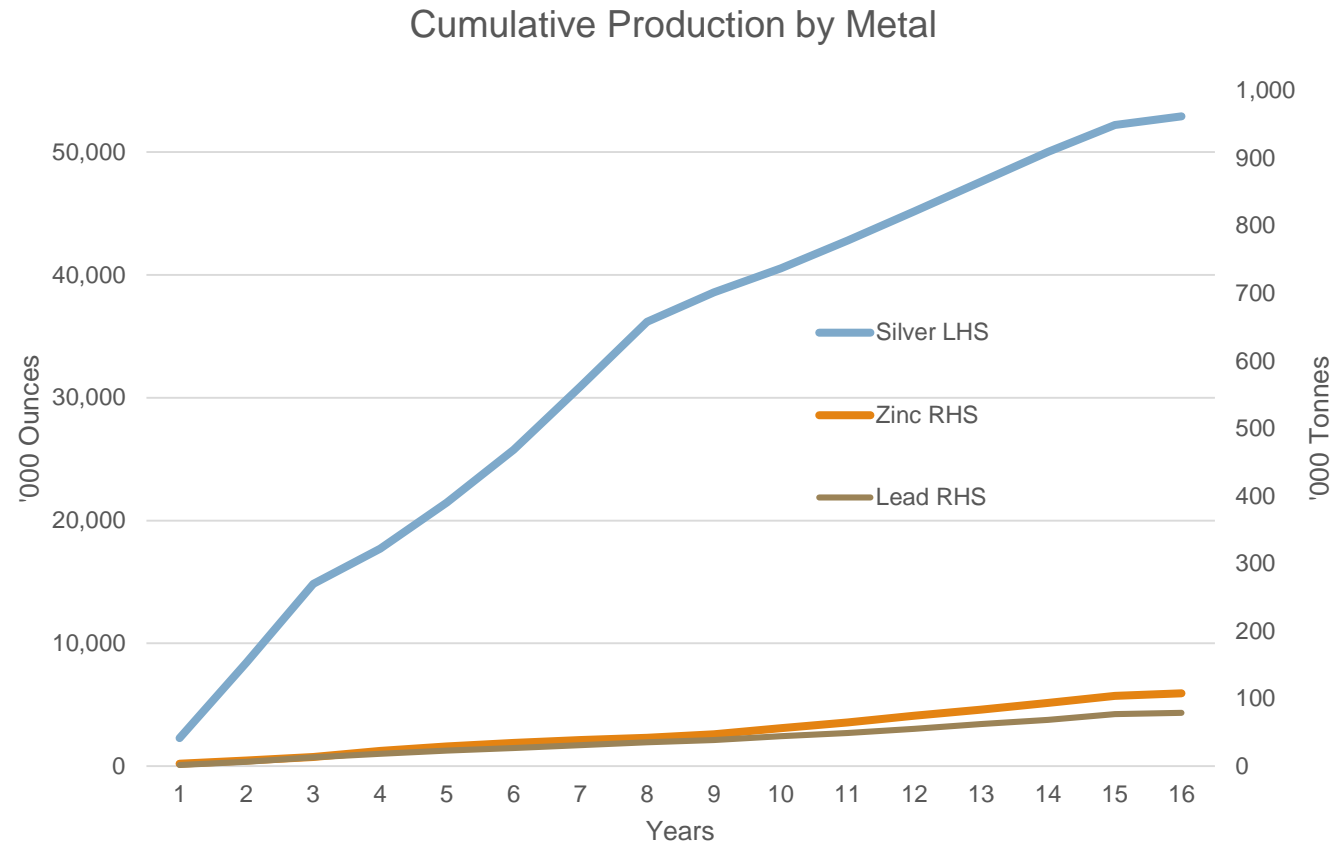
# Economics

## Project Metrics

Physical Metrics	Unit	Value
Production Life	Years	15.5
Ore Mined	Mt	29.9
Waste Mined	Mt	48.2
W:O Strip Ratio	x	1.6
Ag Recovered in Concentrate	Moz	52.91
Zn Recovered in Concentrate	kt	108.0
Pb Recovered in Concentrate	kt	79.3
Financial Metrics	AUD M	USD M
Revenue	1,899.5	1,424.7
Operating Expenses	1,340.8	1,005.6
Operating Margin	558.7	419.0
Undiscounted Cashflow before Tax (real)	257.7	193.3
Project NPV (Pre-Tax)	143.9	107.9
Project IRR (Pre-Tax): Nominal	20.8%	
Capital Costs	AUD M	USD M
Initial	246.0	184.5
LOM Sustaining	53.9	40.4
Unit Costs (Ag Basis)	AUD/oz	USD/oz
C1 Costs	15.47	11.60
All in Sustaining Cost (AISC)	17.25	12.94

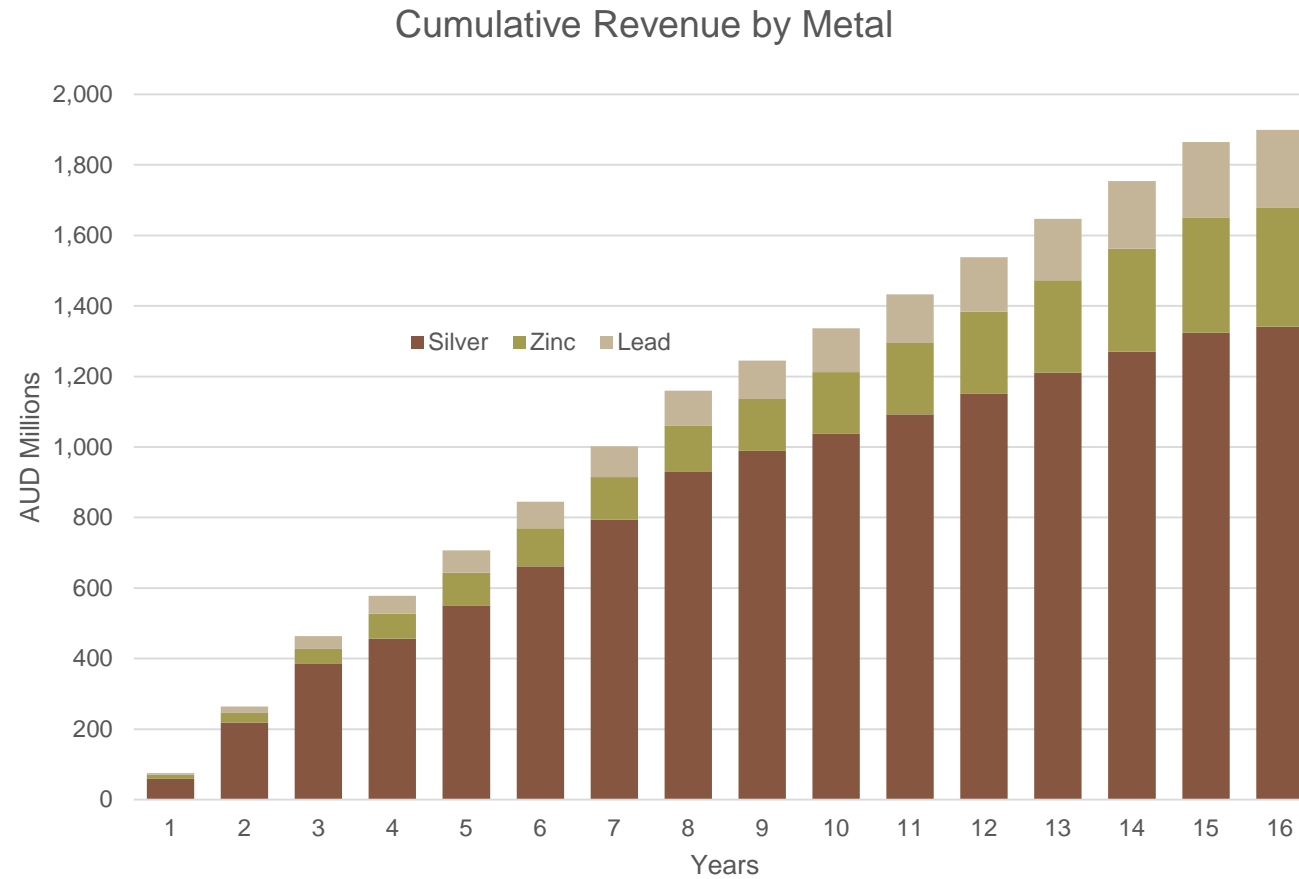
# Economics

## Production



# Economics

## Production





# Project Implementation Methodology

---

- Construction will be undertaken on a fixed price, lump sum EPC basis
- During the EIS/DA process Bowdens Silver suitably qualified engineering companies to tender for the construction works
- On approval of the EIS/DA the company will initiate the tender process with selection of the successful engineer being completed within four months
- On appointment, the Engineer will commence detailed design and the ordering of long lead items
- The construction period, including detailed design will take 18 months to complete
- On-site works will commence approximately three months after contract award
- Mining fleet mobilisation will commence approximately five months after EPC award
- Sufficient ore will be stored on the ROM pad for commissioning of the plant to commence 18 months after EPC contract award

# Project Implementation Employment

---

- Construction employment will average 114 personnel and peak at 184 in Month 13 of the construction period
- No on-site camp will be provided for construction
- Employment during operation will vary depending upon the requirements of the open pit but during the first 10 years will average 181 personnel
- Operational personnel are assumed to reside locally, either being already resident in the area or relocating to the region to take up employment
- No on-site camp will be provided for operations

# Project Implementation

## Employment

---

Department	No. of Personnel
<b>Mining</b>	102 (average first 10 years)
<b>Processing</b>	55
<b>General and Administration</b>	24
<b>Total</b>	<b>181</b>

- Excludes Bowdens Silver exploration team circa 20 personnel
- For every job created a further two jobs are created in local services and contractors

# Supporting Infrastructure

## Power

---

### 132 kV Power supply

- Numerous alternatives considered.
- The preferred option involves a connection to the 132 kV busbar at the Ilford substation, approximately 40 km of 132 kV transmission line to the project site and a 132/11 kV substation on site

### Recently identified alternative:

- The construction of a similar 132 kV line connected directly to Transgrid's feeder 94M near Crudine Ridge (approximate route length of 36 km south-west of the project site)





# ***BOWDENS*** **SILVER**

QUESTIONS