

## Cadia Expansion Pre-Feasibility Study Findings

The Newcrest Board has approved gating of the Cadia Expansion Pre-Feasibility Study ("Study") to the Feasibility phase. The Study establishes Cadia's future mine design, mine sequence and sustainable production rate.

### Summary of Study findings<sup>1</sup>

- Cadia Expansion Pre-Feasibility Study identified the following to be pursued in a Feasibility Study which is expected to be completed in first half of FY20<sup>2</sup>;
  - Estimated Total Capital Expenditure (capex) of \$598m
    - Low cost plant and underground materials handling expansion capex of \$58m
    - Development of next Macro Block PC2-3 capex of \$540m
  - Future potential de-bottlenecking options to increase plant capacity to 35mta
  - Potential recovery improvement options through coarse ore separation or additional ball milling
  - Internal Rate of Return (IRR) of 21%
  - Payback of 8.0 years
  - Net Present Value (NPV) of \$887m
- Plant expansion capital cost approximately \$250m lower than previously expected
- Cadia Expansion Feasibility Study expected to be completed in the first half of FY20. Study scope to include;
  - Development of PC2-3 and expansion of plant to 33mtpa
  - Recovery Improvements through coarse separation or additional ball milling
  - Development of potential options to further debottleneck plant to 35tpa
- Next panel cave to be developed is PC2-3;
  - Estimated capex of \$540m
  - Study assumes commencement of production ramp-up by the end of H1 FY22<sup>3</sup>
- Early works program of critical path activities for the establishment of PC2-3 have commenced in FY19

Newcrest Managing Director and Chief Executive Officer, Sandeep Biswas, said "Two years ago we set out to expand Cadia to 32mtpa for an expected cost of \$310m, today we announce expanding the plant to 33mtpa for \$58m with potential to grow to 35mtpa. The study has delivered a \$252m saving and an additional 1mtpa of throughput capacity. The project team have applied an 'owner's mindset' in delivering an expansion plan with a low capital intensity which has the potential to deliver an impressive 21% return on capital and ensures Cadia remains a tier 1 producer for a long time to come."

<sup>1</sup> The Pre- Feasibility Study (as at 22 August 2018) has been prepared with the objective that its findings are subject to an accuracy range of  $\pm 25\%$ . The findings in the Study, including the estimates of rates of return, costs, payback, NPV, milling rates and rates should be viewed with this in mind and are subject to completion of the Feasibility Study, all necessary permits, regulatory requirements and Board approval and further works as described below.

<sup>2</sup> The indicative production profile underpinning the estimates is contained in the graphs on page 3. The production profile is based on utilisation of 100% of the Cadia East Ore Reserves set out on page 13.

<sup>3</sup> Subject to market and operating conditions, Board approval, all necessary permits and regulatory requirements

The Study assessed a number of expansion cases, ranging from the current 30mtpa base up to 40mtpa, having regard to the capacity of the mine, processing facilities and major infrastructure. The mining rate profile analysis showed that a long term sustainable mining rate of 33mtpa is achievable and that 35mtpa represents the upper limit of Cadia's caving footprint capability until approximately FY27 when PC1-2 production ramps up. To reliably expand the processing plant beyond 35Mtpa would require a third concentrator and an additional \$440m of capex. The Study is predicated on a low-cost expansion to 33mtpa with potential further debottlenecking to 35mtpa.

The selected 33mtpa rate is based on detailed mine production rate analysis utilising simulation modelling and shows that spatial constraints within each mining area and the impacts of fragmentation during ramp up periods are key mining constraints.

### Table of Study key findings<sup>1,2,3,4</sup>

Area	Measure	Unit	Pre-Feasibility Study
Production	Ore milled / throughput	mtpa	33
	Life of Mine (LOM)	Years	45
	Ore mined (LOM)	Mt	1,366
	Average copper grade (LOM)	%	0.3%
	Average gold grade (LOM)	g/t	0.49
	Copper produced (LOM)	Kt	3,498
	Gold produced (LOM)	Koz	15,471
	Average annual copper production (LOM)	Kt	78
	Average annual gold production (LOM)	Koz	344
	Gold recoveries (LOM)	%	71.6%
	Copper recoveries (LOM)	%	84.3%
Capital	Project capital	\$m (real)	598
	Sustaining capital (LOM)	\$m (real)	3,056
	Total life of mine capital (LOM)	\$m (real)	6,890
Operating	Total operating cost (LOM) <sup>5</sup> (real)	\$/t	11.79
	All-In Sustaining Cost (LOM)	\$/oz sold	30
Economic assumptions	Gold price	\$/oz	1,250
	Copper price	\$/lb	3.00
	AUD/USD exchange rate		0.75
	Discount Factor	% (real)	5
Financials	Net Present Value (NPV)	\$m (real)	887
	Internal Rate of Return (IRR)	% (real)	21
	Payback period	Years	8.0
	Free cash flow generation (LOM) (post tax)	\$m (real)	10,623

<sup>4</sup> Cadia is an AUD functional currency operation, the Study has been assessed in AUD and the outcomes in this release have been converted to USD at an exchange rate assumption of AUD/USD 0.75.

<sup>5</sup> Total operating costs include mining costs, processing costs, infrastructure costs and general and administrative costs.

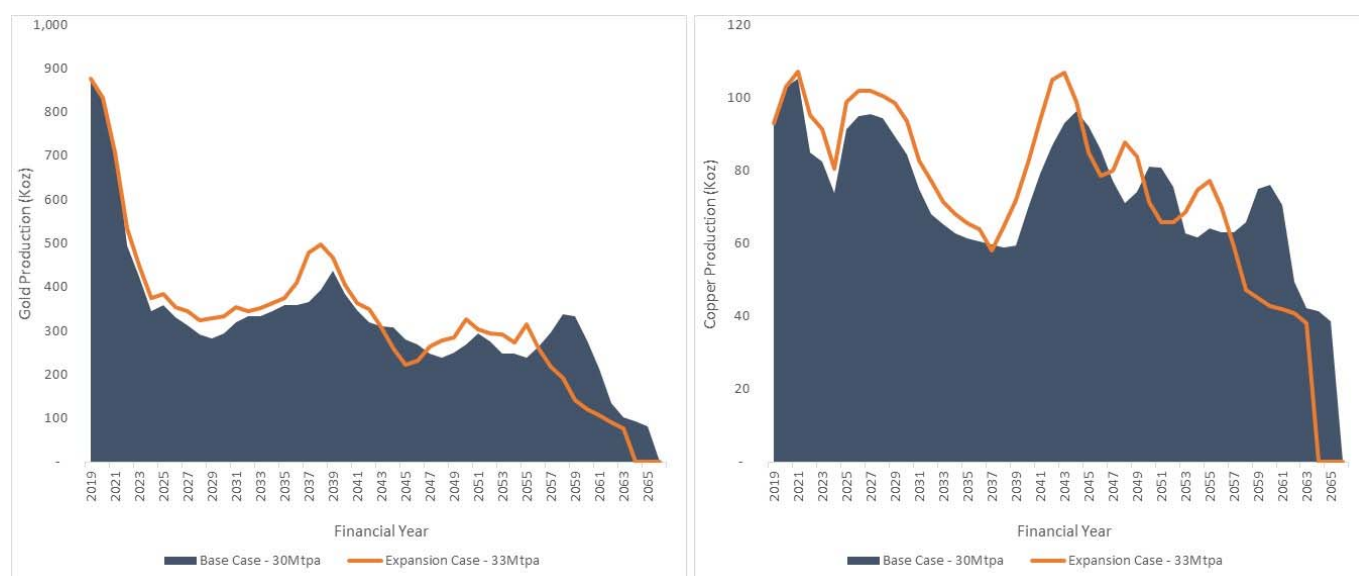
The process plant has already been progressively debottlenecked from 26mtpa, when Cadia East was commissioned, to the current rate of 30mtpa. The Study has identified further debottlenecking opportunities to increase the rate to 33mtpa and options to further debottleneck to 35Mtpa will be assessed during the Feasibility Study.

Concentrator 1 is currently constrained to 22mtpa by the SAG Mill. Projects to further debottleneck the SAG Mill have been identified which, as estimated in the Study, can potentially increase throughput by approximately 3mtpa to 25mtpa. Concentrator 2 has recently undergone a significant debottlenecking program that has increased annualised throughput from 6.5mtpa to 8mtpa. Incremental capital expenditure of \$58M is required for upgrades to the underground materials handling system and the installation of additional crushing capability within the Concentrator 1 plant at Cadia.

### Indicative production profile<sup>1,6,7</sup>

The Study identified a maximum mining rate of 39mtpa was achievable but only for periods of time between construction of block caves. Production rates would fall during transition periods between mining blocks. A third concentrator, which would require significant additional capital expenditure of approximately \$440m, would be required to achieve annualised production rates beyond 35mtpa. When combined with the mining part of the Study, which indicates mine production rates of 39mtpa would not be consistent or sustained, it was determined that increasing processing capacity to this level yielded a lower expected return on investment than for the incremental expansion to 33mtpa. The Study found this option of maximising the mining rate to 39mtpa would have yielded a higher NPV of \$955m but a lower IRR of 17% and a longer payback of 9 years.

The Study found that increasing throughput to the 33mtpa rate would bring forward gold and copper production. The graphs below compare the indicative production profile at 30mtpa against the indicative accelerated throughput rate. These indicative production profiles should not be construed as production forecasts or guidance.

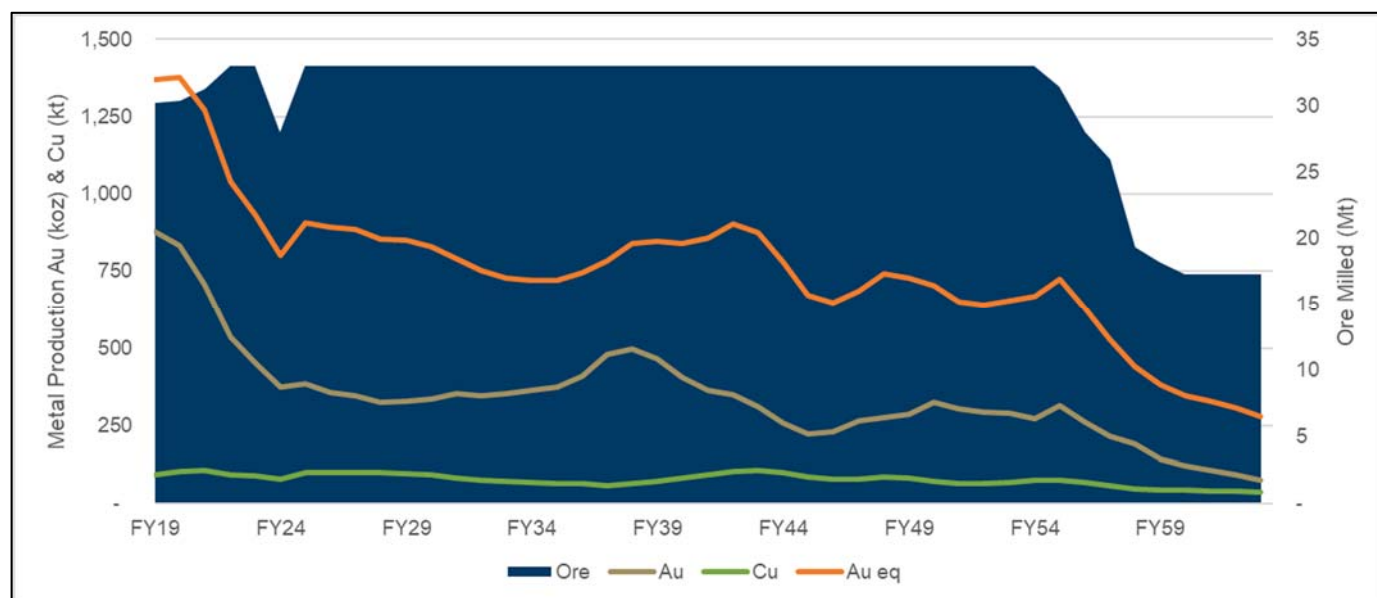


**Gold and Copper indicative production profile by year Base Case 30mtpa compared to Expansion Case 33mtpa**

<sup>6</sup> The production profile is based on utilisation of 100% of the Cadia East Ore Reserves set out on page 11.

<sup>7</sup> Indicative only and should not be construed as guidance. Achievement of estimates shown is subject to market and operating conditions.

The following graph depicts the indicative gold equivalent production profile for the life of mine, which the Study assumes would not be expected to fall below 500koz until FY58. Gold equivalent production is expected to peak at approximately 1,380koz gold equivalent before averaging 800koz gold equivalent per annum between FY24 to FY48. This indicative production profile should not be construed as a production forecast or guidance.



**Ore milled and Gold, Copper & Gold Equivalent production by year<sup>8</sup>**

## Proposed plant expansion<sup>1</sup>

The Study proposes the construction of a new secondary crushing circuit for the Concentrator 1 milling circuit including a crusher with a secondary screening feed, a pebble crusher and a 1.5 megawatt (MW) ball mill.

The advantages of the combined debottlenecking of Concentrator 1 milling circuit option include:

- Capital efficiency – as it requires lower capital expenditure
- Design and operational simplicity
- Ease of implementation

The Study found that additional infrastructure is expected to increase the Concentrator 1 milling rates to 25mtpa. Recent upgrades to Concentrator 2 have increased its capacity to 8mtpa. The total surface milling rate is expected to be 33mtpa combined.

To increase the capacity of the Concentrator 1 milling circuit to 25mtpa the Study has identified that the reduced residence time in the circuit results in an increase of the grind size. It is expected that this will result in a recovery loss of approximately 1%. The Study has identified further opportunities to offset this loss via a number of pathways, including additional ball mill grinding power to reduce grind size or coarse gold recovery which is currently being trialled at Cadia. Recovery improvement is included in the Feasibility Study scope.

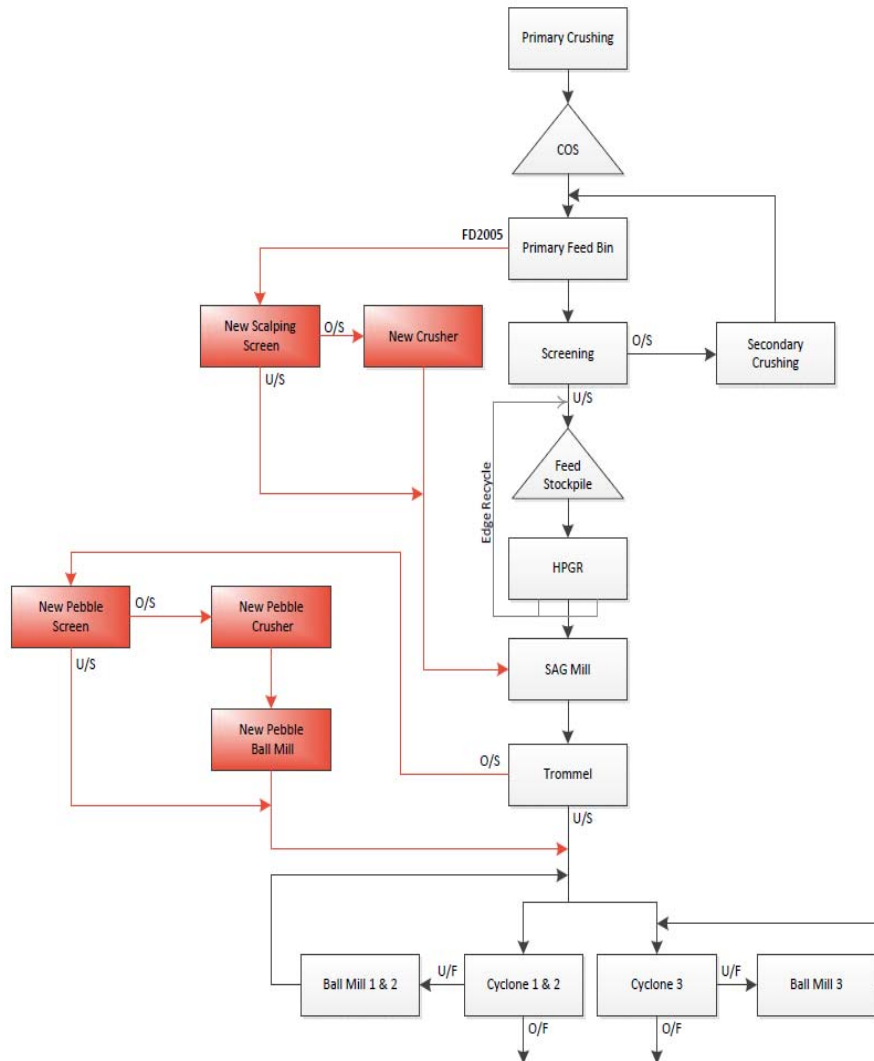
Newcrest will apply for modification of Cadia's project approval for the expansion once the investigation into the Northern Tailings Storage Facility (NTSF) embankment slump has been completed and studies to confirm a long term tailings solution for Cadia have been finalised. Development of PC2-3 does not require further permitting as it is generally in accordance with the existing approval. To increase Cadia Hill Pit Tailings Storage Facility (PTSF) to full capacity is a standalone modification. Subject to necessary permitting and regulatory approval, the combined capacity of the PTSF and the Southern Tailings Storage Facility (STSF) is expected to provide sufficient tailings capacity through to 2029 at the increased processing capacity.

<sup>8</sup> Assumptions include: Gold price of US\$1,200/oz, copper price of US\$3.00/lb, AUD:USD exchange rate of 0.75. Recovered Gold & Copper Production as provided in the chart above as indicative of the forward metal sales profile. Gold-equivalent production (by-product basis) = Recovered Au oz+ (Cu Price \$US/lb) x 2204.62 / (Au Price US\$/oz) x (Recovered copper tonnes as provided in the chart above, as indicative of the forward production profile). Gold grades are as set out in the indicative mine production profile on page 3. Based on LOM Au recovery of approximately 71% and approximately 84% for Cu. In the Company's opinion, all elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold.

Permitting the production rate increase from the currently permitted 32mtpa, and the mine life extension, are contingent upon the outcomes of the investigation in relation to, and future plans, for the NTSF. This permitting approval may not be completed by the end of the Feasibility Study and remains a risk until the NTSF is resolved.

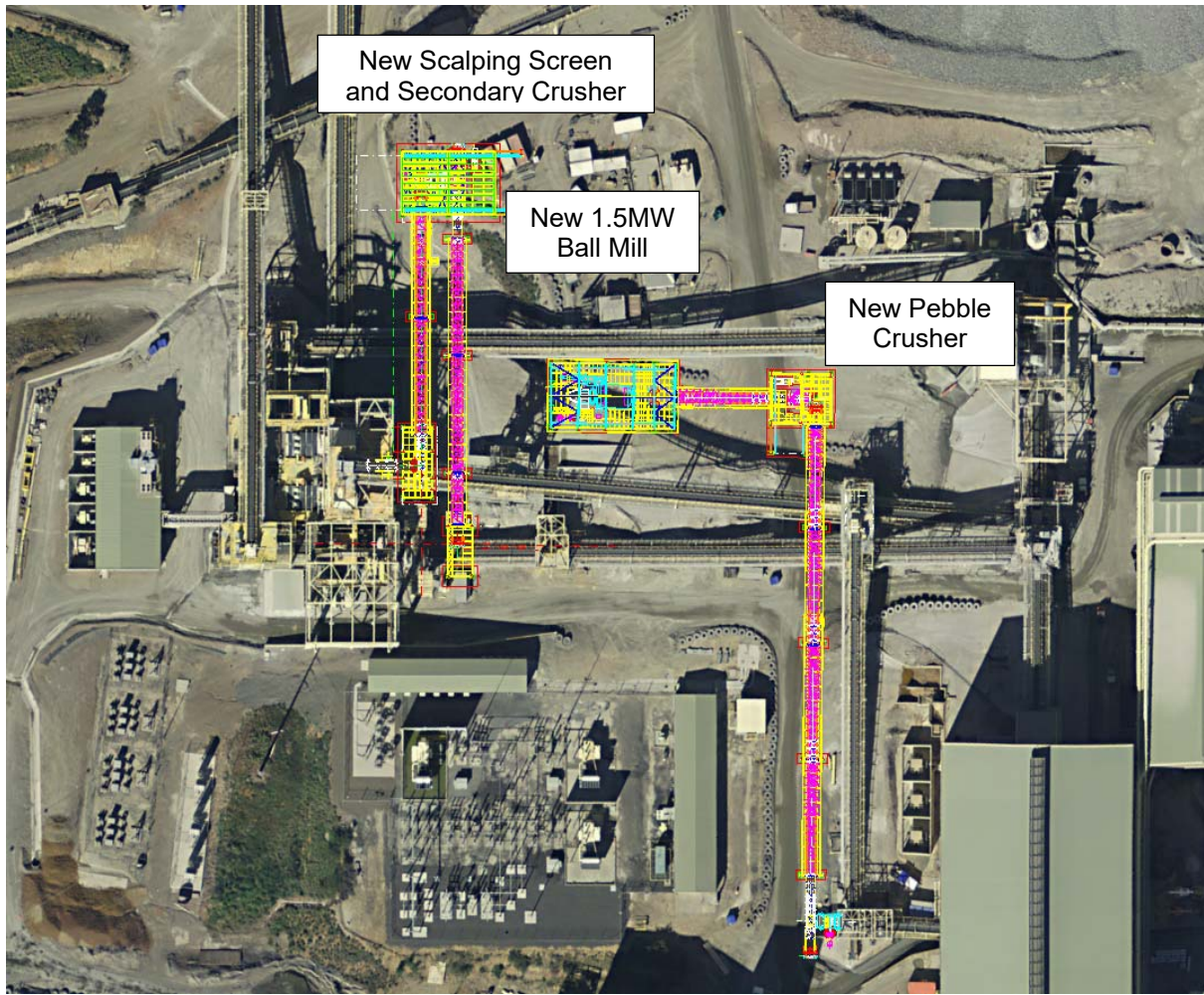
The environmental assessment work will encompass noise, air quality, site water balance, road transport, Aboriginal heritage and biodiversity. Some of this work is underway.

The duplication of the power line from Orange to Cadia and minor capacitor upgrades to TransGrid substations at Mt Panorama and Orange North is already underway and is expected to provide access to sufficient power for the expansion.

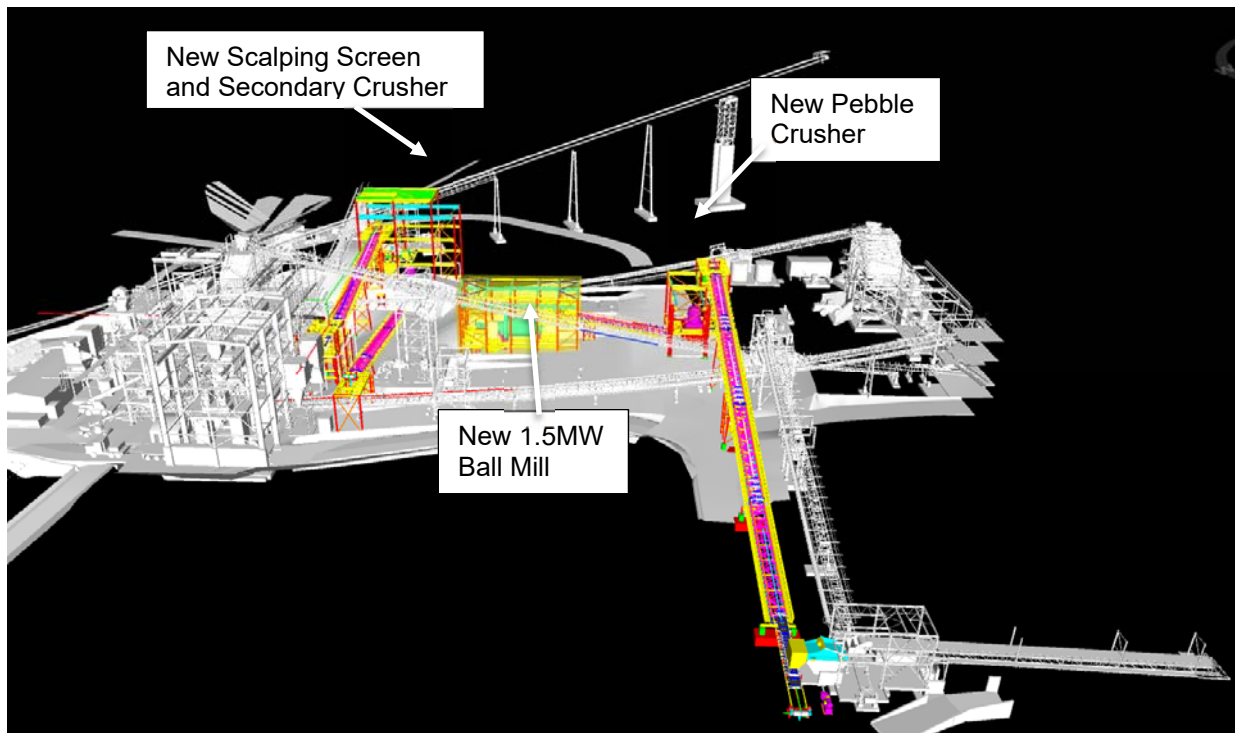


**Block flow diagram showing new, scaling screen, crusher, pebble crusher and ball mill**





**Proposed expansion for Cadia processing plant**



**Proposed expansion for Cadia processing plant**

## Tailings and water usage<sup>1</sup>

The Cadia Hill open pit tailings storage facility is expected to enable Cadia to potentially produce at rates greater than 30mtpa. It significantly improves the risk profile of the site by decreasing the flows and rate of rise of the existing NTSF and STSF. Work continues on improving pit dewatering of the Cadia Hill open pit, primarily due to fine suspended tailings material affecting pump and recovery performance.

Whilst New South Wales is experiencing drought, currently there are no issues with water shortages at Cadia. However, if the current drought conditions were to persist for a longer period of time water availability has the potential to become an issue. Cadia has been assessing future water needs as part of the proposed expansion project and has been developing a local and regional water strategy to address the impacts of any extended drought.

To ensure water supply reliability is maintained at the proposed higher production rates further sustaining capital will be required which will provide additional thickening of the tailings prior to deposition. This will also materially reduce Cadia's demand on external water sources. The cost and timing of the additional thickening capacity are being considered separately to the expansion.

## Mine development and sequence<sup>1,6,7</sup>

The Study has re-assessed the orebody and determined an optimal mine design and operating sequence that is designed to be safe, resilient and which maintains production continuity as PC1 and PC2 are depleted and their production ramps down. The production profiles developed are constrained by the cave establishment sequence and the individual cave operational lifecycle.

The key findings and recommendations on mining from the Study are:

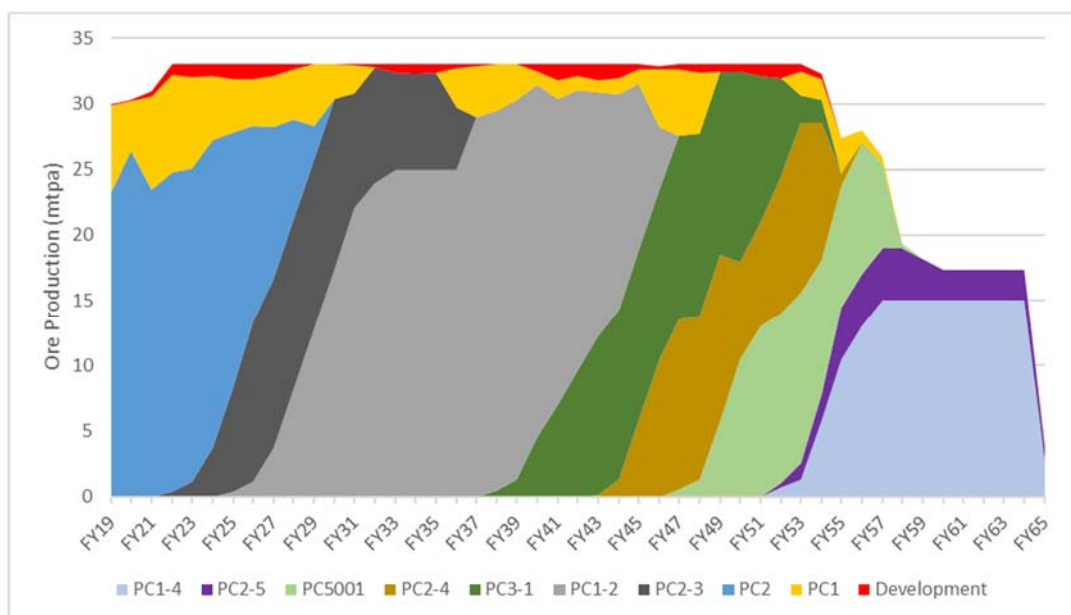
- The continuation of panel cave mining is the most efficient and economic mining method to extract maximum value from the Cadia East orebody and can be achieved in a safe and reliable manner;
- Long term productive capacity of the mine has been optimised; and
- an additional ~\$540m will be required for the full development of PC2-3 following the gating of the Feasibility Study expected in the first half of FY20.

It is proposed that PC2-3 will use the El Teniente footprint layout with 32m x 20m drawbell spacing with 151 drawbells and a footprint of 97,000m<sup>2</sup>. Following is an indicative timeline from the Study for the commencement of construction of future block caves, noting this remains subject to further studies, permitting, Board approval and market and operating conditions.

Panel Cave	Start Construction	First production	Ore (mt)
PC2-3	FY19	FY22	122
PC1-2	FY21	FY25	401
PC3-1	FY36	FY38	153
PC2-4	FY42	FY43	106
PC5001	FY44	FY47	93
PC1-4	FY48	FY52	154
PC2-5	FY49	FY52	35

During construction of the caves above, the Study contemplates an additional 20mt of development ore over the life of Cadia will be extracted and processed.

## Indicative preliminary ore production profile<sup>1,2,3,6,7</sup>



The above graph is the indicative ore production profile and contains only the Cadia East Ore Reserves. The above graph does not forecast any conversion of Mineral Resources into Ore Reserves into the operating plan.

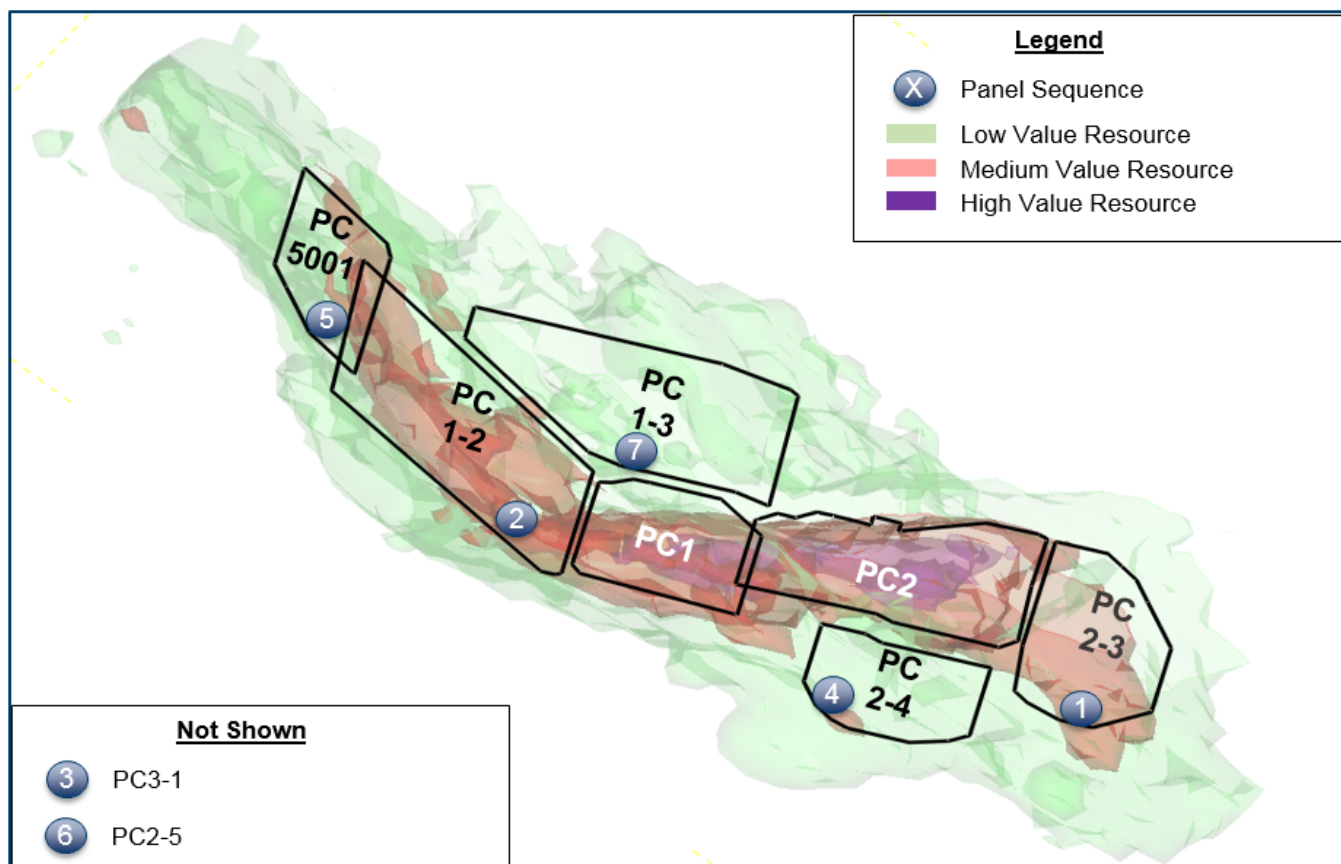
## Indicative mine production profile<sup>1,2,3,6,9</sup>

Year	Ore Source	Total material movement	Plant Feed	Average Gold Grade (g/t)	Average Copper Grade (%)
FY19-21	PC 1 & PC2	~90	~91	1.1	0.4
FY22-24	PC 1 & PC2	~99	~94	0.7	0.3
FY25-27	PC1, PC2, PC2-3, PC1-2	~99	~99	0.5	0.4
FY28-30	PC1, PC2, PC2-3, PC1-2	~99	~99	0.7	0.3
FY31-33	PC1, PC2, PC2-3, PC1-2	~99	~99	0.5	0.2
FY34-36	PC1, PC2, PC2-3, PC1-2	~99	~99	0.5	0.2
FY37-39	PC1, PC1-2, PC3-1	~99	~99	0.6	0.2
FY40-42	PC1, PC1-2, PC3-1	~99	~99	0.5	0.4
FY43-45	PC1, PC1-2, PC3-1, PC2-4	~99	~99	0.4	0.4
FY46-48	PC1, PC3-1, PC5001, PC2-4	~99	~99	0.4	0.4
FY49-51	PC3-1, PC5001, PC2-4	~99	~99	0.4	0.4
FY51	Remaining Reserves subject of ongoing study				

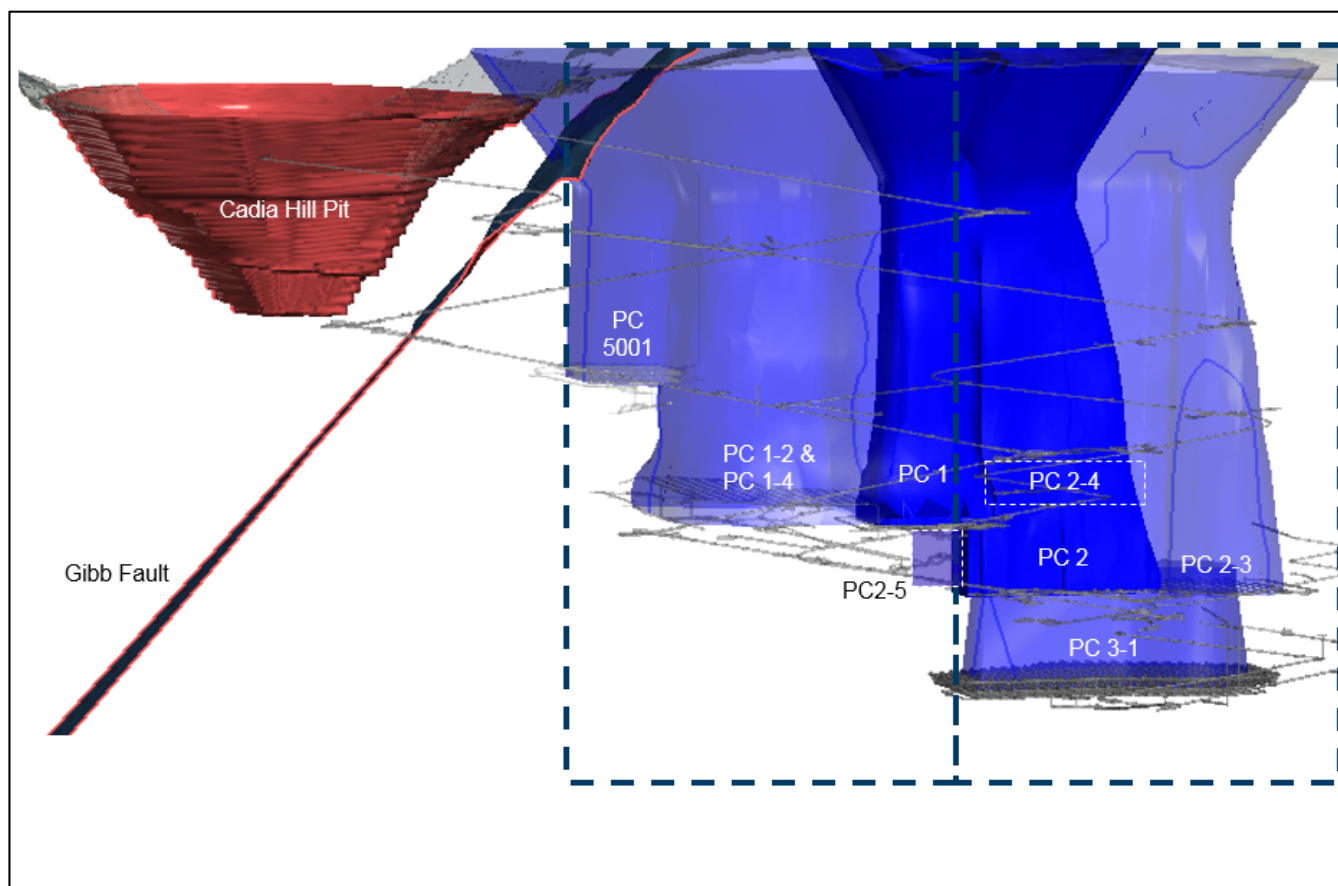
<sup>9</sup> Indicative only and should not be construed as guidance – the above table is updated annually in February each year. Achievement of estimates shown is subject to market and operating conditions.



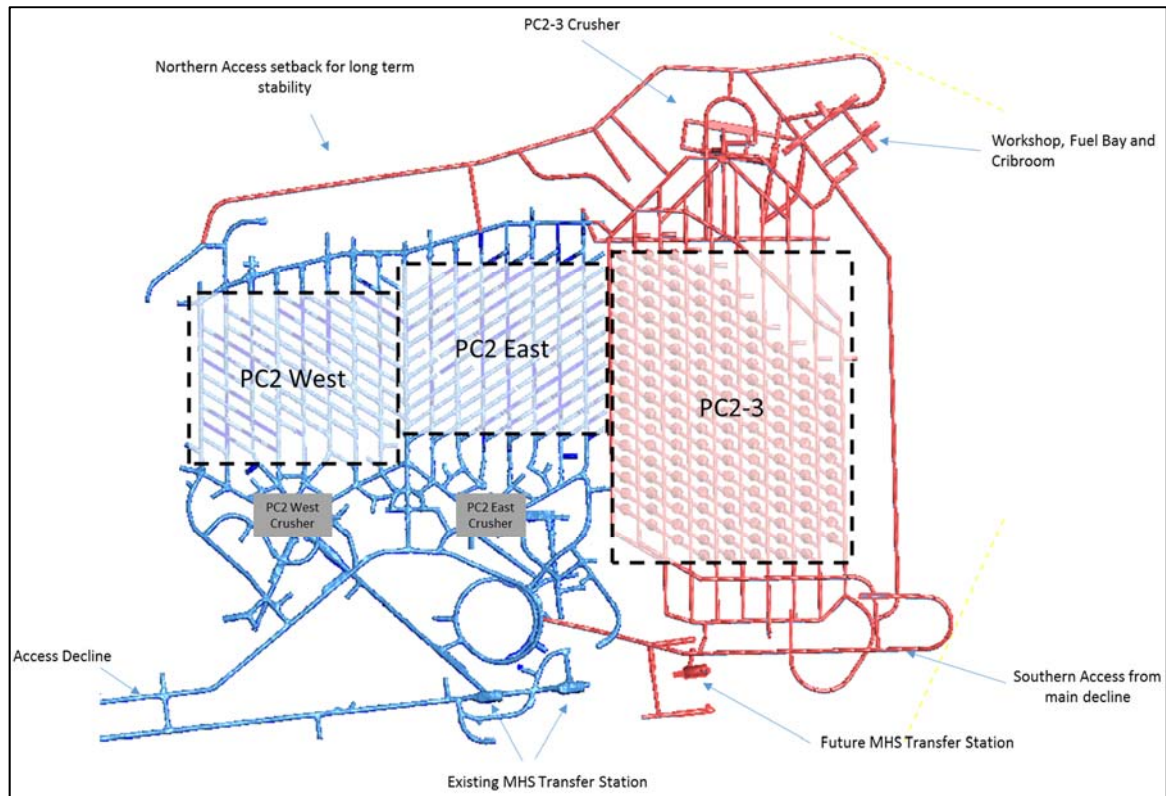
Replacement of Concentrator 1 SAG mill motor has been scheduled for FY24 which has resulted in an estimated reduction in ore milled for the year. The new motor has 2MW of installed additional power which is expected to assist in debottlenecking the mill.



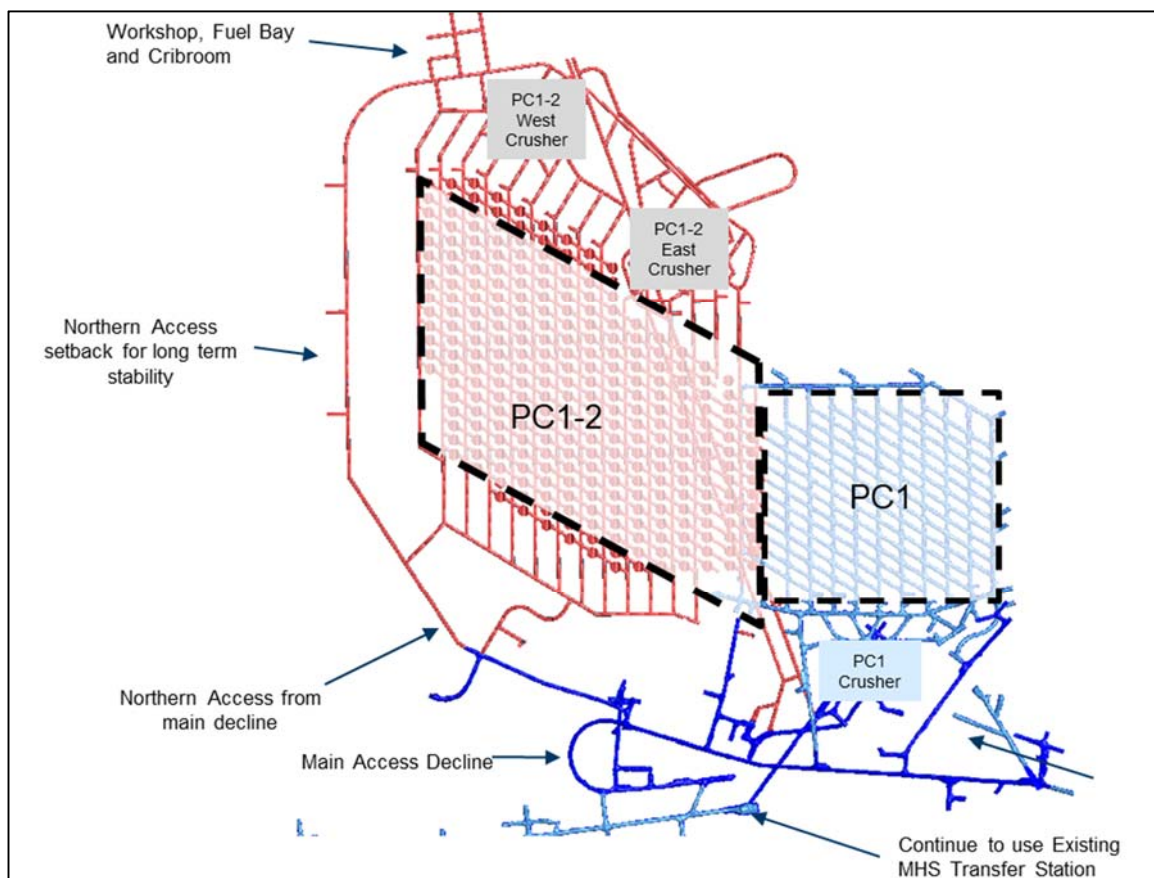
Mining block definition and sequence – plan view



## Cadia panel cave development – cross section



**PC2-3 proposed layout**



**PC1-2 proposed layout**

## Metal price and exchange rate sensitivity analysis<sup>1</sup>

The actual IRR of the project will vary accordingly to the copper and gold prices realised. The table below shows how the estimated Base Case 21% project IRR varies using different price assumptions:

Scenario	IRR	
Gold price per ounce	1,150	20%
	1,350	22%
Copper price per pound	2.50	18%
	3.50	24%
AUD/USD	0.70	23%
	0.80	19%

Base case assumptions are Gold price \$1,250/oz, Copper price \$3.00/lb and AUD/USD exchange rate 0.75

## Cadia Hill Mineral Resource and Ore Reserve Removal

On 23 April 2018 Newcrest announced that the Cadia Hill open pit had been approved to use the first 200 metres as tailings disposal for Cadia East and that it would be likely, subject to further study, that the remnant Mineral Resource and Ore Reserves of Cadia Hill open pit would ultimately be forgone. The Cadia Expansion Study has confirmed that the use of the Cadia Hill open pit for tailings storage will preclude any future mining of the Cadia Hill Ore Reserve or Mineral Resource. This has resulted in the removal of the entire Cadia Hill Ore Reserve containing approximately 1.5 Moz gold and 0.13 Mt of copper and removal of the in situ Cadia Hill Mineral Resource containing approximately 2.7 Moz gold and 0.23 Mt of copper. Surface stockpiles from Cadia Hill containing approximately 0.3 Moz gold and 0.04 Mt of copper remain in Mineral Resource.

## Cadia East Mineral Resource<sup>10</sup>

The Cadia East Mineral Resource has been updated for mining depletion to 30 June 2018 from that reported in the Annual Statement of Mineral Resources and Ore Reserves as at 31 December 2017. All other assumptions remain unchanged. A summary of material assumptions is provided below and JORC Table 1, Section 1 to 3 is included as an Appendix. Mineral Resources are reported inclusive of Ore Reserves.

	Ore	Gold		Copper		Silver	
	Mt	g/t	Moz	%	Mt	g/t	Moz
Total Mineral Resource	3,000	0.37	35	0.26	7.7	0.68	65
Measured Mineral Resource	0.23	1.2	0.0088	0.31	0.00071	0.83	0.0062
Indicated Mineral Resource	3,000	0.37	35	0.26	7.7	0.68	65
Inferred Mineral Resource							

<sup>10</sup> Data is reported to two significant figures to reflect appropriate precision in the estimate and this may cause some apparent discrepancies in totals.

## Summary of Mineral Resource

### Geology and Geological Interpretation

The Cadia gold copper deposits are hosted by a late Ordovician to early Silurian volcano-intrusive complex which forms part of the larger zone of arc-related volcanic and associated intrusive rocks in the eastern Lachlan Fold Belt. Mineralisation at Cadia is hosted by the mid to late Ordovician Forest Reefs Volcanics and the underlying Weemalla Formation and by the late Ordovician to early Silurian Cadia Intrusive Complex. Post-mineral cover comprises Silurian Cadia Coach Shale and a relatively thin capping of Tertiary basalts and gravels in some areas. Recognised structural controls include the regional northwest corridor – dilation zone thought to control the emplacement of the Cadia Intrusive Complex and post-mineral faulting in two dominant orientations striking northwest and north-south.

The Cadia East deposit is hosted within the Forest Reef Volcanics and porphyry intrusions. A north-east trending mass of narrow sheet like dykes of monzonitic to dioritic compositions intrude the lower parts of the Forest Reef Volcanics at Cadia East. These intrusives are largely restricted to the eastern half of the deposit although some narrow dykes and isolated bodies of monzonite have been recognised in the western end. At the upper western end of the deposit immediately underneath the Gibb fault, isolated narrow intersections have been identified with south dipping mineralised quartz veining. These occurrences are interpreted to be the Cadia Hill Monzonite.

Mineralisation at Cadia East can be divided into two broad overlapping zones: an upper, copper rich disseminated zone and a deeper gold-rich zone associated with sheeted veins. The upper zone forms a relatively small cap to the overall mineralised envelope and has a core of disseminated chalcopryite, capped by chalcopryite-pyrite mineralisation. The upper zone mineralisation is stratigraphically controlled within the volcanoclastic unit. This zone is transitional to the deeper vein style mineralization. The deeper zone is localised around a core of steeply dipping sheeted quartz-calcite-bornite-chalcopryite-molybdenite, with the highest gold grades associated with the bornite-bearing veins. Copper and molybdenite form a mineralised blanket above and to the east of the higher grade gold envelope.

The geology model for the Cadia East deposit includes lithology, alteration, and structural faults. The structural interpretation includes the pyrite faults, Ca-La Crunch faults and Carbonate faults. Modelling of the fault planes and lithological boundaries comprises data obtained from drill core and underground mapping. The major faults were used as estimation domains, with semi-soft boundaries implemented where geostatistical testing warranted. The factor most influencing grade continuity is that Cadia East is a porphyry copper-gold mineralisation exhibiting properties of the diffusion model.

### Drilling Techniques

The drilling of the Cadia East deposit is diamond core NQ3, HQ3, and PQ. Triple tube is used to maximise core recovery. Most drill holes are collared as PQ or HQ for accurate and safe drilling. The size is then reduced at the geologist's discretion as the drill hole advances. All recent drilling is orientated.

### Sampling and Sub-sampling

Data used for resource estimation is obtained from drill core, which is sampled and assayed on 2.0 metre intervals. Drill core is sampled by cutting the core in half with a diamond saw. The left hand of the cut core is placed in a calico bag, marked with the appropriate sample number and sent to the laboratory for assaying. The remaining half-core is stored in the original tray on a pallet at the core processing facility for an unspecified period and then moved to storage at the Cadia Core Farm. Sample preparation is conducted at the Newcrest Laboratory facility located in Orange and all routine drill core samples are processed on site. Pulp replicates and crushed coarse reject duplicates are routinely undertaken.

### Sample Analysis Methods

Samples are routinely assayed for gold by fire assay and copper, silver, molybdenum, lead, zinc, and sulphur by ICP-OES analysis, with additional cyanide-soluble copper analysis. Comprehensive QA/QC procedures have been in place since drilling and sampling programs at Cadia East began. These processes are undertaken at both the laboratory and site that includes a combination of check samples (blind reference material, random blanks, duplicates, repeats, replicates, and second lab checks), meetings, visits, and external audits. Various primary laboratories located on Orange have been used including Newcrest Services Laboratory since June 2010, ALS-Chemex between May 2004 and May 2010, and AMDEL prior to May 2004.

### Estimation Methodology

Ordinary Kriging of copper, gold, sulphur, silver, molybdenum and fluorine are undertaken directly into 20 m x 20 m x 20 m blocks. The resource model was domained utilising structural surfaces for gold, copper, silver,



molybdenum and sulphur. Semi-soft boundaries were used between the Ca-La Crunch faults while the lower porphyry surface was treated as a hard boundary. The 0.1% copper grade shell was used to constrain estimation as a global domain. The fluorine estimation domains utilise the Ca-La Nth structure, the lower porphyry surface and the combined basalt lithology. Kriging Neighbourhood Analysis is used to define the search neighbourhood for all elements. All elements are estimated independently of each other. Copper and gold grades are not capped. The resource model is validated via visual, geostatistical and production reconciliation methods.

## Mineral Resource Classification

The Mineral Resource has been classified as an Indicated Mineral Resource only, based on an assessment of geological confidence as a function of geological and mineralisation continuity. Grade continuity and drill hole density is assessed using Extension Variance methods, whilst the reported resources were constrained within a 'value' shell representing the limit to eventual economic extraction.

## Cut-off Grade

A value algorithm is used to calculate the net smelter return (NSR) for each block using revenue and cost assumptions as at 31 December 2017. The NSR calculation takes into account Mineral Resource revenue factors, metallurgical recovery assumptions, transport costs and refining charges and royalty charges. The break even cut off value takes into account the site operating costs include mining cost, processing cost, relevant site general & administration costs and relevant sustaining capital costs. The break even cut off value equates to approximately AUD18.50/t milled.

## Mining and Metallurgical methods and parameters and other modifying factors

No mining or environmental factors have been incorporated into the estimation. Metallurgical factors have been incorporated into the value algorithm which constrains the Mineral Resource classification.

## Cadia East Ore Reserve<sup>11</sup>

The Study which establishes Cadia's optimal future mine design, mine sequence and sustainable production rate also supports an updated Cadia East Ore Reserve. The update includes operational learnings to date including removal of marginal mineralisation the latter stage caves and inclusion of PC3 into Ore Reserves. There is no material change in overall Ore Reserves from 31 December 2017. The Cadia East Ore Reserve has also been updated for mining depletion to 30 June 2018. A summary of material assumptions is provided below and JORC Table 1, Section 4 included in Appendix.

	Ore	Gold		Copper		Silver	
	Mt	g/t	Moz	%	Mt	g/t	Moz
Total Ore Reserve	1,400	0.49	22	0.30	4.2	0.79	35
Proved Ore Reserve							
Probable Ore Reserve	1,400	0.49	22	0.30	4.2	0.79	35

## Summary of Ore Reserve

### Material Assumptions for Ore Reserves

A pre-feasibility level study was completed in 2018 to provide supporting basis for the Cadia East Ore Reserve. Cadia East Panel Cave is an operating mine for the Cadia Valley Operations province and incorporating learnings from operational execution to date. Work is progressing on a Mining Feasibility Study for the PC2-3 mining block and is anticipated to be complete in the 2019 calendar year. Any adjustment to the Ore Reserves Statement will be made following the completion of this study.

### Ore Reserve Classification

The Ore Reserve classification is based on Indicated Mineral Resources with a small portion of diluting material included within the estimate due to the nature of the mining method chosen. No Measured Mineral Resources are stated for this deposit. This classification is based on geological confidence as a function of continuity and

<sup>11</sup> Data is reported to two significant figures to reflect appropriate precision in the estimate and this may cause some apparent discrepancies in totals. Mineral Resources are reported inclusive of Ore Reserves.



complexity of geological features; data spacing and distribution and estimation quality parameters including distance to informing samples for block grade estimation.

### **Mining Method**

The preceding Feasibility Study (2010) and current underground cave mining activities at Cadia East support the appropriateness of the selected mining methods as the basis of the forward Ore Reserve estimate. Ongoing geotechnical studies and monitoring utilising experience and data from the current underground operations provide ongoing key direction for stability, design and schedule sequence parameters.

### **Ore Processing**

Processing of the Cadia East underground ore stream will be through Cadia Valley Operations Ore Treatment Plant concentrators 1 & 2. Metal recovery is through gravity and conventional flotation to a Copper/Gold concentrate. This circuit currently processes Cadia East Material with similarly styled material to future ore sources. Cadia East is the sole source of feed for both Concentrator 1 and Concentrator 2. Production of up to 33mtpa is anticipated to be produced through the concentrators. While the scale of processing will position the operation among the world's largest gold mines, the technology associated with the ore processing is industry standard for this style of deposit and is already custom and practice at Cadia Valley Operations.

Recovery assumptions are based on test work completed during the Feasibility Study (2010). These assumptions have been validated as representative by reconciliation of production to date of Cadia East ore through the processing plant. Recoveries for gold are anticipated to range between approximately 60% and 80% and recoveries of copper are expected to range between approximately 80% and 85% through the life of the project.

Driven by the production schedule, grades of molybdenum are predicted to rise to economic levels. At this time a molybdenum plant is planned, subject to Board and regulatory approvals, to be built to recover economic levels of Molybdenum into a specific molybdenum concentrate. Revenue from molybdenum is included in the Ore Reserve estimation process. Fluorine is the key deleterious element for the gold/copper concentrate product with smelter penalties incurred on the basis of fluorine content. Newcrest has installed sufficient auxiliary processing facilities to remove fluorine from the final concentrate.

### **Cut-off Grade**

Cadia East Ore Reserve employs a value based cut-off by determining the NSR value equal to the relevant site operating cost. The NSR calculation takes into account Ore Reserve revenue factors, metallurgical recovery assumptions, transport costs and refining charges and royalty charges. The site operating costs include mining cost, processing cost, relevant site general & administration costs and relevant sustaining capital costs. This cost equates to a break even cut off value of approximately AUD18.50/t milled.

### **Estimation Methodology**

Estimation of the Cadia East Ore Reserve involved standard steps of mine optimisation, mine design, production scheduling and financial modelling. Factors and assumptions have been based on operating experience and performance in Cadia Valley Operations caving operations. The Ore Reserve has been evaluated through a financial model. All operating and capital costs as well as revenue factors stated in this document were included in the financial model. A discount factor of 5% real was applied. This process demonstrated the Cadia East Ore Reserve to have a positive NPV. Sensitivities were conducted on the key input parameters including commodity prices, capital and operating costs, ore grade, discount rate, exchange rate and recovery which confirmed the estimate to be robust.

### **Material Modifying Factors**

All development has mining factors for dilution and recovery applied to accurately represent the expected mined tonnes. PCBC™ software is used for cave production scheduling and estimation of grade for material drawn from the block caves. Due to the approach adopted in the resource model where low grade material is included within all mining zones, no additional mining dilution or recovery factors have been applied to the Ore Reserve estimate. This assumption is supported by the actual reconciliation between resource model and mill performance at the project to date being within an acceptable uncertainty range for the style of mineralisation under consideration.

## JORC Code 2012 Edition – Table 1

### Section 1 Sampling Techniques and Data

Criteria	Commentary
Sampling techniques	Data used for resource estimation is obtained from drill core (PQ, HQ, NQ), which is sampled and assayed on 2.0 metre intervals. Drill core is sampled by cutting the core in half with a diamond saw; this ensures sample representivity. The left hand of the cut core is placed in a calico bag, marked with the appropriate sample number (generated in acQuire) and sent to the laboratory for assaying. The remaining half-core is stored in the original tray on a pallet at the core processing facility for an unspecified period and then moved to storage at the Cadia Core Farm where a GPS location of the trays is stored within Newcrest's computer network.
Drilling techniques	The drilling of the Cadia East deposit is diamond core NQ3 (47.6 mm core diameter), HQ3 (63.5 mm core diameter) and PQ (85 mm core diameter). Triple tube is used to maximise core recovery. Most drill holes are collared as PQ or HQ for accurate and safe drilling. The size is then reduced at the geologist's discretion as the hole advances. All recent drilling is orientated using either the BallMark® orientation system or the ACE electronic (accelerometer) tool.
Drill sample recovery	Core recovery is recorded as a measure of the drill run against the actual core in tray, and stored in an acQuire software database. Triple tube is used to maximise core recovery. There are only minor zones of lost core or poor core recovery. In total, not including the surface core to 20 metres depth, the average recovery equates to 99.5%.
Logging	<p>Majority of diamond drill holes are geologically and geotechnically logged in entirety. The geologist logs the diamond drill core for lithology, alteration, structure, mineralisation and geotechnical parameters. All core is logged and photographed after marking up metre intervals and prior to cutting and sampling. Logging data are entered into the acQuire database via a laptop computer or historically via manual data entry. Logging intervals have been 1 m historically for various drilling programmes from 1993 to 2000. Subsequent to these programmes lithology has been logged with intervals derived from combinations of rock type, alteration, structure, and mineralization.</p> <p>Hyperspectral imaging of selected drill core for type sections have been undertaken to assist in alteration modelling.</p>
Sub-sampling techniques and sample preparation	<p>Core samples are half core. Sample preparation is conducted at the Newcrest Laboratory facility located in Orange and all routine drill core samples are processed on site.</p> <p>Sample preparation for analysis is as follows: Samples are dried in an oven at 105°C for several hours. All of the samples are crushed to 2 mm maximum diameter by a Boyd crusher and split to a maximum weight of 3 kg using a rotary sampler. Each 3 kg sample is pulverised using a Labtechnics LM5 pulverizing mill to specified grind parameters of 90% passing 106 µm. A 250 g sub-sample is collected for analysis and submitted to the assay laboratory. From the 250 g sample, 2 x 30 g samples are created for fire assay and ICP-OES analysis. Pulp replicates and crushed coarse reject duplicates are routinely undertaken (1 in 20 samples). The sampling protocols are adequate to ensure representivity of porphyry copper-gold type mineralisation.</p>
Quality of assay data and laboratory tests	<p>Since June 2010 Newcrest Services Laboratory (Orange, NSW) has been the primary laboratory used for assaying. Prior to this ALS-Chemex (Orange) was used between May 2004 and May 2010. AMDEL (Orange) was used as the primary laboratory for assaying till May 2004. ALSChemex (Orange) is now our second laboratory for check assaying of samples. Check assays have also been completed at Genalysis (Townsville) and ALS-Chemex (Townsville) in the past.</p> <p>Samples are routinely assayed for gold, copper, silver, molybdenum, lead, zinc, sulphur and cyanide-soluble copper. Gold analysis is by fire assay with 30 g charge and Atomic Absorption Spectroscopy (AAS) finish and detection limit of 0.01 ppm (g/t).</p> <p>Newcrest resource development QA/QC procedures have been in place since drilling and sampling programs at Cadia East began. All data received are checked and verified in accordance with the Newcrest Resource Management QA/QC and database management procedures. A monthly report is created to highlight current successes and issues. This report is issued to the laboratory and Newcrest management.</p> <p>The laboratory QA/QC currently involves analysis of the following.</p> <ul style="list-style-type: none"> <li>• Blind reference material (standards) at a rate of one in twenty samples or one per batch, whichever is more.</li> <li>• Random Blank samples (Silurian samples or quartz pebbles sourced from local landscape suppliers).</li> <li>• Duplicates from the Boyd crusher coarse splits.</li> </ul>

Criteria	Commentary
	<ul style="list-style-type: none"> <li>• Duplicates from the LM5 pulveriser pulp.</li> <li>• Checks on grind and crush size from the sample preparation stage.</li> <li>• Replicate submissions of pulps to an alternate laboratory for analysis.</li> <li>• Visits to the laboratory and random laboratory audits to confirm procedures are in place and applied/executed correctly.</li> <li>• Monthly QA/QC meetings with laboratory personnel to discuss results, procedures, issues arising.</li> <li>• Analysis of received sample weights.</li> <li>• External audits of QA/QC.</li> </ul> <p>CVO procedures include:</p> <ul style="list-style-type: none"> <li>• Visits to the laboratory for confirmation of actual procedures applied.</li> <li>• Monthly QA/QC meetings with laboratory personnel.</li> <li>• External audit of QA/QC. Cadia East QA/QC dates from 2000 to 2009.</li> <li>• From 2005, five standards manufactured from Cadia East material and prepared by Ore Research have been used. Three new standards generated and certified in 2015 for gold, copper, silver, molybdenum, and sulphur.</li> <li>• The gold and copper standards performed well with no systematic biases present. Standard performance in general varies between -1 and +1 standard deviation.</li> <li>• Sulphur standards in general exhibited a negative grade bias and underperformed till December 2014. From this point sulphur standards continually exhibit a positive bias.</li> <li>• Duplicates show around 60% of the gold population has a relative paired difference (RPD) below 10%, unlike copper that has in excess of 95% below 10%.</li> <li>• Repeat assays at 1 in 20 from the Boyd crusher are regularly analyzed for gold, copper and sulphur. No issues are observed in the repeat assay analysis.</li> <li>• Pulps from two complete drill holes were re-submitted to a second laboratory. Results confirmed good repeatability between the laboratories with no systematic bias apparent.</li> </ul>
Verification of sampling and assaying	<p>As Cadia East is a bulk underground producing mine with relatively low grade variability (copper-gold porphyry), verification of significant intersections by independent/alternative personnel nor use of twinned holes is deemed necessary.</p> <p>All data and interpretative inputs to Mineral Resource estimates are checked and verified in accordance with a range of Newcrest standard operating procedures. Diamond drill core samples are processed in-house using a dedicated core processing facility, sample preparation and analytical laboratory. All resource logging data is automatically uploaded to the resource database via logging notebook computers. Newcrest employs a centralised resource drill hole database team to check, verify and validate new data and to ensure the integrity of the total resource database.</p> <p>Day-to-day management of the resource data is undertaken by the database administrator on site using the acQuire database system. Prior to resource estimation a centralised resource team conducts further data checks to ensure data integrity prior to estimation. The 2012 resource model flagged issues with Ag assays and detection limits for a range of drill holes. The 2016 resource model addressed these issues by validating the database against the original hard copy results. This saw the removal of negative values, correction of values below detection limit and correction of the raw assay values in the database to reflect that of the original hard copy. In addition, a campaign of re-assaying of stored pulps for silver was undertaken to bring the precision levels for silver assays to industry standard for Mineral Resource and Ore Reserve reporting.</p> <p>Regular internal and external reviews of all geological and Mineral Resource estimation processes are conducted to check the quality and integrity of these procedures. No adjustments have been made to assay data.</p>
Location of data points	<p>Majority of drill hole collars are recorded by mine surveyors and loaded by the database administrator, validated by supervising geologist. Drill holes that require high accuracy are set up by mine surveyors before commencement of drilling.</p> <p>Drill holes are normally surveyed using a combination of electronic and gyroscope survey tools. Currently, single shot surveys using the Ranger EMS system are completed at 30 m intervals downhole, unless an increase in downhole monitoring is required. This system provides a rudimentary control on the drill hole path. Multi Shot EMS Surveys using the Reflex system are conducted at end of hole or during a drill bit or core diameter change as the drill hole is drilled.</p> <p>Where drilling angles have permitted, recent holes have been gyroscope surveyed as close to the end of hole as possible. Where Gyro surveys were not taken due to poor access or unavailability, the Multishot surveys are checked, edited if required and smoothed with a 5 point smoothing formula.</p>

Criteria	Commentary
	<p>The Cadia East grid and coordinate system is consistent with all Cadia Valley Operations. The grid is aligned at 30 degrees to the east of true north and at 19 degrees to the east of magnetic north.</p> <p>Surface topography across the Cadia East area is based on a combination of theodolite surveyed ground pick-ups and air photogrammetry. Photogrammetry is levelled by ground surveyed points. The data are considered accurate to within 500 mm.</p>
Data spacing and distribution	<p>As Cadia East is a producing orebody and a classified Mineral Resource, data spacing for reporting of Exploration Results is not applicable.</p> <p>The data spacing varies from 20 m x 20 m to 200 m x 200 m. In current caving operations the drill hole spacing is 60 m x 60 m. Cadia East is a copper-gold porphyry deposit mined on a bulk underground scale with grade distributions characterised by low nugget effects and long variogram ranges. As such the data spacing is sufficient to establish the degree of geological and grade continuity appropriate for Indicated Mineral Resource and Probable Ore Reserve classification.</p> <p>Drill hole data are 10 m downhole composited for geological interpretation and grade estimation. No other type of samples (e.g. grabs) nor compositing have been applied.</p>
Orientation of data in relation to geological structure	<p>Gold and copper mineralisation at Cadia East is predominately hosted in a sheeted quartz vein system that strikes East-West and dips 75° towards the north. Majority of the drill programs conducted prior to 2012 are surface drill holes and drilled orthogonal to the vein system orientation (North to South or South to North).</p> <p>Drill holes since 2012 are underground sub-vertical primarily for preconditioning of Panel Cave 1 Stage 1 and Panel Cave 2 Stage 1. These holes are assayed and used in resource estimates. In addition, horizontal infill holes are drilled occasionally from underground to map major structures and provide grade confidence for production reliability.</p> <p>There does not appear to be any bias between drilling orientation and assay results.</p>
Sample security	<p>Samples are transported from drill site to the core shed by the drilling contractor. On completion of cutting the core, the samples are dispatched by courier to the Newcrest Laboratory in Orange. Sample dispatches are reconciled against Laboratory samples received and discrepancies reconciled by geology staff.</p>
Audits or reviews	<p>Independent external reviews of sampling techniques have been undertaken in the past with no fatal flaws identified.</p>

## Section 2 Reporting of Exploration Results

Criteria	Commentary
Mineral tenement and land tenure status	<p>The Cadia East copper-gold deposit is located approximately 20 km south-west of Orange in central NSW.</p> <p>Cadia East is situated within ML1405, granted 5<sup>th</sup> Oct 1996 and covering 3116 ha. Leases are wholly owned by Newcrest. Infrastructure relating to mining of the deposit is also contained within ML1481, granted 8th March 2001 covering 584.1 ha., ML1689, granted 11 Sept 2012 covering 153.6 ha., and ML1690, granted 10 Sept 2013 covering 70.4 ha</p>
Exploration done by other parties	<p>Gold was discovered in the Cadia Valley in 1851. Little Cadia was discovered and excavated a short distance by Samuel Stutchbury (Government Geologist) in May 1851. Mining occurred by the Canobolas Copper Mining Company from 1856 to 1861. Activity commenced in 1856 at the Cadiangullong Mine. The Scottish Australian Mining Company leased the land in July 1861. Mining commenced in October 1861. The erection of a smelter established a focus for the mine and a village arose for the mine and smelter workers. During the period from the 1870's to the turn of the century, the local population was largely sustained by small scale gold mining and brief periods of copper mining but never on a scale similar to the 1860s.</p> <p>In 1899 the Scottish Australian Mining Company turned to possible exploitation of the iron ores at Big Cadia. The lease at Big Cadia was confirmed in November 1907, but required the construction of a branch rail line from Spring Hill to Cadia. In February 1908, Carne reported that the principal focus of the Syndicate was to exploit the secondary copper ore under the Big Cadia (Iron Duke) iron lode. Other lodes in the area were being mined for sulphide ore for fluxing. Mining peaked during 1913 but closed down in 1914 when WW1 broke out. Intermittent mining was carried out until 1917 when the mine was permanently closed.</p> <p>Modern era exploration at Cadia was prompted by its proximity to the Cadia mineralised district, and in particular by the recognition of magnetic features, which can easily be interpreted as westward extensions</p>

Criteria	Commentary
	<p>or repetitions of the magnetic anomaly over the magnetite skarn at Big Cadia. In 1985, Homestake Australia drilled two percussion holes to a depth of 95 metres to test a magnetic anomaly with poor results.</p> <p>The Cadia area was acquired by Newcrest Mining in 1991. After initially exploring the Big Cadia (Iron Duke) skarn, the focus changed to Cadia Hill. The recognition of the porphyry-style system, partially obscured by post mineral Silurian sediment cover, resulted in a core drilling programme with the discovery hole being drilled in 1992. At the same time an extensive halo of low grade mineralisation was delineated to the northwest of the deposit confirming the northwest – southeast alignment of mineralisation.</p>
Geology	<p>The Cadia gold copper deposits are hosted by a late Ordovician to early Silurian shoshonitic volcano-intrusive complex which forms part of the larger zone of arc-related volcanic and associated intrusive rocks in the eastern Lachlan Fold Belt. Mineralisation at Cadia is hosted by the mid to late Ordovician Forest Reefs Volcanics and the underlying Weemalla Formation and by the late Ordovician – early Silurian Cadia Intrusive Complex (CIC). The CIC is a multi-phase alkalic intrusive suite petrographically ranging from gabbro to syenite with volumetric dominance by monzonite and diorite. All mineralisation in the CVO area is thought to be related to igneous and hydrothermal fluids derived from this complex of intrusive rocks. Post-mineral cover comprises Silurian Cadia Coach Shale and a relatively thin capping of Tertiary basalts and gravels in some areas. Recognised structural controls include the regional northwest corridor – dilation zone thought to control the emplacement of the CIC and post-mineral faulting in two dominant orientations: northwest striking faults including the PC40 fault through the Big Cadia skarn deposit and the North Fault at Ridgway; and north-south faults typically west over east thrust systems including Cadiangullong and Gibb Fault.</p> <p>The Cadia East deposit is hosted within the Forest Reef Volcanics (FRV) and porphyry intrusions. A north-east trending mass of narrow sheet like dykes of monzonitic to dioritic compositions intrude the lower parts of the FRV at Cadia East. These intrusives are largely restricted to the eastern half of the deposit although some narrow dykes and isolated bodies of monzonite have been recognised in the western end. At the upper western end of the deposit immediately underneath the Gibb Fault, isolated narrow (10 m) intersections have been identified with south dipping mineralised quartz veining. These occurrences are interpreted to be the Cadia Hill Monzonite.</p> <p>Mineralisation at Cadia East can be divided into two broad overlapping zones: an upper, copper rich disseminated zone and a deeper gold-rich zone associated with sheeted veins. The upper zone forms a relatively small cap to the overall mineralised envelope and has a core of disseminated chalcopyrite, capped by chalcopyrite-pyrite mineralisation. The upper zone mineralisation is stratigraphically controlled within the volcanoclastic unit. This zone is transitional to the deeper vein style mineralization. The deeper zone is localised around a core of steeply dipping sheeted quartz-calcite-bornite-chalcopyrite-molybdenite, with the highest gold grades associated with the bornite-bearing veins. Copper and molybdenite form a mineralised blanket above and to the east of the higher grade gold envelope.</p>
Drill hole Information	<p>No exploration results are reported in this release, therefore this section is not relevant.</p> <p>The treatment of drill data has been articulated in Section 1.</p>
Data aggregation methods	<p>No exploration results are reported in this release, therefore this section is not relevant.</p> <p>Drill hole data are downhole composited to 10 m and used in the Mineral Resource estimate in entirety.</p>
Relationship between mineralisation widths and intercept lengths	<p>No exploration results are reported in this release, therefore this section is not relevant.</p> <p>Drill hole data are downhole composited to 10 m and used in the Mineral Resource estimate in entirety.</p>
Diagrams	No exploration results are reported in this release, therefore this section is not relevant.
Balanced reporting	No exploration results are reported in this release, therefore this section is not relevant.
Other substantive exploration data	No exploration results are reported in this release, therefore this section is not relevant.
Further work	No exploration results are reported in this release, therefore this section is not relevant.



### Section 3 Estimation and Reporting of Mineral Resources

Criteria	Commentary
Database integrity	Data are stored in an SQL acquire database. Assay and geological data are electronically loaded into acQuire and the database is replicated in Newcrest's centralised database system in Melbourne. Regular reviews of data quality are conducted by site and corporate teams prior to resource estimation, in addition to external reviews.
Site visits	The Competent Person for the Mineral Resource estimate is an employee of Newcrest's Melbourne corporate Resource Management group and visits site on a regular basis.
Geological interpretation	<p>The geology model for the Cadia East deposit includes lithology and major structural faults. The structural interpretation was updated from the 2012 model for the pyrite faults, Ca-La Crunch faults and Carbonate faults across the Cadia East deposit. Modelling of the fault and lithological boundaries/planes comprised of data obtained from drill core and underground mapping.</p> <p>Alteration was also interpreted in anticipation of being used as alternative estimation domains, however, statistical testing did not give any convincing evidence of alteration being a major control on estimation domains. Similarly, lithology as estimation domains also turned out to be unconvincing.</p> <p>The major faults were used as estimation domains, with semi-soft boundaries implemented where geostatistical testing warranted.</p> <p>The factor most influencing grade continuity is that Cadia East is a porphyry copper-gold mineralisation exhibiting properties of the diffusion model, which adds high confidence in the geological interpretation.</p>
Dimensions	The Cadia East deposit occupies a mineralised zone 2.3 km in a strike length (East – West), 1.1 km in width and 1.8 km in a vertical extent. The deposit does not outcrop as it is overlain by between 80 and 200 metres of post mineralisation sandstones and shales.
Estimation and modelling techniques	<p>Geostatistical testing of the gold and copper grade distributions showed that the Cadia East mineralization exhibits classical diffusion properties (where the grades transgress from the high-grade core to lower-grade peripheries in a systematic and controlled manner).</p> <p>Variogram models for copper and gold also exhibit low nuggets and long ranges. The coefficient of variation of copper and gold are relatively low at around 1 - 1.5 indicating that grade estimation will not be problematic.</p> <p>Cadia East is a bulk mining (block cave) operation, and the SMU is basically the whole panel footprint divided vertically into yearly draw increments. However, individual draw point dimensions are taken into account for local estimation precision (the mineralisation style allows so).</p> <p>Ordinary Kriging (OK) of copper, gold, sulphur, silver, molybdenum and fluorine are undertaken directly into 20 m x 20 m x 20 m blocks. There are no assumptions made regarding recovery of by-products.</p> <p>Prior to 2012 estimation domains were defined based on grade shells. Domain boundaries were treated as hard contacts. The 2012 and 2016 Resource Models were domained utilising structural surfaces for gold, copper, silver, molybdenum and sulphur. Semi-soft boundaries (20 m) were used between the Ca-La Crunch faults while the lower porphyry surface was treated as a hard boundary. The 0.1% copper grade shell was used to constrain estimation as a global domain. A review of the 2012 fluorine domains was conducted as per SRK recommendation and the fluorine estimation domains for the 2016 resource model utilises the Ca-La Nth structure, the lower porphyry surface and the combined basalt lithology. Fluorine is a potentially deleterious element.</p> <p>Kriging Neighbourhood Analysis is used to define the search neighbourhood for all elements. All elements are estimated independently of each other regardless of the degree of correlation, as each element has its own grade continuity characteristics which are not necessarily reflected in the correlations.</p> <p>Copper and gold grades are not capped as Monte Carlo based Metal-at-Risk analysis indicates that all the 10 m composites are representative of the mineralisation style.</p> <p>The resource model is validated via visual, geostatistical and production reconciliation methods.</p>
Moisture	All tonnages are calculated and reported on a dry tonnes basis.

Criteria	Commentary
Cut-off parameters	<p>A value algorithm is used to calculate the net smelter return (NSR) for each block using revenue and cost assumptions as of 31 December 2017.</p> <p>The NSR calculation takes into account Mineral Resource revenue factors, metallurgical recovery assumptions, transport costs and refining charges and royalty charges.</p> <p>The site operating costs include mining cost, processing cost, relevant site general &amp; administration costs and relevant sustaining capital costs. This cost equates to a break even cut off value of approximately AUD18.50/t milled.</p> <p>Blocks above AUD18.50/t are eligible to qualify for Mineral Resource reporting.</p>
Mining factors or assumptions	<p>As Cadia East is a bulk mining operation employing panel caving, the Mineral Resource reporting does not allow a block by block classification.</p> <p>Instead a shell is generated using AUD18.50/t as the value cut-off and the contents of the shell are reported in its entirety as the Mineral Resource (provided they also classify Indicated and/or Inferred).</p>
Metallurgical factors or assumptions	<p>Metallurgical amenability is derived from current operating Cadia Plant performance. Metallurgical factors have been incorporated into the value algorithm which constrains the Mineral Resource classification. These include recovery formulas for gold, copper, silver and molybdenum.</p>
Environmental factors or assumptions	<p>No environmental factors were deemed necessary for the resource estimate.</p>
Bulk Density	<p>All bulk density measurements are carried out in accordance with site standard procedures for Specific Gravity. Intervals for bulk density determination are selected according to lithology/ alteration/mineralisation type to best represent certain intervals as defined by the geologist. The measurements are performed on site by geologists or geological assistants as part of the logging process. Measurements are generally taken at 20 metre to 50 metre intervals down hole.</p>
Classification	<p>The Mineral Resource estimate has been classified as Indicated. Criteria used to classify the resource estimate are summarised below:</p> <ul style="list-style-type: none"> <li>• Constrained inside a AUD18.50/t value shell; <ul style="list-style-type: none"> <li>○ Indicated resources are constrained within the value shell.</li> <li>○ Value algorithm incorporates mining, processing, transport and administration costs. Metallurgical recovery formulas are applied to all metals.</li> </ul> </li> <li>• Grade continuity and drill hole density; <ul style="list-style-type: none"> <li>○ Classification is based on Extension Variance methods. These methods are consistent with classification approaches used at other Newcrest and JV sites (for similar mineralisation styles). Based on this work Indicated is defined within weighted average distances <math>\leq 100</math> m and/or has a gold slope of regression value of <math>&gt;0.75</math>. In locations where the slope of regression criteria was fulfilled, yet the average distance exceeded 120 m, the blocks were removed from the Indicated classification. The Cadia East Resource Model doesn't include an Inferred Resource.</li> </ul> </li> <li>• Geological and mineralisation continuity; <ul style="list-style-type: none"> <li>○ Mineralisation at Cadia East is a very large, diffuse, low to moderate grade porphyry related gold-copper-silver-molybdenum deposit. Aside from the Gibb Fault, structural dismemberment is negligible and does not affect continuity.</li> </ul> </li> </ul> <p>The resource classification methodology has been tested with geostatistical evaluations, and appropriately confirms the Competent Person's view of the deposit.</p>
Audits or reviews	<p>The current Mineral Resource estimate has been externally reviewed by SRK in December 2016 and there are no issues or concerns with the Mineral Resource inputs, process and execution. SRK conclude that the Mineral Resource estimate is suitable for reporting in accordance with the requirements of the JORC Code (2012).</p>
Discussion of relative accuracy/ confidence	<p>For an Indicated Resource it is considered reasonable for the relative uncertainty to be +/- 15% in tonnage, grade and metal (exclusive of each other, i.e., each variable has to satisfy the criteria) for an annual production volume at a 90% confidence level. Geostatistical evaluations indicate that based on the annual processing throughput this criteria is satisfied. Relative uncertainties and confidence level estimates are considered for both gold and copper.</p> <p>Detailed monthly mine reconciliations have been maintained since production commenced. The mine reconciliations confirm that the in situ tonnage, grade and metal variances are well within the Indicated Resource relative uncertainty band.</p>

Criteria	Commentary
	Mine to mill reconciliation for FY18 was 101% tonnes, 101% gold metal and 111% copper metal.

## Section 4 Estimation and Reporting of Ore Reserves

Criteria	Commentary										
Mineral Resource Estimate for conversion to Ore Reserves	<p>Cadia East is a large low to moderate grade, porphyry related gold and copper deposit that is located immediately east of Cadia Hill and separated by a major thrust fault (the Gibb Fault). Known mineralisation extends approximately 2.3 kilometres east-west, 1.1 kilometres north-south and 1.8 kilometres vertically. The deposit does not outcrop as it is overlain by between 80 and 200 metres of post mineralisation sandstones and shales. The mineralisation can be divided into two broad overlapping zones; an upper, copper-rich, disseminated zone and, a deeper gold-rich zone associated with sheeted veins.</p> <p>The Mineral Resource grades were estimated with Ordinary Kriging of 10 m composites for six elements: gold, copper, silver, molybdenum, sulphur, and fluorine. The grades were estimated into directly into 20 m x 20 m x 20 m blocks.</p> <p>The Mineral Resource is classified based on geological confidence as a function of grade continuity and drill hole density, as well as geological and mineralisation continuity. Indicated Mineral Resources were constrained within a 'value' shell representing the limit to eventual economic extraction.</p> <p>The reported Cadia East Mineral Resources are inclusive of Ore Reserves.</p>										
Site Visits	The Competent Person for the Ore Reserve estimate is an employee of Newcrest Mining Limited and is based on site.										
Study Status	<p>A Pre-Feasibility Study was completed in 2018 to provide supporting basis for the Cadia East Ore Reserve estimate. Cadia East Panel Cave is an operating mine for the Cadia Valley Operations (CVO) province and the Pre-Feasibility Study incorporates learnings from operational execution to date. The Pre-Feasibility Study shows that the mine plan is technically achievable and economically viable taking into consideration all material Modifying Factors.</p> <p>Work is progressing on a mining Feasibility Study for the PC2-3 mining block and any adjustment to the Ore Reserves statement will be made following the completion of this study.</p>										
Cut-off Parameters	<p>The Cadia East Ore Reserve employs a value based cut-off determined from the Net Smelter Return (NSR) value equal to the relevant site operating cost.</p> <p>The NSR calculation takes into account reserve revenue factors, metallurgical recovery assumptions, transport costs, refining charges, and royalty charges.</p> <p>The site operating costs include mining cost, processing cost, relevant site general &amp; administration costs and relevant sustaining capital costs. This cost equates to a break even cut off value of approximately AUD18.50/t milled.</p>										
Mining factors or assumptions	<p>Estimation of the Cadia East Ore Reserve involved standard steps of mine optimisation, mine design, production scheduling and financial modelling. Factors and assumptions have been based on operating experience and performance in CVO caving operations. The basis of the analysis is considered at Pre-Feasibility Study level or higher.</p> <p>The preceding Feasibility Study (2010) and current underground cave mining activities at Cadia East support the appropriateness of the selected mining methods as the basis of the forward Ore Reserve estimate.</p> <p>Ongoing geotechnical studies and monitoring utilising experience and data from the current underground operations provide ongoing key direction for stability, design and schedule sequence parameters.</p> <table border="1"> <thead> <tr> <th>Mine Design Parameter</th><th>Value</th></tr> </thead> <tbody> <tr> <td>Undercutting Strategy</td><td>Advanced Undercut</td></tr> <tr> <td>Undercut Design</td><td>W Cut with Apex level</td></tr> <tr> <td>Extraction Level Layout</td><td>El Teniente</td></tr> <tr> <td>Extraction Spacing</td><td>32m x 20m</td></tr> </tbody> </table>	Mine Design Parameter	Value	Undercutting Strategy	Advanced Undercut	Undercut Design	W Cut with Apex level	Extraction Level Layout	El Teniente	Extraction Spacing	32m x 20m
Mine Design Parameter	Value										
Undercutting Strategy	Advanced Undercut										
Undercut Design	W Cut with Apex level										
Extraction Level Layout	El Teniente										
Extraction Spacing	32m x 20m										

Criteria	Commentary		
	<table border="1" data-bbox="384 188 1374 488"> <tr> <td data-bbox="384 188 879 488">Draw Column Height</td><td data-bbox="879 188 1374 488"> Maximum  PC1 – 1200 m  PC2 – 1400 m  PC2-3 – 1400 m  PC1-2 – 1170 m  PC1-4 – 1120 m  PC5001 – 850 m  PC3-1 – 460 m </td></tr> </table> <p data-bbox="371 535 874 566">The following Modifying Factors have been applied:</p> <ul data-bbox="421 584 1430 705" style="list-style-type: none"> <li>• All development has mining factors for dilution and recovery applied to accurately represent the expected mined tonnes; and</li> <li>• PCBC™ software is used for cave production scheduling and estimation of grade for material drawn from the block caves.</li> </ul> <p data-bbox="371 723 1430 844">Due to the approach adopted in the resource model where low grade material is included within all mining zones, no additional mining dilution or recovery factors have been applied to the Ore Reserve estimate. This assumption is supported by the actual reconciliation between resource model and mill performance at the project to date being within an acceptable uncertainty range for the style of mineralisation under consideration.</p> <p data-bbox="371 862 1430 1043">The resource model is comprised of Indicated Mineral Resources only. Mine plans are based on the extraction of caving blocks solely delineated on the basis of these Indicated Mineral Resources. Some unclassified material has been included within the Probable Ore Reserve as mined dilution. This is a relatively small proportion (6% of the gold metal and 5% of the copper metal) of the tabled Ore Reserve and does not have a material impact upon the estimate. Even without consideration of the metal contained in the dilution incorporated in the Ore Reserve, the economic analysis indicates an economic Probable Ore Reserve.</p> <p data-bbox="371 1061 1430 1122">The remaining mining zones for Cadia East are brownfields projects and will require the following mining infrastructure to support the caves:</p> <ul data-bbox="421 1140 1015 1270" style="list-style-type: none"> <li>• Ventilation fans and refrigeration equipment;</li> <li>• Materials handling systems extensions;</li> <li>• Additional crushing and conveying equipment; and</li> <li>• Underground workshop, service and personnel facilities.</li> </ul>	Draw Column Height	Maximum PC1 – 1200 m PC2 – 1400 m PC2-3 – 1400 m PC1-2 – 1170 m PC1-4 – 1120 m PC5001 – 850 m PC3-1 – 460 m
Draw Column Height	Maximum PC1 – 1200 m PC2 – 1400 m PC2-3 – 1400 m PC1-2 – 1170 m PC1-4 – 1120 m PC5001 – 850 m PC3-1 – 460 m		
Metallurgical factors or assumptions	<p data-bbox="371 1290 1430 1529">Processing of the Cadia East underground ore stream will be through Cadia Valley Operations Ore Treatment Plant concentrators 1 &amp; 2. Metal recovery is through gravity and conventional flotation to a copper/gold concentrate. This circuit currently processes Cadia East Material with a similarly styled material to future ore sources. Cadia East is the sole source of feed for both Concentrator 1 and Concentrator 2. Production of up to 33mtpa is anticipated to be produced through the concentrators. While the scale of processing will position the operation among the world's largest gold mines, the technology associated with the ore processing is industry standard for this style of deposit and is already custom and practice at CVO with many years of operational experience.</p> <p data-bbox="371 1547 1430 1700">Recovery assumptions are based on test work completed during the Feasibility Study (2010). These assumptions have been validated as representative by reconciliation of production to date of Cadia East ore through the processing plant. Recoveries for gold are anticipated to range between approximately 60% and 80% and recoveries of copper are expected to range between approximately 80% and 85% through the life of the project.</p> <p data-bbox="371 1718 1430 1807">Driven by the production schedule, grades of molybdenum are predicted to rise to economic levels. At this time a molybdenum plant is planned to be built to recover economic levels of molybdenum into a specific molybdenum concentrate. Revenue from molybdenum is included in the Ore Reserve estimation process.</p> <p data-bbox="371 1825 1430 1915">Fluorine is the key deleterious element for the gold/copper concentrate product with smelter penalties incurred on the basis of fluorine content. Newcrest has installed sufficient auxiliary processing facilities to remove fluorine from the final concentrate.</p>		
Environmental	<p data-bbox="371 1935 1430 2024">Cadia presently holds a Project Approval for the Cadia East Project under both NSW and Commonwealth legislation until 30 June 2031. Minor amounts of waste will be generated from the Cadia East mine and these will be stored within existing waste storage facilities.</p> <p data-bbox="371 2042 1430 2096">Modifications to this Project Approval under the NSW Environmental Planning and Assessment Act 1979 (EP&amp;A Act) will be required over the life of the life of the Reserves period with the storage of tailings a key</p>		

Criteria	Commentary
	consideration. Modifications to store tailings in the Cadia Hill Open Pit are currently underway. Studies to determine the long term tailings storage beyond this facility are ongoing and will be submitted for modification as required over the life of the asset.
Infrastructure	<p>A majority of the surface infrastructure is now complete for the Cadia East mine. Additional surface infrastructure planned for the future includes:</p> <ul style="list-style-type: none"> <li>• Additional circuit crushing &amp; grinding capacity; and</li> <li>• Molybdenum plant.</li> </ul> <p>Underground infrastructure will continue to operate over the mine life as additional mining blocks are established to maintain the mill rate. Both surface and additional underground infrastructure requirements are dictated by the production schedule.</p> <p>Provision has been made in the Ore Reserves estimate for future capital expenditure requirements relating to infrastructure during the life of the mine based on most recent estimates.</p>
Costs	<p>Capital and operating costs have been determined as part of the Pre-Feasibility Study based on the current operating cost base modified for changing activity levels and reasonable cost base reductions over the life of the mine. The operating costs include the mining cost, processing cost, relevant site general and administration costs and relevant sustaining capital costs. Capital costs also include processing upgrade and mine development costs along with associated infrastructure and project establishment costs. These provisions have been allowed for during the life of the mine based on most recent Pre-Feasibility plan estimates. Ore Reserve cost estimates have been reviewed as part of the study execution, are reviewed annually and are considered to be to a Pre-Feasibility Study level.</p> <p>Long term metal prices and exchange rate assumptions adopted in the June 2018 Ore Reserve estimation process are USD\$1,200/oz for gold and USD\$3.00/lb for copper at a USD:AUD exchange rate of 0.80. These assumptions are consistent with Newcrest metal price guidelines for June 2018 Ore Reserve reporting. No cost impact is expected from deleterious elements</p> <p>Transport and refining charges have been developed from first principles consistent with the application and input assumptions for these costs used by the current operation.</p> <p>Royalties are calculated as 4% of block revenue less all off site realisation costs (TCRC's), less ore treatments costs and less one third of site general and admin cost.</p>
Revenue factors	<p>Long term metal prices and exchange rate assumptions adopted in the June 2018 Ore Reserve estimation process are USD\$1,200/oz for gold and USD\$3.00/lb for copper at a USD:AUD exchange rate of 0.80. These assumptions are consistent with Newcrest metal price guideline for the June 2018 Ore Reserve reporting.</p> <p>The NSR calculation takes into account reserve revenue factors, metallurgical recovery assumptions, transport costs and refining charges and royalty charges.</p>
Market assessment	<p>Newcrest is a price taker and gold is sold on the open market and subject to price fluctuations. Supply and demand for gold from CVO is not a constraint in the estimation of the Ore Reserve.</p> <p>CVO has sold copper concentrate for its operational life into the world concentrate markets and this is assumed to continue under conditions similar to Newcrest's current market agreements over the life of the operational plan.</p> <p>Concentrate volume forecasts were derived from the Pre-Feasibility Study production schedule.</p>
Economic	<p>The Ore Reserve has been evaluated through a financial model. All operating and capital costs as well as revenue factors stated in this document were included in the financial model. A discount factor of 5% real was applied. This process demonstrated the Cadia East Ore Reserve to have a positive NPV.</p> <p>Sensitivities were conducted on the key input parameters including commodity prices, capital and operating costs, ore grade, discount rate, exchange rate and recovery which confirmed the estimate to be robust. The NPV range has not been provided as it is commercially sensitive.</p>
Social	<p>The Cadia East project builds on the agreements and social licence for operation as developed for Ridgeway SLC &amp; Block Cave and the Cadia Hill open pit as part of the Cadia Valley Operations permits and licencing. Socio-economic evaluations of the Cadia Valley Operations (Cadia or CVO) incorporating community and stakeholder surveys and engagement activities and regional economic impact assessments, has shown positive impacts on employment, income, business turnover and Gross Regional Product (GRP). Cadia regularly consults and this continued engagement with the community and developing and maintaining one-on-one relationships with key stakeholders, will be vital to the maintenance of a social licence to operate.</p>



Criteria	Commentary
Other	<p>Cadia Holdings Pty Ltd (CHPL) holds four current mining leases covering CVO. CVO has a number of legal and marketing arrangements related to its ongoing operational requirements. None of these arrangements are likely to materially impact upon the Cadia East Ore Reserve estimate. CVO are in material compliance with all legal and regulatory requirements.</p> <p>The Cadia East deposit is located in an area which has been seismically active both prior to and subsequent to mining by CVO. These events can produce seismic loading at the site and this risk is taken into account in the design of the infrastructure.</p> <p>CVO has recently experienced a failure of one of its tailings storage facilities. Investigations into the cause of this failure are ongoing. Studies to determine the long term tailings storage are ongoing at this time and the findings of the investigation will be used in the design of future facilities. This element of the plan represents a risk to the Ore Reserves if a viable tailings storage solution cannot be found.</p>
Classification	<p>The Ore Reserve classification is based on Indicated Mineral Resources only. No Measured Mineral Resources are stated for this deposit. This classification is based on geological confidence as a function of continuity and complexity of geological features; data spacing and distribution and estimation quality parameters including distance to informing samples for block grade estimation.</p> <p>Unclassified material has been included within the Probable Ore Reserve as mined dilution. This is a relatively small proportion (1.3 Moz gold or 6% &amp; 0.2Mt copper or 5%) of the tabled Ore Reserve. Even without consideration of unclassified material in the mining inventory, the proportion of indicated material would still conclusively deliver a Probable Ore Reserve.</p> <p>It is the Competent Person's view that the classifications used for the Ore Reserves are appropriate.</p>
Audits or reviews	<p>SRK Consulting (Australasia) Pty Ltd (SRK) was commissioned to conduct an independent review of the mining section of the Pre-Feasibility Study, which included the Ore Reserve estimation processes and results.</p> <p>SRK concluded that the Ore Reserve estimates had been prepared appropriately and has been appropriately classified as Probable Ore Reserve. SRK identified that final cave volumes have the potential to be a material issue over the life of the Ore Reserve however current estimates are appropriate at this time.</p>
Discussion of relative accuracy/ confidence	<p>The accuracy of the estimates within this Ore Reserve is mostly determined by the order of accuracy associated with the Mineral Resource model, the geotechnical input and the cost factors used.</p> <p>The Competent Person views the Cadia East Ore Reserve a reasonable assessment of the global estimate. Some risk and opportunity is associated with the Ore Reserve process due to the prolonged operating life of the mine. Key opportunity and risk areas are associated with:</p> <ul style="list-style-type: none"> <li>• Cost base assumptions rely on current technology and macroeconomic factors. Changes to these assumptions will have an impact on the Ore Reserve estimate.</li> <li>• The Modifying Factors (key inputs) for Ore Reserve estimation rely upon the geology and geotechnical data inherent to the orebody. This data, such as geological structures and rock mass properties, is to the appropriate definition and have been applied within Pre Feasibility Study, however further orebody data is required to confirm the geological and geotechnical information and is planned as part of the Forward Works Programme.</li> </ul> <p>Overall reconciled performance of the Cadia East mine models for 2018 is 101% of tonnes, 101% of gold metal &amp; 111% of copper metal when reconciled to mill production.</p>

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## Forward Looking Statements

This release includes forward looking statements. Forward looking statements can generally be identified by the use of words such as “may”, “will”, “expect”, “intend”, “plan”, “estimate”, “anticipate”, “continue”, “outlook” and “guidance”, or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs. The Company continues to distinguish between outlook and guidance. Guidance statements relate to the current financial year. Outlook statements relate to years subsequent to the current financial year.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the Company’s actual results, performance and achievements to differ materially from statements in this presentation. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licences and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the Company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward looking statements are based on the Company’s good faith assumptions as to the financial, market, regulatory and other relevant environments that will exist and affect the Company’s business and operations in the future. The Company does not give any assurance that the assumptions will prove to be correct. There may be other factors that could cause actual results or events not to be as anticipated, and many events are beyond the reasonable control of the Company. Readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in this release speak only at the date of issue. Except as required by applicable laws or regulations, the Company does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in assumptions on which any such statement is based.

## Non-IFRS Financial Information

Newcrest results are reported under International Financial Reporting Standards (IFRS) including EBIT and EBITDA. This release also includes non-IFRS information including Underlying profit (profit after tax before significant items attributable to owners of the parent company), All-In Sustaining Cost (determined in accordance with the World Gold Council Guidance Note on Non-GAAP Metrics released June 2013), AISC Margin (realised gold price less AISC per ounce sold (where expressed as USD), or realised gold price less AISC per ounce sold divided by realised gold price (where expressed as a %), Interest Coverage Ratio (EBITDA/Interest payable for the relevant period), Free cash flow (cash flow from operating activities less cash flow related to investing activities), EBITDA margin (EBITDA expressed as a percentage of revenue) and EBIT margin (EBIT expressed as a percentage of revenue). These measures are used internally by Management to assess the performance of the business and make decisions on the allocation of resources and are included in this release to provide greater understanding of the underlying performance of Newcrest’s operations. The non-IFRS information has not been subject to audit or review by Newcrest’s external auditor and should be used in addition to IFRS information.

## Ore Reserves and Mineral Resources Reporting Requirements

As an Australian Company with securities listed on the Australian Securities Exchange (ASX), Newcrest is subject to Australian disclosure requirements and standards, including the requirements of the Corporations Act 2001 and the ASX. Investors should note that it is a requirement of the ASX listing rules that the reporting of ore reserves and mineral resources in Australia comply with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) and that Newcrest’s ore reserve and mineral resource estimates comply with the JORC Code.

## Competent Person's Statement

The information in this report that relates to Cadia Ore Reserves is based on information compiled by the Competent Person, Mr Geoffrey Newcombe, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Geoffrey Newcombe, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest's executive equity long term incentive plan, details of which are included in Newcrest's 2019 Remuneration Report. Replacement of Ore Reserves and Mineral Resources depletion is one of the performance measures under recent long term incentive plans. Mr Geoffrey Newcombe has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Geoffrey Newcombe consents to the inclusion of material of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Cadia Mineral Resources is based on information compiled by the Competent Person, Mr Vik Singh, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Vik Singh, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest's executive equity long term incentive plan, details of which are included in Newcrest's 2019 Remuneration Report. Replacement of Ore Reserves and Mineral Resources depletion is one of the performance measures under recent long term incentive plans. Mr Vik Singh has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Vik Singh consents to the inclusion of material of the matters based on his information in the form and context in which it appears.