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# **Underground Sub-level Caving Recommences at Big Bell**

## Highlights

- Underground sub-level cave mining recommences at Big Bell
- New extraction method and significantly enhanced ground support reduces geotechnical risk
- First mass cave blast breaks approximately 103,000 tonnes at 3.0g/t over 3 levels (510/535/560)
- Final piece of Westgold's Murchison strategy now in place

Westgold Resources Limited (**Westgold** or the **Company**) is pleased to advise that underground sub-level cave stoping has recommenced at the Cue Gold Operations (**CGO**) Big Bell underground mine.

The first mass cave blast was initiated on Monday 2 March, 2020 and paves the way for the planned ramp up in mine output that targets steady-state production rates by the end of CY 2020.

Westgold's Executive Chairman, Peter Cook said:

"This is a major milestone for Westgold and a terrific achievement by our CGO team. Big Bell has been idle and flooded since 2003 however before that it was one of the largest single mine gold producers in the Australian gold sector.

After nearly 3 years of substantial capital reinvestment and hard toil, we are on the cusp of returning Big Bell to its former glory. Big Bell will become our largest single mine in the Murchison region and restarts with a 10 year mine life with excellent resource extension potential.

Big Bell is key to Westgold's plans as it represents the last critical piece in our Murchison strategy. Our dominant land position, three operating process plants, over 9 million oz resource base and our unique position as owner operator provides the strategic platform to underwrite more than 300,000 ounces of production per annum in the longer term."

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## OVERVIEW

#### **Big Bell – A Brief History**

Gold was first discovered around Big Bell in 1910 with small scale prospects being mined. There has been approximately 2.7 million ounces of gold produced from the area in four periods prior to Westgold ownership, those being:

- 1. 1913 to 1924: 88,000 tonnes for ≈15,000 oz
- 2. 1937 to 1955: 5.6 million tonnes for ≈730,000 oz from underground
- 3. 1988 to 1995: 14.2 million tonnes for ≈804,000 oz from open pits
- 4. 1995 to 2003 11.5 million tonnes for ≈1.17 million oz from underground

The last phase of underground mining at Big Bell (until 2003) applied a sub-level cave mining methodology with extraction sequencing from the edges, retreating from either ends to the centre. Whilst this proved a very effective and low-cost method, it induced substantial geotechnical stress in the shrinking central pillars which escalated mining risk and negatively impacted mine productivity. In 2003 technical and economic factors driven by a gold price under A\$500/oz, saw the mine close. The Big Bell process plant was subsequently sold a few years later and the mine sat idle until 2016.

Westgold gained control of the project in 2011 and after several years of detailed evaluation in 2016 set about the monumental task of setting up and re-establishing the mine for long term, sustainable gold production as part of its Central Murchison gold strategy.



Figure 1: Big Bell Mine.

#### Westgold re-establishes the Big Bell underground mine

Over the past 3 years Westgold has progressively dewatered the underground mine and rehabilitated the historic access development to ≈610m vertical depth.

All the critical mine services including dewatering, surface infrastructure power reticulation, ventilation, pumping and emergency egress have been re-installed. Access drives into all old mining areas have been rehabilitated with new development extended to enable the extraction of remnant and new ore horizons.

With the advancement of time and the progression of mining technology, Westgold has re-established Big Bell as a technology driven modern mine. Particularly in the area of mine geotechnics, Westgold has installed a substantially more sophisticated ground stress management and support regime. This new system is comprised of combinations of dynamic rockbolts, high-tensile and purpose designed mesh integrated with shot-crete, to provide greater support to quantitatively assessed and modelled cave impact



zones. These new technologies and improved methods will result in far more effective management of the geotechnical implications of sub-level cave mining.

Westgold has reversed the extraction sequencing compared to the previous mining phase. Ore extraction will now be effected from the centre of the ore system to the limits, with up to 7 levels retreating at any one time carrying a retreating V-shape profile as the mine gets deeper. This change in extraction methodology enables a continuous and more even redistribution of induced ground stress as the cave advances.

The sub-level caving mining methodology has considerable advantages over long-hole open stoping methods or up-hole benching methods typically used in the Australian gold sector. The progressive mitigation of natural cave filling allows for nearly full extraction of ore without a requirement for pillars.

The bulk nature and size of the stopes allows for higher productivity and therefore significantly lower unitmining costs. Consequently, Westgold expects mine operating costs at Big Bell to fall to under \$40 per tonne of ore extracted at steady state.

The change in extraction and geotechnical management has however come with a far more arduous capital burden. As a consequence, an exceedingly large amount of ore must be capitally developed before steady state production can be reached. In this case, more than 3 years of ore will be capitally developed and progressively carried forward as up to 5 levels commence extraction from the core to the limits. The benefit is in operational flexibility with multiple draw points available at any time allowing for higher productivity, efficient fleet utilisation and lower mining costs.

The following figure 2 depicts the Big Bell mine in longitudinal projection.



Figure 2: Big Bell long section showing extent of past mining and current mine plan.

The long section diagram illustrates the twin declines that provide level access at the ends of the ore body. Significantly, the early drilling has already shown potential for the core of the ore system to expand in strike



from the planned 500-600m of strike-length up, to 700-800m of strike-length. Accessing this expansion in strike can be accommodated by simply moving the centroid of the declines away from the core.

The following plan view of the 560 level depicts the deepest level of historic mining and shows how the strike extension can be accessed. It also shows the area against the old cave front, which was significantly damaged by ground stress at closure in 2003 and the extraction directions of the cave front from the centre to the limits along strike.



Figure 3: Big Bell Plan View of 560mRL showing past mining, current mine plan and potential cave extensions

The final rehabilitation of old caving fronts within the orebody has taken longer than anticipated to secure for safe ore extraction. As such this first mass blast in the cave is non-typical but necessary to invert the cave front blasting approximately 103,000 tonnes over three development levels (510/535/560).

As illustrated in the long section below (Figure 4), the remediation blast establishes a V-shape cave that should ensure a smooth ramp-up of the northern cave extraction fronts. A similar process is now under way for the southern cave front (scheduled for completion in mid-2020) after which all cave excavations will be new and provide greater predictability in scheduling as well as ore tonnage won from the development cycle.

# **Big Bell Mine**







Figure 4: Big Bell Long Section showing extents of the Initial Cave Blast

## **Big Bell – A New Beginning**

In its first year of production mining, Westgold aims to establish this V-retreat profile before the mine transitions to steady state high output levels of circa 1 million tonnes per annum. With caving having commenced, the mine is expected to progressively ramp up to full output by the end of CY 2020. Total output for CY 2020 is anticipated to be approximately 600,000 tonnes at  $\approx$ 3g/t Au.

Recently completed exploratory diamond drilling has revealed excellent high-grade results at widths that enable the extension of the sub-level cave method along strike. These could quickly amount to increases in key mine metrics of tonnes and ounces per vertical metre and consequently extend the mine life and lower overall production costs.

#### o Ore Processing

The ore from Big Bell will be trucked approximately 60km to the Company's 1.2 million tonne per annum processing hub at Tuckabianna by road. The gold ore from Big Bell contains gold in both sulphide and silicate mineral, and while the gold is very fine grained, free milling with recoveries at grinds of 80% passing 75 microns are expected to be 90%. The ore will require approximately 28 hours of residence time.

When the mine reaches full capacity, Big Bell ore will be the primary feed source for Tuckabianna adding at least 100,000oz per annum at steady state to Westgold's production profile for potentially over a decade.



## • The Geology

The gold mineralisation at Big Bell is strata-bound and hosted in a sequence of quartz-muscovite-potash feldspar schists bound by mafic volcanics. These schists contain abundant sulphides (up to 10%) mainly as pyrite. The gold is in both sulphide and silicate minerals and is very fine grained.

The Big Bell load system dips steeply to the East with a true width averaging approximately 30m over the core 700m of strike. The ore is accessed by a footwall decline ramp of 6m (w) x 5.5m (h), as depicted in Figure 6 below.



Figure 5: The Big Bell Shear

Figure 6: Big Bell Mine cross section 3,700mN

#### • Growth from the Field - The Bigger Picture

The Big Bell mine is a single mine covering approximately 1.2km of strike in an overall mineralised lode system (Figure 5). The package of schists known as the mine sequence (and colloquially referred to as the Big Bell Shear) extends over a 20km regional strike.

The strike-length of this mine sequence is predominantly controlled by Westgold with strong indications of mineralisation to the north at the Accelerator and Indicator Prospects. Currently Westgold remains focussed on the southern part of the strike (Fender to Big Bell)

In the southern 4km of this package, mineralisation is strongly developed and a number of open pits have been mined in the period from 1988 – 2003. Whilst Big Bell is the largest of these systems, showing essentially continuous wide mineralisation over the full width of the package, it is also the only mine that has been subject to deeper drilling and underground mining (refer to Figure 4 and Figure 5).

The 1600N, Shocker and Big Bell South open pits (Figures 8 and 7 respectively) were significant producers and, with limited shallow drilling show good depth continuity of the ore systems together with a significant change in the gold price, may now represent near term underground opportunities.





Figure 7: Gram x Metre contours showing limits of drilling.

Similarly, further to the south at Fender, an open pit cut-back is currently underway with a planned underground development on that ore system being considered.

Once Big Bell is re-established and operating at steady state, growth at Westgold will be from these internal opportunities enabling the Group to leverage its own mining capability and existing operating infrastructure in line with these targets.

In preparation for expansions on the Big Bell line, exploration drilling will accelerate on high priority targets later in this year.



Figure 8: Limited deep drilling under the 1600N, Shocker and Big Bell South zones.



#### • Financial Output Reporting of the Big Bell Mine

With the requirement to establish new and multiple levels and large tonnages of developed ore before the cave mining can achieve a steady state production, it is expected that Big Bell will remain in a capital development phase until it reaches steady-state production and/or cave front progression enables the targeted 1 million tonne per annum to be achieved.

This will enable the mine to develop incrementally with a typical physical, financial and production profile during the ramp up period that is in line with its forecast long term fiscal profile.

#### • Impact on CGO and the Broader Murchison Operations

The impact to the Group of the Big Bell mine operating at full production is significant. Big Bell (as an additional single mine) adds approximately 100,000oz to group output and will be the primary ore source for the Tuckabianna mill, with additional ore coming from targets within the Big Bell, Cuddingwarra, Day Dawn, Pinnacles and Tuckabianna package (Figure 9). Collectively these areas hold a Total Mineral Resource of 53.87 million tonnes at 2.57g/t Au, containing 4.45 million ounces and an Ore Reserve of 20.18 million tonnes at 2.68g/t Au, containing 1.74 million ounces (refer to ASX announcement of October 4, 2019 for detail on the Resource and Reserves estimates).



Figure 9: Location Map of Westgold's Southern (Cue) and Northern (Meekatharra) assets

With Big Bell ultimately being the primary source of plant feed for Tuckabianna, Westgold will have the opportunity to truck additional tonnage to utilise the larger capacity and lower cost Bluebird mill (within the Meekatharra Gold Operations-MGO).



Although located approximately 100km north of CGO, MGO's Bluebird processing plant is larger and has a lower operating cost. As ore cartage and process cost is similar for any ore within the CGO area, these ore sources could be economically trucked north to sustain higher production rates at MGO.

The Great Fingall, Golden Crown and Cuddingwarra mines represent prime opportunities to implement this strategy.

The Great Fingall mine (Figure 10) produced 1.2 million ounces at a recovered grade of 19.5 g/t before it closed during the Great War (1914-1918) and Golden Crown produced 288,000oz at 13.8g/t before it closed in 1998. Recent drilling by Westgold has shown an extension to the Great Fingall ore body to approximately 1.75km at depth. This will become a priority development for Westgold when Big Bell enters a steady-state phase. (Refer to ASX Announcement of January 21, 2020).

The spectacular grades seen in the Great Fingall and Golden Crown could be the lower tonnage, high grade icing on the Westgold's group production cake with serious potential to enhance MGO and/or CGO production and costs.



Figure 10: Schematic: Great Fingall – Golden Crown Section



Additionally, at Cuddingwarra (Figure 11), 10kms west of Cue, open pit and underground mining opportunities exist at both the Black Swan South and Rheingold prospects.





#### Looking Forward and Impact on Guidance

Westgold will update the market as to progress at Big Bell during the ramp up period in its Quarterly Reports and specifically on any material variation to its ramp up plan. As has previously been advised, the delay in the onset of stoping at Big Bell has impacted the ability for CGO and hence the group to achieve its quarterly guidance. Whilst that short term consequently impacts the current quarter, the significance of the commencement of production from stoping at Big Bell will see mine outputs align better with guidance for the financial year.

As the ramp up progresses, Westgold will look to provide a guidance update for FY 2020 later in the ensuing quarter.

#### **COMPLIANCE STATEMENTS**

#### **Exploration Targets, Exploration Results and Mineral Resources**

The information in this report that relates to Exploration Targets, Exploration Results and Mineral Resources is compiled by Westgold technical employees and contractors under the supervision of Mr. Jake Russell B.Sc. (Hons), who is a member of the Australian Institute of Geoscientists. Mr Russell is a full time employee to the company, and has sufficient experience which is relevant to the styles of mineralisation and types of deposit under consideration and to the activities which he is undertaking to qualify as aCompetent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Russell consents to the inclusion in this report of the matters based on his information in the form and context in which it appears. Mr Russell is eligible to participate in short and long term incentive plans of the company.

#### **Exploration Results**

The information is extracted from the report entitled 'Exploration Highlights - 30 September 2019 Quarter' created by Westgold on 14 October 2019 and available to view on Westgold's website (www.westgold.com.au) and the ASX (www.asx.com.au). The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

#### **Forward Looking Statements**

Certain statements in this report relate to the future, including forward looking statements relating to Westgold's financial position and strategy. These forward looking statements involve known and unknown risks, uncertainties, assumptions and other important factors that could cause the actual results, performance or achievements of Westgold to be materially different from future results, performance or achievements expressed or implied by such statements. Actual events or results may differ materially from the events or results expressed or implied in any forward looking statement and deviations are both normal and to be expected. Other than required by law, neither Westgoldd, their officers nor any other person gives any representation, assurance or guarantee that the occurrence of the events expressed or implied in any forward looking statements will actually occur. You are cautioned not to place undue reliance on those statements.

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