



Sitting on a golden egg

West Wits Mining (ASX:WWI) is a Melbourne-based gold explorer, with projects in South Africa and Western Australia. The company's South African Witwatersrand Basin Project (WBP) is located in an area that has produced a significant amount of the world's gold. At present, WBP carries a JORC resource of 4.28Moz of gold. WWI conducted a scoping study of this area and identified five distinct mine targets for staged development, of which stage 1 comprises the Qala Shallows project.

Benefits of low capital outlay and early production

The company completed its Definitive Feasibility Study (DFS) for Qala Shallows in September 2021 and production is expected to begin by early 2022. Qala Shallows will produce 663,000 oz. over a 17-year life-of-mine (LoM). The reefs in this area have existing shafts and holes last worked in the early 2000s, when these sites were abruptly mothballed due to decline in gold prices. WWI will therefore require only clearing and rehabilitation of underground workings before it can begin mining. This significantly reduces the time and capital required to take the project from development to mining stage, thus making it a highly robust project. Another factor that contributes to the favourable project economics is that WWI will be processing ore on a toll treatment basis instead of building plants of its own.

On-track to meet project milestones

By mid-2021, WWI had already secured environmental and mining rights approvals and is on track to commence gold production from Qala Shallows by 2022. The company recently raised ~\$9m in new equity and it is working with a debt advisor to secure the relatively modest capital needed to bring WBP's stage 1 online.

Valuation range of A\$0.054–0.076 per share

We have valued WWI at 5.4 cents per share base case and 7.6 cents per share optimistic case using the DCF approach, with conservative assumptions on annual gold production and gold prices. We foresee WWI being re-rated once production commences in Qala Shallows. The key risks we see are: 1) commodity price risk; 2) project financing; 3) delays in project timelines/milestones; 4) unforeseen challenges in processing ore on a toll treatment basis.

Share Price: A\$0.036

ASX: WWI

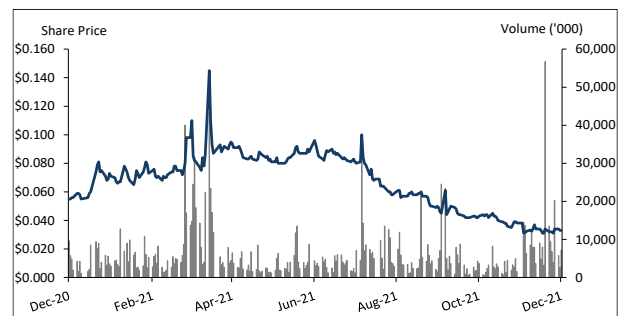
Sector: Materials

27 January 2022

Market cap. (A\$ m)	66.0
# shares outstanding (m)	1,834.4
# shares fully diluted (m)	2,081.6
Market cap ful. dil. (A\$ m)	74.9
Free float	83.1%
52-week high/low (A\$)	0.11 / 0.031
Avg. 12M daily volume ('000)	6,039.0
Website	westwitsmining.com

Source: Company, Pitt Street Research

Share price (A\$) and avg. daily volume (k, r.h.s.)



Source: Refinitiv Eikon, Pitt Street Research

Valuation metrics	
DCF fair valuation range (A\$)	0.054–0.076
WACC	7.8%
Assumed terminal growth rate	None

Source: Pitt Street Research

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Introducing West Wits Mining, ASX:WWI

West Wits Mining (ASX:WWI) is a Melbourne-based gold explorer, mining at tenements situated in South Africa and Western Australia. The company's South Africa-based WBP is a largely underground geological formation made up of two historic mining centres on the northern edge of its namesake basin in the Central Rand Goldfields. Witwatersrand has a rich history of gold production, being the world's largest-known gold reserve and producing >1.5 billion oz. or ~22%¹ of all over-the-surface gold. With this project, WWI aims to establish itself as a mid-tier gold producer, targeting >80,000 oz. p.a. over 20+ years. As per the JORC-compliant global mineral resource estimate (MRE), WBP boasts 4.28Moz of gold at 4.58g/t and the company is targeting maiden production in early 2022. Besides WBP, the company is targeting gold, copper and manganese at its Mt Cecelia Project that is located in the highly prospective East Pilbara region of Western Australia. This region is one of Australia's most prominent regions for mineral exploration with several joint venture agreements taking place since Rio Tinto's Winu discovery, ~70km east of Mt Cecelia. As we note below, Rio Tinto recently farmed into this project.

WBP carries an existing JORC resource of 4.28Moz of gold

WBP has existing infrastructure and rich history of gold production

WBP could have the potential to be a 12Moz gold resource

WBP could potentially be ~3x its current resource estimate

In August 2015², WWI announced that it had restated the old Durban Roodepoort Deep resources of WBP, which had been estimated at 12.8Moz in 1998. In October 2020, WWI reported a 4.4Moz estimate, but it later reduced this estimate to 3.55Moz in July 2021 and this was subsequently revised to 4.28Moz in December 2021. WWI was granted a mining licence covering lesser area in the Qala Shallows and Deeps than the previous prospecting licence because part of WWI's application covered areas in the north of the leases that were heavily built over and therefore impractical to mine. However, in September 2021, the company lodged a new prospecting license application to extend the area covered under its Qala Shallows and Deeps mining rights, which if granted, can equip WWI to reinstate a substantial portion of the project's original MRE.

Qala Shallows project offers early start and robust returns

WWI's Qala Shallows project, stage 1 of WBP, is currently in its development phase and the project is expected to be commissioned in early 2022. The company's early mining initiative at Qala Shallows (stage 1 of the project) is on track with a goal of extracting 5-8kt ore p.m. starting February 2022, and building to 50,000t ore p.m. under full-scale DFS development. The objective of the early mining initiative is to establish a mining footprint at the existing Qala Shallows, starting with the rehabilitation of the old Qala Adit box cut and decline to access remnant ore bodies in addition to the DFS production schedule

Of all the five stages of WBP, Qala Shallows has the largest mineral resource and longest LoM. Notably, the company can expedite its development activities due to presence of existing infrastructure. Another benefit of this project is that it requires modest initial capital since WWI will not be building its own processing plant but relying on the capacity of plants in the vicinity. Consequently, the DFS for this project illustrates a solid returns profile with an Internal Rate of Return (IRR) of 35% and payback of 5.5 years over a mine life of 17 years.

¹ Norman, N.; Whitfield, G. (2006) *Geological Journeys*; pp. 38–49, 60–61.

² See West Wits' market release dated 28 August 2015 headlined 'Restatement of historical resources in South Africa'.



Ten reasons to look at WWI

- 1) **The Central Rand Goldfield sits in one of the oldest and largest gold provinces in the world. The Witwatersrand** accounts for over 1.5 billion oz. in production since the 1880s, making up ~22% of all over-the-surface gold. WBP's JORC gold resource estimate of 4.28Moz at 4.58g/t is just a fraction of the overall resource potential of area under WWI's control.
- 2) **WWI has already secured environmental and mining rights and is in the development stage** of the Qala Shallows project, which is the first phase of the five-staged development programme of WBP. We believe the project is significantly de-risked with WWI having the necessary approvals in place and this should support its project financing efforts.
- 3) **WWI's South African projects are 33.4% owned by the Black Economic Empowerment partner, Lilitha Group.** This ownership structure makes the project over-empowered, surpassing South Africa's Mining Charter requirement of 26%. Lilitha also plays an active part in the operations and was instrumental in securing the company's mining license.
- 4) **There is high potential for early gold production within six months from project commencement, i.e. by early 2022.** WWI, as part of its early mining initiative at the Qala Shallows project, aims to produce ~5-8kt ore p.m. starting February 2022.
- 5) **The Qala Shallows project entails low capital expenditure due to historical mine works and planned toll treatment for processing ore.** The WBP project area, primarily the first stage of Qala Shallows, has shafts and holes from early 2000s when these sites were operational that can become functional with only rehabilitation and clearing. Further, the company intends to process ore on a toll treatment basis, thus no capital is required for the processing plants.
- 6) WWI completed the DFS for Qala Shallows project in September 2021. **The results of the DFS demonstrate that the project is highly robust and lucrative.** The study highlights that the project has a pre-tax Net Present Value (NPV) on a 7.5% discount rate of US\$150m (A\$205m) for capital costs of ~US\$50m. This works out to a healthy pre-tax IRR of 35% over the mine life of 17 years.
- 7) With South Africa being home to some of the world's largest gold mines, WWI is expected to benefit from a **favourable regulatory and political environment** as well as availability of talent pool.
- 8) There can be further upside potential for WWI in the medium-term from **Mt Cecelia project's** exploration targets in the highly prospective East Pilbara region of Western Australia. WWI is planning drilling campaigns in this region from 2022. **The recently announced farm-in and joint venture agreement with Rio Tinto** will help accelerate the development of the high-priority targets.
- 9) **WWI has an experienced leadership** team with significant mining experience. Its managing director, Jac van Heerden, is a Mining Engineer with over 20 years of operations and project experience in South Africa, Democratic Republic of Congo (DRC) and Zimbabwe.
- 10) We believe WWI is undervalued at its current market value. We value the company at 5.4 cents per share base case and 7.6 cents per share optimistic case using a DCF approach with conservative assumptions on annual gold production and gold prices. The near-term catalyst for the stock can be production commencement from Qala Shallows, which is expected as early as 2022.

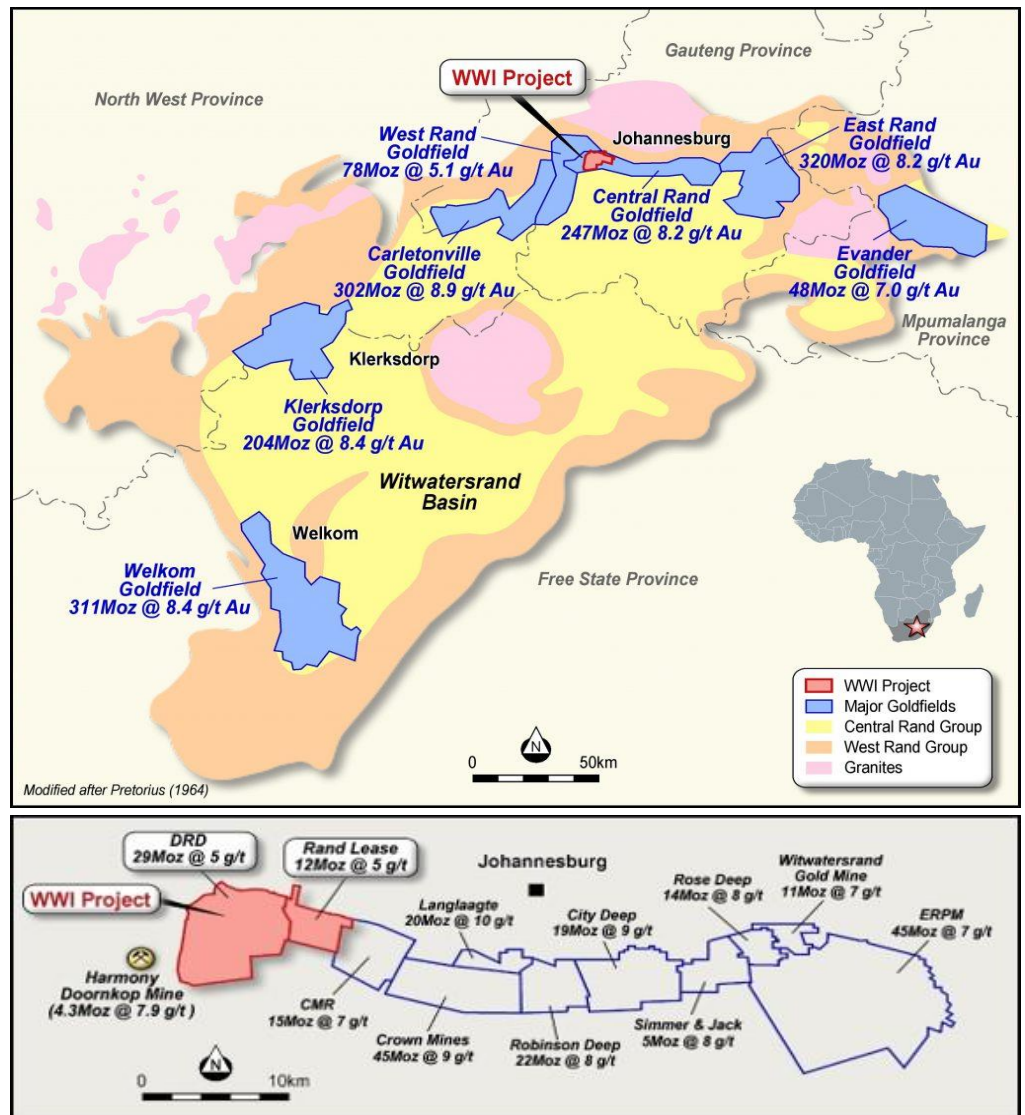


WBP – a robust South African gold play

Witwatersrand is a globally renowned gold-producing region, which is a 56km long, north-facing scarp in South Africa. Mining has been taking place in this area since the discovery of goldfields in 1886. This region hosts the world's largest-known gold reserves producing over 1.5 billion oz., which represents ~22% of over-the-ground gold stock. The WBP is located ~15km west of the city of Johannesburg in the Gauteng Province of South Africa. WBP comprises two historic mining centres in the northern edge of the Witwatersrand Basin in the Central Rand Goldfield, immediately southwest of the city of Johannesburg (Figure 1). The Central Rand Goldfield contains some of the world's largest gold deposits and has produced over 247Moz of gold or over 35% of global production.

Witwatersrand is one of world's largest gold reserves, producing ~22% of above-the-ground gold

Figure 1: Location of the WWI project in the Witwatersrand Basin, South Africa



Source: Company



WBP has been developed since 2007 and has 4.28Moz resource till a depth of 1,000 metres

WWI was granted mining rights in WBP in July 2021

A project with historical significance

WWI has been developing WBP since 2007, when the South African gold major DRDGOLD, and an ASX-listed company Mintails, formed this company as a joint venture. There were initially six lease areas, four of which were sold to a consortium headed by Mintails in 2012³. Post this transaction, WWI had the Durban Roodepoort Deep (DRD) and Rand Leases (RL) mines, which were both major gold producers until their sudden closure by DRDGOLD in 2000 due to low gold prices and certain corporate issues. By then, the mines had workings down to 3,100 metres. The DRD mine, once nicknamed the 'Grand Old Lady', historically accounted for 29Moz of gold. The RL mine produced another 11Moz.

Under the DRD and RL mines, the main reefs of interest were the Bird, Kimberley, Main, South and Ventersdorp Contact. Despite the sudden closure of mining in 2000, the shafts on these mines - Circular Shaft, 6 Shaft, 11 Shaft and Qala Shaft – as well as an adit next to the Qala shaft - can still be used since they were mothballed rather than closed.

During 2015-2021⁴, WWI gradually built up a multi-million ounce JORC 2012 resource on its leases, and was granted a mining right for WBP in July 2021. At present, WWI has a 4.28Moz JORC MRE at the WBP down to a depth of 1,500 meters which provides the resource base to sustain a long-life mine.

There are a significant number of old mine workings in the area and the WBP is focussed on three of these existing but closed sites, located on the old DRD and RL mines. Additionally, there are a number of historic economic reef horizons in these areas, including Bird Reef (BR), Kimberley Reefs (K9A and K9B), Main Reef Leader (MRL) and Main Reef (MR). Figure 2 depicts the reef-wise breakdown of WBP's 4.28Moz resource @ 4.58g/t.

Figure 2: WBP JORC MRE – by Reef (2g/t cut-off)

WBP Reef	Measured			Indicated			Inferred			Total		
	Ore (Mn)	Grade	Au Moz	Ore (Mn t)	Grade	Au Moz	Ore (Mn t)	Grade	Au Moz	Ore (Mn t)	Grade	Au Moz
Bird - Central and West	0.04	3.73	0.00	0.89	2.51	0.07	0.44	2.86	0.04	1.38	2.66	0.12
Bird - East	2.22	4.30	0.31	2.00	4.74	0.30	0.42	4.48	0.06	4.63	4.51	0.67
K9B KRC	0.00	2.98	0.00	0.10	3.87	0.01	0.18	4.22	0.02	0.28	4.08	0.04
K9B KRE	1.93	4.37	0.27	6.21	4.14	0.83	2.35	5.51	0.42	10.50	4.49	1.52
K9A KRE	2.10	4.54	0.31	1.82	4.20	0.25	4.20	5.14	0.69	8.11	4.77	1.25
MRL	0.72	5.81	0.14	0.15	8.34	0.04	0.09	7.54	0.02	0.96	6.36	0.20
MR	2.79	4.73	0.42	0.09	5.15	0.01	0.31	5.27	0.05	3.19	4.79	0.49
Total	9.81	4.60	1.45	11.26	4.19	1.52	7.98	5.10	1.31	29.05	4.58	4.28

Source: Company

Note: Global MRE set a 2.0g/t Au cut-off. Reported in accordance with the JORC Code of 2012.

Favourable geology

In addition to the high-potential DRD and RL mines, several other gold-bearing reefs were mined in this area over a strike length of 46km producing 7.7 million kg of gold at an average grade of 8.21g/t (Handley, 2004). Between 1888 and 2000, mines across WWI rights produced 1.3 million kg of gold

³ The East Champ D'Or, Luipaardsvlei, West Rand Consolidated and West Wits Leases. These leases are sometimes called the Randfontein Cluster.

⁴ 1.2Moz in January 2016; 1.3Moz in May 2016; 3.3Moz in December 2017; 3.7Moz in July 2018; 4.4Moz in October 2020; 3.5Moz in July 2021; 4.28Moz in December 2021.



(40Moz), at an average grade of 4.92g/t (Handley, 2004). The 4.28Moz MRE declared by WWI is a result of sourcing and verifying historical datasets, diamond drilling, developing trenches across surface outcrops, and capturing additional surface and underground assays and geological data from mining plans. Further, ~69% of WWI's MRE is in Measured and Indicated Categories. Moreover, inspection of historic underground mine works shows stable existing shafts with no critical rock engineering issues since mine closure in 2000. Thus, in our opinion, the magnificent mining history along with the extensive deposits found in this region, make WBP a highly promising and low risk project for WWI.

*Existing Black Economic
Empowerment partner helps
de-risk the project*

Favourable mining jurisdiction

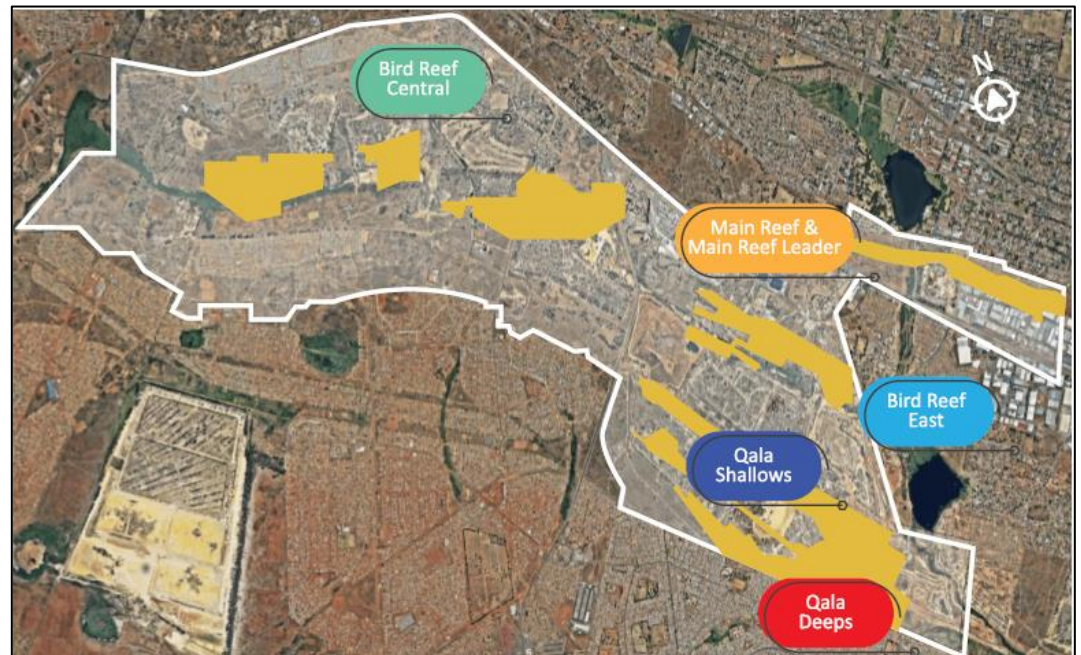
South Africa has a rich heritage of mining projects particularly for gold producers. The regulatory environment and democratic institutions in this country are comparable to developed countries and these have largely remained favourable for the mining sector. South Africa also boasts of a rich talent pool, which is a critical requirement for the mining sector. Moreover, WWI benefits from its Black Economic Empowerment partner, Lilitha Group, which owns an effective 33.4% stake in WBP. This ownership structure ensures that the project is over-empowered, surpassing South Africa's Mining Charter requirement of 26% and the slated 30% in the 2018 Draft Mining Charter proposal. Lilitha has also played an instrumental role in securing the mining license and is a politically well-connected entity. It also brings significant mining experience to the table. We believe this partnership with Lilitha helps de-risk the project from regulatory and political perspectives.



Development plan for WBP

The South African mining services firm Bara Consulting carried out an independent scoping study and the results were received in July 2020. The study confirmed the company's view that WBP offers multiple areas for mining and identified five distinct mining targets (Figure 3), which enables staged development. In our view, this incremental development approach helps in de-risking the overall project.

Figure 3: WWI's five mining targets/stages



Source: Company

The scoping study further indicated a 25-year LoM with an estimated 1.56Moz of run-of-mine (RoM) gold production (Figure 4). With this cornerstone project, WWI can target a steady state gold production of 80,000 oz. p.a. for 18 years. With its extensive mineral deposits, the project has the potential to reach a maximum capacity of >90,000 oz. p.a. by year 7 (Figure 5).



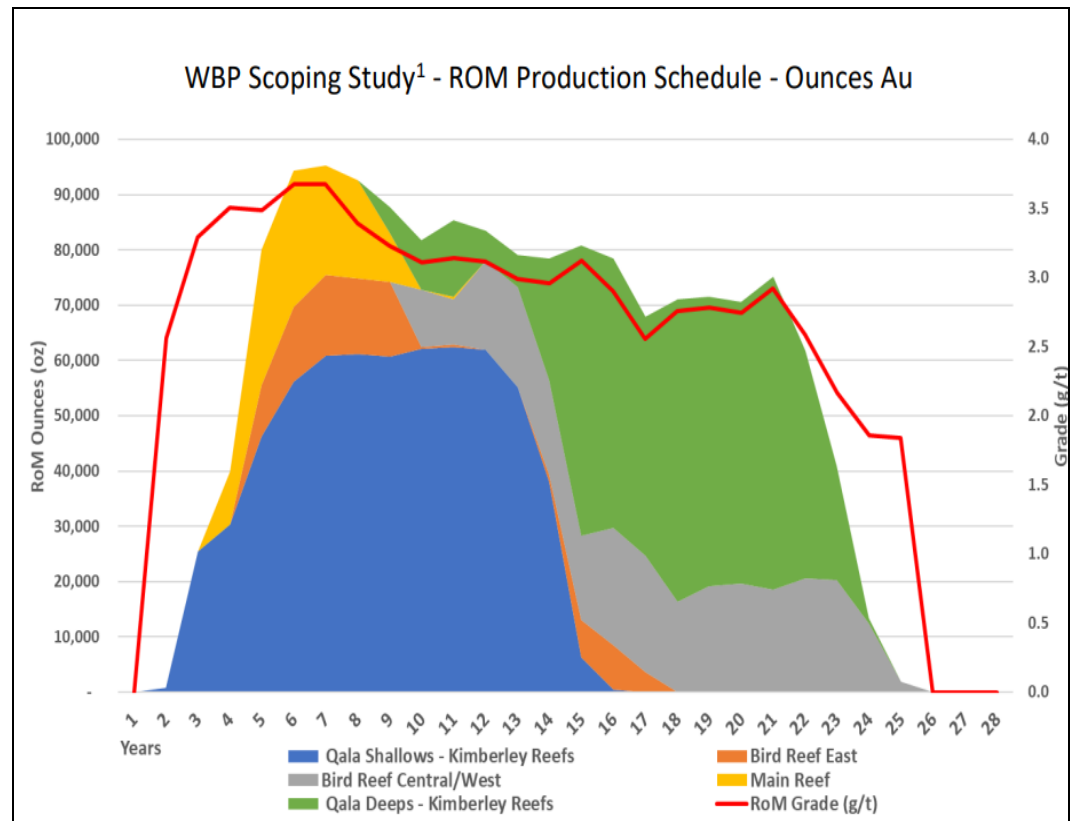
Figure 4: WBP’s key production metrics

WBP Scoping Study – Production Data	Outcome
Life of Mine (Construction to Relinquishment)	25 Years
Total Years of Production	22 Years
Total Production (Ore Tonnes)	16,000,000
Max Production Rate (Ore Tonnes)	850,000tpa
Run of Mine Grade Au (Average)	3.4g/t Au
Recovered Grade Au (Average)	3.0g/t Au
LoM Contained Au	1,730,000oz
Metallurgical Recovery Au (Overall)	90%
Run of Mine (RoM) Gold Produced	1,560,000oz
Average Annual Gold Production (22 yrs)*	70,000oz
Average Annual Steady Gold Production (18 yrs)^	80,000oz
Max Gold Production (Year 7)	95,000oz

Source: Company

Note: *Production Years–22 yrs (Yr 3–24); ^Steady state - excludes ramp-up and ramp-down of production – 18 yrs (Yr 5-22)

Figure 5: RoM production schedule by stages



Source: Company



WBP has been divided in five stages prioritized based on:

- *Larger mineral resource*
- *Longer LoM*
- *Existing infrastructure supporting rapid development*

Five-stage incremental development

The development of mining operations for WBP has been divided into five stages based on distinct reef packages. Two of the mining targets – Qala Shallows and Qala Deeps made up of the Kimberley Reef Package, still have extensive life left and form the backbone of WBP, while the other areas of operation will supplement additional tonnes through the Qala operations LoM. The sequence of the detailed evaluation of these three mining sites is based on the extent of mineral resource and likely longer life of mine, as well as the potential to develop the mine more rapidly than other sites. It is currently proposed that Qala Shallows be developed first followed by the Main Reef target. The Bird Reef East target will be developed from the Qala workings on completion of mining at the Main Reef and the Bird Reef Central will be the last of the targets to be developed.

Stage 1 – Qala Shallows (Kimberley Reef East)

The production model for the Shallows section alone estimates 7.3Mt at a RoM grade of 3.06g/t for 663,000 oz. over 17 years of production. The DFS estimates first production from Qala Shallows in year 2 with a steady production increase to 50,000t p.m. by year 4. This timeline compares favourably with other similar underground projects and excludes WWI's planned early mining initiative. WWI intends to fund this stage with a mix of debt and equity and envisages funding the later stages of the project with production from this stage.

Stage 2 – Main Reef Package

The Main Reef and Main Reef Leader bands have been identified as the second priority target due to the high recovered gold grade of 5.3g/t though it has a shorter project life. The shorter project life is due to historical mining on this reef package that has reduced the available mineral resources. The scoping study estimated this stage to provide 630,000t at 5.3g/t for 105,000 oz. of incremental production over years 4–9 combined.

Stage 3 – Bird Reef East

This reef has been identified as the third stage of development based on the mine layout as it can be accessed via development from the Qala shaft. Once the Qala Shallows operation reaches a depth of ~150 metres and nears steady state production, a drive will be established to the Bird Reef East with a development distance of ~1,000 meters.

Stage 4 – Bird Reef Central

This reef is accessible via the existing Circular Shaft and has lower recovered grade profile relative to WBP's other areas of development. The development of this stage is subject to further feasibility.

Stage 5 – Qala Deeps

This reef is a depth extension of the Qala Shallows from 500-1,500 meters below surface where the reef dip steepens. Production from the Deeps is scheduled to ramp-up to steady state production from year 15 as the Shallows near depletion. The Deeps section will share infrastructure access with the Shallows and will be subject to a dedicated DFS to confirm rock support and



ventilation requirements to achieve WBP's production schedule from year 15.

Historically proven mining methods

As per the scoping study, reef dips in the area vary from 30° to sub-vertical and it is therefore necessary to employ multiple mining methods. The two mining methods that will be employed at the Witwatersrand Basin are:

- Conventional Breast Mining for shallow dipping areas of <50°.
- Mechanised Longhole Stopping for steeper dips of >50°.

These same methods were used when the historical mine ceased operations in the early 2000s, and these are still being extensively used in South African gold mining. Therefore, the mining methods are tried and tested in the Witwatersrand Basin with a readily available, highly skilled workforce and supply network.

Capitalising existing processing plants

With gold ores from the Witwatersrand Basin having similar metallurgical properties, most gold plants in this area have similar process flow sheets. The scoping study emphasised on the presence of sufficient capacity and quality of processing in the region to enter a toll treating arrangement with one of the local plant operators as opposed to allocating capital for the construction and operation of a new process facility. In fact, during the mine's historical operations, the ores were processed in a similar manner and the neighbouring mines are currently mining similar reef packages which achieve metallurgical recoveries of >90%.

The scoping study assumed that a process plant, between 10km and 15km from WWI's mining sites, would be used for the toll treatment. The plant for the Doornkop mine of Harmony Gold (JSE:HAR) is ~10km away while the Cooke gold-uranium project of Sibanye-Stillwater (JSE:SSW) has a plant called Ezulwini which is ~45km away.

All set for WBP's early mining initiative

Qala Shallows, stage 1 of WBP, was commissioned in Q3 2020. The project will commence with the rehabilitation and re-commissioning of the existing Qala Adit box cut at the Qala shaft. During the re-commissioning phase, geological and rock engineering surveys will be conducted to identify potential old workings that can be restarted as an early mining initiative. This initiative has not been included in the production profile, so it will be additional to the production target, if achieved. The early mining initiative will provide the project team a pilot programme with the mine contractor, gaining valuable information on the underground workings. The company is targeting production of ~5-8kt ore p.m. starting February 2022 and planning to raise this to 10kt p.m. from July 2022. During the scheduled development of the Qala shaft, the engineering team will further review the access and production schedules of the Main Reef and Bird Reef mining areas that will be subject to further DFS, due to commence in Q1 2022.

Early mining initiative at Qala Shallows is targeting 5–8kt pm ore production from 2022



DFS of Qala Shallows is a pivotal milestone

Qala means ‘getting started’ or ‘new beginning’ in the Southern Sotho language commonly spoken around Johannesburg. Indeed, the DFS for Qala Shallows is a stepping-stone for the company’s planned operations in the Witwatersrand Basin. The DFS conducted in September 2021 has delivered robust and compelling results, triggering the first of the five planned stages of WBP development. Qala Shallows represents ~40% of the total planned production across WBP’s 25-year LoM. The DFS supports an underground mining operation with a robust rate of return over a 17-year LoM.

Mineral resources in Qala Shallows are located in areas that will require relatively limited additional development

Substantial ore reserve supports exploration upside

Under the Qala Shallows, two Kimberley Reefs will be processed during the life of the project — K9A and K9B. The Kimberley Reef is a free milling ore containing minor quantities of sulphides, mainly pyrite, and has gold dissolution of 94-95%. The reefs have a substantial maiden ore reserve of 3Mt at 2.88g/t (Figure 6). Additionally, the Inferred Mineral Resources are largely located in areas that will require relatively limited additional development. As per the DFS, there is ~3.9Mt of Inferred Mineral Resources, which if harnessed efficiently, will provide significant upside to the quantity of ores that can be mined from these reefs.

Figure 6: Ore reserve statement for Qala Shallows (JORC 2012)

Ore Reserves (JORC 2021)					
Reef Type	Ore Reserve Category	Tonnage (Mt)	Grade (g/t)	Content (kg)	Content (oz)
K9A	Proved	0.37	3.38	1,260	40,400
	Probable	0.45	2.32	1,040	33,400
	Total K9A	0.82	2.80	2,300	73,800
K9B	Proved	0.46	2.94	1,340	43,200
	Probable	1.72	2.91	4,990	160,600
	Total K9B	2.17	2.92	6,330	203,800
Grand Total	Proved	0.8	3.1	2,600	83,600
	Probable	2.2	2.8	6,000	194,000
	Total	3.0	2.9	8,600	277,600

RoM Inventory				
Resource Category	Tonnes (t)	Grade (g/t)	Au Content	Au Content (oz)
Measured	880,000	3.08	2,713	87,000
Indicated	2,614,000	2.75	7,184	231,000
Inferred	3,855,000	3.26	12,569	404,000
Total	7,349,000	3.06	22,466	722,000

Source: Company

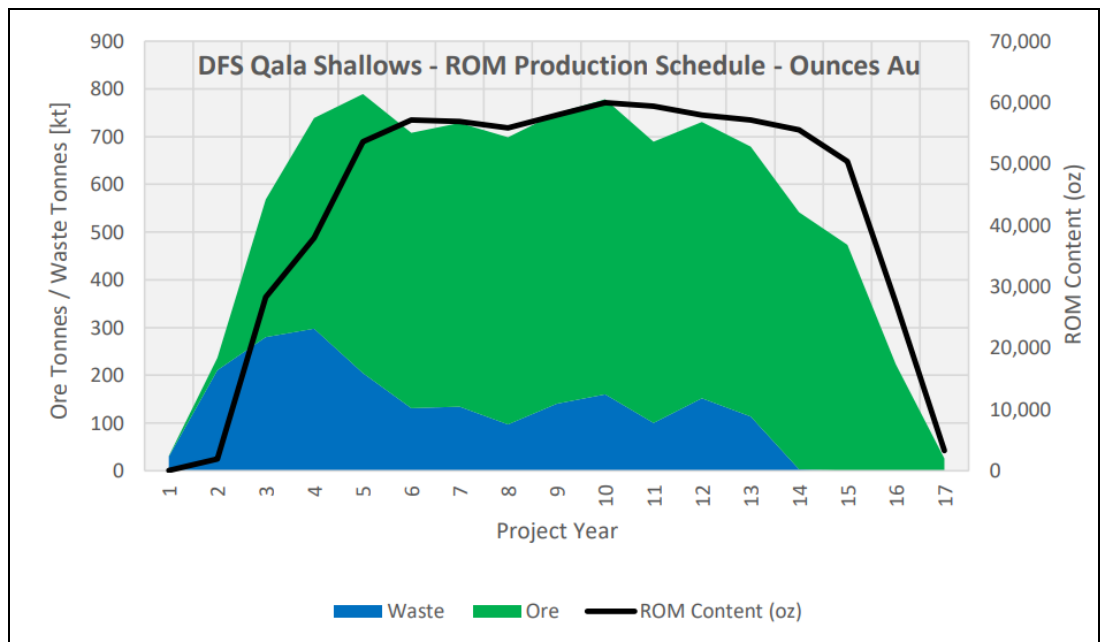


Prolific gold mining site

As per the DFS, Qala Shallows has the potential to ramp-up to a RoM steady state and peak gold production of ~53,000 oz. and 60,000 oz. p.a., respectively (Figure 7). First ore is expected to be extracted 12 months from the commencement of development, building up to an annualised production rate of 25,000 oz. p.a. after 30 months and reaching a full steady state production rate of 53,000 oz. p.a. after the fourth year. Thus, we believe with its extensive deposits, the first stage of WBP has the potential to establish WWI as a mid-tier gold producer.

Qala Shallows alone has the potential to establish WWI as a mid-tier gold producer

Figure 7: Production profile of Qala Shallows over LoM



Source: Company

Low capital costs due to existing infrastructure and processing plants

The DFS estimated an initial capital outlay of US\$50m over the first three years, which is relatively low considering the project size. The mining operations at Qala Shallows will involve conventional breast stope mining for the shallow dipping areas that is <50°. The primary access to the underground mine will be via a decline system from the surface from the existing Qala Adit box cut. The targeted first production by year 2 is possible due to the existing decline adit and extensive underground development. The Qala site will therefore only require clearing and rehabilitation of underground workings before proposed production mining can commence. The majority of the first stage of mining operations will be conducted in a large unmined block located to the east of the property and the existing pillar remnants on the western side, using existing shafts and holes, thereby resulting in lower capital investment.

Further, Kimberley Reef ore has been processed in several metallurgical plants on the Witwatersrand Basin in the past and is currently being treated in the Modder East plant. The ores produced at Qala Shallows will be treated

Modest capital outlay is a critical benefit of Qala Shallows project



at existing nearby plants on a toll treatment basis, thus saving capital needed for the construction of processing plants. The three plants that have been identified as possible toll treatment sites include:

- Ezulweni plant, 45km away, owned and operated by Sibanye Gold Division.
- Doornkop plant, 10km away, owned and operated by Harmony Gold.
- Gold Plat plant owned and operated by Gold Plat.

WWI currently has a small-scale toll treatment arrangement with Gold Plat (AIM:GDP), which has a 10kt p.m. circuit available that will be sufficient to treat the company's early mining ore.

Project implementation is on track

In July 2021, WWI secured the crucial mining right approval, which together with its March 2021 environmental approval, fortifies its position to commence mining in a globally renowned gold producing region. WWI can now move to design and implementation phase of this project and is on track to commence gold production within one year of development, i.e., by early 2022. Notably, in August 2021, WWI raised AUD\$7m of the required US\$50m, to advance the development programme. Further, in October 2021, it appointed an experienced Africa-focused debt advisor, Taurum International Ltd, to facilitate debt financing for its initial capital requirement. More recently, on 24 December 2021, WWI announced the completion of fresh capital raise of A\$9.5m through an underwritten A\$7.9m rights issue and A\$1.6m private placement (before costs).

Recent capital raise to keep up the momentum for first production expected in Q1 2022

Favourable project economics

The results of the DFS suggest that the proposed Qala Shallows project is highly lucrative. The study outlined a project free cash flow of US\$240m and a post-tax IRR of 30% (Figure 8). In our view, the healthy project economics is a testament to the potential of WWI's mines in the Qala Shallows, and this should support the capital raising efforts of the company.

DFS results indicate excellent financial returns and minimal downside risk from lower gold prices

Figure 8: Qala Shallows financial evaluation

WBP – Qala Shallows – Parameters	Outcome
Total Revenue (US\$)	1,160m
Total Free Cashflow (US\$)	240m
Peak Funding (US\$)	50m
LoM C1 Cost (US\$/oz)	970
LoM All-in-Sustaining Cost (US\$/oz)	1,144
Steady State All-in-Sustaining Cost (US\$/oz)	1,027
Payback (years)	5.5 years
Pre-tax NPV (@7.5%) (US\$)	151m
Post-tax NPV (@7.5%) (US\$)	106m
Pre-tax IRR	35%
Post-tax IRR	30%

Source: Company



Minimal downside risk from lower gold prices

In addition to process recovery and gold grade, gold price has a direct impact on project revenue, which in turn affects the financial viability of the overall project. The DFS results demonstrate that the project remains viable even at lower gold prices of US\$1,400–1,600/oz., with a payback period of 6–9 years (Figure 9).

Figure 9: Gold price sensitivity

Gold Price	Pre-tax Project NPV(@7.5%)	Pre-tax Project IRR	Post-tax Project IRR	Operating Margin	Peak Funding Requirement	Payback Period
US\$/oz	US\$m	%	%	%	US\$m	Years
1,400	36	15	13	31	66	8.5
1,600	102	27	23	40	53	6.2
1,700	135	32	28	43	48	5.7
1,750	151	35	30	45	48	5.5
1,800	167	37	33	46	47	5.3
1,900	200	43	37	49	46	5.0
2,000	233	48	42	52	46	4.8
2,300	331	62	54	58	44	4.2

Source: Company



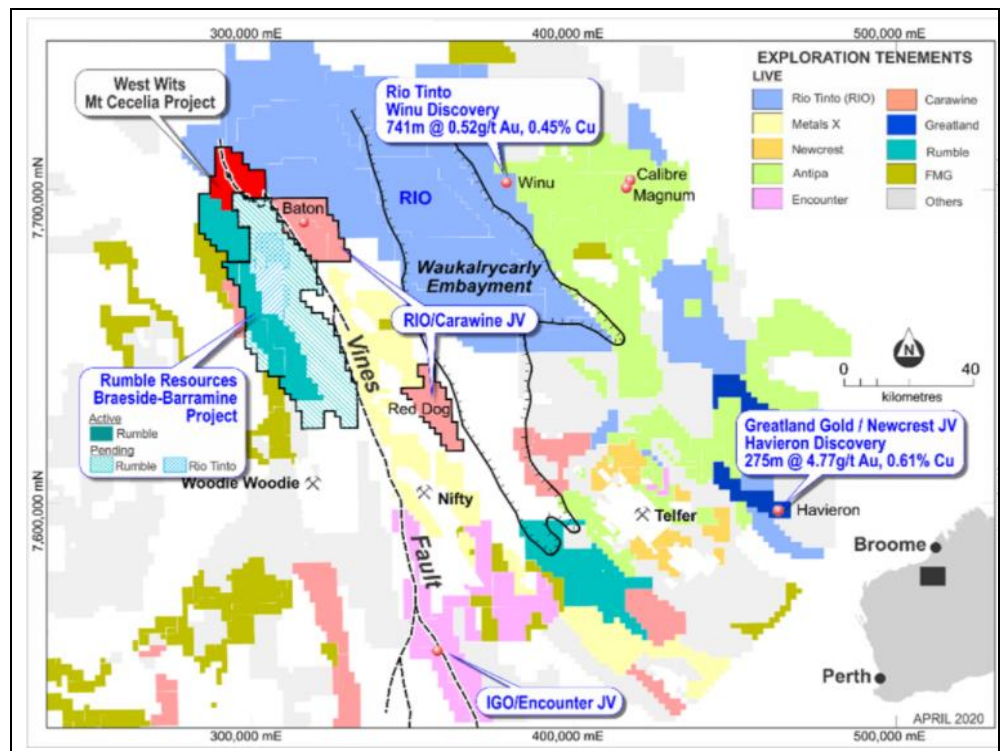
Mt Cecelia depicts high mineralisation potential

Besides WBP, WWI is targeting gold, copper and manganese at its 100%-owned Mt Cecelia Project that is located in the highly prospective East Pilbara region of Western Australia. This is a greenfield project that sits on the western contact of the Paterson Province. The project is located ~150km East North East of Marble Bar, ~150km North West of Telfer Mine and ~120km North North West of Nifty mine (aerial distance).

The Mt Cecelia tenement sits astride a major crustal boundary (known as Vines Fault) that presents an opportunity in one of Australia's premier exploration destinations, that includes major mines such as Telfer Gold, (Newcrest Mining), Nifty Copper (Metals X), Woodie Woodie Manganese (Consolidated Minerals) as well as significant new copper-gold discoveries such as at Haverion (Greatland Gold) and Winu (Rio Tinto). In fact, Rio Tinto's exploration licence applications currently adjoin over 60% of Mt Cecelia's tenement boundary (Figure 10) and it has increased its tenement area from ~1,000km² to over 11,000km² in this area.

Mt Cecelia's tenement is surrounded by high-potential mines of major mining companies

Figure 10: Mt Cecelia and neighbouring tenements



Source: Company

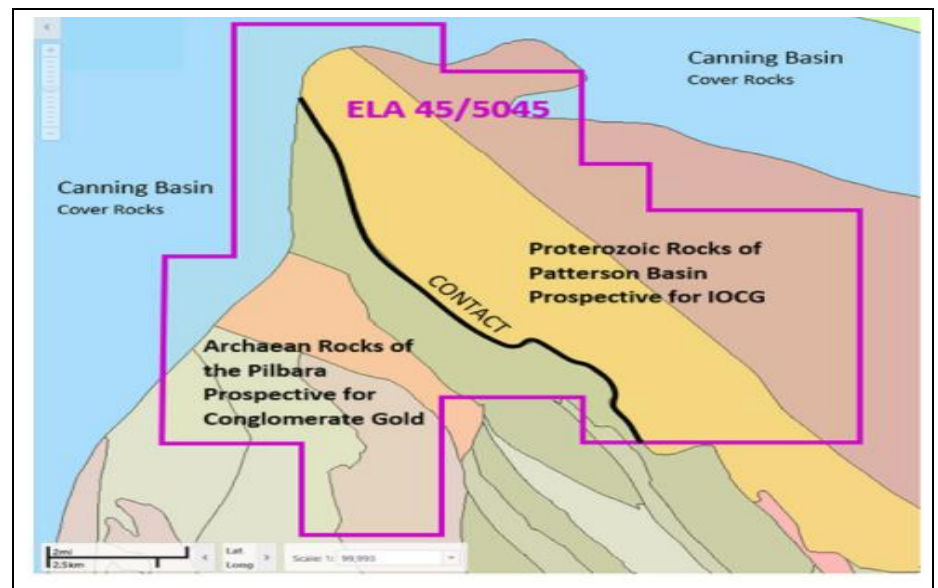
WWI engaged PGN Geoscience in 2020 to perform a detailed desktop study to assist in target generation at Mt Cecelia. The study supported Mt Cecelia's potential and found the north-eastern portion as prospective for iron oxide copper gold ore (IOCG) deposits (Figure 11). Moreover, WWI has completed a SkyTEM Heliborne Electromagnetic (HEM) survey over Mt Cecelia, which successfully identified eight target areas for further exploration. **Of the eight targets areas identified, four have been classified as 'high-priority'** (Figure 12). The company conducted a further ground-based electromagnetic survey in August 2021 to better define the high-priority targets for optimised drilling.

Four high-priority targets confirmed by WWI for drilling activity



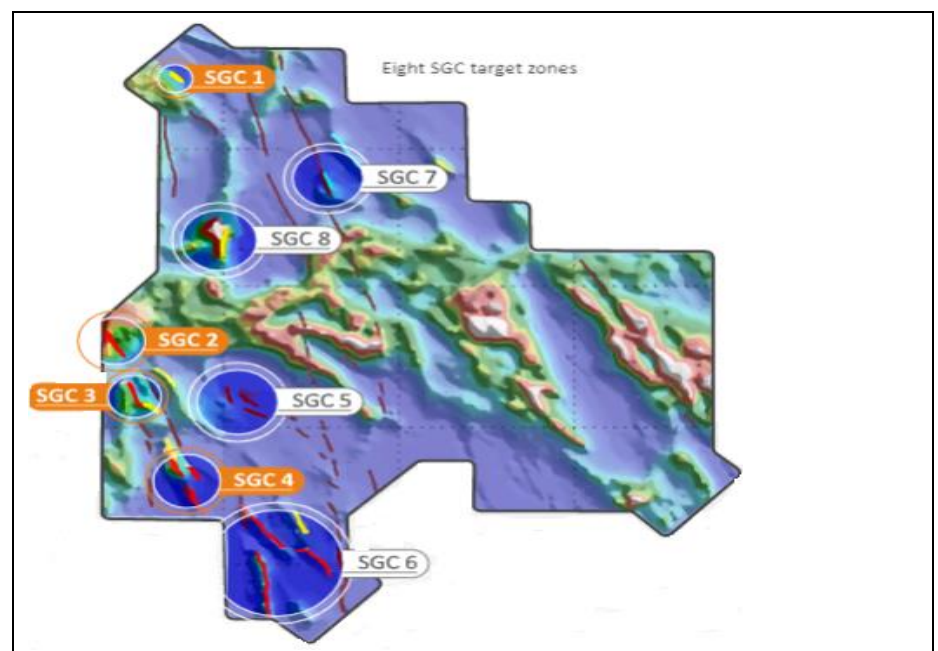
These surveys have been a significant advancement for the project and provide confidence in the management’s decision to go ahead with drilling programme in 2022. As per WWI’s consultant geophysicist, Russell Mortimer, Target SGC_1, in the northwest sector of the survey area is of highest priority being discrete in nature, relatively shallow and adjacent to a northwest-southeast trending magnetic feature with associated possible alteration/demagnetisation.

Figure 11: Geological map of Mt Cecelia’s tenement area



Source: Company

Figure 12: Mt Cecelia’s key exploration target areas



Source: Company



Agreement between WWI and Rio Tinto will be a catalyst for advancing exploration and drilling in 2022 and beyond

Another significant catalyst for the Mt Cecilia project is the deal between WWI and Rio Tinto Exploration (RTX). In December 2021, WWI signed an up to A\$10m farm-in and joint venture agreement with RTX. As part of the agreement, RTX is required to pay A\$0.15m cash up-front and, subject to land access, complete at least 800 metres of diamond core and/or reverse circulation drilling before 31 December 2022. As stage 1 of the agreement, RTX has the right to earn a 51% interest by spending a minimum of A\$4m of exploration expenditure within four years. Under stage 2, RTX will have the option to sole fund a further A\$6m of exploration expenditure within three years of such election to earn an additional 29% interest. RTX would have to make a further A0.25m cash payment if it elects to sole fund stage 2. We believe this partnership brings in capital, technical expertise and regional knowledge that will accelerate development of Mt Cecilia's key targets while also ensuring that WWI is well positioned to share in the benefits of major discoveries.

Valuation and earnings model

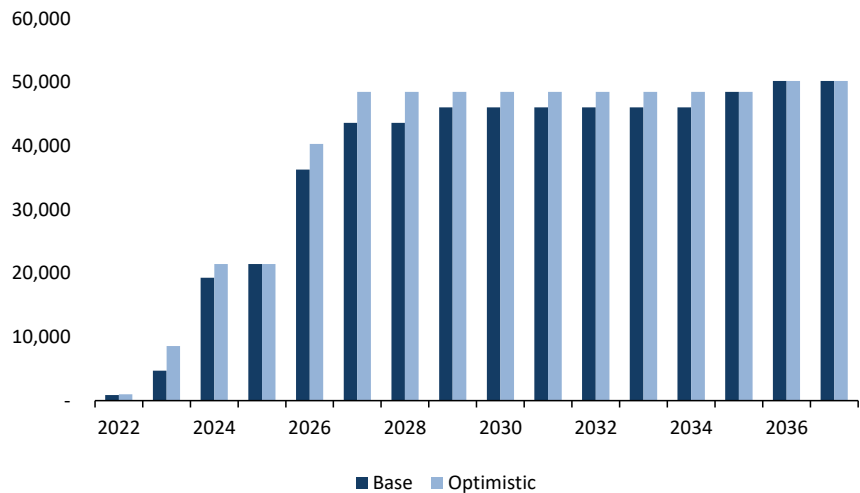
We value WWI at 5.4 cents per share base case and 7.6 cents per share optimistic case, using a DCF approach that is primarily based on the assumptions of the DFS for Qala Shallows released in September 2021. The key assumptions driving our DCF valuation are outlined below:

- **Ores extracted and production.** We have used the total Measured, Indicated and Inferred resources for our model and have assumed the mine life to be 16 years (excluding development period). This has been done mainly because the Inferred Mineral resources for WWI are largely located in areas that will require relatively limited additional development. We have restricted the scope of our model to only Qala Shallows, stage 1 of WBP, and have not incorporated the estimated production from the other four stages that were included in the scoping study. For both our base and optimistic cases, we have used a total capacity of ~7.34Mt ore resources but the extraction ramp-up assumed is different across the two cases. Further, gold produced is computed based on a 95% gold recovery rate with an average grade of 2.81g/t over the mine life. The total gold produced during the project life comes out to be ~595Koz and ~629Koz in the base and optimistic case, respectively (Figure 13).

Gold produced during LoM is estimated at ~595Koz and ~629Koz for base and optimistic case, respectively



Figure 13: Gold production outlook (oz.) - Base vs. Optimistic case



Source: Company, Pitt Street Research

- **Gold price.** Gold price of US\$1,800/oz. and a conversion rate of A\$1 = US\$0.73 has been used in our base case. We have assumed a slightly higher gold price of US\$1,900 in the optimistic case, driven by limited signs of increase in interest rates and weakness in the US\$.
- **Costs.** Based on the DFS, we have assumed total operating cost of A\$117.1/t of ore extracted in the base case. This includes mining and processing costs of A\$79.5/t and A\$27.0/t, respectively, in addition to general and administration costs of A\$10.6/t. We have considered a 1.3% royalty on the revenue from gold as stipulated in South African legislation.
- **Capital costs.** As guided in the DFS, our model assumes project capital cost of A\$76.5m that includes start-up capital cost of A\$43.7m to be incurred in the first year and remaining to be incurred over next four years. A sustaining annual capital of A\$7.5m has been considered for the life of mine.
- **Funding.** We have used a 65:35 debt-equity ratio to fund the capital requirement.
- **Discount rate.** We use a WACC of 7.8%. This may seem low but we believe the 12.1% cost of equity, which includes a 3.5% country risk premium for South Africa, adequately reflects the de-risked nature of the Qala Shallow's development path, and the fact that South Africa is a mature mining jurisdiction where the relevant permits have been granted to WWI. The 5.5% after-tax cost of debt in turn reflects the long production history of WWI's project area, and the substantial resources beyond what will be tapped in Qala Shallows, which potentially provide additional security to project lenders.

A mix of debt and equity funding has been assumed, skewed towards the former option

Qala Shallows project attains breakeven by year 5 in both our base and optimistic case

Figure 14 shows our valuation summary for WWI and the upside potential of the stock. The midpoint of our valuation range is 6.5 cents per share. In our view, the DCF valuation for WWI is a conservative estimate as we have only considered the economics of Qala Shallows, and excluded the other four stages of WBP. We have also not considered the option to extend the project

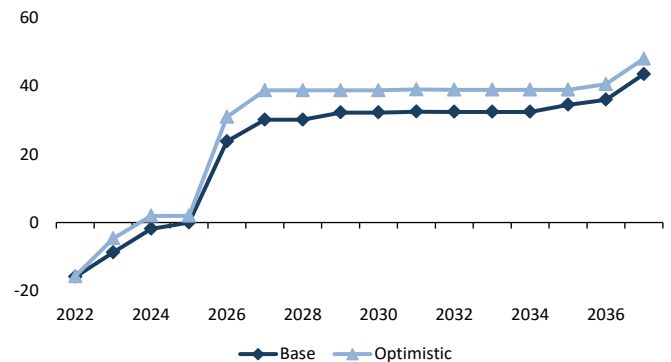


life from 17 years to 23 years, which is being considered by the management. Further, we have not incorporated any potential upside from Mt Cecilia project in the medium term.

Figure 14: Valuation summary (post-equity financing)

WWI Valuation (A\$m)	Base	Optimistic
Net Asset Value	111.1	157.3
Net Debt (Cash) (m)	(0.8)	(0.8)
Minority Interest (m)	-	-
Other Investments (m)	-	-
Equity value (m)	112.0	158.1
Share Outstanding (Diluted)	2,083.1	2,083.1
Implied Price (AUD cents)	5.4	7.6
Current Price (AUD cents)	3.6	3.6
Upside (%)	49.3%	110.8%

Figure 15: Free Cash Flow Generation (A\$m) - Base vs. Optimistic Case



Source: Company, Pitt Street Research

Figure 15 reflects the expected free cash flow profile of the project based on our assumptions. We can observe that the project attains breakeven by year 5 in both our base and optimistic case. The project returns an average of ~A\$33m and A\$40m every year, from year 5 of the project, in our base and optimistic case, respectively.

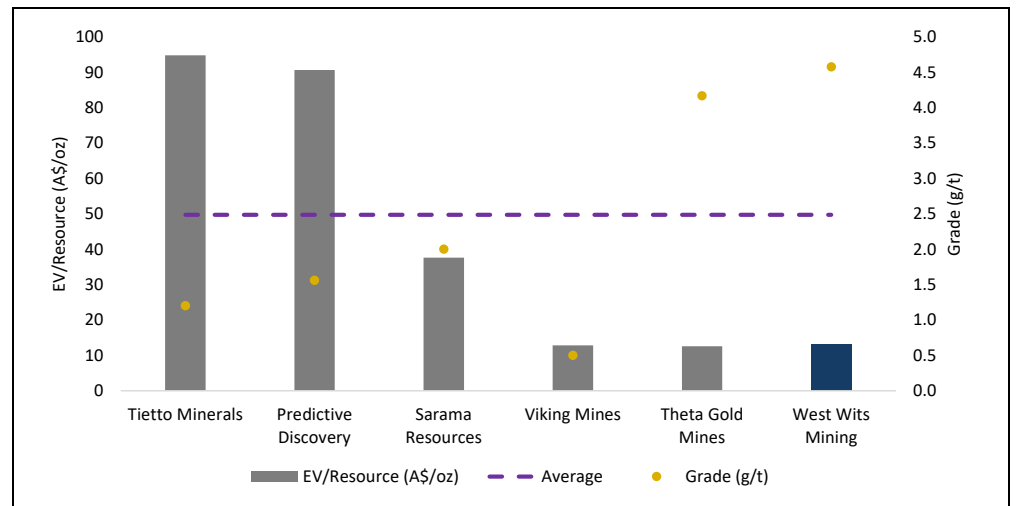
We foresee the stock being re-rated to our valuation range driven by the following factors:

- Timely production commencement from Qala Shallows.
- Grant of the new prospecting license that WWI has applied for that will enable it to reinstate a substantial proportion of the project's original MRE.
- Increase in gold prices, underpinned by renewed concerns about global economic recovery and COVID-19 variants.

We also conducted relative valuation based on EV/Resources to assess WWI's standing vis-à-vis comparable companies (Figure 16). It was observed that despite an above-average grade of gold and resource estimate the company is undervalued on the EV/Resources metric.



Figure 16: EV/Resources (A\$/oz.) comparison with select peers



Source: S&P Capital IQ, Pitt Street Research

Risks

We see the following key risks to our investment thesis:

- **Underlying commodity risk.** WWI is exposed to commodity price risk, which depends on macroeconomic factors and demand and supply dynamics of the underlying commodity, i.e., gold.
- **Project delays.** In case there are any delays in the mining activities due to funding or operational challenges, it will affect the cash flows and viability of the project.
- **Challenges in ore processing.** The primary premise of low capital outlay for WWI is that the company will be able to process ore on a toll treatment basis by leveraging the capacity of neighbouring plants. While the company currently has a small-scale toll treatment arrangement with Gold Plat, which should be sufficient for its early mining initiative, it will require larger scale arrangements in future. There could be operational complexities in such arrangements that could arise in future and affect costs or capital requirement.
- **Geological risk.** The resources for WBP are estimates. There could be a downside risk if a portion of resources is re-categorised as Inferred Resources at a later stage.



Experienced leadership team

The company's current board and leadership composition is as below (Figure 17).

Figure 17: Board and management composition

Name	Designation	Affiliations (current and past)
Board of Directors		
Michael Quinert	Non-Executive Chairman	First Au Ltd, First Graphene Ltd
Peter O'Malley	Non-Executive Director	Bonterra Resources, Barnwell Industries
Timothy Chapman	Non-Executive Director	PAC Partners
Hulme Scholes	Non-Executive Director	Randgold & Exploration Co Ltd
Management Team		
Jac van Heerden	Managing Director	ERG Africa's copper/cobalt mine, Aquarius Platinum
Simon Whyte	CFO and Joint Company Secretary	Ernst & Young, BP Australia Pty Ltd
Paul Godfrey	Joint Company Secretary	First Au Ltd, QR Lawyers
Tozama Siwisa	Head of Corporate Affairs	Umbeco Mining, Hlagisa Mining, Shanduka Group, Lonmin Plc
Luvuyo Jafta	General Manager - Mining	Hernic Ferrochrome Pty Ltd

Source: Company

Board of Directors

Michael Quinert has been the Non-Executive Chairman since December 2007. He has over 35 years of experience as a commercial lawyer with over 25 years as a partner in a Melbourne law firm. He graduated with degrees in Economics and Law from Monash University.

Peter O'Malley has extensive experience advising on M&A, debt/equity transactions and capital optimisation strategies in multiple jurisdictions. He has 13 years of experience working in Credit Suisse and later managing Deutsche Bank's Hong Kong Natural Resources investment banking practice for many years.

Timothy Chapman holds a Bachelor of Commerce and has over 20 years' experience in financial services and capital markets. He has a strong track record in the resources sector. He is currently Director, Corporate Broking at PAC Partners.

Hulme Scholes has expertise in mining and environmental law and dispute resolution having represented tier 1 mining companies that include Sibanye Stillwater Ltd and DRDGOLD Ltd. Hulme was recognised by Best Lawyers® (2020) for his expertise in mining law.



Management Team

Jac van Heerden has been the managing director since April 2020. He is a mining engineer holding an MBA degree with over 20 years of operations and project management experience in South Africa. Jac was President of ERG Africa's copper/cobalt mine overseeing 3,800 personnel prior to joining WWI.

Simon Whyte has been the CFO and Company Secretary since October 2018. He is a Chartered Accountant with an experience of 12 years combined in Ernst & Young and BP Australia Pty Ltd.

Paul Godfrey is a Senior Associate at law firm QR Lawyers since his admission in February 2017. He is also the Company Secretary at First Au Ltd. Paul has practised exclusively in commercial and corporate law.

Tozama Siwisa has significant experience in leading transformation projects from development to execution. She has worked with several mining companies in the past including Umbeco Mining, Hlagisa Mining, Shanduka Group and Lonmin Plc. Tozama holds an MBA degree from Tshwane University of Technology, a Certificate in Contracts Management and an Advanced Certificate in Construction Contracts from the University of Pretoria.

Luvuyo Jafta is a qualified Mining Engineer with over 22 years' experience in the mining industry across a variety of commodities. He holds a Bachelor of Technology (Mine Engineering) from the University of Johannesburg.

Comparable companies to WWI

Currently, there are over 30 gold miners across the small- and mid-cap segments of ASX. Thus, for our analysis, we have focussed on pure-play gold miners that are listed in Australia but have major mining operations in Africa, and which a market capitalisation of below A\$1,500m (Figure 18).

Figure 18: Peer group comparison

Company	Code	Key Project	Country	Stage	Grade (g/t)	Resource (Moz)	EV (A\$m)	EV/Resource (A\$/oz)
West African Resources	ASX: WAF	Sanbrado	Burkina Faso	Development	2.0	5.1	1,169.2	229
Resolute Mining	ASX: RSG	Syama	Mali, Senegal	Development	NA	7.6	709.7	93
Predictive Discovery	ASX: PDI	Bankan	Guinea	Exploration	1.6	3.7	331.1	91
Tietto Minerals	ASX: TIE	Abujar	Ivory Coast, Liberia	Exploration	1.2	3.4	317.9	95
Theta Gold Mines	ASX: TGM	Theta	South Africa	Exploration	4.2	6.1	76.6	13
Okapi Resources	ASX: OKR	Crackerjack	DRC	Exploration	NA	NA	29.2	NA
Turaco Gold	ASX: TCG	Tongon North	Ivory Coast	Exploration	NA	4.5	47.6	11
Mako Gold	ASX: MKG	Napié	Ivory Coast	Exploration	NA	NA	26.5	NA
African Gold	ASX: A1G	Agboville	Ivory Coast	Exploration	NA	NA	28.4	NA
Sarama Resources	TSX-V: SWA	Sanutura	Burkina Faso	Exploration	2.0	2.9	109.1	38
Viking Mines	ASX: VKA	Tumentu	Ghana, Mongolia	Exploration	0.5	0.8	10.1	13
Polymetals Resources	ASX: POL	Alahiné	Guinea	Exploration	NA	NA	1.5	NA
West Wits Mining	WWI	WBP	South Africa	Development	4.6	4.3	56.0	13

Source: S&P Capital IQ, Pitt Street Research

West African Resources engages in the acquisition, exploration and development of gold and copper projects in West Africa. Its key asset is the 90% owned Sanbrado gold project located in Burkina Faso, which the company anticipates will produce between 250,000 and 280,000 oz. of gold in 2021.



Resolute Mining engages in development of gold properties in Africa and Australia. The company's flagship project is the Syama gold mine located in Mali, West Africa. It also owns the Mako gold mine in Senegal, West Africa.

Predictive Discovery explores, identifies and develops gold reserves in West Africa. Its flagship property is the 100% owned Bankan gold project, which covers an area of 358km² located within Guinea's Sigui Basin.

Tietto Minerals engages in gold exploration activities in Ivory Coast and Liberia. It holds interests in the Abujar gold project comprising three tenements covering an area of 1,114km² located in the central western region of Ivory Coast; and the Dude South and Cestos projects in Liberia.

Theta Gold Mines operates as a gold exploration and development company in South Africa. Its principal property is the Theta project located near the town of Pilgrim's Rest in Mpumalanga Province of South Africa.

Okapi Resources engages in the exploration and development of gold deposits in Australia and Africa. It holds 100% interest in the Crackerjack gold project located in the southwest of Halls Creek town in Western Australia, as well as has an option to acquire 70% interest in the Mambasa gold project located in DRC.

Turaco Gold engages in the acquisition and development of gold properties in Ivory Coast. It holds 89% interest in the Boundiali gold project that covers an area of 572km² located on the Oume-Fetekro belt; 89% interest in the Ferke gold project covering an area of 300km²; and 100% interest in the Tongon North gold project covering an area of 800km².

Mako Gold is an early stage exploration company in West Africa. Its flagship property is the Napié gold project covering an area of 224km² located in the north central part of Ivory Coast.

African Gold holds a 100% interest in the Agboville gold project that covers an area of 1,400km² located in the south east of the West African Craton.

Sarama Resources is an exploration stage company that holds 100% interest in the Sanutura project covering an area of 1,450km²; and 19% interest in the Karankasso project covering an area of 750km² located within the southern Houndé Belt, south-west Burkina Faso.

Viking Mines explores and mines gold and coal deposits in West Africa. It holds 100% interests in the Tumentu gold project and Butre gold project located in Ghana; and Berkh Uul coal project and Khonkhor Zag coal project located in Mongolia.

Polymetals Resources engages in the exploration and development of gold projects in Guinea. It holds interests in the Alahiné licence covering an area of 64km² and the Mansala licence covering an area of 48km², which are located in the Sigui Basin.

Appendix I – Major Shareholders

WWI has two major shareholders – Wingfield Durban Deep LP and Citicorp Nominees Pty Ltd – owning 11.1% and 5.5% stakes, respectively. Wingfield Durban Deep LP was incorporated on 14th January 2020 and is a nominee of Wingfield Capital Partners LLC of Texas, US.



Appendix II – Analysts’ Qualifications

Stuart Roberts, lead analyst on this report, has been an equities analyst since 2002.

- Stuart obtained a Master of Applied Finance and Investment from the Securities Institute of Australia in 2002. Previously, from the Securities Institute of Australia, he obtained a Certificate of Financial Markets (1994) and a Graduate Diploma in Finance and Investment (1999).
- Stuart joined Southern Cross Equities as an equities analyst in April 2001. From February 2002 to July 2013, his research speciality at Southern Cross Equities and its acquirer, Bell Potter Securities, was Healthcare and Biotechnology. During this time, he covered a variety of established healthcare companies, such as CSL, Cochlear and Resmed, as well as numerous emerging companies. Stuart was a Healthcare and Biotechnology analyst at Baillieu Holst from October 2013 to January 2015.
- After 15 months over 2015–2016 doing Investor Relations for two ASX-listed cancer drug developers, Stuart founded NDF Research in May 2016 to provide issuer-sponsored equity research on ASX-listed Life Sciences companies.
- In July 2016, with Marc Kennis, Stuart co-founded Pitt Street Research Pty Ltd, which provides issuer-sponsored research on ASX-listed companies across the entire market, including Life Sciences companies.
- Since 2018, Stuart has led Pitt Street Research’s Resources Sector franchise, spearheading research on both mining and energy companies.

Cheng Ge is an equities research analyst at Pitt Street Research.

- Cheng obtained a B. Com in Finance and LL. B from the University of New South Wales, in 2013, and has passed all three levels of the CFA Program.
- Before joining Pitt Street Research, he has worked for several financial services firms in Sydney, where his focus was on financial advice.
- He joined Pitt Street Research in January 2020.

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