



Resolute

# ASX Announcement

13 July 2018

## Bibiani Update

### Environmental Permit Received

### Feasibility Study Update confirms robust economics Operational readiness phase to commence in FY19

#### Highlights

- Environmental Permit Authorisation received to recommission Bibiani Underground mine and processing plant
- Feasibility Study Update completed which demonstrates potential for a long life, high margin project
- Mineral Resource of 2.5 million ounces of gold at 3.6 grams per tonne
- Potential for production of ~100,000 ounces of gold annually over a ten year life of mine
- Life of mine All-In Sustaining Costs estimated to be between US\$700 per ounce to US\$800 per ounce
- Start-up capital requirement of ~US\$75 million with total project capital of ~US\$115 million
- Operational readiness planning to commence during current financial year
- Final Investment Decision expected post completion of Resolute's Syama Underground mine in Mali

Resolute Mining Limited (ASX:RSG) (Resolute or the Company) is pleased to advise that the Company has received Environmental Permit Authorisation (EPA or Permit) to recommission the Bibiani Underground mine and processing plant (Bibiani). The EPA has been issued by the Ghanaian Environmental Protection Agency (Agency) following submission of an Environmental Impact Assessment (EIA) and completion of a negotiation and consultation process that was commenced by Resolute in August 2016. The Permit is valid for a period of 18 months and can be renewed by application to the Agency. The EPA and its conditions are broadly consistent with the Company's proposed development plan for the Bibiani. The Permit conditions, schedules, and exceptions, are being reviewed by Resolute to ensure compliance and to identify any required amendments to the recommissioning plan.

Following receipt of the EPA, Resolute has finalised an update to its 2016 Bibiani Feasibility Study (see ASX Announcement dated 23 June 2016). The feasibility study update (Study Update) delivers a lower All-In Sustaining Cost (AISC) and longer mine life, as a result of an increase in mineral resources, improved mine optimisation and design, and refinement of operating and capital costs.

The Bibiani Mineral Resource was upgraded in October 2017 by 40% to 21.7 million tonnes (Mt) at 3.6 grams per tonnes (g/t) gold (Au) at a 2g/t Au cut off for a total of 2.5 million ounces (Moz) (see ASX Announcement dated 18 October 2017). The Study Update has established a mining schedule, consisting of Indicated and Inferred Resources, of 10.1Mt at 3.4g/t containing 1.1Moz (See Note 1). Gold production can be maintained at an average of approximately 100,000oz per annum for a ten-year mine life. The AISC is expected to be within a range of US\$700/oz to US\$800/oz for Life of Mine (LOM) production of ~ 1Moz of gold.

Managing Director and CEO, Mr John Welborn, was pleased to have received a key statutory approval from the Ghanaian Government and to have completed a Study Update that confirms Bibiani represents a compelling growth opportunity for Resolute:



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“Resolute continues to progress the opportunity to recommission Bibiani. We are honouring our commitments to the Ghanaian government and being highly disciplined in our pursuit of value creation for all stakeholders. Receipt of our environmental permitting is a significant step in the pathway towards turning the mine back on. Bibiani has produced approximately four million ounces of gold over a long history and is a regionally important gold mine providing important economic and social benefits to the local population.

“Our Study Update demonstrates that the mine can meet our thresholds of producing 100,000 ounces of gold a year over a ten year mine life at an All-In Sustaining Cost in the region of US\$750 per ounce. We will now focus on an operational readiness program with the intention of making a final investment decision during 2019. A positive decision will only be made on the basis of a complete and compelling recommissioning plan supported by a functional operational readiness plan, all required approvals, a clear funding strategy, and the availability of Resolute’s project team. Bibiani is a key contributor to our goal of establishing Resolute as a 500,000oz per annum producer.”



Figure 1: Bibiani Gold Mine and Processing Plant

### Study Update Outcomes

The Study Update incorporates new resource, mining and processing data and improves upon the result of the 2016 Study (see ASX Announcement dated 23 June 2016). The estimates include all capital and operating expenditure and royalties over the current LOM. Ore mined comprises Indicated and Inferred Mineral Resources. Project capital is estimated to be US\$115 million (m) with estimated start-up capital of US\$75m. Project capital includes US\$42m for purchase of mining fleet. Initial development of the underground mine is planned to be undertaken by a contractor, diminishing the initial capital requirement and ensuring prompt access to ore.

<sup>1</sup> Note that the Mining Inventory of 10.1 Mt at 3.4 g/t contains both Indicated (61%) and Inferred (39%) Mineral Resources. 39% of the production target referred to in this document is based on Inferred Mineral Resources. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.



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Key Study Update outcomes are summarised below and compared with the previous 2016 Study:

	Units	2018 Study	2016 Study
<b>Underground development</b>			
Ore development	m	23,883	9,841
Waste development	m	10,234	16,389
Vertical development	m	1,548	1280
Total development	m	34,117	27,510
<b>Ore production</b>			
Development ore	kt	878	609
Stoping ore	kt	9,182	4,748
Total ore	kt	10,060	5,357
Metal grade (ROM)	g/t	3.4	3.7
Metal contained (ROM)	koz	1,084	645
<b>Metal recovery</b>			
Processing recovery	%	89.9	87
Metal (recovered)	koz	974	561
<b>Operating unit costs</b>			
Underground Mining (excl. pre-production)	US\$/t	31.3	34.6
Processing	US\$/t	21.6	22.5
General and Admin	US\$/t	9.0	11.2
Royalty and refining costs	US\$/t	6.8	7.2
<b>Costs</b>			
Sustaining capital	US\$M	63	89.6
Operating cost	US\$M	624	391.7
<b>AISC</b>	<b>US\$/oz</b>	<b>\$764</b>	<b>\$858</b>
<b>Mine life (incl. pre-production)</b>	<b>years</b>	<b>11.0</b>	<b>6.1</b>

Table 1: Bibiani Study outcomes

## Project Summary

### Location

Bibiani is situated in the western region of Ghana in West Africa. It is bordered by Burkina Faso to the north, the Ivory Coast to the west and Togo to the east.

The Bibiani mineral concessions lie approximately 80km south west of the Ashanti capital, Kumasi. The principal and most practical access to Bibiani is from the east, along the Kumasi – Bibiani – Sefwi Bekwai highway. The Kumasi airport can be accessed from Accra by a 40 minute flight using various national airlines.

Road access to the Bibiani mine gate from Kumasi is excellent. Bibiani receives electrical power from the national grid. There are two fresh water dams at the Project. Bibiani is serviced by two well equipped coastal ports, Tema which lies just to the east of Accra and Takoradi which lies in the western half of the country.



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Figure 2: Resolute project location map

### History

The exploitation of Bibiani commenced in 1902 with the mining of surface adits and oxidised ore at shallow levels. The mine closed in 1913 after recovering approximately 70,000oz of gold. In 1927 mining activities recommenced as an underground mine. The mine was operated by the State Gold Mining Corporation until it was closed in 1973, having yielded approximately 2Moz of gold.

Ashanti Goldfields acquired Bibiani in the mid-1990s and redeveloped the mine as an open pit operation with a modern processing plant. Ashanti Goldfields (later AngloGold Ashanti (AGA)) produced approximately 1.8Moz of gold from the main and satellite pits until production was hampered by the failure of the western pit slope.

After the cessation of open pit mining operations in the Bibiani Main Pit (Main Pit), AGA continued to operate the plant by exploiting a series of small, low grade satellite pits, by depleting the remaining run of mine (ROM) and low grade ore stockpiles and the treatment of old tailings resources. In addition, a trackless decline was developed in 2004 and 2005 to provide access to the underground workings for resource estimation and exploration work.

In 2006, the mine was purchased from AGA by Central African Gold (CAG) who continued to explore and develop the underground potential. The mine was placed on care and maintenance in late 2008. In late 2009, Noble Mineral Resources Ltd (Noble) agreed to acquire CAG Ghana Limited and commenced mining of satellite open pits to the north-east of the Main Pit in 2010.

Following a period of declining gold price, Noble suspended operations at Bibiani in May 2013. A Scheme of Arrangement (Scheme) with creditors of Noble's Ghanaian subsidiaries was put in place by the Ghanaian Supreme Court in 2014 and supported by Resolute and the Ghanaian Government. The effect of the Scheme was to enable Resolute to secure, with the endorsement of the Ghanaian Government, ultimate ownership of Bibiani with protection from those liabilities which had been incurred at a time when Bibiani was owned by Noble's Ghanaian subsidiaries.

Pursuant to the Scheme, Resolute has defined obligations to the historic creditors of the Ghanaian subsidiaries which include payments to the Scheme creditors upon various milestones (Scheme Payments). The next Scheme Payment is triggered by Resolute making a decision to proceed with the development of Bibiani (Final Investment Decision).

Notwithstanding the Scheme's approval by the Court, the creditors, and the Minister of Mines, a Ghanaian creditor has sought to circumvent the operation of the Scheme and is seeking to enforce a winding up order in relation to the company that holds Bibiani, namely Mensin Gold Bibiani Limited (Mensin) (now a subsidiary of Resolute), on the basis of a debt incurred during the time whilst Noble was the ultimate owner of the mine. Resolute is defending Mensin's right to unencumbered ownership of Bibiani which was a key element of the Scheme supported by both Resolute and the Ghanaian Government.



Upon assuming ownership in 2014 Resolute embarked on a surface and underground resource drilling program to re-assess the underground mine potential.

In June 2016, Resolute completed an initial feasibility study to assess the re-commencement of underground mining at Bibiani. The 2016 Study contemplated production of up to 1.2 million tonnes per annum (Mtpa) from long hole open stope underground mining. Processing of the ore would occur at the existing Bibiani processing plant.

The 2016 study estimated production of 541,000oz of gold, at an average AISC of US\$858/oz, after pre-production capital of US\$72m. The completion of this study led to the commencement of the Phase 2 drilling campaign, with the aim of upgrading the Resource to support a larger mining inventory.

## Scope of Study Update

The scope of the Study Update has included the following tasks:

- conduct additional drilling / geotechnical investigation work;
- re-examine the mining plan and assessment of the optimal development of underground mining operations;
- conduct metallurgical testing and analysis to confirm the scope of the required plant upgrades;
- commence the work needed to obtain permits and government approvals;
- conduct an environmental investigation / forum to develop an environmental impact statement;
- develop a thorough risk assessment of the overall mining plan and
- identify opportunities to further improve the viability of a sustainable operation.

## Study Contributors

The Study Update has been compiled by Resolute with contributions from the following consultants:

Company	Study Update Input
Optiro Pty Ltd (Optiro)	Resource Estimation
AMC Consultants Pty Ltd (AMC)	Mine Design, Mine Schedule, Mining costs
Wood Group (Amec Foster Wheeler) (Wood)	Ore Process and capital / operating estimates
Minelogix Pty Ltd (Minelogix)	Metallurgical testing
Advisian (WorleyParsons Group)	Tailings Storage Facility

## Key Study Elements

### Geology

The Bibiani deposit is hosted within a thick sequence of fine-grained graded turbidites with localised thin interbeds of fine to medium-grained turbiditic sandstones. The orebody is a mesothermal lode-type deposit which is similar to the lode deposits in the Konongo-Axim belt hosting the significant Obuasi deposit. The Bibiani orebody geometry is structurally controlled by a steep, north to north-east trending shear corridor 200 - 400m wide, within Lower Birimian sediments and close to the eastern contact of the Upper Birimian. The shear zone includes quartz infill as massive veins and quartz stock works. In the widest parts of the orebody, two and locally three individual quartz reefs or lodes can be identified. Two highly graphitic fault zones, historically referred to as pug seams or fissures, are associated with the major shear zone on footwall and hanging wall sides.

In general, the orebody dips east at 60 - 80°, crossing the regional structure at low angles. At the centre of the mine, the orebody alignment is 030 - 035° which changes to around 020° at the northern end of the mine. The strike of the bedding cuts across the strike of the ore body at small angles. Traditionally the ore body has been divided into a northern and southern part based on the location of the central shaft, which lies on section line 5400N. Despite this the orebody is essentially continuous.

The southern ore zone is around 800 long and consists of a composite vein of quartz and mineralised country rock dipping about 60° to 70° to the east. The northern orebody consists of the continuation of the west lode and of the



east and central lodes, which are less distinct toward the south. The latter reef lodes consist of more massive laminated smoky quartz with phyllite partings. Milky white quartz is also present, but is generally barren.

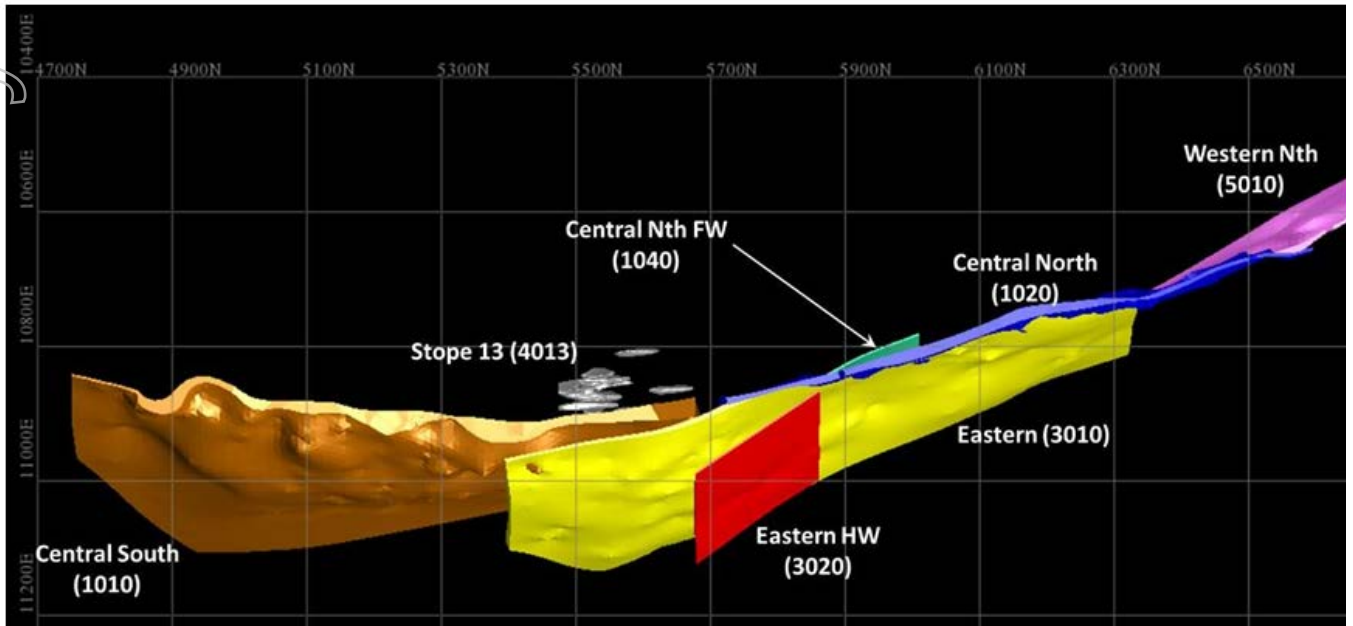


Figure 3: Bibiani lode names plan view

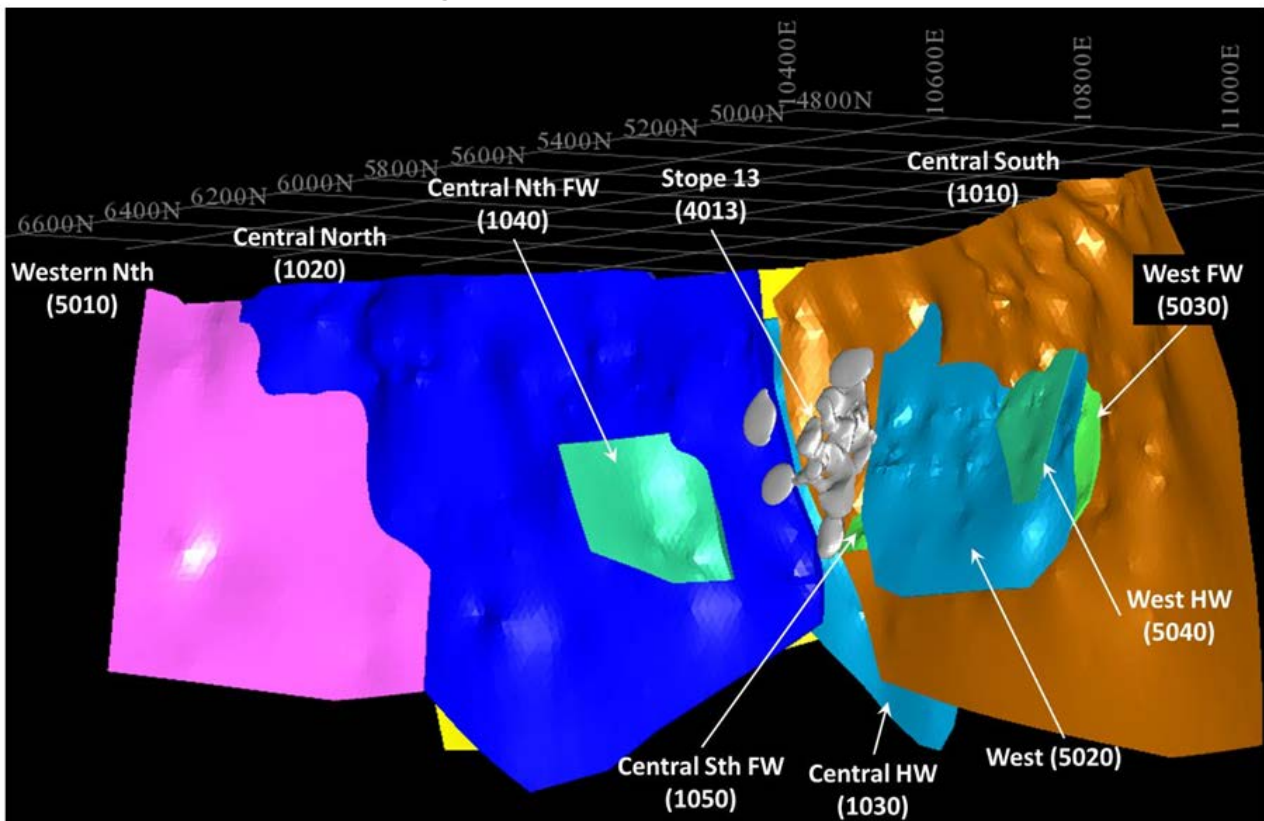


Figure 4: Bibiani lodes - oblique view looking northeast

The northern ore zone has been mapped at 20 - 40m width near the surface and widens substantially at depth. At around 100 – 120m relative level (mRL) (the underground 4 and 5 Levels) horizontal widths exceed 100m where parallel shears coalesce. The dips are generally near vertical at surface, but the eastern boundary flattens moderately at depth to less than 65° around 150mRL. The lodes merge approximately 400 - 500m north of the central shaft.

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Further to the north the orebody narrows and continues as one near-vertical reef 15 - 25m in width. The length of the main historic underground mining zone extends to 1,800m while the total strike length of the Bibiani mineralised trend is around 4,000m. The mineralisation remains open at depth.

## Resources

The Phase 2 exploration drilling program at Bibiani commenced in December 2016 and was completed in June 2017 with 25,400m of diamond drilling undertaken from both surface and underground positions. The primary focus of the program was to convert Inferred Resources to the Indicated category and to explore for new unmined mineralised lodes. This campaign followed Phase 1 where Resolute completed 26,665m of underground and surface diamond drilling at Bibiani with the aim of enhancing the estimated 1.7Moz Resource announced on 15 August 2014.

Following completion of the Phase 2 drilling program, Optiro was engaged to prepare an independent resource estimate (see ASX announcement dated 18 October 2017). As part of this engagement, the Bibiani mineralisation was reinterpreted and revised geological domain wireframes were constructed. Optiro used an ordinary-kriged methodology constrained by these domain wireframes. The Bibiani mineralised system has been classified into discreet domains which reflect the mineralisation and the natural grade of the deposit. Significantly, 65% of the updated Mineral Resource Estimate is contained within the Central Lode domain.

The updated Mineral Resource Estimate produced a 40% increase in total resources from the previous estimate. The updated combined Indicated and Inferred Resource is 21.7Mt at 3.6g/t Au (2 g/t Au cut-off) for a total of 2.5Moz. This was an increase of 729,000oz over the June 2016 estimate of 1.8Moz. In addition to a significant increase in volume, the grade of the total resources at Bibiani has increased from 3.5g/t to 3.6g/t. The updated Mineral Resource Estimate is primarily a result of the excellent Phase 2 drilling from the Central Lode.

Total Indicated Resources now stand at 13.3Mt at 3.5 g/t Au for 1.5Moz, an increase of 300,000oz over the previous estimate. The updated Resource forms the basis of the optimised mine plan.

The significant difference between the earlier estimates and the 2017 estimate are:

- ongoing exploration and edits to the database which have impacted the interpretation and average grade of mineralisation;
- increased areal extent of the mineralisation along strike and down dip; and
- inclusion of the samples within mineralised domains within the open pit.

The 2014 estimate includes material within the open pit which has been mined and subsequently depleted post the 2014 estimate.

Mineral Resources at Bibiani as at 18 October 2017 (2.0 g/t Au cut-off)			
Category	Mt (000s)	Grade (g/t)	Moz (,000s)
Indicated	13.3	3.5	1.5
Inferred	8.4	3.7	1.0
Total	21.7	3.6	2.5

Table 2: Mineral Resource at Bibiani Gold Mine

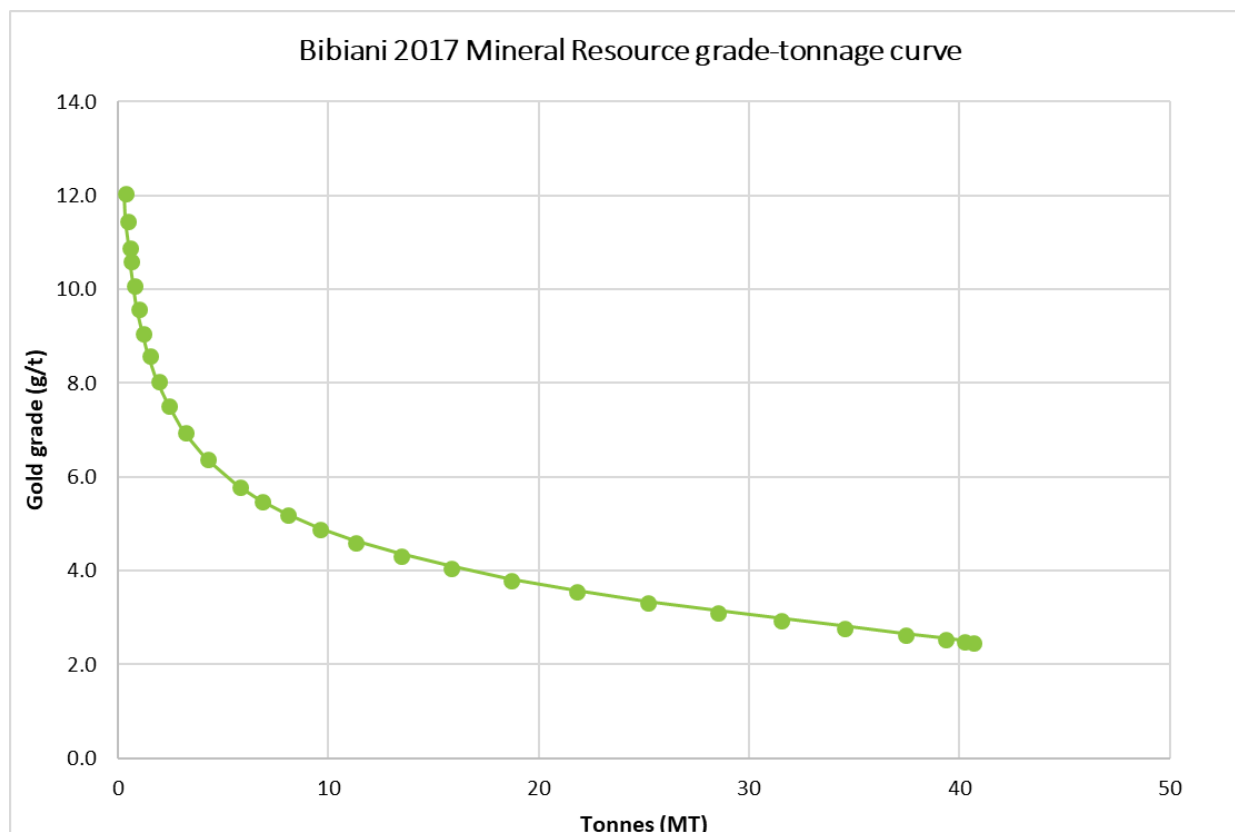


Figure 5 Grade-tonnage curve re-mining Bibiani 2017 Mineral Resources

At a 2.0g/t Au cut-off, approximately 8.4Mt at 3.7g/t Au for 1.0Moz of resources are classified as inferred, with over 90% of this material occurring within the Central South, Central North, Central HW and Eastern Lode domains. Infill drilling to assess and potentially upgrade the bulk of this material to indicated status could be achieved, utilising existing surface and underground drill sites.

An additional 989kt at 4.72g/t Au for 150koz (at 2.0g/t cut-off) of material within the Central South, Central North and Stope 13 domains has not been classified as a Mineral Resource either because of the degree of extrapolation associated with the estimate or because of the uncertainty associated with the interpretation.

Outside of the resource model, there is an excellent potential for mineralisation to extend at depth, particularly in the southern and northern parts of the orebody, where historical mining activity extended to approximately 800m below the surface or approximately 120-150m below the deepest portion of the resource model. Further drilling is required in these areas. There is also potential for mineralisation to continue beyond the limits of historical mining.

In late 2017, after the resource estimate was completed, several diamond holes were drilled. These were designed to target mineralisation below the central part of the orebody. Results included an intercept of 16m at 7.97g/t of Au from 488m from BSDD068, which is interpreted to be below the Eastern HW Lode. This zone remains open at depth and for at least 100m along strike to the north and south.

The western side of the orebody, along strike of the Stope 13 area and the Western Lode(s) is also of interest. Due to a combination of previous mining activity and topography, this area remains difficult to test via drilling, without either major earthworks / pit rehabilitation or further underground development.

Results such as 20m at 2.7g/t Au in BUDD080 remain open to the north and further drilling could outline economic mineralisation in close proximity to current or planned underground infrastructure.



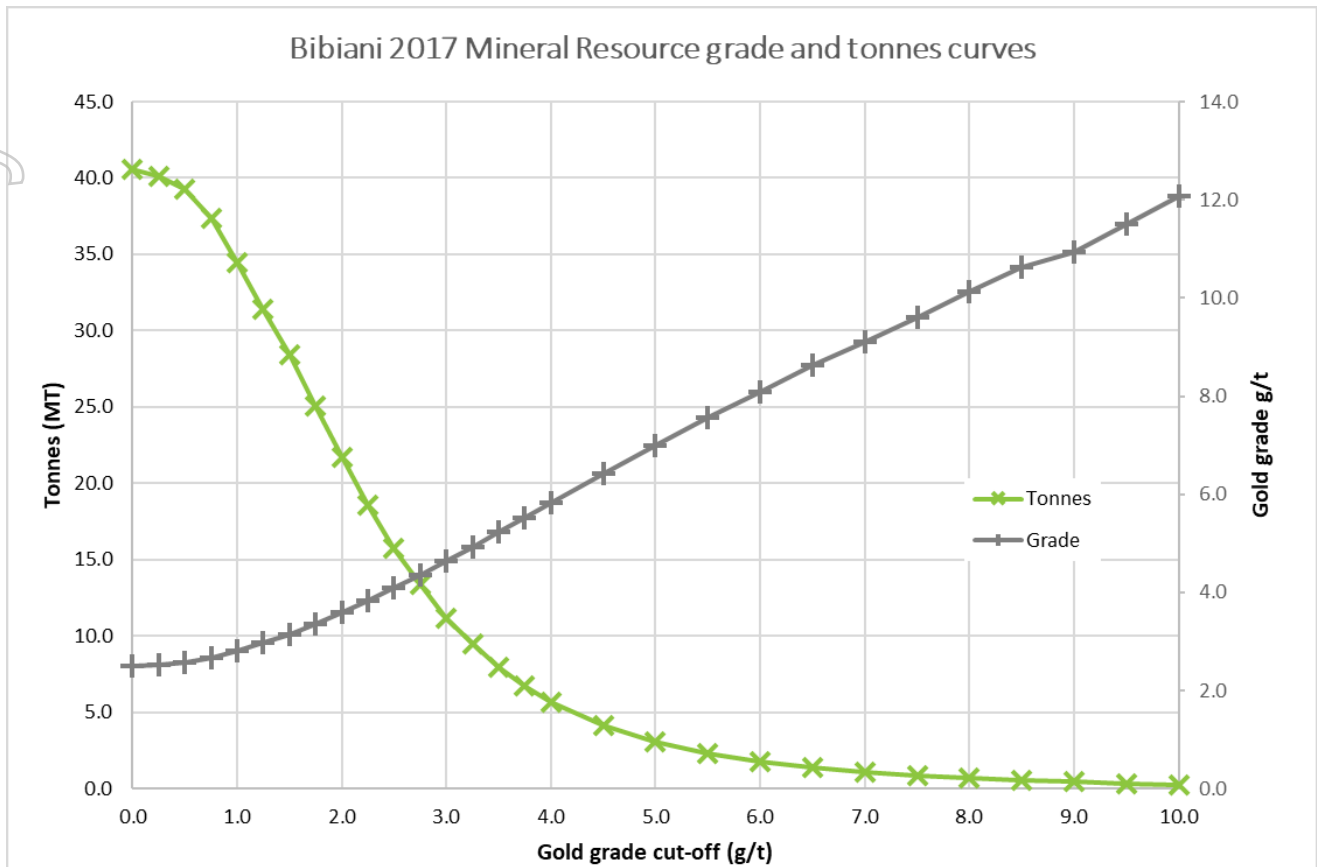


Figure 6: Grade and tonnes curve Bibiani 2017 Mineral Resources

### Mining

Mining will be undertaken by long hole open stoping (LHOS) mining methods. A trade-off study of various LHOS methods was undertaken and the selected mining methods were:

- The main mining method will be LHOS with pillars. This method was applied to the majority of the mining areas, where the stope blocks are less continuous, occur in multiple lodes and vary in width.
- In the lower southern portion of the mine, there is a large continuous block of ore at lower COG of approximately 2g/t Au, with widths of up to 25m. In this area, the sublevel shrink method is preferred. This method is currently used at Resolute’s Mt Wright mine at Ravenswood in Queensland, Australia.

The mine design covers a strike length of 1.2km and focuses on the ore located between 5,000 and 6,200m N. Due to the strike length of the design, two declines will be developed at depth, each servicing a 600m strike length of ore. The planned mine design is shown in long-section in Figure 7 below.

Development dimensions have been designed to suit the selected equipment. Declines will be 5.5m W x 5.8m H, being the typical dimensions for 60t to 65t trucks. Lateral development requiring truck access will have dimensions of 5.5m W x 5.5m H, reducing to 5.0m W x 5.0m H in the level access areas and 4.5m W x 4.5m H in the ore drives. The ore drives will be designed to fit mid-sized 14t loaders and drill rigs capable of drilling 89mm diameter blastholes.

Three phases of mine design and scheduling have been undertaken. Multiple schedules were produced for each design phase. The final optimised schedule resulted in reduced up-front costs and will deliver a desired financial outcome by targeting high value ore during the early LOM. The optimum schedule has been selected in accordance with Resolute project objectives:

- Early ore production.
- Production rate of approximately 1.0Mtpa ore and recovered ounces of 100koz per annum.
- Ten-year mine life producing 1.0Moz.

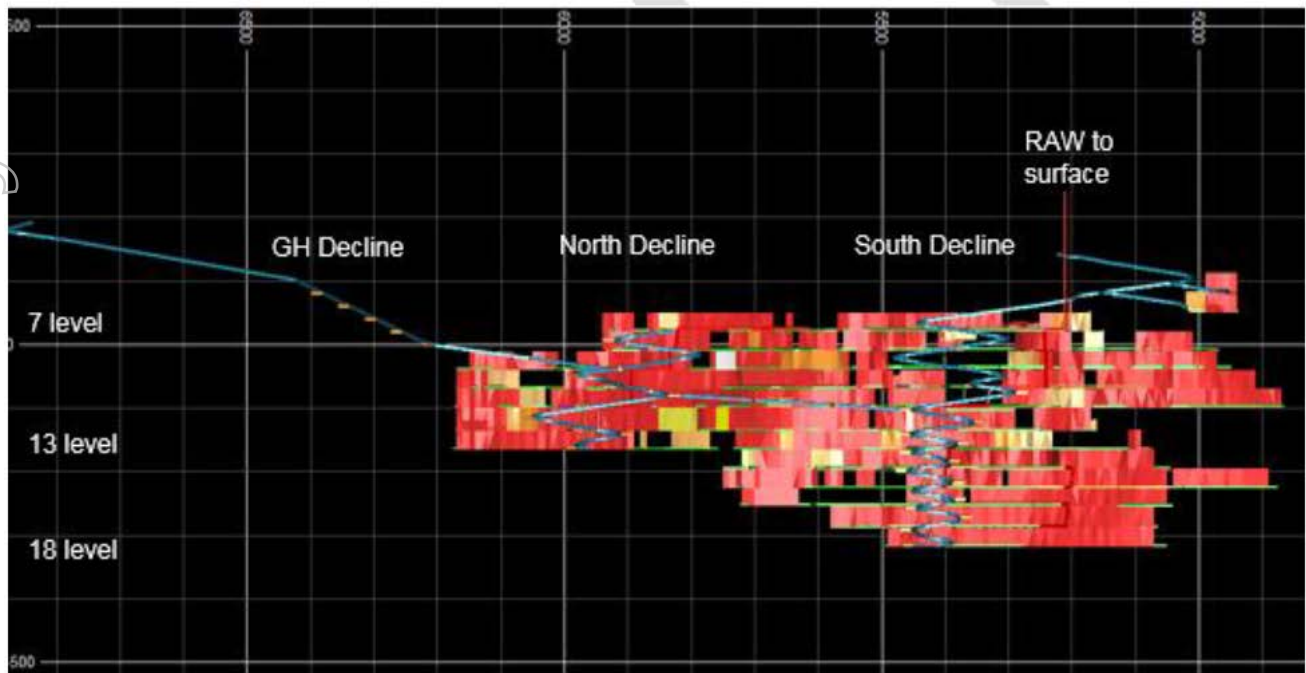


Figure 7: Bibiani long section of mine design

Stope designs were manually designed on 10m cross-sections around all potential ore, without consideration of voids and targeting a 2.0 g/t Au COG. The stope designs were then reviewed and classified based on interaction with existing voids, with a different stope recovery for LHOS stopes based on each of the following:

- No void interaction 80% recovery
- Interaction with a single void 75% recovery
- Interaction with multiple voids 55% recovery
- Impractical to mine 0% recovery

The following schedule priorities and sequence were then applied:

- Strip and re-support the Main decline.
- Establish the primary ventilation network from 7 Level to the surface.
- Develop the South decline to its base at 18 Level.
- Separately develop the Greg Hunter decline to provide full ventilation capacity, access to the ROM pad and second mine egress.
- Stope the 5 to 8 Level South area, due to ease of ore access with the South area already developed.
- Stope the lower South area once access is established. This area contains the large continuous, highest grade ore zone which will allow for simpler, lower risk production with the highest ounces.
- Supplement from the North area and upper South area.
- Transition to the North area as the South area is depleted.
- Table 3 below shows this schedule and a rate of approximately 40 stopes per year will be required at the peak production rate.

Figures 9 to 11 illustrate the development schedule over the LOM, the anticipated ore production schedule and gold mined and recovered. It should be noted that Year 12 in the production schedule consists of only 5 months' production and should not be viewed as a full year's production. Further mine scheduling optimisation programs could alter the ramp-down period assumed and could provide some investment upside if this resource is extracted in Year 11 as opposed to Year 12.

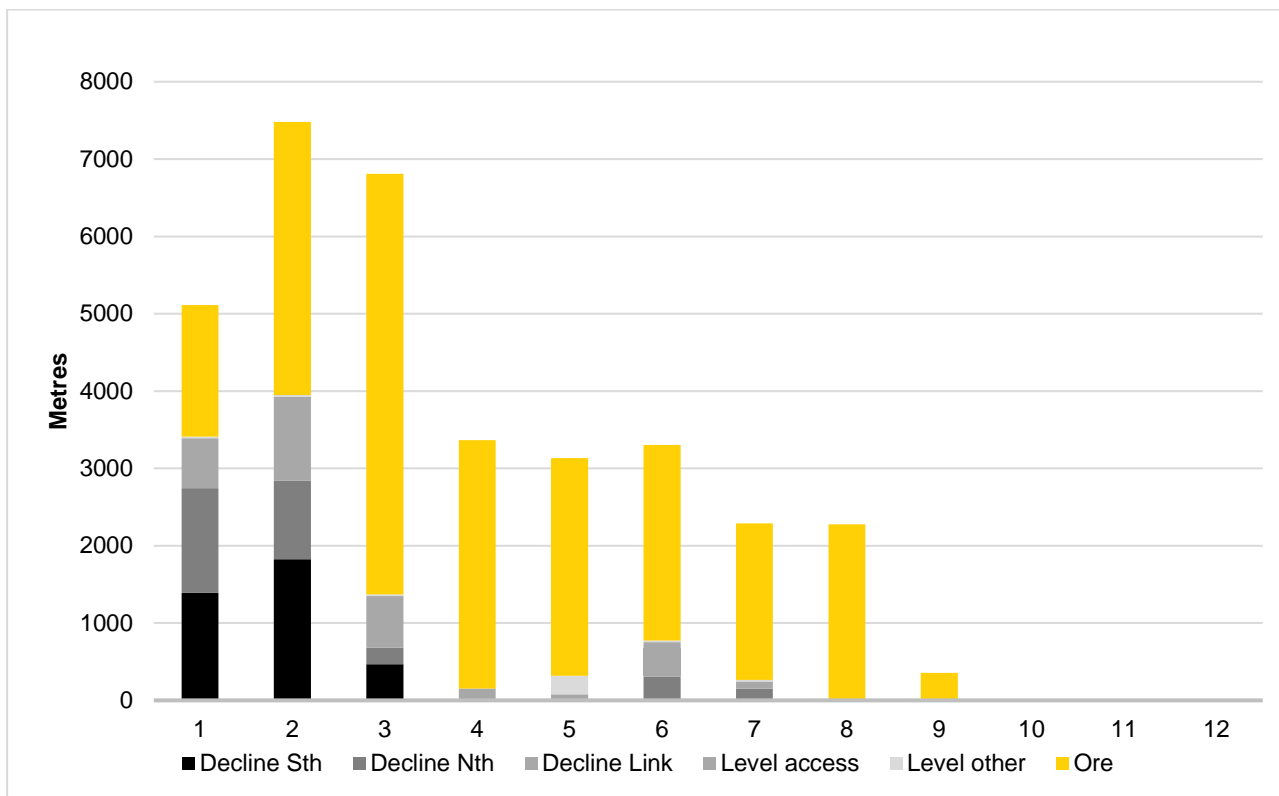


Figure 8: Development Schedule

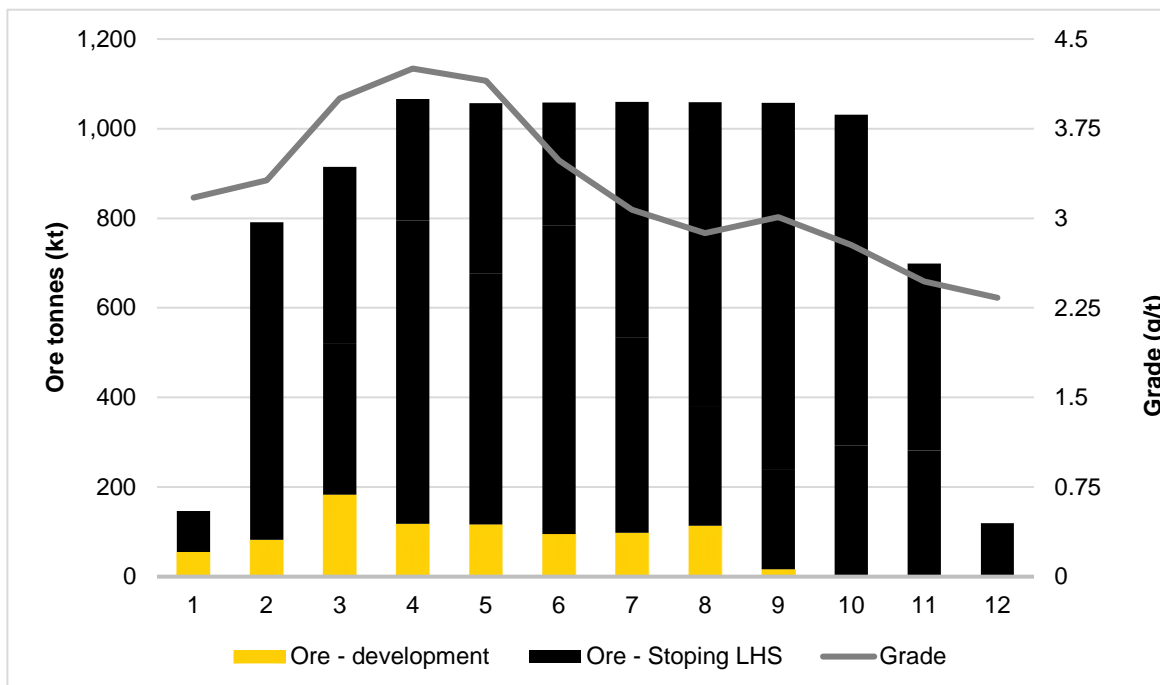


Figure 9: Ore Production Schedule

<sup>1</sup> Note that the Mining Inventory of 10.1 Mt at 3.4 g/t contains both Indicated (61%) and Inferred (39%) Mineral Resources. 39% of the production target referred to in this document is based on Inferred Mineral Resources. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

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Physicals	Units	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Yr 11 + 12	TOTAL
<b>Development</b>													
Decline Sth	m	1,388	1,824	468	0	0	0	0	0	0	0	0	3,680
Decline Nth	m	1,355	1,017	216	0	0	310	153	0	0	0	0	3,050
Decline Link	m	0	0	0	0	0	361	0	0	0	0	0	361
Level access	m	647	1,088	668	153	79	82	90	0	0	0	0	2,807
Level other	m	20	20	19	0	238	20	20	0	0	0	0	336
Sublevel	m	0	0	0	0	0	0	0	0	0	0	0	0
RAW/Esc access	m	0	0	0	0	0	0	0	0	0	0	0	0
Ore	m	1,701	3,531	5,440	3,210	2,819	2,529	2,025	2,275	354	0	0	23,883
<b>Total Development</b>	<b>m</b>	<b>5,110</b>	<b>7,479</b>	<b>6,809</b>	<b>3,364</b>	<b>3,135</b>	<b>3,302</b>	<b>2,287</b>	<b>2,275</b>	<b>354</b>	<b>0</b>	<b>0</b>	<b>34,117</b>
<b>Vertical Development</b>													
Return airway	m	92	694	164	58	0	37	29	0	0	0	0	1,074
Escape-way	m	31	216	124	29	0	37	36	0	0	0	0	474
Fresh airway	m	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>m</b>	<b>124</b>	<b>910</b>	<b>288</b>	<b>88</b>	<b>0</b>	<b>74</b>	<b>65</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,548</b>
<b>Longhole drilling</b>	<b>km</b>	<b>73</b>	<b>107</b>	<b>178</b>	<b>252</b>	<b>230</b>	<b>215</b>	<b>201</b>	<b>182</b>	<b>55</b>	<b>4</b>	<b>2</b>	<b>1,500</b>
<b>Tonnes</b>													
Waste	kt	306	428	209	65	84	116	27	10	3	0	0	1,249
Ore - development	kt	55	82	183	118	117	95	98	114	17	0	0	878
Ore - Stoping SLS / Avoca	kt	0	0	337	678	559	688	435	265	223	293	401	3,880
Ore - Stoping LHS	kt	92	709	395	271	381	275	526	680	818	739	417	5,302
Ore - Total	kt	147	791	914	1,066	1,057	1,058	1,060	1,059	1,058	1,031	818	10,060
Total ore and waste	kt	453	1,219	1,124	1,131	1,142	1,174	1,087	1,069	1,061	1,031	818	11,309
<b>Haulage</b>	<b>000 tkm</b>	<b>460</b>	<b>1,889</b>	<b>2,892</b>	<b>3,087</b>	<b>2,993</b>	<b>3,145</b>	<b>2,432</b>	<b>2,272</b>	<b>2,387</b>	<b>2,288</b>	<b>1,669</b>	<b>25,514</b>
<b>Fill</b>	<b>000 m3</b>	<b>0</b>	<b>0</b>	<b>159</b>	<b>320</b>	<b>264</b>	<b>325</b>	<b>206</b>	<b>125</b>	<b>106</b>	<b>138</b>	<b>190</b>	<b>1,834</b>
<b>Ore Summary</b>													
Tonnes	kt	147	791	914	1,066	1,057	1,058	1,060	1,059	1,058	1,031	818	10,060
Grade	g/t	3.17	3.32	4.00	4.25	4.15	3.48	3.07	2.87	3.01	2.78	2.45	3.35
Mined ounces	koz	15	84	118	146	141	118	105	98	102	92	65	1,084
Recovered ounces (Effective)	koz	13	76	106	131	127	106	94	88	92	83	58	974

Table 3: Schedule Physicals

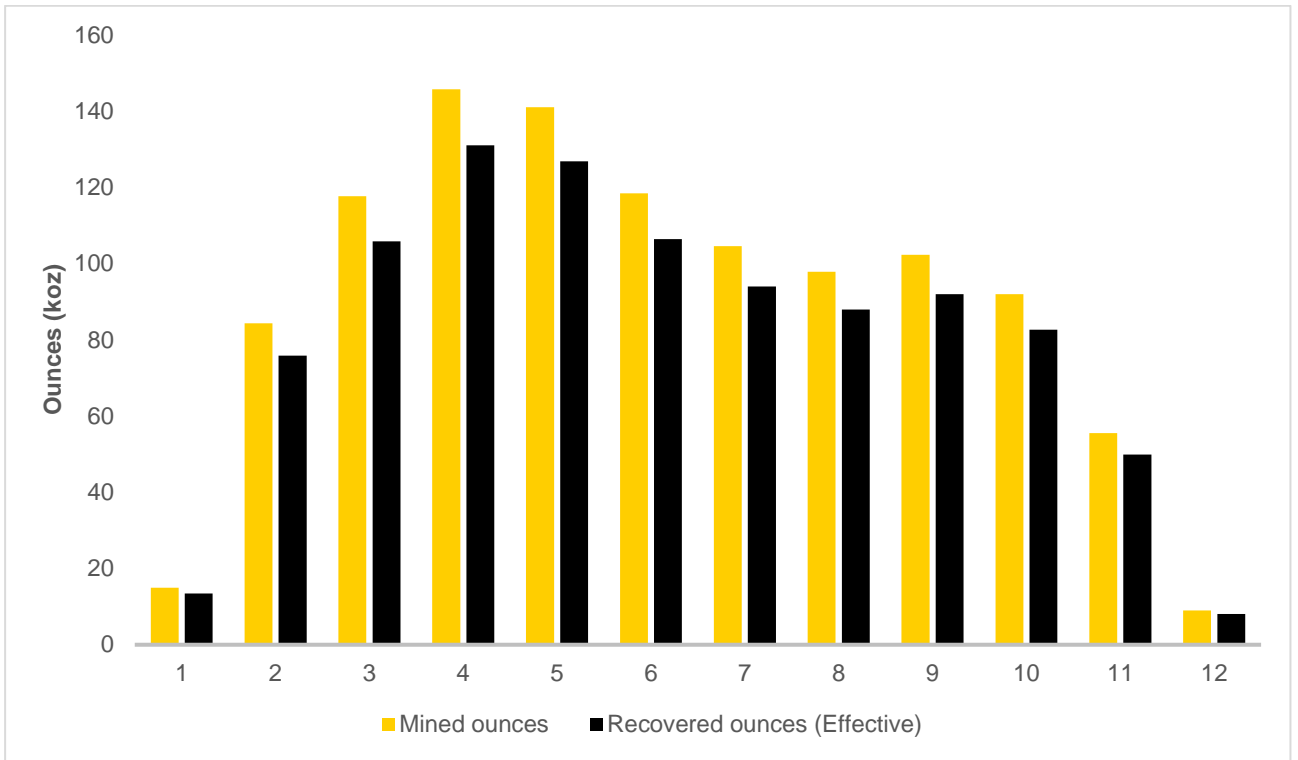


Figure 10: Recovery Schedule

### Processing

The Bibiani ore processing plant was designed and operated at a rate to suit the open-cut mining program at the time. To match proposed mine ore production rate, the processing plant will be modified to treat a nominal rate of 1.1Mtpa.



Figure 11: Bibiani Processing Plant



Metallurgical testing conducted in 2015, which included full sulphide flotation and concentrate regrind, indicated superior gold recovery than the actual data from 2002-2003 (gravity and CIL) and 2004-2005 (partial flotation and concentrate regrind). The process upgrades noted below allow the plant to take full advantage of this improved recovery

The gold to be mined is predominantly fine and locked in pyrite and arsenopyrite-sulphide minerals. The mineralogy of the deposit favours targeted concentrate regrinding of these gold-associated sulphide minerals to achieve an optimal leach extraction. The process will produce a sulphide concentrate by flotation at a primary grind size of P80 106  $\mu\text{m}$ . Concentrate is then fine ground to P80 25  $\mu\text{m}$  prior to intense cyanidation. The flotation tails are also leached in a standard carbon in leach process and combined with the intense leach circuit slurry prior to the elution and gold room circuits.

Mined ore will be stockpiled primarily according to sulphide sulphur and gold content so that blended ore of an optimum concentration of 0.6% (w/w) sulphide sulphur is maintained as mill feed. Ore will be crushed using a gyratory crusher to nominally P80 of 120 mm before reporting directly to the primary semi autogenous (SAG) mill or to a small crushed ore stockpile should the mill be unavailable for maintenance.

The milling circuit will utilise the existing SAG mill in a single-stage closed circuit with cyclone classification to produce a product size of P80 106  $\mu\text{m}$ . An existing gravity concentrator is used to remove any coarse gold in the cyclone feed while the overflow stream reports to a rougher flotation circuit to target a mass pull of about 10%. Gravity concentrate reports directly to the gold room with the tailings fraction reporting to the SAG mill discharge hopper. Flotation will recover a sulphide rich concentrate with about 93% gold recovery.



Figure 12: Milling Equipment



Flotation concentrate is cycloned to remove fine particles with the coarse fraction reground to P80 25 µm in an existing stirred mill. Ground concentrate and flotation tailings will then be thickened to nominally 65% (w/w) solids in separate thickeners thereby maximising return of non-cyanide containing water to the milling and flotation circuits. Concentrate will be leached in a carbon in leach (CIL) circuit, joining the flotation tail in a CIL circuit. Carbon will be stripped to recover precious metals. The revised flow sheet is illustrated in Figure 13.

To achieve this process, the following modifications and upgrades are required.

Process area	Modification or upgrade
Crushing	Commissioning of the primary gyratory crusher.
Milling	SAG mill operation only and gravity concentrator accepting a portion of cyclone feed.
Rougher Flotation	Reagents to be added via a new conditioning tank, modifications to the flotation cell location and new feed distribution box. Install a new concentrate thickener.
Fine Grinding	New trash screen, pre-cycloning of mill feed and fine concentrate grinding.
Leaching	Reconfigure the existing CIL tanks into an intense ground concentrate leach circuit and standard float tails leach circuit.
Electrowinning and Smelting	New gravity concentrate intense leach reactor prior to electrowinning.
Carbon Regeneration	Complete the installation of the gas-fired regeneration kiln.
Cyanide	Upgrade to remove bulk bin storage and install tanker access.
Additives	New tanks and pumps for Copper Sulphate, Hydrogen Peroxide, Promoter and Flocculant and Installation of agitator and ring main pumps for lime.
Tailings Dam	Modifications to level dam wall as required.



Resolute

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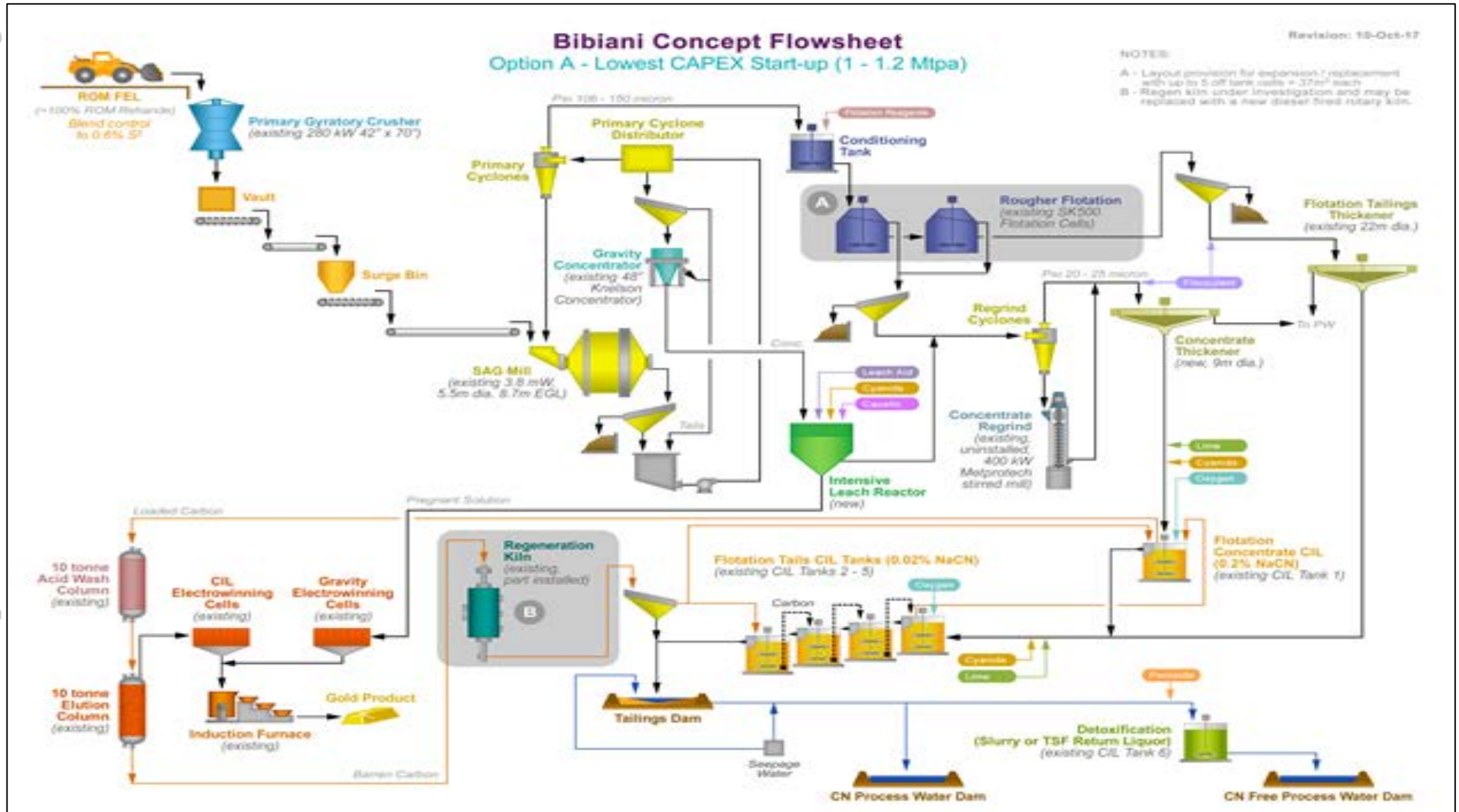


Figure 13 : Bibiani process flow sheet





## Capital Cost

The LOM capital costs associated with the recommencement of Bibiani are summarised below.

Cost Category	Capital Cost US\$m
Underground Mining	86
Treatment	11
Shared & Regional Infrastructure	2
Site Support Services	2
Project Management Services	2
Other Capitalised Costs	10
Provisions	2
<i>Total Project Capital</i>	<i>115</i>
Sustaining Capital	63
<b>Total LOM Capital</b>	<b>178</b>

**Table 4: Capital expenditure summary**

Project capital expenditure estimates have been prepared by Wood (processing) and AMC (mining). These capital estimates have been consolidated and built into the Bibiani financial model.

The procurement of mining equipment and the establishment of underground infrastructure constitutes the bulk of the underground mining capital requirement, which in turn comprises 77% of the overall project capital. The processing plant estimate has been based on a base case of 1.1Mtpa production rate, with the plant operating for 8,000 hours per annum at a rate of 145t/hr.

EPCM has been based on 7% of the direct field cost for each process area and Owner's costs include an allowance for the ramp up of plant operational staff from 6 months prior to the plant commissioning phase.

All capital expenditure incurred post steady-state (commercial) production has been reported as sustaining capital.

## Operating Cost

### Mining Operating Cost

The mining cost estimate is based on quantities derived from the mining schedule and the unit rates calculated using a cost model with updated prices for materials, parts and consumables.

Costing has been based on the following assumptions:

- Contract mining for the first three years
- Owner mining from Year 4 onwards
- Owner management and technical services for the life of the mine.

Costs have been estimated from:

- Contractor costs from Resolute's Syama Underground mine development contract.
- Underground mobile equipment costs from supplier quotations.
- Resolute input costs from personnel and key consumables such as diesel and electrical power

Mining operating costs are those associated with ore development, stoping and ore haulage. It also includes a portion of mining overheads split between capital and operating costs based on tonnes mined.

The total mining operating cost averages US\$31.3/t mined.

**Processing Operating Cost**

Operating cost for the plant based on an assumed throughput of 1.1Mtpa has been determined for the following several discrete cost centres:

- Utilities
- Labour
- Maintenance and consumables
- External Services
- Overheads

Costs have been developed from the 2016 Minelogix report and updated with Wood (Amec Foster Wheeler) data and calculations.

Labour was calculated around a three-shift roster and one relief shift. Process consumables costs for crusher / mill liners and screen spares were obtained from manufacturers. Other consumables were determined from similar Ghanaian installations. Reagent pricing was also derived from recent similar projects estimated by Wood.

Cost Area	Annual Cost (US\$m)	Cost per Tonne (US\$/t)
<b>Mining</b>		
Utilities	50.6	5.0
Labour	63.2	6.3
Maintenance & Consumables	86.1	8.6
External Services (Contractor Mining)	72.2	7.2
Overheads	43.1	4.3
<b>Treatment</b>		
Utilities	67.8	6.7
Labour	28.2	2.8
Maintenance & Consumables	118.4	11.8
External Services	1.7	0.2
Overheads	1.4	0.1
Shared & Regional Infrastructure	0.1	0.1
<b>General &amp; Administration</b>	90.3	9.0
<b>Total Operating Cost</b>	<b>623.9</b>	<b>62.1</b>

Table 5: Operating expenditure summary

**General and Administration Operating Cost**

General and administration operating cost allowance is \$9 per tonne based on similar allowances at Resolute's Syama Gold Mine and Ravenswood Gold Mine.

**Royalties**

Government royalties and refining costs constitute approximately \$64m over LOM, derived from the sale of gold.

**Rehabilitation and Remediation**

The estimates have not been fully costed for this work. In the financial model, it has been assumed that the sale of minesite fixed and mobile plant will cover the cost of rehabilitation and remediation work.



## Social Impact

### Bibiani Community Support

Since purchasing the Bibiani minesite, Resolute's Ghanaian subsidiary, Mensin Gold Bibiani (MGBL) has established the Resolute Foundation Advisory Panel focussing on four development pillars:

- Water and Sanitation
- Community Health
- Education
- Income Generation

Key local representatives and staff from MGBL have been working collaboratively to develop and implement projects to build strong links between the Bibiani community and the minesite and to enable a lasting beneficial legacy. In line with Resolute policy, the funding of community development initiatives will be assessed on need, fairness, maintenance of a social license and most importantly, capability of the company to meet the necessary funding requirements in a timely manner.

Some of the projects identified to date include partnering with the Municipal Assembly in areas of infrastructure development and alternative livelihood programs. MGBL also supports the local football team, undertakes sanitation works, conducts medical outreach and health education programs, and funds an Education Grant Scheme.

## Environmental

### Environmental Permit Authorization

As described above, during 2016 Resolute completed and submitted an Environmental Impact Assessment (EIA) for Bibiani to the Agency. The process for community consultation and initial government review of the EIA was completed in early 2018, and the final EIA was submitted to the Agency in March 2018. In June 2018 Resolute was granted Environmental Permit Authorisation (EPA or Permit) to recommission the Bibiani Underground mine and processing plant. This landmark approval enables Resolute to put its operational readiness plan into action. As part of this plan, Resolute will commence the process of securing a Mining Operating Permit which is the next key approval required to enable the Company to progress Bibiani towards production.

The Permit is valid for a period of 18 months and can be renewed by application to the Agency no later than 6 months prior to expiry. Under the terms of the Permit, the Agency retains the right to make changes to any aspect of operations at Bibiani if such operations pose danger to public safety, generate social issues within the catchment of communities or have negative impacts on the environment. The Permit specifies various conditions and requirements including:

- Socio-economic and water resources use conditions
- Reporting requirements
- Permitted depth of the mine
- Reclamation bond requirements
- Closure certification
- Ventilation and dewatering
- Management of hydrocarbon and spills
- Noise, vibration, and air quality management
- Requirement to commence mining activities within 18 months of issue
- A renewal clause allowing extension of the Permit upon application 6 months prior to expiry
- Permit exceptions

The Permit and its conditions are broadly consistent with the Company's proposed plan to recommission Bibiani. The Company is reviewing the EPA and will consult with the Agency to clarify certain conditions, schedules and exceptions.



### Mine Operating Permit

Having secured the EPA, Resolute must now secure a Mine Operating Permit from the Ghanaian Minerals Commission (MinCom).

Securing the Mining Operating Permit will require the following:

- The updating of the Main Operating Plan.
- Preparation and approval of a comprehensive Emergency Response Plan.
- Preparation and approval of a Tailings Storage Facility Management Plan.
- Review and approval by the Minerals Commission.

Resolute will now embark on completing the necessary applications and seeking these approvals. It is anticipated that the Mining Operating Permit will be granted early in 2019 allowing a final investment decision to be made during 2019.

### Operational Readiness Planning

To prepare Bibiani for a final investment decision and eventual recommissioning, Resolute intends to undertake detailed operational readiness planning during the course of the current financial year.

This work will establish a baseline scope, budget and schedule for implementation and describes how the work will be completed, transferred to operations and who will be responsible for each phase of implementation. Key to outcomes from this process include:

- Detailed assessment of project risks with necessary mitigation plans;
- Proposed scope general arrangement drawings for all infrastructure, detailed mine design, power and instrumentation drawings and process flow diagram;
- Identification of all procurement packages;
- Confirmation of Project cost estimates to an accuracy of 10%;
- Detailed Project Execution and Operational Readiness schedule;
- Detailed resource plan for Project execution and operational steady state;
- Project health, environmental and safety plan;
- Initial commissioning plans;
- Review and update of the assumptions, scope and strategies for project implementation and operational readiness;
- Finalisation of site baseline data;
- Functional checks of existing systems;
- Identification and applications for all Project and Operation Permits and Licenses;
- Development of contract and procurement strategy and plans;
- Commencement of major tender packages for execution phase;
- Delivery of Project Execution Plan and Operational Readiness Plan, and
- Delivery of the initial detail engineering design to establish Project cost estimate to an accuracy of 10%.

The proposed timing of a final investment decision for the recommissioning of Bibiani towards the end of 2019 allow Resolute to effectively manage its project development and human resources. It is expected that key technical and project teams currently working on the development of the Syama Underground will be available to recommission Bibiani.

### Potential Enhancements

#### Disposal of underground waste

There is an opportunity to dispose of waste underground, which was not incorporated into the haulage calculations. This has the potential to reduce mining costs and help to fill the previously mined stopes.



## Voids

There is an opportunity for the addition of low cost marginal ore if the voids contain backfill with grade. At this stage, it is unknown what proportion of the old stope voids are filled or empty. If it is established that the backfill material has reasonable grade and can be extracted, it will have significant impact on the initial years of production and project cash flows.

## Additional Resources

Records derived from the mine's previous owners indicate lower gold recoveries were achieved when the operations switched from oxide to sulphide ore. The configuration of the mill at that time was not suitable for this material, hence recoveries were low. Tailings from this period may contain economic gold that can be extracted. If this can be achieved in the first few years of the ramp-up in production, the additional revenue will help to lessen the capex requirement.

There is potential addition of mill feed through small nearby open pit mines on the existing mining leases. If confirmed, this additional material could be added to mill feed which in the current configuration is only planned to be operated at 40% capacity. There is also potential to employ hydraulic fill to improve mining recovery as in order to maintain stability, some ore is lost in pillars. With the cost-effective use of hydraulic backfill, mining recovery could be improved.

## Mining Costs

The Greg Hunter decline provides an opportunity for potential automation of trucking, with subsequent cost savings in the long term. Resolute is establishing fully automated loading and trucking at the Syama Underground mine and will assess the capacity to introduce elements of this technology at Bibiani. In addition, Syama Underground will employ sophisticated short interval mining scheduling and control systems which are also likely to have application at Bibiani. These systems have the potential to enhance equipment utilisation, increase productivity and reduce mining costs.

## Increased Production Rate

During the second half of the production programme, gold production drops due to the decrease in grade. With further exploration and, as more mineable resources are defined, there exists an opportunity to increase the ore processing rate and maintain production at 100-110koz pa instead. It is anticipated that these additions will require very little capital and the cost of extra production will be marginal relative to the added revenue.

## Process Enhancement

Metallurgical investigations on the master composite sample provided for test work demonstrated a possible improvement in processing recovery up to 92% from the 89.9% recovery used in the financial models. Close monitoring and fine tuning of the process may be able to deliver additional revenue from this opportunity.

## Timeline and Final Investment Decision

Bibiani is a key growth opportunity for Resolute. Receipt of the EPA and completion of the feasibility study update have allowed a timeline to be developed for the recommissioning of the mine.

Resolute's budget for the current financial year includes the care and maintenance program of the existing underground mine and processing facilities and the completion of the Bibiani Operational Readiness Plan. It is expected that Resolute will be able to make a Final Investment Decision during 2019. This would enable recommissioning, mine development, and mill recommissioning to occur during 2020.

For further information, contact:

**John Welborn**

**Managing Director and CEO**

Resolute Mining Limited

Telephone: +61 8 9261 6100 | Email: [contact@rml.com.au](mailto:contact@rml.com.au)



Resolute

# ASX Announcement

## About Resolute

Resolute is a successful gold miner with more than 28 years of continuous production. The Company is an experienced explorer, developer, and operator, having operated nine gold mines across Australia and Africa which have produced 8 million ounces of gold. Resolute currently operates two mines, the Syama Gold Mine in Africa and the Ravenswood Gold Mine in Australia, and is one of the largest gold producers listed on the Australian Securities Exchange with FY19 guidance of 300,000 ounces of gold at an All-In Sustaining Cost of A\$1,280/oz (US\$960/oz).

Resolute's flagship Syama Gold Mine in Mali is a robust long-life asset comprising parallel sulphide and oxide processing plants. The move to underground mining is expected to extend the mine life beyond 2032. The Ravenswood Gold Mine in Queensland demonstrates Resolute's significant underground expertise in successfully mining the Mt Wright ore body, where operations are expected to cease in the final quarter of FY19. The Company's next stage of development in Queensland is the return to large scale open pit mining at the Ravenswood Expansion Project, which will extend the Company's local operations to at least 2032. In Ghana, the Company has completed a feasibility study on the Bibiani Gold Mine focused on the development of an underground operation requiring modest capital and using existing plant infrastructure. Resolute is also actively exploring over 6,600km<sup>2</sup> of potential world class tenure in West Africa and Australia. Resolute supplements its own exploration activities with a portfolio of interests in listed African focused gold exploration companies to provide shareholders with a pipeline of development opportunities.

## Competent Persons Statement

The information in this announcement that relates to Exploration Results is based on information and supporting documentation compiled by Mr Bruce Mowat, a Competent Person who is a member of the Australian Institute of Geoscientists and is a full-time employee of Resolute Corporate Services Pty Ltd, a wholly owned subsidiary of Resolute Mining Ltd. Mr Mowat has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the JORC Code 2012. Mr Mowat consents to the inclusion in this announcement of the material compiled by him in the form and context in which it appears.

The information in this announcement that relates to the Mineral Resource estimate is based on information and supporting documentation prepared by Mr Kahan Cervoj, a Competent Person who is a member of The Australasian Institute of Mining and Metallurgy. Mr Cervoj is a full time employee of Optiro Pty. Ltd. and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which has been undertaken to qualify as a Competent Person as defined in the JORC Code 2012. Mr Cervoj confirms that the Mineral Resource section is based on the information in his supporting documents and consents to the inclusion in this announcement of the material compiled by him in the form and context in which it appears.

### ASX:RSG Capital Summary

**Fully Paid Ordinary Shares:** 741,477,595  
**Current Share Price:**  
A\$1.33 as at 12 July 2018  
**Market Capitalisation:**  
A\$990m  
**FY19 Guidance:**  
300,000oz @ AISC A\$1,280/oz

### Board of Directors

Mr Martin Botha *Non-Executive Chairman*  
Mr John Welborn *Managing Director & CEO*  
Mr Peter Sullivan *Non-Executive Director*  
Mr Mark Potts *Non-Executive Director*  
Mr Bill Price *Non-Executive Director*  
Ms Yasmin Broughton *Non-Executive Director*

### Contact

**John Welborn *Managing Director & CEO***  
Level 2, Australia Place | 15-17 William St  
Perth, Western Australia 6000  
T: +61 8 9261 6100 | F: +61 8 9322 7597  
E: [contact@rml.com.au](mailto:contact@rml.com.au)



### Cautionary Statement about Forward-Looking Statements

This announcement includes certain statements, estimates and projections with respect to the future performances of Resolute. Such statements, estimates and projections reflect various assumptions concerning anticipated results, which assumptions may prove not to be correct. The projections are merely estimates by Resolute, of the anticipated future performance of Resolute's business based on interpretations of existing circumstances, and factual information and certain assumptions of economic results, which may prove to be incorrect. Such projections and estimates are not necessarily indicative of future performance, which may be significantly less favourable than as reflected herein. Accordingly, no representations are made as to the fairness, accuracy, correctness or completeness of the information contained in this announcement including estimates or projections and such statements, estimates and projections should not be relied upon as indicative of future value, or as a guarantee of value of future results. This announcement does not constitute an offer, invitation or recommendation to subscribe for or purchase securities in Resolute Mining Limited (ASX:RSG).

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