Competent Persons' Report on the West Rand Tailings Retreatment Project for DRDGOLD Limited

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Executive Summary - introduction

Sound Mining (Pty) Ltd (Sound Mining) has been requested by DRDGOLD Limited (DRDGOLD) to prepare a Competent Persons' Report (CPR) on the West Rand Tailings Retreatment Project (the WRTRP or the Project) located in the Gauteng Province of South Africa. DRDGOLD is a mid-tier gold production company focused exclusively on the retreatment and reclamation of historical surface gold tailings storage facilities (H-TSFs). DRDGOLD has its headquarters in Johannesburg, South Africa and has a primary listing on the Johannesburg Stock Exchange Limited (JSE) under the ticker JSE:DRD with its secondary listing on the New York Stock Exchange (NYSE). DRDGOLD publicly announced on the 22 November 2017 that it is in the process of a JSE Category 1 transaction with Sibanye Gold Limited (trading as Sibanye-Stillwater) (as per paragraph 9.5(b) of the JSE Listings Requirements) for which the CPR is required in fulfilment of the following disclosure requirements:-

- the 'JSE Listings Requirements for Mineral Companies'- Section 12's disclosure requirements in support of this transaction;
- the CPR is to be 'South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves' (the SAMREC Code 2016) compliant with special reference to Table 1;
- the JSE will require reporting of the environmental section in compliance with the 'the South African Guideline for the reporting of Environmental, Social and Governance Parameters within the Mining and Oil and Gas Industries' (the SAMESG Guideline); and
- the JSE will require a 'South African Code for the Reporting of Mineral Asset Valuation' (SAMVAL Code 2016) compliant mineral asset valuation. Sound Mining will undertake the valuation and incorporate it into the CPR.

DRDGOLD is a leader in the recovery of gold from the retreatment of surface tailings and has an extensive network of mineral and processing assets which are consolidated businesses operating as a single entity namely Ergo Mining Proprietary Limited (Ergo). The Ergo gold tailings retreatment operation on the Central and East Rand currently treat 2.1 million tonnes per month (Mtpm) from various assets. The CPR will not provide techno-economic information on any of the Ergo assets but will focus exclusively on the assets to be acquired as part of the transaction with Sibanye-Stillwater, as described below.

The feasibility of a project combining the reclamation of the numerous historical tailings storage facilities (H-TSFs) on the West Rand Basin of the Witwatersrand Basin has been investigated for over 15 years with numerous parties involved and considering differing combinations of assets. Sibanye-Stillwater has made the strategic decision to partner with DRDGOLD which has the necessary experience in the economic reclamation of gold bearing TSFs with proven, optimised processing methodologies and project management expertise for the execution and implementation of surface processing infrastructure development. Sibanye-Stillwater has therefore agreed to vend selected processing plants, H-TSFs and an active TSF (A-TSF), as summarised below, for a 38.05% shareholding in DRDGOLD with an option to increase the shareholding to 50.1% at a later stage.

WRTRP- assets included in the transaction with Sibanye-Stillwater

Asset type	Asset	Location	Comment
Historical tailings storage facilities (H-TSFs)	Driefontein 3	Driefontein mining right area	Moveable surface H-TSFs
	Driefontein 5		
	Venterspost North	Kloof mining right area	
	Venterspost South		
	Kloof 1		
	Libanon		
Currently active A-TSFs	Driefontein 4	North east of Driefontein mining right area on a Sibanye-Stillwater holding	Moveable working surface TSF
Future active tailings storage facilities (A-TSFs)	Driefontein 1, Driefontein 2, Kloof 2 and Leeudoorn	Both mining areas	To be transferred for no additional consideration once they are decommissioned
Operating surface gold processing plants	Driefontein 2 plant (DP2 plant)	Located on Farm Blyvooruitzicht 116IQ Portion (Ptn) 6 and Farm Driefontein 113IQ Remainder (Re) of Ptn 1	Processes surface rock dump material and comprises two semi-autogenous grinding mills (SAG) and a ball mill, cyanide leaching, and a new (2014) carbon-in-leach circuit to improve recoveries.
	Driefontein 3 plant (DP3 plant)	Located on Farm Blyvooruitzicht IQ116 Ptn 6	Designed to process low-grade surface material with four SAG mills followed by cyanide leaching and a CIP plant
	WRTRP pilot plant	Located at Driefontein 1 processing plant	Moveable pilot plant designed by LogiProc to test processes, methodologies and assumptions made in historical Definitive Feasibility Studies (DFSs)
Transferring land required for future development of the WRTRP	Land required for the development of the central processing plant	Located after subdivision of Farm Rietfontein 347IQ Ptns 35 and 73	
	Land required for the regional tailings storage facility and return water dam	Farm Cardoville 647IQ; RE Ptn 6 farm Cardoville 364 IQ; Ptn 8 of Ptn 6 of farm Cardoville 364IQ; Ptn 13 of Ptn1 of farm Cardoville IQ; Ptn 50 farm Kalbasfontein 365IQ; RE Ptn 3 farm Cardoville 364; RE Ptn 5 of Ptn 3 farm Cardoville 364IQ; Ptn 11 farm Cardoville 364IQ	
Licences to operate	All the licences, permits, permissions, management plans and reports which were necessary for Sibanye-Stillwater to operate the WRTRP assets		
Access rights	Access to the Driefontein 10 shaft and Kloof 10 shaft area for the purposes of pumping water for the hydro-mining	Located within the Driefontein and Kloof mining right areas	Supply and pumping of water, at the cost to WRTRP, at the required quantities licenced for the WRTRP assets
	Installation, supply, distribution and maintenance of power supply		Rights, servitudes and agreements for installation, supply and distribution and maintenance of power supply; existing and proposed pipeline routes; servitudes; wayleaves and surface right permits
	Driefontein 1 gold plant	Located at Driefontein 1 processing plant	Access for the purpose of accessing the pilot plant

Purpose of the Competent Person's Report

SVT1.2; SVT1.3; JSE 12.9(a)(d); JSe 12.9(a); JSE 12.9(h)(i)

DRDGOLD is listed on the JSE and the proposed acquisition from Sibanye-Stillwater would constitute a Category 1 transaction for which a CPR is required in terms of Chapter 12 of the JSE Listing Requirements. The CPR has been compiled in order to incorporate all the available and material information that shareholders, potential future finance providers and their advisors would reasonably require in order to make balanced and reasoned judgements regarding the techno-economic merits of the assets. Sound Mining's primary obligation in preparing mineral asset reports for the public domain is to describe mineral projects in compliance with the reporting codes applicable under the jurisdiction in which the company operates.

In this case, the CPR has been prepared in compliance with and to the extent required by the SAMREC Code 2016, published under the joint auspices of the Southern African Institute of Mining and Metallurgy (SAIMM) and the Geological Society of South Africa (GSSA) as well as the new Chapter 12 of the JSE Listing Requirements. The CPR describes the Project in terms of its historical and recent exploration data, which would have a bearing on the techno-economic value of the assets.

The disclosure in terms of the environmental and social aspects of the Project has been made according to the SAMESG Guideline published by the South African Environmental, Social and Governance Committee.

The mineral asset valuation included in the CPR has been prepared in compliance with, and to the extent required by, the SAMREC Code 2016, published under the joint auspices of the SAIMM and the GSSA.

Sound Mining consents to the publication of this CPR in the circular and to the referencing of any part of this CPR, provided that no portion is used out of context or in such a manner as to convey a meaning which differs from that set out in the whole report.

The effective date of this CPR is 31 December 2017.

Project outline

JSE 12.9(h)(ii)(iii); SR1.1(i); SV T1.2

The WRTRP does not form part of DRDGOLD's current asset portfolio but on fulfilment of the transaction with Sibanye-Stillwater, will comprise the H-TSFs, processing plants and A-TSF as described in the table above and includes the land for the development of a regional tailings storage facility (R-TSF) and a central processing plant (CPP). The WRTRP is an advanced gold reclamation project for which the components of the Project are at a Preliminary Feasibility Study (PFS) level of accuracy whilst some of the costs are at a Definitive Feasibility Study (DFS) level of accuracy.

The Project is located in the West Rand Goldfield of the Gauteng province 30 kilometres (km) from Johannesburg and is accessed via a network of national tarred roads including the local R28 highway between Randfontein and Westonaria or the N12 national road between Johannesburg and Potchefstroom (Executive Summay Figure 1). The Project includes H-TSFs within an area extending from Carletonville to Krugersdorp, and encompasses the Sibanye-Stillwater - Driefontein and Kloof operations area and mining rights as shown in the diagram overleaf (Executive Summary Figure 2). The H-TSFs in total cover an area of 412.3ha with a combined Mineral Reserve estimate tonnage of 246Mt at an average grade of 0.344g/t Au for a total gold content of 2.72Moz Au.

DRDGOLD intends developing the selected assets into a large scale (1.2Mtpm), long life (20 years) project to reclaim gold through a phased approach as follows:-

- Phase 1 will include upgrading the existing Driefontein 2 (DP2) and Driefontein 3 (DP3) processing plants with carbon-in-leach (CIL) circuits to process 500ktpm of tailings hydro-mined from the high grade Driefontein 5H-TSF with re-deposition onto the currently active Driefontein 4A-TSF over a period of five years (Executive Summary Figure 3). Hydro-mining of Driefontein 5H-TSF only is undertaken in Phase 1 which is estimated to be commissioned within a year after implementation of the proposed transaction. Phase 1 is expected to be cash generative with modest upfront capital investment required with the cash flows prioritised for the development of subsequent phases;
- concurrently with Phase 1, a DFS will be conducted on the viability of Phase 2, the bulk of which has already been completed, to determine whether or not to proceed onto Phase 2 or an "alternative option";
- given a favourable outcome of the DFS, Phase 2 will proceed in two stages over a 24 month period and will develop a central, high volume processing plant (CPP) with a throughput of 1.2Mtpm redepositing onto a regional tailings storage facility (R-TSF) and will include the reclamation, firstly of the Driefontein 3H-TSF, Kloof 1H-TSF and Libanon H-TSF (Phase 2A) followed by the Venterspost North H-TSF and Venterspost South H-TSF (Phase 2B) (Executive Summary Figure 4 and 5). The total Project LoM is 20 years with some simultaneous production between various phases.

The R-TSF will be constructed in Phase 2 and has been designed to accommodate a deposition rate of 1.4Mtpm over a LoM of 17 years. The R-TSF has been designed in two stages as a lower and upper compartment and will accommodate considerably more tailings than that required for the WRTRP. The potential total design deposition rate is 4Mtpm but for the WRTRP only the lower compartment will be required and only the capital costs for this lower compartment have been applied to the WRTRP;

- an “alternative option” should Phase 2 not proceed, is the continued use of DP2 and DP3 plants extended during Phase 1 to accommodate 500ktpm from Driefontein 3H-TSF and to extend the Driefontein 4A-TSF to contain the tailings (Executive Summary diagram 6). This option would provide a total 13 year LoM and would extend Phase 1 by eight years; and
- in addition, a set of currently active TSFs (A-TSFs) will be included in the project once they are decommissioned. No compliant Mineral Resource estimate for these A-TSFs can be determined at this stage and as the date of their eventual decommissioning is unknown and is even unguaranteed, techno-economic disclosure on these assets would be speculative at best and therefore will not form part of this CPR or the Project valuation;

Historical ownership and exploration activities

SR1.5(i)-(v); SVT1.6

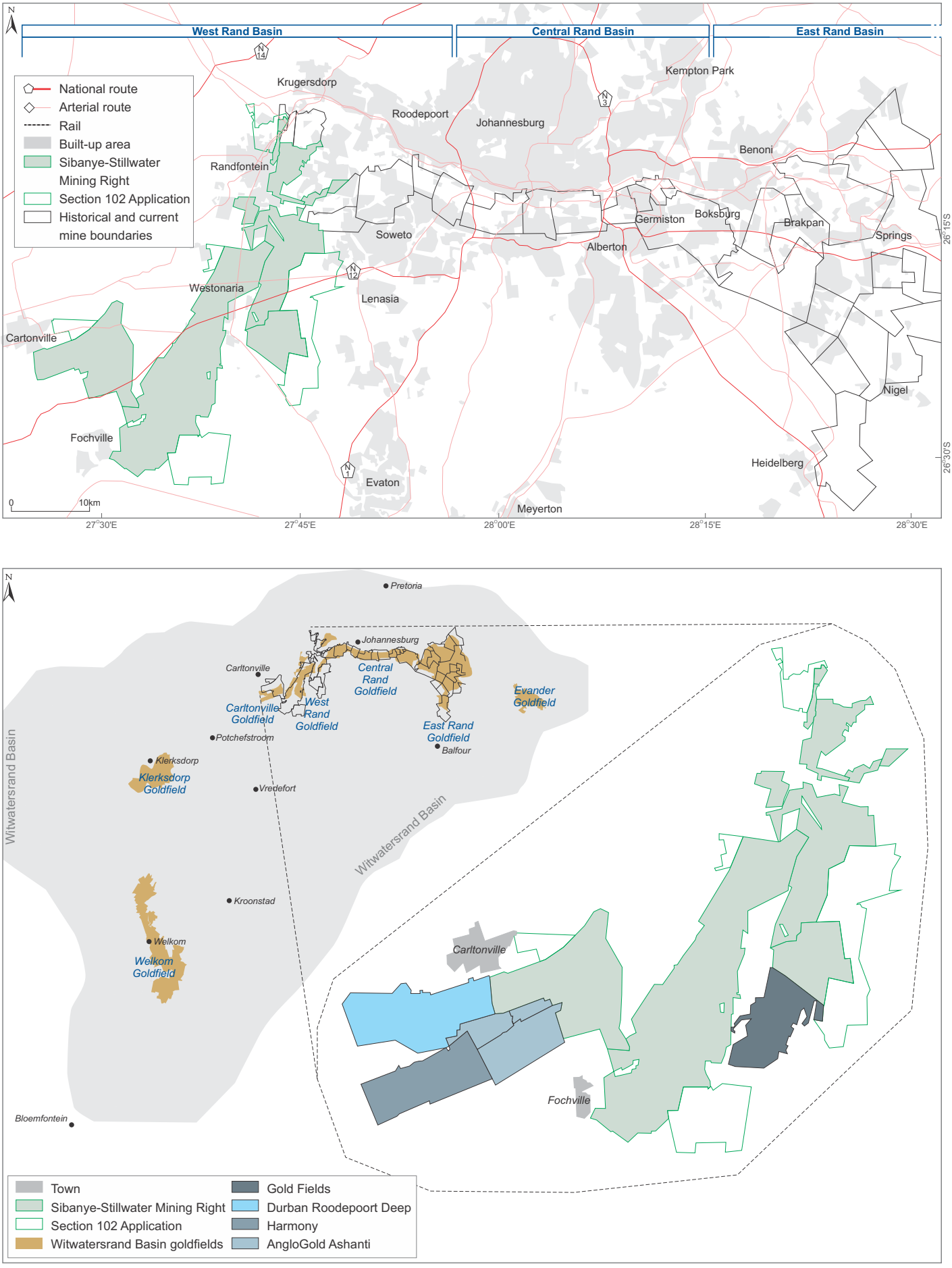
Gold and uranium mining operations commenced in the late 1800s in the Witwatersrand Basin goldfields of South Africa, and have resulted in the accumulation of substantial amounts (approximately 1.3 billion tonnes of surface tailings and other mine residues. The possible re-treatment of H-TFSs in the West Rand area has a long and complex history with Gold Fields Limited (Gold Fields), Rand Uranium Limited (Rand Uranium), Harmony Gold Mining Company Limited (Harmony), Gold One International Limited (Gold One) and Sibanye-Stillwater completing a number of parallel, independent studies relating to the treatment of these H-TSFs. There is an approximate 15 year history of metallurgical testwork and process design which has been undertaken for a variety of combinations of assets and products recovered. Whilst a substantial amount of the historical studies applied to specific combinations of assets and are not all relevant to the WRTRP in its current form, there is much historical information that has been referenced for the purposes of assessing the technical merits of the Project.

Prior to 2009 Gold Fields embarked on a project known as the West Wits Project (WWP) aimed at retreating several H-TSFs on its four mining complexes: Kloof, Driefontein, Venterspost and South Deep to recover residual gold, uranium and sulphur and storing the tailings on a new Central Tailings Storage Facility (CTSF). Similarly, Rand Uranium had embarked on the Cooke Uranium Project (CUP), which endeavoured to treat the Cooke H-TSF for gold, uranium and sulphur and ultimately deposit the tailings onto the Geluksdal TSF, located very close to the CTSF. The two independent projects had similar operational and environmental mandates, within a 25km radius of each other. In 2009 Gold Fields and Rand Uranium evaluated the potential synergy of an integrated retreatment plan for H-TSFs located within the South Deep, Cooke, Kloof, Driefontein and Venterspost mining complexes (Figure 1). Both the Rand Uranium– Cooke CUP and the Gold Fields – WWP feasibility projects were nearing completion. However, a significant amount of re-engineering and confirmatory testwork would have been required to achieve a combined DFS and the combined project was stalled because of economic circumstances at the time.

In 2012 Gold One acquired Rand Uranium and in the same year acquired the Ezulwini Mining Company (Pty) Ltd (Ezulwini) in an agreement with First Uranium Corporation. During the same year Gold One, revived the tailings retreatment project and Gold Fields entered into a joint venture partnership with Gold One to investigate the economic viability of concurrently reprocessing current arisings and historical tailings from a number of sites situated in the greater Carletonville/Westonaria/Randfontein area. A Scoping study was concluded in late 2012.

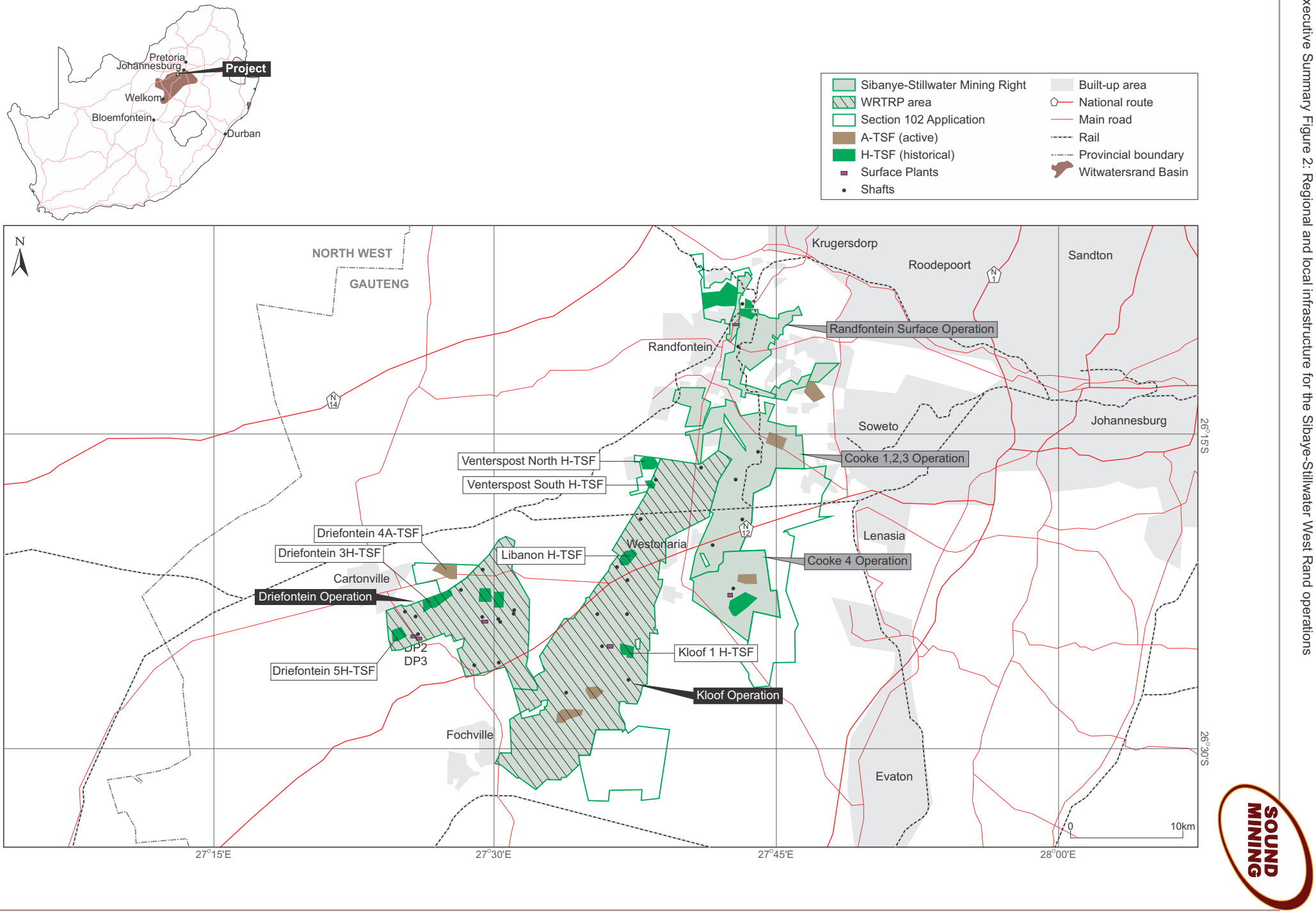
In early 2013 Gold Fields unbundled its Kloof and Driefontein Complex and Beatrix gold mines in the Free State to create a separate entity in Sibanye Gold Limited and listed Sibanye Gold Limited as a fully independent company on both the JSE and the NYSE stock exchanges in early 2013. Subsequently, in October 2013, Sibanye Gold Limited purchased the interest held by Gold One in Rand Uranium and Ezulwini.

Executive Summary Figure 1: Regional location and mineral assets of Sibanye



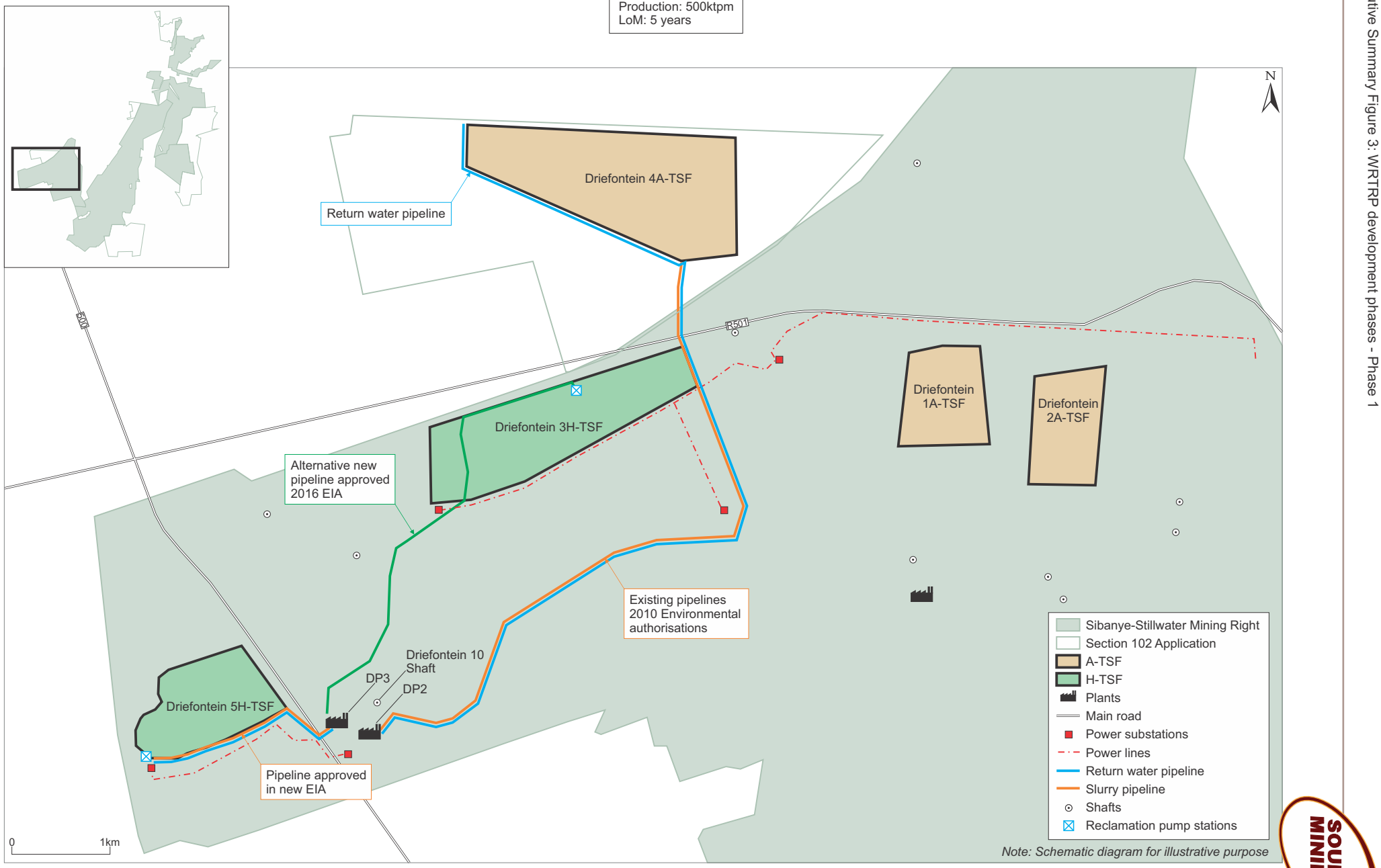
Source: Sound Mining 2017

Source: Sibanye 2016



Executive Summary Figure 2: Regional and local infrastructure for the Sibaye-Stillwater West Rand operations

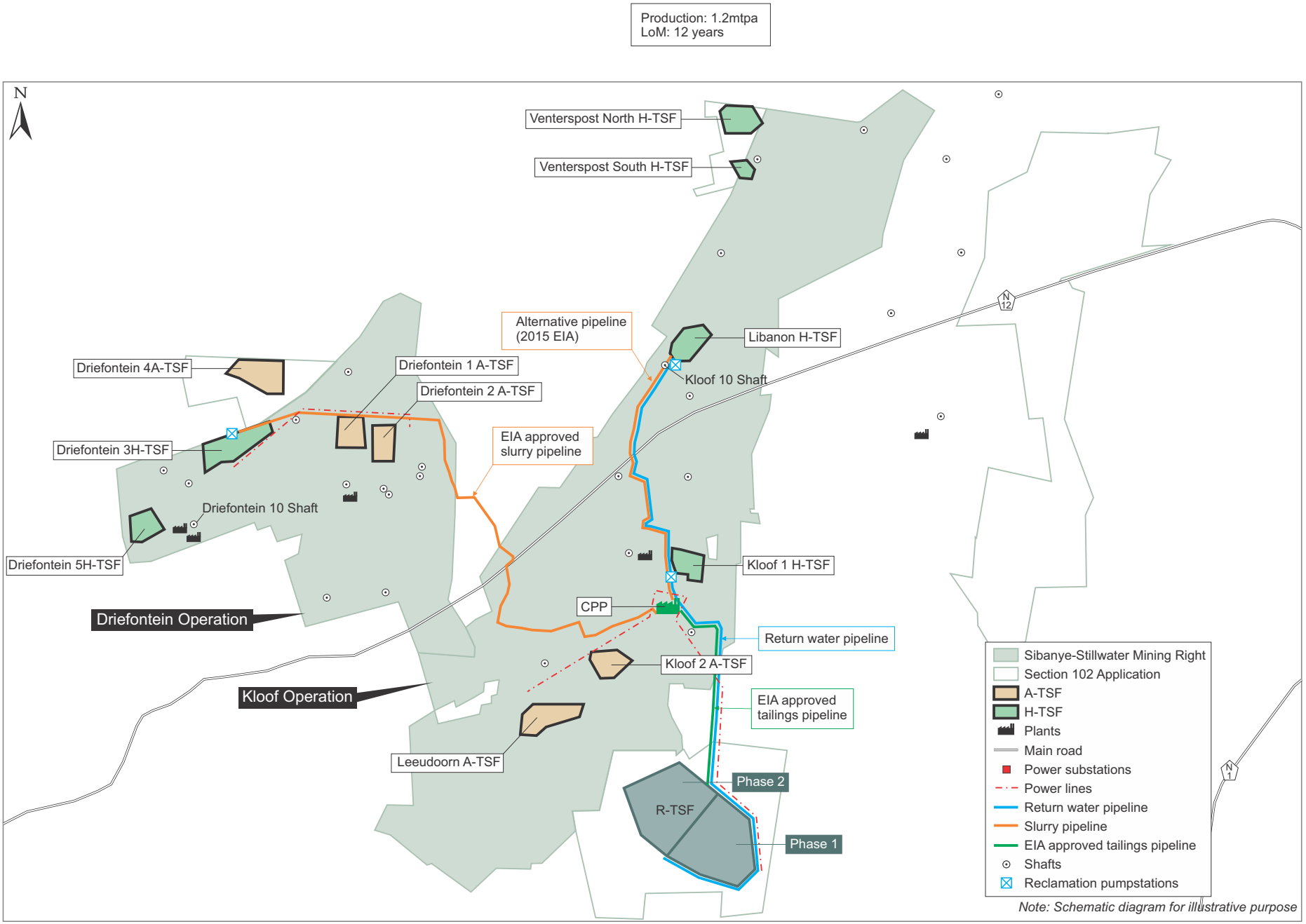
Source: Sound Mining 2017



Executive Summary Figure 3: WRTRP development phases - Phase 1

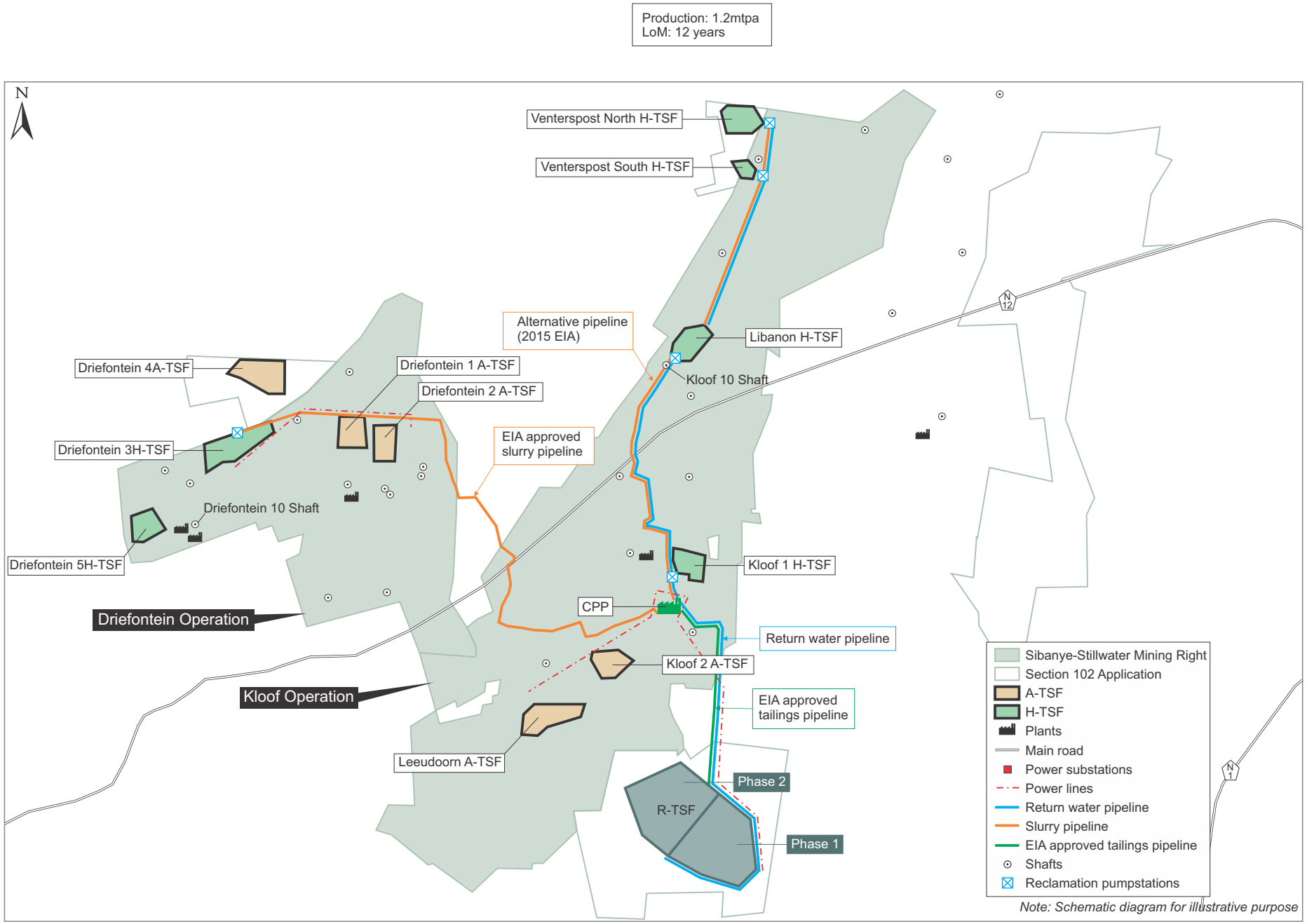
Source: Sound Mining 2017

Executive Summary Figure 4: WRTRP development phases - Phase 2A



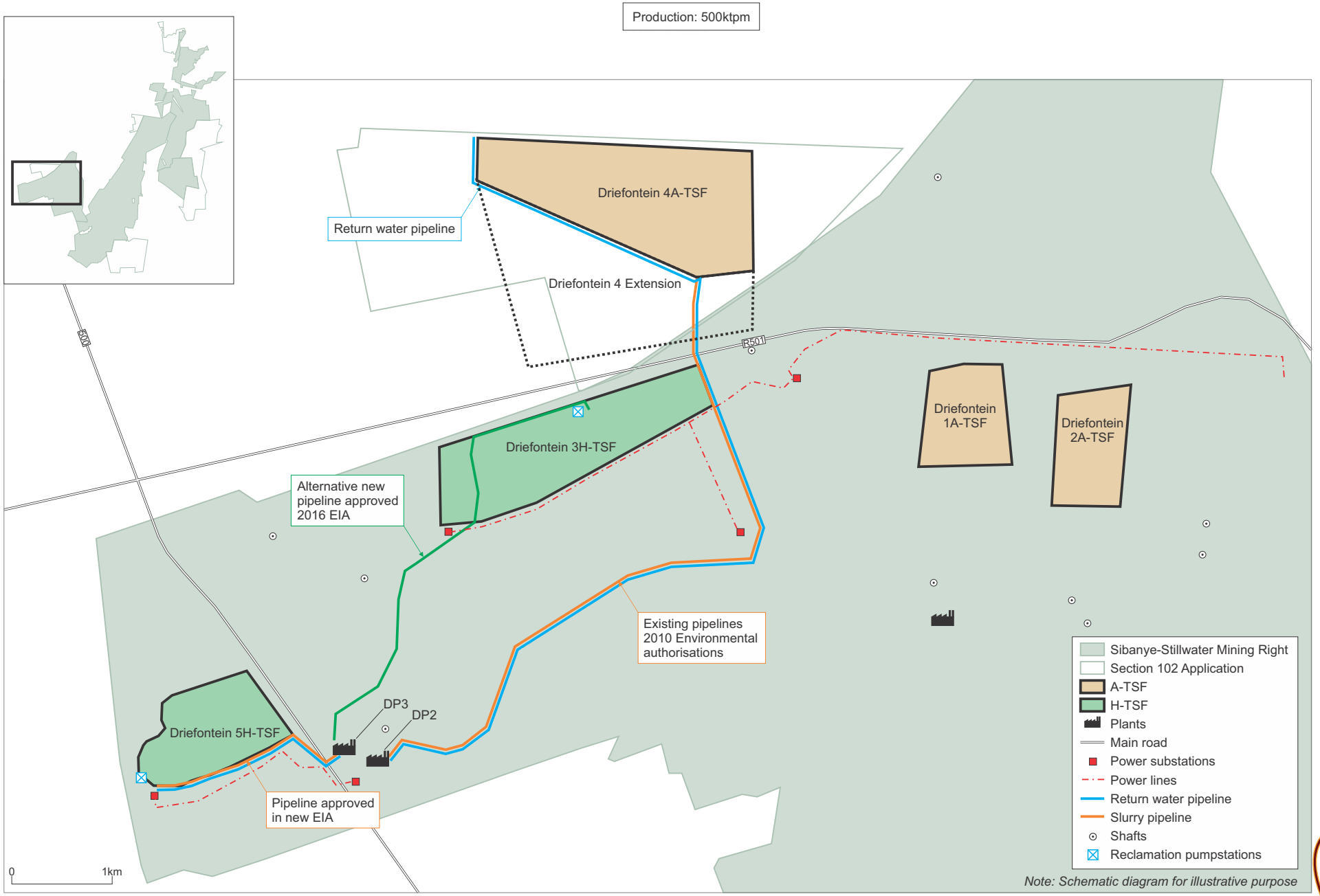
Source: Sound Mining 2017

Executive Summary Figure 5: WRTRP development phases - Phase 2A



Source: Sound Mining 2017

Executive Summary Figure 6: WRTRP development phases - Alternative option



The Gold One assets which became part of Sibanye Gold Limited included the Cooke Operations (underground mining and surface reclamation operations) for gold and uranium production. This transaction gave Sibanye Gold Limited control of the majority of the surface mineral resources in the region. A PFS was completed during 2013 and confirmed that there is a significant opportunity to extract value from the surface mineral resources. Subsequently a number of DFSs have been completed on various combinations of H-TSFs.

Sibanye Gold Limited acquired United States registered Stillwater Mining Company in May 2017 and began trading as Sibanye Stillwater in August 2017.

Legal aspects and tenure

SR1.5(i)-(v); SVT1.5; JSE 12.9(h)(iv)

Valid mining rights exist for the Driefontein and Kloof areas as summarised below:-

- Driefontein mining right – new order mining right GP30/5/1/2/2/51MR issued in 2007 and valid until January 2037 totalling 8,561 hectares(ha) located in the Magisterial District of Oberholzer in the Gauteng Province. Sibanye-Stillwater is entitled to mine all declared material situated within this mining right and has all the necessary statutory requirements in place. The submission of an Environmental Management Programme (EMP) and Environmental Impact Assessment (EIA) are required by Section 39(1) of the MPRDA; and
- Kloof mining right – new order mining right GP30/5/1/2/2/66MR issued 2007 and valid until 2027. The LoM is expected to extend until 2033. The new order mining right covers a total of 20,087ha, in the Magisterial District of Westonaria, in the Gauteng Province. Sibanye-Stillwater is entitled to mine all declared material falling within this mining right and has all the necessary statutory requirements in place.

Sibanye-Stillwater will continue to operate the Kloof and Driefontein Mines under the auspices of its mining rights whilst the WRTRP conducts its business.

In respect of the WRTRP assets, Section 102 amendments to the mining rights have been made by Sibanye-Stillwater to permit the reclamation activities anticipated for the WRTRP. In correspondence between the DMR and Sibanye-Stillwater in 2016, the DMR stated it was prepared to grant the applications and indicated the extent of the financial provision for closure. The closure quantum is currently in dispute as the stated requirement for value added tax (VAT) is not confirmed and awaits a ruling by the South African Revenue Service (SARS).

The H-TSFs forming part of the WRTRP, are included of the Exchange Agreement between DRDGOLD and Sibanye-Stillwater and are to be transferred from Sibanye-Stillwater to the Special Purpose Vehical (SPV) created to hold the WRTRP. In terms of that agreement the H-TSFs are classified as moveable assets and will be transferred to the SPV, as movable assets and, therefore, there is no requirement to transfer any part of the mining rights to the SPV.

The current DRDGOLD owned Ergo reclamation operations are not subject to royalty payment and a similar arrangement is envisaged for the WRTRP.

The review of the environmental permitting concluded that the Section 102 amendments, once granted, will satisfy most of the requirements for the WRTRP, with some exceptions having been noted, whereby additional amendments will be required for the Driefontein 4A-TSF and various piping routes for Phase 2. These are not considered fatal flaws and sufficient time is available for the application of the appropriate additional requirements.

According to the Project agreements the rehabilitation liability of the H-TSFs is transferred to the SPV. The portion of the Sibanye-Stillwater rehabilitation trust fund related to these assets will be transferred to the special purpose vehicle rehabilitation trust with any shortfall covered by an insurance policy. The current quantum in the trust fund is approximately ZAR354m. In addition, the SPV will assume responsibility for the approximately 169 employees that currently are in Sibanye-Stillwater employ and operate the DP2 and DP3. Sound Mining considers that DRDGOLD has made sufficient financial provision for retrenchment of this work force, should the need arise, in its overheads allocation.

The agreements provide for access to various infrastructure on the mining rights, notably water and power supply, but the status of the surface right agreements with private land owners for any newly envisaged infrastructure is unknown. Sound Mining considers this a manageable risk.

Sibanye-Stillwater has been granted two water use licences (WUL) by the Department of Water and Sanitation for a period of 20 years and the water that will be used in the reclamation workings and the process plants will be sourced from underground workings at Kloof 10 shaft and Driefontein 10 shaft to a maximum of 9,487Mℓ/a and 2,555Mℓ/a respectively. After treatment, the slurry/tailings will be disposed into the R-TSF. DRDGOLD has opted for a closed water system throughout the project life so no water treatment or discharge into the surface water courses will occur. Steps to transfer the WUL from Sibanye-Stillwater to the WRTRP will be required in accordance with the provisions of National Water Act (NWA) including Sections 25 and 51. In accordance with the Dam Safety Regulations, a DSR licence and licence to impound will be required but it is unclear whether the applications for these licences will be made by Sibanye-Stillwater or by WRTRP following the transfer of the WUL to the SPV.

Sibanye-Stillwater has received a Provisional Atmospheric Emissions Licence (PAEL) in respect of the activities required for the operation of the CPP on 30 August 2017. Atmospheric Emissions Licences in terms of NEM:AQA are not required for the elution and smeltering of gold.

Heritage Impact Assessments were undertaken for both the Driefontein and Kloof areas affected by the activities of the WRTRP and submitted to the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Authority Gauteng (PHRA-G). Historical grave sites and heritage buildings were identified and recommendations made to preservation of these sites in the infrastructure planning and construction.

Sibanye-Stillwater is the holder of Certificates of Registration (CoR) in terms of the National Nuclear Regulator (NNR) for both Driefontein and Kloof mining right areas but these CoRs are not transferable. At this stage it is unclear whether the special purpose vehicle will be required to apply for a CoR or a certificate of exemption in terms of Section 22 of the National Nuclear Regulation Act (NNRA).

The WRTRP will be undertaking mining activities in terms of in Section 102 of the Mine Health and Safety Act (MHSA) and consequently the provisions of the MHSA will apply to the Project. In the first exchange agreement, DRDGOLD warrants to maintain practises and procedures to ensure material compliance with the MHSA. However, the Use and Access Agreement assumes that the provisions of the MHSA do not apply to the activities to be undertaken by the SPV. The Use and Access Agreement, consequently, contemplates that, as soon as reasonably possible after the effective date, the SPV will confirm with the DMR that the activities to be undertaken are not subject to the MHSA and apply for exemption.

Geological Setting

SR2.1(i)-(vii); SVT1.7; JSE 12.9(h)(v)

The mineral assets considered in this CPR are historical surface residual tailings material from the mining of the West Witwatersrand Gold Fields and as such the nature of the underlying geology is not of direct relevance to the business of the WRTRP. However, an understanding of the scale and nature of the gold mineralisation that was targeted in the historical mining operations provides context for the investigation of the structure and composition of the H-TSFs. The surface geology is relevant to the siting of future WRTRP infrastructure.

The assets of the WRTRP are located within the Far West Rand goldfield of the gold-bearing, late Archaean (2.7Ga to 3.2Ga), Witwatersrand sedimentary basin (Witwatersrand Basin). The Witwatersrand Basin is the largest gold bearing metallogenic province globally and is unconformably overlain, by units of the Ventersdorp Supergroup (~2.7Ga), the Transvaal Supergroup (~2.6Ga) and the Karoo Supergroup (~280Ma).

Deposition in the Witwatersrand Basin is considered to have taken place along the interface between a fluvial system and a major body of still water or an inland sea with the source of the gold postulated as being a northerly Archaean Greenstone belt in which craton/plate interactions caused the development of mineralising hydrothermal activity and generated sedimentary environments where deposition could occur. The origin of the gold mineralisation in the Witwatersrand Basin has been the source of debate for over 100 years. The debate has been historically divided between the syn-genetic or placer proponents and the epigenetic or hydrothermal model. The most widely accepted model appears currently to be the modified placer model in which placer gold grains have been remobilised after burial.

The Kloof and Driefontein mining complexes located on the northwestern rim of the Witwatersrand Basin and exploit three primary reefs, namely the Ventersdorp Contact Reef (VCR) located at the top of the Central Rand Group, the Carbon Leader Reef (CLR) near the base of the Central Rand Group and the Middelvlei Reef (MR), which stratigraphically occurs 50m to 75m above the Carbon Leader. Additional minor reefs include the Kloof and Libanon Reefs exploited in some operations.The H-TSFs contain the processed waste from the mining of auriferous and uraniferous ores from Driefontein, Kloof, Libanon and Venterspost operations as follows:-

- the Driefontein mining complex H-TSFs comprise primarily processed Ventersdorp Contact Reef, Carbon Leader Reef and Middelvlei Reef;
- the Kloof mining complex H-TSFs comprise primarily processed Ventersdorp Contact Reef, Middelvlei Reef and to a lesser extent the Kloof Reef;
- the Venterspost mining complex H-TSFs comprise primarily processed Middelvlei Reef and Ventersdorp Contact Reef; and
- Libanon mining complex TSFs comprises material from the Ventersdorp Contact Reef, Libanon Reef, Kloof Reef and the Middelvlei Reef.

The surface geology of the mining area comprises outliers of Karoo Supergroup shales and sandstones, followed by Pretoria Group sediments and the Chuniespoort Group dolomites of the Transvaal Supergroup. The principal elements of the Transvaal Supergroup include the clastic sediments of the Black Reef Formation, the chemical and clastic sediments of the Chuniespoort Group, and the clastic sediments and volcanics of the Pretoria Group.

In general, the composition of a TSF depends on the geochemical make-up of the material being mined and the chemicals used in the mining and extraction process. In addition, the internal structure of the TSF reflects the mining strategy and depositional methodologies employed for each operation. The bulk density of tailings material is a critical factor in the accurate estimation of tonnages and a view on the lateral and vertical variation in moisture content should be obtained. These factors can result in a considerable variation in gold content and distribution throughout a TSF and such variation has an impact on final recoveries and projected revenues for the operation.

In addition, secondary processes such as metal re-mobilisation, erosion, weathering, leaching and acid mine drainage can affect the geochemical characteristics of a TSF. These processes tend to progress faster in a TSF as weathering, erosion and oxidation are accelerated by the fine particle size of the material and leaching together with acid mine drainage occur due the large amount of water associated with TSFs. Gold can undergo mobilisation within the TSF with time and hence may exhibit areas of re-concentration and even be present in the sub-structure soil. The geochemical characteristics of the footprint geology, such as dolomites, granites, quartzites, has a bearing on the mobilisation dynamics of a TSF. Hence, depending on several factors such as footprint, age of deposition, beneficiation, primary reef origin of slimes, a TSF may exhibit areas/layers of differing grade profiles.

All of the above described factors have been taken into consideration in the characteristaion and modelling of the H-TSFs.

Exploration Programmes

JSE 12.9(h)(vi), SR3.1(i)-(viii), 3.2(i)-(v)

The extent, morphology and structure of the H-TSFs is relatively simple compared to conventional mineral deposits. Consequently, the exploration programmes were also simple and straightforward, comprising:-

- surveying to determine physical dimensions and volumes;
- auger drilling programmes to permit sampling for gold content and mapping of the gold distribution, independently audited;
- metallurgical and flow sheet development testwork; and
- tailings toxicity tests and specific gravity determination.

The required SAMREC Table 1 disclosure for the exploration programmes is provided in the CPR and the review by Sound Mining concluded that the drilling programmes were suitable for the deposit type and that the drilling and sampling techniques were of a high standard, with sample contamination and losses kept to a minimum.
The drilling and sampling programmes were conducted to industry standards and the results are considered SAMREC compliant and suitable for incorporation into a Mineral Resource estimate.

The analytical laboratories used in the exploration programme are all ISO certified for gold analysis and all three these laboratories follow best practice principles of quality management and have procedures of chemical analysis and assay that fulfil the requirements of international best practice. The QA/QC of the field and laboratory verification procedures were independently audited and considered appropriate. Full length samples were taken and are considered representative of the disseminated mineralisation which has no orientation or structural control other than grade variations due to deposition variations and secondary remobilisation of the gold. This gold distribution within the H-TSFs is adequately understood from the geological modelling.

Historically there has been a suggestion that the density of the H-TSFs could vary with the lithology of the basement material. The Driefontein H-TSFs, the Venterspost H-TSFs and the Libanon H-TSF are located on Malmani Subgroup dolomites whilst the remainder are located on the non-dolomitic argillaceous and arenaceous sediments of the Timeball Hill and Hekpoort Formations. An independent density study by Geostrada concluded that the basement lithology does not significantly impact the density of the tailings material. Historically, Gold Fields used an average density of 1.40t/m^3 in its Mineral Resource estimations and the average value of 1.40t/m^3 is confirmed by Ergo for its current operations and relies on the actual data from the processing of 2.1Mtpm of tailings material from the Witwatersrand basin over decades. Further evidence in support of the use of an average density value of 1.40t/m^3 is provided by a comparison of the densities used by other companies in the business of tailings retreatment of Witwatersrand tailings. Sound Mining has used an average density of 1.40t/m^3 and considers this a reliable value based on substantial empirical evidence. The use of a dry density in the estimation of an in situ Mineral Resource is standard best practice and the dry density value has been applied to the Sound Mining Mineral Resource estimate. However, the wet density and bulk densities are generally considered more appropriate for the conversion to Mineral Reserves and calculations of tailings tonnage production and revenues. In this case the effect of changing the density values in respect of the volume estimations shows that using a wet density of 1.45t/m^3 does not have a material effect on the tonnage estimation.

The estimation of the historical exploration expenditure is impossible to determine given the numerous owners of the project area and the long history of investigation into the potential for such a large reclamation project.

Mineral Resource Estimate

SR4.1(i)-(vi), SR4.2(i)-(vi); SR4.4(i); 4.5(i)-(vi); SVT1.9; JSE 12.9(h)(ix)

The geological modelling and Mineral Resource estimation was originally undertaken for Gold Fields by Minxcon 2009. Sound Mining has independently reviewed the database, geological models, estimation methodology, classification criteria and estimation results.

The exploration database was demonstrated to comprise analytical data obtained from reliable laboratory assays on samples obtained from SAMREC compliant sampling and industry best practice drilling programmes. The drillhole grid spacing is close for typical TSFs drilling programmes and the entire depth of each H-TSF was sampled. The data density is therefore considered sufficient to assure continuity of mineralisation and structure and provides an adequate basis for estimation.

Such H-TSFs constructed from the tailings of Witwatersrand gold mining operations have been successfully and economically exploited for several decades and the geotechnical and geometallurgical characteristics are well understood from experience and from testwork on the WRTRP assets themselves. No factors of a geotechnical or geometallurgical nature have been identified that would have a significant effect on the prospects for eventual economic extraction.

The exploration database was imported into DataMineTM Studio 3 software and data validation was undertaken to ensure the integrity and validity of the imported data. Three dimensional wireframes were constructed from the LIDAR survey digital data and drillhole information.

The wireframes comprised simple 3D representations of the volume of the H-TSFs and as such are not open to alternative interpretations. As the entire deposits are to be mined no geological losses or other geotechnical considerations were applied to the models or the Mineral Resource estimates.

No sample compositing was undertaken and Ordinary Kriging was used for the gold grade estimation as this is considered the most reliable and accurate methodology for this deposit type. Capping of anomalously high grade values was applied to the assay values only of the higher grade Driefontein 5H-TSF (at 1.6g/t Au) and Kloof 1H-TSF (at 0.7g/t Au) facilities. The kriging process used applied using 50mx50mx3m (X, Y and Z directions) block size with subcells employed at a minimum of 10mx10mx3m. The spatial inter-relationships of the sample grades were investigated with variograms and were deemed best represented by omni-directional models.

The classification of the Mineral Resources was based on suitable statistical criteria and all of the Mineral Resources were classified in the Measured category. The Sound Mining review and verification confirms minimal variance between the Minxcon and Sound Mining estimates.

In compliance with the SAMREC Code, the applied Mineral Resource classification is a function of the confidence of the asset tenure and the entire process from drilling, sampling, geological understanding and geostatistical relationships. The WRTRP H-TSFs legal tenure is underpinned by the Sibanye-Stillwater mining rights, the applications for Section 102 amendments to those mining rights for the WRTRP activities, the amended EMPs and the signed agreements with Sibanye-Stillwater covering the Project's right to access and exploit the moveable assets. The drilling, sampling, analytical processes and governance of the exploration programmes have been appropriate and in-line with industry best practice and are considered to be of high confidence. The density used in the conversion from volume to tonnage has been determined from both in situ measured values and empirical data and is considered reliable. Sound Mining concludes that the estimations are based on a suitable database of SAMREC compliant information. Sound Mining was able to re-produce the Minxcon variograms and was able to demonstrate that the variography and the parameters used in the kriging process are appropriate. The conclusion is that the Minxcon 2009 Mineral Resource estimate methodologies and interpretation are reasonable and can be relied upon to reflect the Mineral Resource base for the WRTRP. Sound Mining identified no material issues that would affect the overall conclusions reached by Minxcon.

Measured Mineral Resource estimate for WRTRP H-TSFs (Minexcon 2009 – as interrogated, verified and endorsed by Sound Mining 2017)

H-TSF	Volume ('000m^3)	Density (t/m^3)	Tonnage ('000t)	Au Grade (g/t Au)	Au Content ('000g)	Au content ('000oz)
Driefontein 3	35,540	1.4	49,756	0.47	23,385	752
Driefontein 5	19,956	1.4	27,938	0.47	13,103	421
Kloof 1	19,931	1.4	27,903	0.33	9,068	292
Libanon	52,351	1.4	73,291	0.27	19,935	641
Venterspost North	38,954	1.4	54,536	0.27	14,943	480
Venterspost South	9,068	1.4	12,695	0.33	4,189	135
Total	**175,860**	**1.4**	**246,119**	**0.34**	**84,623**	**2,721**

Source : Minxcon 2009; interrogated, verified and endorsed by Sound Mining 2017
Compliant with the SAMREC Code 2016
Apparent computational errors due to rounding and are not considered significant
In situ Mineral Resource estimate reported according to SAMREC Code requirements
Mineralisation widths are not relevant as the entire deposit is to be mined
Grades are not regional averages
Mineral Resource estimate reported inclusive of Mineral Reserves
No geological losses applied
Density 1.40t/m^3

Mine design

SR5.2(i)-(vii)

The mining method for the WRTRP will be hydraulic mining (also known as hydro-mining), which uses high-pressure water monitors to deliver a high-pressure (25bar to 30bar) water jet to hydraulically excavate unconsolidated tailings material within the H-TSF's. The method is not new and has been tried and tested over decades of successful Ergo reclamation and re-deposition operations. No un-tested technical assumptions with regards the mining have been made for the WRTRP. Water will be delivered to the monitors through a network of pipes (RVN Group 14 December 2017).

They will remove the tailings material from the top of a H-TSF to the natural ground level in 15m layers. The top-down monitoring approach can be used to form consistent stable slopes that can be varied according to the material properties of the tailings that are being reprocessed. Horizontal bench widths of between 100m and 200m, inclusive of the face angle, will be created and managed to maintain safe working distances between simultaneous operations at different bench elevations. The design is for bench face angles to be in the region of 45° to 50°.

Water from the monitors mix with the tailings material to form a slurry with a high solids content. The slurry is channelled along the base of the H-TSF to a sump at the lowest elevation of the bench being mined. The position of the sump changes as mining proceeds along a bench, to limit the distance between the monitor and the sump. If too far from the active face, tailings material may drop out of suspension and reduce the solids content of the slurry pumped to the plant. The slurry will be pumped via a pipeline to a processing facility where the solids are separated from the water using a thickener. Excess water is then pumped back to the H-TSF to be re-used by the high-pressure monitors.

Hydro-mining and re-deposition, although not complicated, is a specialised activity, and will accordingly continue to be outsourced to competent and experienced service providers. The operating expenditure (opex) estimate for the mining and re-deposition operations in this CPR is supported by actual operational figures and not only by computations from the various feasibility studies that have been undertaken and completed for the WRTRP. The cost and maintenance of the mining equipment, as well as the employees required, will be for the contractor‘s account and will form part of the contractual agreements with DRDGOLD.

The performance assumptions in this study are based on experience and information from decades of similar tailings reclamation operations and so the equipment requirements, manning complements and necessary supporting infrastructure, in terms of water and power supply, are well understood by DRDGOLD and have been used in the planning for the WRTRP. Information, which includes an up to date bill of materials, has been used together with the planned quantities to estimate the associated costs for the WRTRP and these estimates have been endorsed by the current Ergo service provider.

The pipeline and pumping design and capex estimate has been undertaken by in-house DRDGOLD personnel and independent specialists familiar with such mining operations.

Specific mining schedules were developed for each H-TSF using the block models and grade distribution that was used for the Mineral Resource estimate. These schedules were integrated into a 20 year LoM production plan for the WRTRP which detailed how the total production of 246.12Mt would be accessed from the various H-TSFs.

The CP has checked the integrity of the mine design and associated costs and is satisfied that the level of detail and accuracy is aligned with the requirements of a PFS.

Metallurgical testwork and processing

SR5.3(i)-(vi)

The metallurgical characterisation of the H-TSFs has been included in numerous techno-economic studies from 2000 ranging from Scoping Studies through PFS stage to DFS levels of accuracy. The metallurgical testwork included evaluation of various processing options including direct leach, grinding, ultra-fine grinding and flotation.

The most comprehensive testwork has been performed on Driefontein 3H-TSF and Driefontein 5H-TSFs with slightly less detailed testwork having been performed on the Libanon, Kloof 1 and Venterspost North and South H-TSFs. There is sufficient metallurgical testwork available to evaluate potential metallurgical performance for Phase 1 and Phase 2 and the Phase 2 information will be supplemented by pilot plant trials to be performed on the various H-TSFs during Phase 1 operations. The results from these pilot plant trails will provide the detail required for the development of the DFS on WRTRP-Phase 2.

Historically the most favourable liberation on Witwatersrand Basin gold bearing ores have been achieved at grind sizes of <75µm. Both the diagnostic leach and assay by size results confirm the need to mill the coarse fractions in order to improve recovery. The presence of preg-robbers in the tailings material is indicated and it is best industry practice to design the reclamation plants with a CIL system to mitigate the impact of preg-robbers on recovery.

Based on the metallurgical testwork, Sound Mining estimated that the following processing recoveries would be achievable on the various H-TSF feed sources:-

Process recoveries determined from metallurgical testwork

H-TSF	Process recovery (%)
Driefontein 3	61.9
Driefontein 5	63.0
Kloof 1	44.6
Libanon	48.5
Venterspost North	39.3
Venterspost South	Assume similar to North

The design and capital expenditure estimates for the upgrade of the DP2 and DP3 plants were undertaken independently to a Preliminary Feasibility Study (PFS) level of accuracy. The operational expenditure has been estimated from actual operational data from the Ergo operations. The Sound Mining review of the design and costings for the plants and benchmarking against other such retreatment facilities as a test of reasonableness, showed that the design and costings to be appropriate for the envisaged project and in-line with industry standards. The capex for the Phase 1 plant upgrades is ZAR88.87m. The total opex for Phase 1 is ZAR63.97/t which includes contractor mining.

The process design for the CPP has been through many iterations in various PFSs and DFSs over the last ten years. DRDGOLD has made the strategic decision to implement the simple gold extraction process that has proven successful in its Ergo operations including milling of the coarse fraction and excluding flotation. The design and capital expenditure estimates for the CPP was undertaken independently to a PFS accuracy level effective as of December 2017. The operational expenditure has been estimated from actual operational data from the Ergo operations.
The design and costings for the CPP was reviewed by Sound Mining and benchmarked against other such retreatment facilities as a test of reasonableness and the conclusion is that the design and costings are appropriate for the envisaged project and in-line with industry standards.

The design criteria included a throughout of 1.2Mtpm and is comprised of standard units, readily available which have been successfully used in the Ergo operations. The process flow includes:-

- a slurry receiving and screening circuit where the pH is adjusted;
- a milling, classification and thickening circuit which includes a series of cyclones;
- a pre-conditioning and CIL circuit where material transferred from the milling, classifying and thickening circuit is preconditioned with further pH adjustments and the addition of oxygen. Oxygen levels and leach kinetics are further increased by passing the material through a bank of high shear reactors. Thereafter the material enters the first of ten CIL tanks and an online cyanide analyser is used to control the cyanide addition;
- an acid wash, elution and carbon regeneration circuit where loaded carbon transferred from CIL circuit is collected in a carbon storage hopper before being treated by a 3% hydrochloric acid solution, neutralised and the acid washed carbon is then educted to either one of two 10t elution columns containing a caustic solution of 3% sodium hydroxide (NaOH) and 1% sodium cyanide (NaCN) and the solution is heated and pressurised; and
- the electrowinning and smelting where the pregnant solution from the elution circuit is pumped through the electrowinning circuit consisting of two cells in parallel (per circuit). The electrowinning circulation continues for 18 hours, or until gold in solution value drops below a pre-set value measured by manual sampling. Sludge removed from the electrowinning cathodes cells are transferred to calcining. Product from the calcining oven is moved by hand to an induction smelting furnace. Borax, silica, potassium nitrate and sodium carbonate are added to the furnace as flux chemicals to collect impurities. Gold and slag from the furnace are poured into a mould trolley where Dorê gold is recovered as the final product.

Raw water for Phase 1 will be sourced from Drienfontein 10 shaft. Raw water to the CPP is to be supplied from underground sources at Kloof 10 shaft and process water generated in the thickeners and return water will be fed to a 15,000m^3 lined process water pond with a dirty water compartment to allow sufficient settlement of solid particles before overflowing to a clean compartment. A detailed electrical Point of Delivery (POD) study was conducted by Tenova Bateman to identify the optimal power supply sources and upgrades required for both Phase 1 and Phase 2 of the Project.

The design for the CPP has been based on representative and adequate metallurgical testwork which will be supplemented in the DFS phase of project development by additional pilot plant trials. The plant design is based on actual operating plants and the confidence in the design will be strengthened in the trial pilot plant studies to be undertaken for the DFS. The mass balance for the plant is appropriate and the CPP has been included in the environmental permitting applications submitted by Sibanye-Stillwater to the DMR. The actual site of the CPP falls within the freehold area held by Sibanye-Stillwater. The tailings material arising from the new plant will be adequately stored in the lower compartment of the R-TSF which will have excess capacity from both a depositional rate (1.4Mtpm) and final capacity perspective (286Mt). All the necessary infrastructure requirements have been considered and are considered appropriate for the project stage of development..

Infrastructure

The WRTRP entails the reclamation of approximately 246Mt of tailings from numerous geographically separated H-TSF sites and this operation will require adequate storage facilities for the new tailings arising from the Project. Phase 1 of the WRTRP will require the processing of the Driefontein 5H-TSF and re-deposition of the new tailings onto the currently active Driefontein 4A-TSF which will be upgraded to accommodate the additional deposition.

The implementation of WRTRP-Phases 2A and 2B will require the establishment of a R-TSF to accommodate the over 200Mt of tailings material planned for Phase 2 of the Project.

The site of the R-TSF was extensively studied as part of the original Gold Fields and the Rand Uranium projects and was planned for development on the Transvaal Supergroup basement with approval under the National Environmental Management Act (NEMA) for an area of 328ha to contain 750Mt to a maximum height of 110m. Although the permitting for this site has been granted amendments will be required to facilitate the R-TSF.

Conventional TSF construction methods limit the rate-of-rise to <2.0m/yr but a combination of field and laboratory testwork and numerical modelling as part of the 2015 DFS for the Project, has indicated that a maximum allowable rate of rise-of-rise of up to 3m/year can be achieved by using a spigot deposition system and maintaining tailings slurry relative density of between 1.55t/m^3 and 1.6t/m^3. The increased allowable rate of rise allows for a decrease in the required footprint area of the R-TSF and the footprint has been sized for a future total tailings treatment rate of up to 4Mtpm. In order to limit construction time prior to commissioning and to defer some capital expenditure, a phased construction of the R-TSF has been planned. The R-TSF will consist of a lower and upper compartment; with only the lower compartment constructed and developed as part of the WRTRP-Phase 2. The compartment capacity calculations were based on the assumption that the lower and upper compartments will be stand-alone facilities independently constructed with the lower compartment having a capacity of 286Mt, a height of 49m, a footprint of 667ha and a tailings delivery rate of 1.4Mtpm.

The geochemical characterisation of the tailings in accordance with the National Norms and Standards indicates that the processed tailings will classify as a Type 3 Waste requiring disposal at a facility with a prescribed Class C barrier or geomembrane. The key constituents that prevent a re-classification to a Type 4 Waste include arsenic, barium, chromium IV, copper, manganese, nickel, lead and antimony in the case of total concentrations, but more importantly arsenic in the case of leachable concentrations.

Two water use licences (WUL) have been granted for the Kloof and Driefontein components of the WRTRP. The licences permit abstraction/pumping of water from underground workings at Kloof 10 shaft and Driefontein 10 shaft to a maximum of 9,487Mℓ/a and 2,555Mℓ/a respectively. The hydro-mining and processing of the Driefontein 3H-TSF, Kloof 1H-TSF and Libanon H-TSF will require 14.3Mℓ/d; 7.2Mℓ/d and 21.4Mℓ/d respectively (a total of 42.9Mℓ/d). The remaining water supply will be sourced from the return water from the R-TSF which is planned to be 35.6Mℓ/d and underground impacted water from Kloof 10 shaft. The Kloof 10 shaft has ample available capacity (36Mℓ/d) as well as existing storage capacity underground and on surface.

Sound Mining concludes that the available water supply more than adequately meets the WRTRP requirements including the make-up water during the dry season. The supply from underground sources at Driefontein 10 shaft and Kloof 10 shaft do not exceed the permissible pumping rates approved in the WULs.

According to the WULs the return water will be treated in an advanced water treatment facility and discharged into Leeuspruit or disposed to dust suppression. Instead of this open configuration DRDGOLD has opted for a closed water system throughout the project life so no water treatment or discharge into the surface water courses will occur.

The power supply design and costing for the "original" WRTRP was included in the 2015 DFS by Bateman Tenova and whilst the Project has changed in its scope since that point, the supply quantum and points of delivery (PoDs) for those aspects that remain unchanged, are appropriate to the current WRTRP. It was assumed that power at a national level from Eskom would be available and no provision was made for alternative supplies. Power is currently supplied to the various Sibanye-Stillwater mines associated with the WRTRP from Eskom's 132kV and 44kV grid. Thereafter, the voltage is transformed down to 6.6kV.The power requirement to the various components of the WRTRP has been shown to be within the current spare capacity to the Driefontein and Kloof mining complexes, and no significant project risk is identified that could prevent exploitation of the assets. Timeous modifications to the agreements with Eskom and sufficient allowance for the rising cost of power will have to be incorporated into the Project management and economic planning.

The hydro-mining, reprocessing and re-deposition of tailings material requires a pipeline network to be constructed. Slurry pipelines will be needed from the hydro-mining sites at the H-TSFs to the processing plants and tailings pipelines from these processing plants to the Driefontein 4A-TSF and R-TSF. In addition, high pressure water pipelines are necessary to supply the mining operations from bulk storage facilities and separate low pressure water transportation pipelines are needed to provide water to the processing plants via return water dams from the A-TSFs. The pipeline and pumping circuits for the "original" WRTRP were included in the 2015 Bateman Tenova DFS and several iterations of the pipeline routes, with alternative options, have been proposed since that time based on economic considerations and environmental authorisations.
A number of existing pipelines are present for which previous authorisations in 2010 were obtained and these routes and infrastructure, will be upgraded with the necessary amendments to the previous authorisations being required. The disturbed nature of the areas implies that such authorisations are unlikely to be unreasonably withheld.

Mineral Reserve estimate

SR 6(i)-(iii); 6.2; 6.3(i)-(vi); SVT1.9; SVT1.10; JSE12.9(h)(ix)

The Mineral Reserves have been prepared in accordance with the classification criteria of the SAMREC Code. In order to declare a Mineral Reserve it is necessary to develop, to a PFS level of accuracy, a mine plan with revenue and cost forecasts to confirm that the operation will be viable. Modifying factors associated with the reclamation of tailings material have been captured in the mine design, and in the associated technical aspects that informed the capital forecast and operating cost estimates for the WRTRP. These include a mining rate of 300ktpm for each monitor with it's associated equipment, a 100% mining recovery and no mining dilution. Each of the H-TSFs are to be re-mined and processed in their entirety. The mine planning has also taken cognisance of the geotechnical considerations with regard to the safety of the operation and long term stability of the H-TSFs and the R-TSF. The hydrological aspects with regard to the H-TSFs do not impact the mining operation. The Dec 2017 Mineral Reserve estimate for the WRTRP is provided over page.

Key environmental aspects, social and governmental parameters

SR1.5(ii)(v), SR5.5(i-v); SG4.3(2) SG3.5(1,2,3), JSE 12.9(h)(viii)

The review of the environmental status was undertaken by independent environmental specialists. The authorisations required for listed activities under the National Environmental Management Act (NEMA), National Water Act (NWA), National Nuclear Regulator Act (NNRA), National Environmental Management: Air Quality Act (NEM:AQA), National Environmental Management: Waste Act (NEM:WA), National Heritage Resources Act (NHRA) were reviewed in detail with commentary provided for each listed activity. Environmental Impact Assessments (EIA), Environmental Management Programmes (EMPs) and environmental authorisations exist for the Kloof and Driefontein mining areas but some aspects of these will require amendments to facilitate scope changes for the WRTRP. The potential areas requiring amendment have been sited. Sound Mining concludes that the environmental permitting is appropriate for the current PFS level of study. The Project timeline beyond the DFS decision point permits adequate time for the submission of the amendment applications and no fatal flaw is envisaged from a compliance perspective.

SAMREC compliant Mineral Reserves for the WRTRP - Sound Mining (Dec 2017)

Category	Tonnes (Mt)	Grade (g/t Au)	Content (t Au)	Content (Moz Au)
Driefontein 5 H-TSF	27.94	0.47	13.10	0.42
Driefontein 3 H-TSF	49.76	0.47	23.39	0.75
Kloof 1 H-TSF	27.90	0.33	9.07	0.29
Libanon H-TSF	73.29	0.27	19.94	0.64
Proved Mineral Reserve	**178.89**	**0.37**	**65.49**	**2.10**
Venterspost North H-TSF	54.54	0.27	14.94	0.48
Venterspost South H-TSF	12.70	0.33	4.19	0.13
Total Probable Mineral Reserve	**67.23**	**0.28**	**19.13**	**0.62**
Total Mineral Reserve	**246.12**	**0.34**	**84.62**	**2.72**

Source : Sound Mining Dec 2017
Apparent computational errors due to rounding and are not considered significant
Mineral Reserves are reported at the head grade and at delivery to plant
The Mineral Reserves constitute the feed to the gold plants over 20 years.
The Mineral Reserves are stated at a price of ZAR564,245/kg as at 31 December 2017.
Although stated separately, the Mineral Resources are inclusive of Mineral Reserves;
There are no Inferred or Indicated Mineral Resources included in the Mineral Resource statement. However, the Mineral Reserves for the Venterspost North and Venterspost South H-TSF have been classified as Probable due the level of uncertainty regarding the associated processing recoveries assigned in the LoM plans.
Uranium has been excluded in the mineral reserve estimate as it is not being recovered as part of the Project;
Grade and quantity measurements are reported in metric units (Mt) rounded to two decimal places.
The input studies are to the prescribed level of accuracy. The capital and operating costs are supported by quotations and zero-based costing techniques; and
The Mineral Reserve estimates contained herein may be subject to legal, political, environmental or other risks that could materially affect the potential development of such Mineral Reserves

Some heritage and culturally significant areas have been identified and will need to be accommodated in the DFS construction plans and monitored during actual construction.

The WRTRP is expected to provide a significant socio-economic contribution to the West Rand. The unemployment rate is recorded at 42%, and approximately 2,000 jobs will be created during the construction phase and 500 during the operational phase of the WRTRP. It is expected that the capital investment and contributions to the Gross Domestic Product (GDP) associated with the WRTRP, along with the potential multiplier effects, will be significant over the life of the operation and is expected to provide a sustained contribution to the local and national economy.

The Project received widespread interest during the public participation phase of the EIA. Most of the issues and concerns raised by Interested and Affected Parties (I&APs) referred to environmental impacts that already exist such as community health, safety and security concerns, impacts on surrounding farms, water quality impacts and population influx. The Project is expected to have a long-term positive impacts that include employment creation, skills development, local procurement of goods and services, as well as local and regional economic development.

The Social Impact Assessment (SIA) indicated that unrealistic political and community demands for sharing in Project benefits can lead to community and labour unrest, political electioneering and community upheaval. The SIA also states that the existence of informal settlements in close proximity to the Project will pose a risk to the Project in terms of political stability and community. Farmers in the project area are becoming increasingly hostile towards the mining industry and their concerns may need to be addressed.

A Social Management Framework and Monitoring Plan was developed to manage the expected negative social impacts of the Project on host communities. Negative impacts on infrastructure and services, can be more effectively mitigated when the social benefits of the Project materialse. Most negative impacts can be reduced to acceptable levels, and most positive impacts will be enhanced to maximise benefits to surrounding communities.

The closure liability for the Project has been determined for two separate objectives, namely:-

- the disclosure to the Department of Mineral Resources (DMR) in EIAs for mining right amendments and environmental approvals as undertaken by Digby Wells 2015. The disclosure determines the quantum of the financial obligation and the guarantees required by the DMR for the Project; and

- the estimation of closure liability for financial provisioning and planning as undertaken by Golder and Associates (Pty) Ltd (Golder) on behalf of Sibanye-Stillwater in December 2016 and audited by Sibanye-Stillwater auditors for submission to the Minister

The closure costs have been determined on both an “unscheduled” and “scheduled” basis. The unscheduled estimate is based on the costs of rehabilitating the H-TSFs in their present state without any mining activity having taken place. The disclosure to the DMR by Sibanye-Stillwater and the quantum of the financial guarantees required was based on this unscheduled estimate.

The scheduled estimate assumes that mining takes place and that the final rehabilitation will be confined to the rehabilitation of the H-TSF footprints and the R-TSF.

For the purposes of the economic analysis, the Project must ensure that the financial provision is adequate for the current liability of all the H-TSFs which is the unscheduled estimate of the entire Project. Although not currently constructed, the Project will have to make provision for the R-TSF and the CPP which are integral to the Phase 2. Therefore the unscheduled closure obligation has been applied in the financial model and this includes the R-TSF and CPP.

The unscheduled closure estimate is ZAR588.120m and the scheduled closure estimate ZAR360.96m. DRDGOLD is aware that as the mining of the H-TSFs progresses, the liability for the rehabilitation and closure continually decreases from the current to the final scheduled cost. DRDGOLD will make appropriate application to the DMR for adjustments to the closure obligation in the light of this decreasing liability. The annual liability updates required by the DMR will show reduced amounts as the tailings facilities decrease to only footprint rehabilitation.

According to the Project agreements the rehabilitation liability of the H-TSFs is transferred to the SPV. The portion of the Sibanye-Stillwater rehabilitation trust fund related to these assets will be transferred to the SPV rehabilitation trust with any shortfall covered by an insurance policy. It is understood that an environmental trust fund already exists with an amount of ZAR354m as of June 2017, allocated for this Project that, once escalated to December 2017, will largely cover the current anticipated liability of ZAR360.96m.

Market review

SVT1.18

The global gold market supply is founded on primary gold production and secondary recycling, the latter of which contributes approximately 30% to the total 3,100t produced in 2015 and 2016. Primary production decreased 2% in 2017 to 3,038t. In general, smaller gold mining operations were negatively affected by the continued lower commodity price and increasing costs with the consequential closure of some United States, Mexican and other small scales operations. In 2016, worldwide gold production was unchanged from that in 2015, because increased production in some larger producing countries such as Canada offset the decrease in production from smaller operations.

However, in 2017 production dropped precipitously in China and Australia, the world’s top two producers. The amount of scrap gold also fell, helping to drive the decline in supply.The start-up of new mines in 2017 was limited but a number of new mines are expected to enter production in 2018. Such projects include the Natalka project in Russia, which began commissioning in September 2017 and is expected to ramp up to full production by the end of 2018; Canada’s Rainy River project was expected to start commercial production in November 2017 and Houndé in Burkino Faso, which was expected to pour gold before the end of 2017.

Views on the market demand in the public domain are quite divergent. Demand for physical gold rose to 1,895 tons in the first half of 2017, a 17% increase over the same period last year which led to the view that the fundamentals for gold were trending in a positive direction with demand increasing and supply decreasing. However, according to the World Gold Council, overall demand in Q3 2017 fell 9% to 915(t), its lowest since 2009 and the annual demand was forecast to be 3,900t to 4,000t, compared to 4,347 tonnes in 2016. Gold demand has not been below 4,000t on an annual basis since 2009. The Exchange Traded Fund (ETF) inflows 2017 were a fraction of the inflows in 2016.

The gold price has responded to significant political events in 2016 was 9% more than the price in 2015 and was 24% lower than the record-high annual price in 2012. The price of gold (https//goldprice.org) in 2016 fluctuated through several cycles.

Following the United Kingdom's referendum vote to leave the European Union, the price increased to the 2016 year-to-date high (and projected annual high) of USD1,372.98/oz. In October 2016, the price dropped significantly, with an investor sell-off coinciding with improved economic data in the United States. A current upwards move in the gold price to ZAR18,500/oz (ZAR576,000/kg) has been apparent. Alternatively, the price history for gold in USD/oz for the past ten years shows that gold has been trading at around the USD1,300/oz level since 2011. While South Africa is experiencing significant local currency fluctuations against all major currencies, the South African Rand is unlikely to trade below ZAR13.50 to the USD over the long term.

Gold produced from the WRTRP will be delivered to the Rand Refinery for sale. DRDGOLD has a long- standing offtake agreement with Rand Refinery according to which gold is sold on the prevailing spot in ZAR. When applying a long-term exchange rate of ZAR13.5/USD to a realistic USD1,300/oz gold price, it would not be unreasonable for DRDGOLD to anticipate an average real gold price of ZAR564,245/kg from Rand Refinery over the longer term.

Capital and operational expenditure

SR5.8

The capital costs for the WRTRP were based to a large extent on historical information and preliminary designs using conservative assumptions and are summarised below. Sound Mining considers the capex estimate for the WRTRP to be reasonable and in-line with estimates for similar projects in the industry.

Capex for WRTRP Phase 1 and Phase 2

Project component	Capex (ZARm)
Phase 1 capex	
Mining / re-deposition	120
Upgrades to DPP2 and DPP3	38
Gold recovery plant	51
Upgrade to Driefontein 4A-TSF	16
Pilot and DFS	0
Sub-total direct capex	**225**
Contingency 15%	34
Project services 13%	29
Sub-total Phase 1 direct and indirect capex	**288**
Phase 2 capex	
Mining / re-deposition	778
Lower compartment H-TSF	1,229
Construction of CPP	984
Sub-total Phase 2 direct capex	**2,991**
Contingency 15%	449
Project services 13%	389
Sub-total Phase 2 indirect capex	**3,828**
Closure provision	215
Pilot study and DFS (Phase 1)	30
TOTAL	**4,361**

Source : Sound Mining December 2017, DRDGOLD 2017

The WRTRP capex estimates have been undertaken for Phase 1 and Phase 2, however, if for any reason the DFS suggests that the "alternative option" is more favourable, the capex for the "alternative option" has been estimated at ZAR318m.

The opex estimates for the WRTRP have been based on quantities from mine planning and feasibility studies undertaken for the Project, together with up to date information (e.g. bill of materials) from DRDGOLD's Ergo operations on the East Rand. The CP has interrogated the sources of the various quantities used for the opex estimates and is satisfied that they collectively meet and in places exceed the level of confidence associated with a PFS. Accordingly, a contingency of 15% has been applied in the valuation to cater for any uncertainty with respect to the overall Project's opex estimate of ZAR63.97/t for Phase 1 and ZAR48.49 for Phase 2. The overhead costs include a retrenchment provision of ZAR18m that may be incurred over the LoM as well as training and skills development. Refining costs of ZAR1,300/kg have been included in the opex estimate under "Stores".

Opex for Phase 1 and Phase 2

Parameter	Phase 1 (ZAR/t)	Phase 2 (ZAR/t)
Wages	8.88	3.96
Contractors	5.00	5.30
Stores	22.79	19.32
Utilities	13.50	13.81
Overhead	13.80	6.10
Totals	**63.97**	**48.49**

Source : Sound Mining Dec 2017; DRDGOLD 2017

The basis of the operating cost estimates for the WRTRP is outlined below:-

- wages make up 14% and 8% of the operating cost estimate for Phase 1 and Phase 2 respectively. The cost estimate was derived by using the manning schedules as planned by DRD for the WRTRP together with their latest actual salary structures;
- the mining contractors' estimate amounts to 8% and 11% of the operating cost estimate for Phase 1 and Phase 2 respectively. The estimate covers the hydro-mining operations, the re-deposition of tailings, and the operation of the pump stations at the respective mining sites. It is supported by the contracts currently in place and written confirmation from the contractor that the contracted rates would apply equally to the WRTRP. The piping routes and distances have been planned and costed in detail and included in the capital estimate. The maintenance of the pipes and pumps that do not fall under the responsibility of the contractor will be done by DRD personnel;
- stores comprise 36% and 40% of the operating costs for Phase 1 and Phase 2 respectively. DRD's latest bill of materials has been applied to the quantities as planned for the WRTRP. The cost estimate also includes ZAR1,300/kg Au to cater for the cost of refining which cost is supported by existing contracts with Rand Refinery;
- utilities constitute 21% and 28% of the operating cost estimate for Phase 1 and Phase 2 respectively. The cost for water is based on site specific information from Sibanye-Stillwater and current Eskom tariffs were applied to a detailed study completed on the overall power requirement for both Phase 1 and Phase 2; and
- overheads are estimated to amount to 22% of the combined operating costs.

Economic analysis

SR5.8 (i)-(iv); SVT1.12, SVT1.3, SVT1.4, SVT1.5, SVT1.6, SVT1.7, SVT1.8, SVT1.9, SVT1.10, SVT1.11; JSE 12.9(h)(xii)

An economic analysis of the WRTRP was undertaken according to SAMVAL principles utilising the income and market approaches.

The income approach is suitable for development and production properties and relies on the "value in use" principle and requires determination of the present value of future cash flows over the useful life of the mineral asset. A discounted cash flow model was created for the Project with the following input parameters included:-

- a ZAR/USD exchange rate of 13.5; a gold price of USD1,300/oz (ZAR564,245/kg);
- a range of discount rates between 2% to 10% with 6% as the preferred metric;
- a provision of 13% was included for project services;
- a contingency of 15% has been allowed for operational unknowns and some engineering uncertainty; and
- as can be expected for a mining operation of this nature, a sustaining capital provision of 1.5% of total operating costs will be necessary and appropriate to cater for capital Items for processing, future haul roads and other general requirements for the operation over it's LoM.

The DCF is based on real 31 December 2017 money terms. Tax was calculated as per South African legislation. The corporate tax rate applied is based on the mining tax formula that uses capital expenditure and assessed tax losses. The assets will be part of a new entity with no unredeemed capital or assessed losses carried over as at 31 December 2017. Capital expenditures are written off in the year incurred. The assets will essentially form part of DRDGOLD's usual business, which is not subject to the Mineral Royalties Act and so the formula for unrefined metals was not included in the DCF valuation. Indeed, DRDGOLD has been in the business of tailings retreatment for many decades and has not yet been required to pay a royalty.

A discount rate of 6% (in real terms), consistent with the nature of the Project and operating company's cost of capital and risk profile, was applied to the cash flow (i.e. DRDGOLD's weighted average cost of capital is the preferred discount rate). The result is a post-tax real net present value (NPV) of ZAR2,121m and an IRR of 38%. The change in NPV's over a range of discount factors from 2% to 10% is provided below:-

NPV at different discount rates (ZARm)

Discount Rate	2.00%	4.00%	6.00%	8.00%	10.00%
NPV	3,351	2,662	2,121	1,694	1,355

Source : Sound Mining Dec 2017

The overall post-tax pre-finance cash flow confirms that the Project remains cash positive from 2018 until the final 4 years where there are marginal cash flows. The Project remains economically positive with decreasing gold price to a critical point of USD1,040/oz, whereafter the Project becomes negative.

The DCF model was used to also examine the distribution of this value between the respective phases of the project as shown below:-

Distribution of value over the WTRP phases

Phases	Revenue (ZARm)	Opex (ZARm)	Capex (ZARm)	NPV_6 (ZARm)	IRR (%)
Phase 1 for 5 years only	4,479	2020	343*	1,275	164
Phase 1 and Phase 2A for 16 years	20,297	10,290	4,246	2,020	36
Phase 1, Phase 2A and Phase 2B for 20 years	24,626	14,098	4,493	2,121	37

Source : Sound Mining Dec 2017
* Includes closure provision and DFS pilot plant testwork over and above the indirect capital

The Project will have recovered 60% of it's value after only 5 years for a capital outlay of only 7% of the total budget. A total of 95% of the value accrues after Phase 1 and Phase 2A but 95% of the capital will be required. The remaining portion of the total project is marginal.

Should Phase 2 not proceed as planned, Phase 1 can simply continue by exploiting Driefontein 3H-TSF in the "alternative option". The "alternative option" indicated an NPV_6 of approximately ZAR2.7 billion (bn) due to the higher yield from Driefontein 5H-TSF and Driefontein 3H-TSF and significantly lower capital expenditure than the combined Phase 1 and Phase 2 of the Project. The "alternative option" presents a high NPV at lower risk in the short term.

However, DRDGOLD indicated, that consistent with its strategy, it aims to exploit the large regional mineral resource; to rehabilitate a much larger footprint than just the Driefontein 3H-TSF and Driefontein 5H-TSF footprints and to establish infrastructure that provides the strategic advantage and opportunity of regional consolidation far beyond the existing resources.

This larger and longer term focus renders the risk of exposure to the long term gold price less significant. Upside potential for the Phase 2 Project that has not been considered in the valuation include the following:-

- conservative recoveries applied to phase 2B due to less metallurgical testwork performed;
- unscheduled closure included in the DCF model, although only the cash flows relating to scheduled closure will be required; and

- project services of 13% was applied throughout the capital expenditure which may be largely absorbed by DRDGOLD's management capacity.

The market approach valuation method requires comparison with relatively recent transactions of assets that have similar characteristics to those of the asset being valued. No comparable transactions are available in the public domain and the assets under consideration are unusual in that they are not similar to the traditional gold mining operations in South Africa. Sound Mining therefore considered Enterprise Value (EV) per ounce as an indication of the possible value for the assets. Sound Mining constructed a database from information in the public domain on gold mining able to profitably produce gold from low grade (i.e. < 1.5g/t Au) material that is close to, or on top of the surface, and which are able to operate profitably at yields below 1.5g/t Au. Twelve companies were identified and plotted against the associated Mineral Reserves to provide a basis for comparison. An assumed average recovery of 90% was applied to the Mineral Reserves so that a value for each ounce of gold likely to be recovered and sold (i.e. ZAR/oz Au sold) could be estimated for a better benchmark. The value attributed to the Project from the market approach is shown below. The indicative values generated for the WRTRP assets with a Mineral Reserve content of 2.72Moz ranges from ZAR630m to ZAR6,510m. A value of ZAR3,570m can be attributed to the WRTRP by the market approach if an average is assumed.

Range of values from the market approach

Range	MV/oz (ZAR/oz)	Indicated Value (ZARm)
High	4,650	6,510
Middle	2,550	3,570
Low	450	630

Source : Sound Mining Dec 2017

The economic analysis of the WRTRP was based on both the income and market approaches in accordance with the principles of the SAMREC Code. The summary of the analysis is shown below.

Summary economic analysis

Approach	Lower value (ZARm)	Middle value (ZARm)	High value (ZARm)
Market	630	3,570	6,510
Income	0	2,121	4,146

Source : Sound Mining Dec 2017
Income approach range from a 20% up or down adjustment in the gold price

The market approach analysis is based on a mix of listed companies that do not necessarily capture the unique makeup of the Project. Accordingly, Sound Mining does not consider it to be a true reflection of the likely market price (i.e. value) of the Project.

The income approach requires a minimum of a PFS for the declaration of Mineral Reserves and such is the case for the WRTRP. There is a high level of confidence in the Mineral Resources estimate. The operating cost estimates are well defined by information from the rest of DRDGOLD's operations.

The capital estimates are for tried and tested exploitation methodologies and engineering structures. Sound Mining is of the opinion that the overall confidence in the WRTRP currently exceeds that normally ascribed to a PFS and accordingly, is more comfortable with the value of ZAR2,121m as determined by the income approach as reflective of the economic merits of the Project.

Risk Analysis

SR5.7(i), JSE12.9(h)(x)

A detailed risk analysis has been undertaken and is provided in Section 33 of the CPR. Apart from the normal risks inherent in mining projects and the uncertainty of conducting business in South Africa, no catastrophic risks were identified and the risks reviewed are mostly low to very low, excepting for those factors largely outside of DRDGOLD's control such as market conditions and political stability (see Table below). The overall assessment is that the Project is low risk.

Furthermore, the "alternative option" provides an even lower risk profile should, for any reason, the full WRTRP with Phases 1 and 2, is unable to proceed.

WRTRP risk analysis

Potential risk	Comment	Likelihood	Consequence	Mitigation	Overall
Legal Tenure risk	Tenure sufficient for the Phase 1 LoM	Unlikely	Major	None required	Very Low
	Tenure insufficient for the Phase 2 - Kloof mining right expires five years before the end of Phase 2	Likely	Major	Application for renewal by Sibanye-Stillwater	Low
	Failure to grant Section 102 applications for the WRTRP activities and extension of the mining rights over Driefontein 4-TSF and the area for the R-TSF	Unlikely	Major	All mitigating factors have been undertaken	Low
	"Use and Access" agreement draft and unsigned	Unlikely	Major	It is in Sibanye-Stillwater's best interests to finalise the agreement	Low
Claims over land or company	No claims over the land envisaged for the WRTRP operation	Rare	Moderate		Very low
Country Risk	South African country risk in terms of changing legislation and political instability	Possible	Moderate	Inherent medium risk taken by all companies mining in South Africa	Medium
Labour laws, strikes and union activity	Negatively affected operations. Labour contracts for the mining operation for Alexander Forbes' account and risk.	Possible	Major	Inherent medium risk taken by all gold producers	Medium
Gold market movements	Market conditions vary according to global macroeconomic factors, investor demand, exchange rate fluctuations, inflation and interest rates. Project sensitive to gold price fluctuation	Possible	Moderate	Inherent medium risk taken by all gold producers?	Medium
Geological and Resources	Geological conditions extremely well known. Mineral Resource estimates simple and based on SAMREC compliant data	Unlikely	Moderate	SAMREC compliant estimation has been undertaken	Low
Specific gravity	Could affect the tonnage estimations and classification of the Mineral Resources	Possible	Moderate	Density measurement adequate and historical data from Ergo available	Low
Flooding	Excessive rain	Possible	Minor	Adequate storm water design in the mine plan	Low
Seismic activity, geotechnical failure and safety	The West Rand Basin is stable from a seismic perspective. The geotechnical aspects of the current H-TSF sites has been considered and resulted in the selection of the R-TSF site off the dolomites. DRDGOLD has an excellent safety record	Unlikely	Minor	Inherent low risk taken by all companies mining in the West Rand Basin and has been mitigated	Very low

Potential risk	Comment	Likelihood	Consequence	Mitigation	Overall
Sampling and drilling	Compliant with SAMREC standards	Rare	Minor	Has been mitigated	Very low
QA/QC	Compliant with SAMREC standards	Rare	Minor	Has been mitigated	Very low
Audits and reviews	Several independent reviews. All deemed data suitable for Mineral resource estimation	Rare	Minor	Has been mitigated	Very low
Modeling techniques	Compliant with SAMREC standards	Rare	Minor	Has been mitigated	Very low
Grade	Grade distribution well known and mining plan and scheduling adjusted accordingly	Likely	Moderate	Has been mitigated	Very low
Mineral Resources estimation risk	The Mineral Resource estimation is compliant with SAMREC standards. All estimation of resources has inherent risk	Unlikely	Minor	Inherent in estimation methodologies and accepted in the industry	Low
Additional Ore Reserves to extend LoM	Additional resources can be identified as other H-TSF exist in the area	Possible	Major	None required	Low
Mining	Ergo has been operating successfully late 1990s. The only risk is falling gold price and economies of scale	Unlikely	Major	Adequate size of operation and economies of scale	Medium
Mining methodology inadequacy	Successful mining operation with no need to change methodology	Rare	Moderate	None required	Very low
Mining production shortfalls	Production targets being met at Ergo. Safety record excellent so unlikely health and safety stoppages. Labour contracted so stoppages for strikes low risk	Unlikely	Moderate	None required	Low
Pumping adequacy	Critical to the success of the business	Unlikely	Major	Adequate experience and design	Low
R-TSF	Design and costing based on 2015 DFS. Will require an update. Optimisation possible	Likely	Major	Confirmation of the design will be required, and costs can be optimised	Medium
CPP	Full risk assessment still required	Likely	Moderate	None required at this stage	Medium
LoM plan issues	Sound Mining reviewed and satisfied with production estimates and processing recovery estimates	Unlikely	Moderate	Has been mitigated	Low
Ore Reserve estimation risks	Compliant with SAMREC standards. All Ore Reserve estimation has inherent risks	Unlikely	Minor	Has been mitigated	Inherent low risk taken by all mining companies
Processing plant	Based on fully operational examples at design criteria specifications	Rare	Moderate	Has been mitigated	Very low
Refurbishment	Will be required if additional reserves are identified and the LoM extended. No capex determined at this stage for such refurbishment	Possible	Moderate	None required	Medium
Lower recoveries	Currently operating at specified design recoveries	Possible	Moderate	None required at this stage	Medium
Higher operational costs	Based on operational information	Unlikely	Moderate	None required	Low
Regulatory challenges	Inability to proceed due to regulatory issues. Sound Mining considers that at the present status these hurdles should be easily mitigated. Typical issue facing South African mining industry	Possible	Major	Beyond DRD control	Low
Environmental permitting	WUL licence granted. 2105 EIA and EMP amended to include WRTRP activities	Very likely	Moderate	Timeous application	Low
Environmental permitting for infrastructure	Likely that further amendments required to cover plant modifications, pipeline route changes and pumping rate changes from original applications	Likely	Moderate	Timeous applications for amendments	Low

Potential risk	Comment	Likelihood	Consequence	Mitigation	Overall
Environmental monitoring and rehabilitation risk	Full approval of EIA and EMP in place. Water monitoring on the R-TSF forms part of the operating costs. Provision of the rehabilitation costs covered by Sibanye-Stillwater trust fund with additional insurance policy. Included in the DCF	Unlikely	Moderate	None required at this stage	Low
Grave relocation	Grave relocation process, consultation and compensation negotiations with Next-of Kin to be completed	Very likely	Moderate	Timeous consultation and negotiations	Medium
Capital Costs	Capital costs considered acceptable estimates and staggered over the LoM	Unlikely	Moderate	None required at this stage	Low
Funding for Phase	Insufficient funding available to initiate Phase 2	Possible	Major	Proceeding with “alternative route”	Medium
Operational costs	Operational costs for the LoM were compared to actual costs of production. Sound Mining considers them appropriate for a hydraulic mining operation and comparable to Witwatersrand Basin operations of a similar nature	Unlikely	Moderate	None required at this stage	Low
Labour provision	DRDGOLD taking over 164 employees from Sibanye-Stillwater retrenchment provision required	Likely	Moderate	Provision in the budget required	Medium
Project Implementation timing	Dependent on approval by the Competition Commission	Unlikely	Moderate	None required at this stage	Medium
Project closure	Timing dependent on inclusion of currently active A-TSFs as per the Exchange Agreement. New legislation could affect current provision requirements	Likely	Moderate	None required at this stage	Medium
Non-governmental impact	None anticipated	Rare	Minor	None required	Very low
Compliance with host country laws	The operational status of Ergo confirms full compliance with the MPRDA, all environmental regulations and tax and royalty requirements	Rare	Major	None required	Very low
Sufficient funding for remediation and rehabilitation	Provision in the LoM adequate for current legislative requirements. Resolution of the dispute with SARS required before finalisation	Rare	Major	None required at this stage	Very low
Historical experience with host country laws	Operational status since 1990s proves experience	Rare	Major	None required	Very low

Exploration Budget

SR8.1: JSE 12.9h(vi); JSE 12.9(e)(i)(ii)(iii)

The historical exploration expenditure by Sibanye-Stillwater was approximately ZAR320m.

No additional drilling programmes are envisaged but an allowance of ZAR30m has been provided in the Project economic analysis to fund the metallurgical testwork, pilot plant studies and the completion of the future DFS. This allowance is considered reasonable for such a study.

Overall concluding remarks

Sound Mining is of the opinion that the WRTRP is a low risk, profitable Project based on methodologies and systems that are currently effective in Ergo operations. Throughout the technical studies the input assumptions have been conservative and there is certainly opportunity for optimisation of designs. Scrutiny of the LoM completed by independent mining specialists (i.e.the RVN Group) has revealed that the sequence of extraction and rate of mining have been planned in sufficient detail. The recoveries are supported by metallurgical testwork (Section 25) and the quantities and grades planned are consistent with those estimated in the Mineral Resource estimation.

Both the DRDGOLD management team and the proposed mining contractor have considerable experience in such operations and no risks that cannot be mitigated, have been identified. Hydro-mining is well understood by DRDGOLD and it has no intention of redesigning its existing “tried and tested” processes.

The CP has checked the integrity of the mine design and associated costs and is satisfied that the level of detail and accuracy is aligned with the requirements of a PFS. The responsible contractor will be entitled to decide on various operational alternatives and to deploy capital equipment and manage costs. This will however be in conjunction with DRDGOLD, as part of DRDGOLD’s tactical planning for each H-TSF. The cost and maintenance of the mining equipment, as well as the employees required, will be for the contractor‘s account and will form part of the contractual agreements with DRDGOLD.

From a health and safety perspective, hydro-mining does not create, but rather ameliorates the airborne dust problem often associated with fine tailings material. A safety burm around the perimeter of the dump will prevent slurry from escaping from the H-TSF in the event of an unplanned slope failure. Slope stability is however easily managed during the actual operations and the hydrological aspects affecting the H-TSFs are not significant to the operation.

The WRTRP has been has devised not only as an economically viable business but also as a strategic opportunity to positively contribute to the re-organisation of the vast H-TSFs in the region and to mitigate the environmental risk in the region.

The WRTRP is fairly unique in that it has an inherent optionality unusual in mining projects of this size. Each Phase of the project is economically viable as a standalone opportunity and there are several decision points throughout the project life which permit proceeding with an alternative option should commodity prices or other consideration make the alternative more attractive.

Statement

JSE12.9(h)(xi)

The Synopsis provided herewith is a true reflection of the full CPR.

Disclaimers and risks

Sound Mining has prepared this Competent Persons' Report. In the preparation of the CPR, Sound Mining has utilised information provided by DRDGOLD Limited (DRDGOLD) and its specialist consultants. Sound Mining has where possible, verified this information making due enquiry of all material issues that are required in order to comply with the "South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves" (SAMREC 2016 version). Many of the issues that have been reported upon are of a complex nature and Sound Mining will not be held responsible for any interpretation or inference that may be drawn from this Competent Person's Report that is not factually in keeping with the outcomes clearly defined and quantified here. Sound Mining has exercised reasonable care in accordance with standards normally exercised within our profession in the completion of this document. Although Sound Mining has exercised reasonable care in reviewing this supplied data, Sound Mining makes no representation or warranty with respect to the accuracy or veracity of the data that it has relied upon.

Sound Mining has assumed that all of the information and technical documents received and reviewed in this CPR are accurate and complete in all material aspects. While Sound Mining carefully reviewed this information, Sound Mining has not conducted an extensive independent investigation to verify its accuracy and completeness. The information and conclusions contained herein are based on the information available to Sound Mining at the time of preparation of this CPR. DRDGOLD agrees that neither it nor its associates will make any claim against Sound Mining to recover any loss or damage suffered as a result of Sound Mining's reliance on the information provided by Sibanye Gold Limited trading as Sibanye-Stillwater and DRDGOLD for use in the preparation of this CPR. Furthermore, DRDGOLD has also indemnified Sound Mining against any claim arising out of the assignment to prepare this CPR, except where the claim arises as a result of any proven willful misconduct or negligence on the part of Sound Mining. This indemnity is also applied to any consequential extension of work through queries, questions, public hearings or additional work required arising from Sound Mining's performance of the engagement. Sound Mining reserves the right to, but will not be obligated to, revise this CPR and conclusions thereto if additional information becomes known to Sound Mining subsequent to the date of this CPR.

The authors of this Competent Persons' Report are not qualified to provide extensive commentary on legal issues associated with Sibanye Gold Limited's (Sibanye-Stillwater) right to the assets. Sound Mining has undertaken a review of the legal aspects of the projects but no warranty or guarantee, be it express or implied, is made by the authors with respect to the completeness or accuracy of the legal aspects of this document.

This document has been prepared as at the date stated on the cover page. Given the nature of this document and the opinions expressed within, developments after the date of this document are likely. This document takes no account of such potential future developments, therefore Sound Mining recommends that readers advice from Sound Mining in the future to ascertain whether any such events have occurred or updated information has become available and should be considered.

Operational risks

The businesses of mining and mineral exploration, development and production by their natures contain significant operational risks. The businesses depend upon, amongst other things, successful prospecting programmes and competent management. Profitability and asset values can be affected by unforeseen changes in operating circumstances and technical issues.

Political and economic risks

Factors such as political and industrial disruption, currency fluctuation and interest rates could have an impact on DRDGOLD's future operations, and potential revenue streams can also be affected by these factors. The majority of these factors are, and will be, beyond the control of DRDGOLD or any other operating entity.

Forward looking statements

The Competent Persons' Report contains forward-looking statements. These forward-looking statements are based on the opinions and estimates of Sound Mining, DRDGOLD, Sibanye-Stillwater and its specialist consultants at the date the statements were made.

The statements are subject to a number of known and unknown risks, uncertainties and other factors that may cause actual results to differ materially from those anticipated in the Sound Mining, Sibanye-Stillwater and the specialists' forward-looking statements. Factors that could cause such differences include changes in world gold markets, equity markets, costs and supply of materials relevant to the projects, and changes to regulations affecting them. Although Sound Mining believes the expectations reflected in its forward-looking statements to be reasonable, Sound Mining does not guarantee future results, levels of activity, performance or achievements.

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1. Introduction

SR1.1(i); SR1.1(iii); SR5.1(i); SV T1.3; JSE12.9(a); JSE12.9(e);

Sound Mining (Pty) Ltd (Sound Mining) has been requested by DRDGOLD Limited (DRDGOLD) to prepare a Competent Persons' Report (CPR) on the West Rand Tailings Retreatment Project (the WRTRP or the Project) located in the Gauteng Province of South Africa. DRDGOLD is a mid-tier gold production company focused exclusively on the retreatment and reclamation of historical surface gold tailings storage facilities (H-TSFs). DRDGOLD has its headquarters in Johannesburg, South Africa and has a primary listing on the Johannesburg Stock Exchange Limited (JSE) under the ticker JSE:DRD with its secondary listing on the New York Stock Exchange (NYSE). DRDGOLD publicly announced on the 22 November 2017 that it is in the process of a JSE Category 1 transaction with Sibanye Gold Limited (trading as Sibanye-Stillwater) (as per paragraph 9.5(b) of the JSE Listings Requirements) for which the CPR is required in fulfilment of the following disclosure requirements:-

- the 'JSE Listings Requirements for Mineral Companies'- Section 12's disclosure requirements in support of this transaction;
- the CPR is to be 'South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves' (the SAMREC Code 2016) compliant with special reference to Table 1;
- the JSE will require reporting of the environmental section in compliance with the 'the South African Guideline for the reporting of Environmental, Social and Governance Parameters within the Mining and Oil and Gas Industries' (the SAMESG Guideline); and
- the JSE will require a 'South African Code for the Reporting of Mineral Asset Valuation' (SAMVAL Code 2016) compliant mineral asset valuation. Sound Mining will undertake the valuation and incorporate it into the CPR.

DRDGOLD is a leader in the recovery of the gold from the retreatment of surface tailings and has an extensive network of mineral and processing assets which are consolidated businesses operating as a single entity namely Ergo Mining Proprietary Limited (Ergo). The Ergo gold tailings retreatment operation on the Central and East Rand currently treat 2.1 million tonnes per month (Mtpm). Material from DRDGOLD surface tailings deposits is fed to the Ergo plant via an extensive pipeline network including a 50km, 600 kilo-tonnes per month (ktpm) pipeline. The CPR will not provide techno-economic information on any of the Ergo assets but will focus exclusively on the assets to be acquired as part of the transaction with Sibanye-Stillwater, as described below.

The feasibility of a project combining the reclamation of the numerous historical tailings facilities (H-TSFs) on the West Rand Basin of the Witwatersrand Basin has been investigated for over 15 years with numerous parties involved and considering differing combinations of assets. The WRTRP as originally developed by Sibanye-Stillwater, comprised sixteen of the H-TFSs associated with its Cooke, Kloof and Driefontein gold mining operations located in the Carletonville area (Figure 1). The "original" WRTRP planned to extract gold, uranium and sulphur from these sixteen H-TSFs and included the construction of a large scale central processing plant or a combination of various existing processing facilities, together with a single regional tailings storage facility suitable for the containment of all the tailings arising from the central processing plant.

In order to realise the potential of these assets, Sibanye-Stillwater has made the strategic decision to partner with DRDGOLD which has the necessary experience in the economic reclamation of gold bearing TSFs with proven, optimised processing methodologies and project management expertise for the execution and implementation of surface processing infrastructure development. Sibanye-Stillwater has therefore agreed to vend selected processing plants and H-TSFs of the "original" WRTRP for a 38.05% shareholding in DRDGOLD with an option to increase the shareholding to 50.1% at a later stage. The assets included in the partnership are summarised in Table 1 and do not include the entire "original" WRTRP assets. In addition, Sibanye-Stillwater retains the right to dispose of future tailings arisings on the regional tailings storage facility.

DRDGOLD intends developing the selected assets into a large scale, long life project to reclaim gold through a phased approach as follows (see Section 8 for further details):-

- Phase 1 will include upgrading the existing Driefontein 2 (DP2) and Driefontein 3 (DP3) processing plants to process tailings from the high grade Driefontein 5H-TSF;

- Phase 2 will proceed in two stages and will develop a central, high volume processing plant with a throughput of 1.2Mtpm redepositing onto a regional tailings storage facility and will include the reclamation firstly of the Driefontein 3H-TSF, Kloof 1H-TSF and Libanon H-TSF as Phase 2A followed by Venterspost North H-TSF and Venterspost South H-TSFs as Phase 2B;
- an "alternative option" should Phase 2 not proceed, is the continued use of DP2 and DP3 plants extended during Phase 1 to accommodate 500ktpm from Driefontein 3H-TSF and to extend the Driefontein 4A-TSF to contain the tailings. This option would provide a total 13 year LoM and would extend Phase 1 by eight years; and
- in addition, a set of currently active TSFs (A-TSFs) will be included in the project once they are decommissioned (Table 1). No compliant Mineral Resource estimate for these A-TSFs can be determined at this stage and as the date of their eventual decommissioning is unknown and is even unguaranteed, techno-economic disclosure on these assets would be speculative at best and therefore will not form part of this CPR or the Project valuation.

1.1. Nature of the transaction

On 22 November 2017 DRDGOLD and Sibanye-Stillwater, entered into various transaction agreements in terms of which DRDGOLD will acquire the selected surface processing plants, tailings and other assets listed in Table 1 by way of the acquisition of a 100% shareholding in a special purpose vehicle, K2017449061 (South Africa) Proprietary Limited (to be renamed WRTRP Proprietary Limited (WRTRP (Pty) Ltd)) from Sibanye-Stillwater. On implementation of the proposed acquisition, DRDGOLD will allot and issue approximately 265 million new ordinary shares in the share capital of DRDGOLD that will result in Sibanye-Stillwater holding approximately 38.05% of all ordinary shares in the share capital of DRDGOLD. Each of the above agreements are inter-conditional and will be implemented as an asset-for-share transaction, as provided in section 42 of the Income Tax Act, No. 58 of 1962.

The total purchase consideration payable by DRDGOLD to Sibanye-Stillwater amounts to approximately ZAR1.3 billion based on:-

- the issue of 265 million shares, which will result in Sibanye-Stillwater holding 38.01% of all DRDGOLD shares in issue (including treasury shares) following the issue of the shares (which amount to approximately 63% of DRDGOLD shares currently in issue); and
- the closing price of a DRDGOLD share on the exchange operated by the JSE immediately prior to the signature date of ZAR4.96 per DRDGOLD share.

The proposed acquisition will be subject to the fulfilment or waiver of the conditions precedent as follows:-

- all agreements governing the proposed transaction are executed and become unconditional in accordance with their terms;
- approval by the competition authorities of South Africa;
- the necessary approvals by the JSE;
- the approval by shareholders at a general meeting of shareholders;
- the licences to operate in terms of environmental authorisation and Section 102 amendments to the mining rights applications having been granted to Sibanye-Stillwater; and
- the receipt of all approvals, consents or waivers from those South African regulatory authorities as may be necessary to implement the proposed transaction.

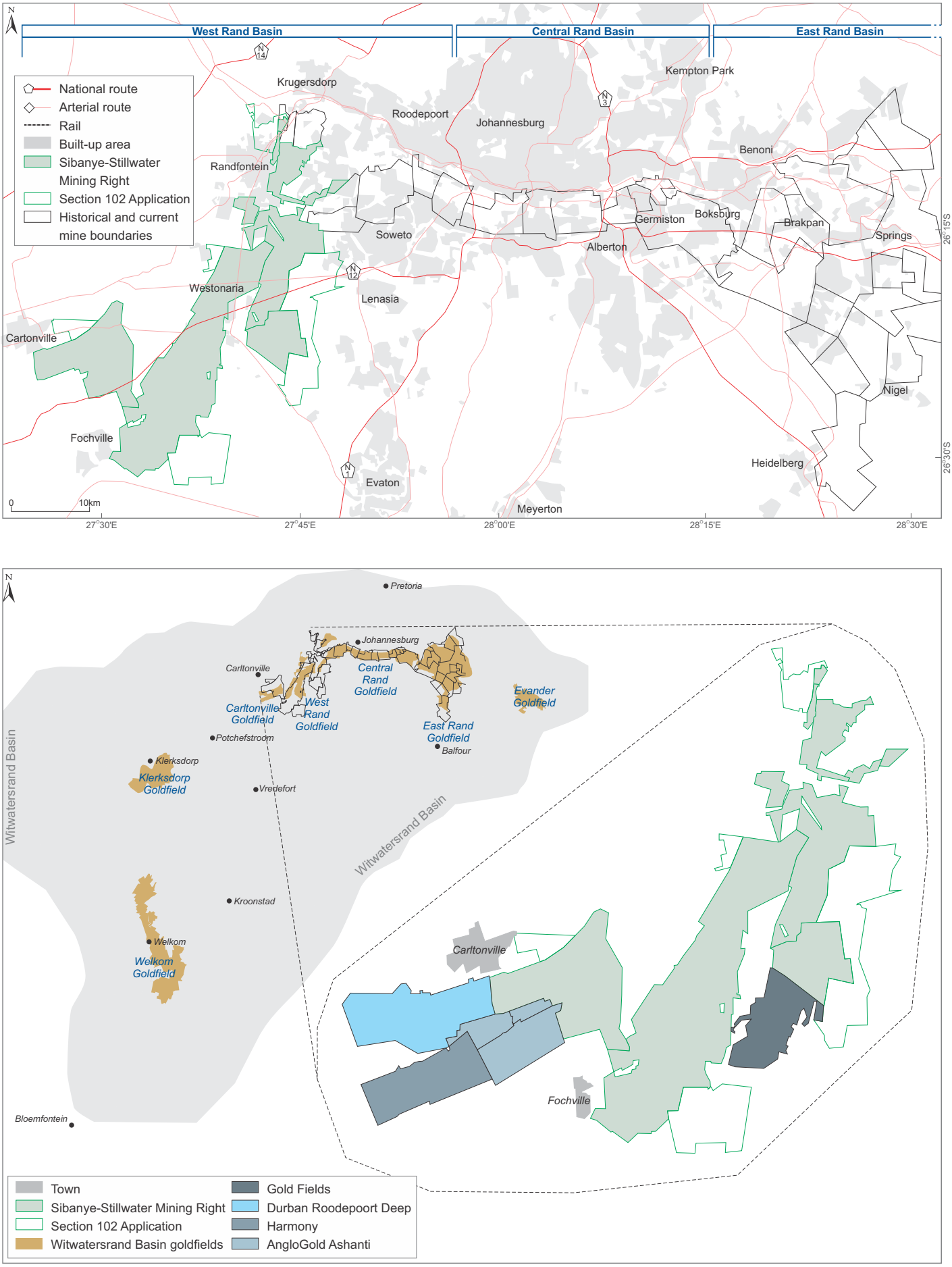
On conclusion of the transaction, WRTRP (Pty) Ltd will be a special purpose vehicle (SPV) newly incorporated to hold the assets selected for the transaction and through which the proposed acquisition will be implemented. Following the implementation of the proposed acquisition, WRTRP (Pty) Ltd will be a wholly-owned subsidiary of DRDGOLD and its primary purpose will be to operate the WRTRP Assets.

Table 1: Assets included in the WRTRP

Asset type	Asset	Location	Comment
Historical tailings storage facilities (H-TSFs)	Driefontein 3	Driefontein mining right area	Moveable surface H-TSFs
	Driefontein 5		
	Venterspost North	Kloof mining right area	
	Venterspost South		
	Kloof 1		
	Libanon		
Currently active A-TSFs	Driefontein 4	North east of Driefontein mining right area on a Sibanye-Stillwater holding	Moveable working surface TSF
Future active tailings storage facilities (A-TSFs)	Driefontein 1 and Driefontein 2, Kloof 2 and Leeudoorn	Both mining areas	To be transferred for no additional consideration once they are decommissioned
Operating surface gold processing plants	Driefontein 2 plant (D2 plant)	Located on Farm Blyvooruitzicht 116IQ Portion (Ptn) 6 and Farm Driefontein 113IQ Remainder (Re) of Ptn 1	Processes surface rock dump material and comprises two semi-autogenous grinding mills (SAG) and a ball mill, cyanide leaching, and a new (2014) carbon-in-leach circuit to improve recoveries.
	Driefontein 3 plant (D3 plant)	Located on Farm Blyvooruitzicht IQ116 Ptn 6	Designed to process low-grade surface material with four SAG mills followed by cyanide leaching and a CIP plant
	WRTRP pilot plant	Located at Driefontein 1 processing plant	Moveable pilot plant designed by LogiProc to test processes, methodologies and assumptions made in historical Definitive Feasibility Studies (DFSs)
Transferring land required for future development of the WRTRP	Land required for the development of the central processing plant	Located after subdivision of Farm Rietfontein 347IQ Ptns 35 and 73	
	Land required for the regional tailings storage facility and return water dam	Farm Cardoville 647IQ ; RE Ptn 6 farm Cardoville 364 IQ; Ptn 8 of Ptn 6 of farm Cardoville 364IQ; Ptn 13 of Ptn1 of farm Cardoville IQ; Ptn 50 farm Kalbasfontein 365IQ; RE Ptn 3 farm Cardoville 364; RE Ptn 5 of Ptn 3 farm Cardoville 364IQ; Ptn 11 farm Cardoville 364IQ	
Licences to operate	All the licences, permits, permissions, management plans and reports which were necessary for Sibanye-Stillwater to operate the WRTRP assets		
Access rights	Access to the Driefontein 10 shaft and Kloof 10 shaft area for the purposes of pumping water for the hydro-mining	Located within the Driefontein and Kloof mining right areas	Supply and pumping of water, at the cost to WRTRP, at the required quantities licenced for the WRTRP assets
	Installation, supply, distribution and maintenance of power supply		Rights, servitudes and agreements for installation, supply and distribution and maintenance of power supply; existing and proposed pipeline routes; servitudes; wayleaves and surface right permits
	Driefontein 1 gold plant	Located at Driefontein 1 processing plant	Access for the purpose of accessing the pilot plant

Source: DRDGOLD Limited press release dated 22 November 2017
Sibanye-Stillwater Limited press release date 22 November 2017

Figure 1: Regional location and mineral assets of Sibanye



Source: Sound Mining 2017

DRDGOLD has issued a guarantee to and in favour of Sibanye-Stillwater in terms of which, with effect from the date the proposed acquisition is implemented, DRDGOLD guarantees the performance of the obligations of WRTRP to Sibanye-Stillwater. In addition, a representative of Sibanye-Stillwater, will be appointed as a non-executive director of the board of directors of DRDGOLD.

Simultaneously, DRDGOLD and Sibanye-Stillwater have entered into an option agreement in terms of which DRDGOLD will grant to Sibanye-Stillwater an irrevocable right and option to subscribe for so many new DRDGOLD shares for cash as will result in Sibanye-Stillwater holding 50.1% of all DRDGOLD shares in issue post-closing of the transaction.

The proposed transaction will result in a 92% increase of DRDGOLD's gold Mineral Reserves from 2.99Moz Au to 5.71Moz Au. The acquisition of the surface assets will provide short-term cash-flow for the development of the later phases of the project and will enhance DRDGOLD's life-of-mine (LoM).

1.2. Purpose of the CPR

SV T1.3; SV T1.4

As noted in Section 1, DRDGOLD is listed on the JSE and the proposed acquisition from Sibanye-Stillwater would constitute a Category 1 transaction for which a CPR is required in terms of Chapter 12 of the JSE Listing Requirements. Sound Mining was commissioned to prepare the CPR in a proposal Referenced PR/SMS/0742/17 and Sound Mining understands that this CPR will be submitted to the JSE as part of a circular to shareholders.

The CPR has been compiled in order to incorporate all the available and material information that shareholders, potential future finance providers and their advisors would reasonably require in order to make balanced and reasoned judgements regarding the techno-economic merits of the assets. Sound Mining's primary obligation in preparing mineral asset reports for the public domain is to describe mineral projects in compliance with the reporting codes applicable under the jurisdiction in which the company operates. In this case, the CPR has been prepared in compliance with and to the extent required by the SAMREC Code, 2016 published under the joint auspices of the Southern African Institute of Mining and Metallurgy (SAIMM) and the Geological Society of South Africa (GSSA) as well as the new Chapter 12 of the JSE Listing Requirements. The CPR describes the Project in terms of its historical and recent exploration data, which would have a bearing on the techno-economic value of the assets.

The disclosure in terms of the environmental and social aspects of the Project has been made according to the SAMESG Guideline published by the South African Environmental, Social and Governance Committee.

The mineral asset valuation included in the CPR has been prepared in compliance with, and to the extent required by, the SAMVAL Code 2016, published under the joint auspices of the SAIMM and the GSSA.

Sound Mining consents to the publication of this CPR in the circular and to the referencing of any part of this CPR, provided that no portion is used out of context or in such a manner as to convey a meaning which differs from that set out in the whole CPR.

The effective date of this CPR is 31 December 2017.

1.3. Scope of the Report and Scope of Work

SV T1.3; SV T1.4; JSE12.9(e);

The scope of work involved the following aspects and was a full evaluation at the current point of project development:-

- an independent technical review of the exploration data base with a view to assessing the quality and reliability of the data base, with checks and verifications as required by SAMREC, in order to determine the suitability of the data for incorporation into a Mineral Resource estimate;
- the creation of geological models for the Mineral Resources, determination of the prospects for eventual economic extraction, and declaration of Mineral Resource estimates;
- assessment of potential mining methodologies and processing options in relation to the further development of the Project;
- assessment of the environmental and social compliance status and the identification of any fatal flaws to eventual extraction;
- assessment of the environmental rehabilitation liabilities required on closure of the Project;
- economic analysis according to SAMVAL principles. The economic analysis is reported on a non-attributable basis; and
- compilation of a CPR with an effective date of 31 December 2017 compliant with SAMREC, SAMVAL SAMESG Guidelines and Section 12 requirements of the JSE.

The compliance codes are presented beneath each heading with SR, SV, SG and JSE 12 representing SAMREC, SAMVAL, SAMESG and the JSE Chapter 12 requirements, respectively. For ease of reference, a checklist of each code or guideline, along with the cross referenced paragraph number addressing each requirement, is presented in Table 62, Table 63 and Table 64.

As stated in SAMREC Section 3 “The estimation of Mineral Resources and Mineral Reserves is inherently subject to some level of uncertainty and inaccuracy. The estimates are based on analytical results of samples that commonly represent only a small portion of a mineral deposit”. The uncertainty of the estimates, where material, are explained in this CPR and are reflected in the appropriate choice of Mineral Resource and Mineral Reserve categories.

Sound Mining has undertaken an independent technical review of the WRTRP in order to identify all the factors of a technical and strategic nature that would influence the future viability of the Project and the review accords with the principles of open and transparent disclosure that are embodied in internationally accepted Codes for Corporate Governance. The CPR has been based upon technical information which has been supplied by DRDGOLD and Sibanye-Stillwater and its appointed consultants, and which has been independently interrogated. In compliance with the requirements of the SAMREC and SAMREC Codes all technical and financial information provided in this CPR has been reviewed and checked for reasonableness.

Sound Mining confirms that, to the best of its knowledge and having taken all reasonable care to ensure that the information contained in the CPR is in accordance with the facts, contains no omission likely to affect its import, and no material change has occurred from the effective date hereof that would require any amendment to the CPR.

The authors of this CPR are not qualified to provide extensive commentary on the legal aspects of the Project or Sibanye-Stillwater’s right to the mineral assets, the status of any claims against the properties or Sibanye-Stillwater, the legality of agreements or other pertinent conditions. Sound Mining has reviewed copies of various permits and authorisations and these have been reviewed to the satisfaction of Sound Mining. No warranty or guarantee, be it express or implied, is made by the authors with respect to the completeness or accuracy of the legal aspects of this document.

Sound Mining reserves the right to, but will not be obliged to, revise this CPR or sections herein, and conclusions thereto, if additional information becomes known to Sound Mining subsequent to the date of this CPR. It must be noted that this review does not form an assurance CPR in accordance with the International Auditing and Assurance Standards Board (IAASB) standards.

1.4. Terms of Reference

SV T1.3; SV T1.4; JSE12.9(e);

DRDGOLD did not provide any specific Terms of Reference for the engagement neither in the preparation of the CPR nor the valuation.

The contractual agreement with Sound Mining for the preparation of the CPR was with DRDGOLD and not the Competent Person (CP) as an individual. In terms of this contract, the CP acts as a representative of Sound Mining. In the light of the requirements of SAMREC and SAMVAL, the CP must provide opinions and conclusions, therefore throughout this CPR, the terms Sound Mining and CP are used synonymously but this usage does not impact on the underlying legal and contractual arrangements.

Unless explicitly stated, all units presented in this CPR are in the Système Internationale (i.e. metric tonnes (t), kilometres (km), metres (m), and centimetres (cm).

Throughout the technical studies relating to the WRTRP numerous acronyms have been used but for reporting purposes, the use of acronyms has been kept to a minimum, with the convention being definition of the acronym in the first usage. However, where required throughout the document the full term may be used for clarity and ease of reading.

The following conventions have been used throughout the CPR to describe aspects of the WRTRP:-

- A-TSF – active tailings storage facility;
- H-TSF – historical tailings storage facility;
- R-TSF – regional tailings storage facility;
- CPP – central processing plant;
- Driefontein mining complex – the Driefontein mining right with the infrastructure associated with the mining operation;
- Kloof mining complex - the Kloof mining right with the infrastructure associated with the mining operation.

1.5. Units of currency

The valuations in this CPR have all been carried out in South African Rands (ZAR). All other units used in this CPR are defined in the text or in the Glossary (Section 42). All references to tonnage are in metric tonnes; gold ounces (oz Au) are troy ounces and the conversion factor used for conversion to troy ounces is 31.10338.

2. Statement of Independence

SV T1.0; SV T1.3; JSE12.9(c);

This CPR has been authored by several CPs and subconsultants in the employ of Sound Mining. Neither Sound Mining nor its staff and subconsultants have, or have had, any interest in the Project capable of affecting their ability to give an unbiased opinion and, have not received, and will not receive, any pecuniary or other benefits in connection with this assignment, other than normal consulting fees. Neither Sound Mining nor any of its personnel involved in the preparation of this CPR have any material interest in either the Project, DRDGOLD or Sibanye-Stillwater. Sound Mining was remunerated on a fixed fee basis for the preparation of this CPR, with no part of the fee contingent on the conclusions reached or the content of this CPR. Except for these fees, Sound Mining, has not received and will not receive any pecuniary or other benefit whether direct or indirect for or in connection with the preparation of this CPR.

3. Competent Persons' Declaration and Qualifications

SR9.1(i)(ii)(iii); SV T1.0; SV T1.3; JSE12.9(c);

Sound Mining is an independent advisory company. The Competent Persons, in terms of the SAMREC Code, responsible for this CPR are:-

- Mr V Duke – mining engineer and Competent Person and Competent Valuator with >30 years experience;
- Ms D Van Buren – geologist and Mineral Resource modeller – Competent Person with >15 years experience;
- Ms F Harper – geologist and Competent Person with >15 years experience;
- Mr E Nel – process engineer for ENC Minerals (Pty) Ltd (ENC Minerals) and Competent Person with >20 years experience; and
- Mr H Gildenhuis and Dr Koos Vivier – environmental specialist for Exigo Sustainability (Pty) Ltd (Exigo) with >20 years experience.

The signatories to this CPR are qualified to express their professional opinions on the technical aspects and value of the mineral assets described. To this end, Competent Persons' and Competent Valuators' experience and declaration certificates are presented in Section 43 and Section 44.

The technical and economic information provided in the CPR is correct to the best of the Competent Persons' and Competent Valuator's knowledge, having followed best endeavours. The analyses and conclusions of the valuation are limited only by the reported forecasts and conditions as well as the inherent risks discussed in Section 33.

4. Reliance on Experts

SR3.1(iii); SR4.5(viii); SV T1.0; SV T1.19

The information and conclusions within this CPR are based on information made available to Sound Mining by DRDGOLD and Sibanye-Stillwater and their external consultants at the time of the preparation of this CPR. Sound Mining has reviewed the information provided as best as is possible given the diverse exploration studies undertaken and the historical changes of ownership. DRDGOLD has reviewed draft copies of this CPR for factual errors. Any changes made as a result of this review did not involve any alteration to the conclusions made.

Sound Mining has reviewed the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) that were prepared for the Section 102 amendments to the original mining rights in order for the WRTRP to proceed. These studies were undertaken by Digby Wells Environmental (South Africa) (Pty) (Digby Wells) and Sound Mining has relied on the findings of these studies.

Sound Mining has not independently conducted any title or litigation searches but has relied upon Sibanye-Stillwater for information on the property title, agreements and other pertinent conditions. Sound Mining has had sight of an independent due diligence of the permitting status of the Project by Malan Scholes Inc. As noted in Section 1.3, the authors of this CPR are not qualified to provide extensive commentary on legal issues associated with Sibanye-Stillwater's and DRDGOLD's right to the mineral properties. Sound Mining has undertaken a review of the legal aspects of the Project. but no warranty or guarantee, be it express or implied, is made by the authors with respect to the completeness or accuracy of the legal aspects of this document.

5. Sources of information

SR3.1(iii); SR4.5(viii); SV T1.19

Sound Mining has based its review of the Project on information provided by DRDGOLD and Sibanye-Stillwater together with technical reports supplied by its consultants and associates and other relevant published data as listed below. A full list of all technical documents used in the compilation of the CPR is provided in Section 41:-

- all the drilling and assaying data were received from Sibanye-Stillwater together with geological models;
- the Lidar survey data was supplied by Southern Mapping Company (Pty) Ltd;
- the Project density data was supplied by Geostrada (Pty) Ltd;
- the quality control and quality assurance (QA/QC) analysis of the assay data and review of the assay laboratories was undertaken by Mr K Kenyon of Keith Kenyon Consulting (Pty) Ltd;
- the mining design was undertaken by The RVN Group (Pty) Ltd (RNV Group;
- the capital costing of the central processing plant was provided by DRA SA (Pty) Ltd (DRA) and aspects of the process design supplied by Azmet (Pty) Ltd;
- the design and capital costing of the overland transfer pump and pipeline systems were undertaken by Paterson and Cooke (Pty) Ltd;
- the design and costing for the upgrade of Driefontein 4A-TSF for Phase 1 was undertaken by Beric Robinson Tailings (Pty) Ltd;
- the electrical Point of Delivery study was undertaken by Tenova Bateman (Pty) Ltd;
- the previous Mineral Resource estimates were undertaken by Minxcon (Pty) Ltd;
- the design and costing of the regional tailings facility was undertaken by SLR Global Environmental Solutions (Pty) Ltd and reviewed by Golder and Associates (Pty) Ltd; and
- the EIAs and EMPs were undertaken by Digby Wells.

6. Personal inspection

SR1.1(iii); SV1.0

Members of the Sound Mining, ENC Minerals and Exigo teams visited the Project on 17 January 2018 and examined the various TFS's within the WRTRP. During the site visits, infrastructure, process plants sites and the proposed regional tailings storage facility site were visited.

Table 2 : Personal inspections

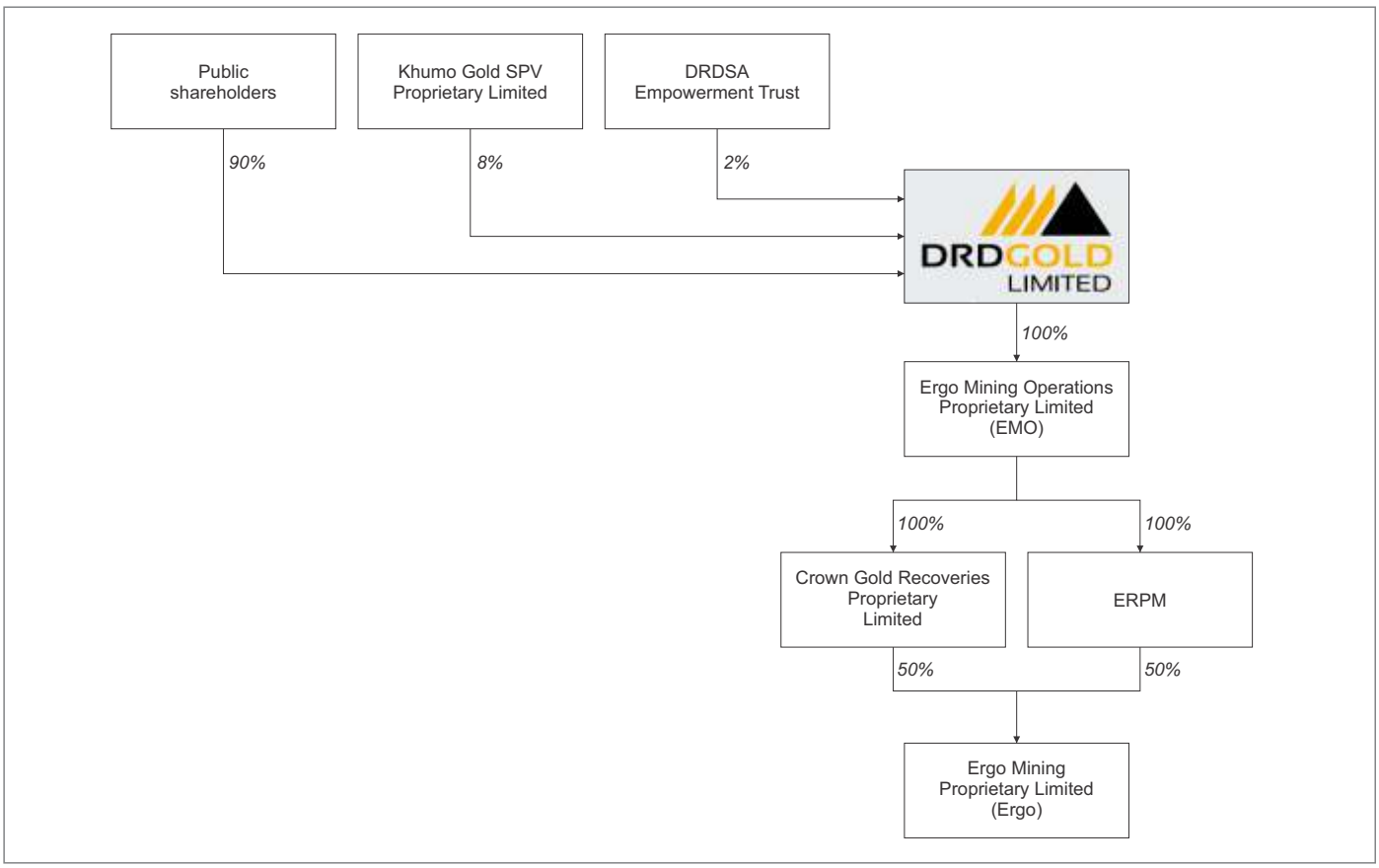
Team	Competent Person	Site visit
Sound Mining	V. Duke	Representative of the Sound Mining team as a CP and CV
	F. Harper	No site visit as the H-TSFs are simple, surface, man-made structures and no historical drillhole sites or samples are available for inspection. The CPs relied on V. Duke as CP to provide the necessary input from his visit
	D. Van Buren	
ENC Minerals	E. Nel	Representative of ENC Minerals
Exigo	K. Vivier	A Competent Person from the Exigo team ensured attendance the site visit to ensure full interrogation of the environmental aspects
	H. Gildenhuis	

7. Corporate structure

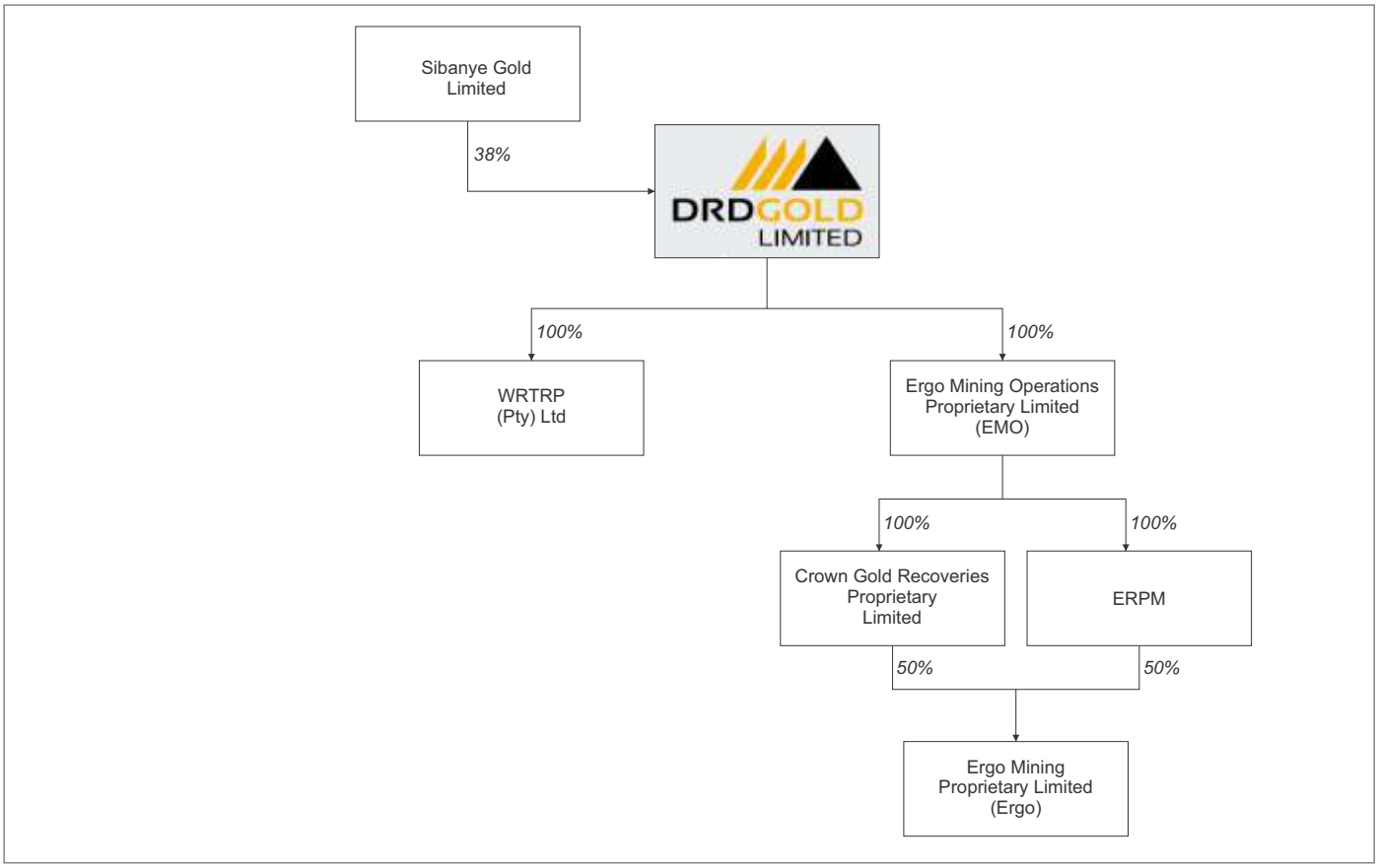
DRDGOLD has a simple, efficient corporate structure with all operations consolidated into a single operating entity, Ergo Mining Proprietary Limited (Ergo). Ergo is wholly owned by Ergo Mining Operations Proprietary Limited (EMO). The broad based black economic empowerment BBBEE partners, Khumo Gold SPV Proprietary Limited (Khumo) and the DRDSA Empowerment Trust (the Trust) hold an 8.1% interest and a 2.4% interest in DRDGOLD respectively.

Figure 2: DRD corporate structure pre and post the proposed transaction

Pre-transaction



Post-transaction



Source: Sound Mining 2017

8. Project outline – project description

SR1.1(i); SR5.1(i); SV1.5; JSE12.9(h)(ii)

As discussed in Section 1, the WRTRP does not form part of DRDGOLD's current asset portfolio but on fulfilment of the transaction with Sibanye-Stillwater, will comprise the H-TSFs and processing plants as described in Table 1 and includes the land for the development of a R-TSF and a CPP. The WRTRP is an advanced gold reclamation project for which the components of the Project are at a Preliminary Feasibility Study (PFS) level of accuracy whilst some of the Budget Cost Estimates (BCE) are at a Definitive Feasibility Study (DFS) level of accuracy.

The Project is located in the West Rand Goldfield of the Gauteng province 30 kilometres (km) from Johannesburg and is accessed via a network of national tarred roads including the local R28 highway between Randfontein and Westonaria or the N12 national road between Johannesburg and Potchefstroom (see Figure 3). The Project includes H-TSFs within an area extending from Carletonville to Krugersdorp, and encompasses the Sibanye-Stillwater - Driefontein and Kloof operations area and mining rights as shown in Figure 3.

The H-TSFs in total cover an area of 412.3ha with a combined Mineral Reserve tonnage of approximately 246Mt at an average grade of 0.344g/t Au for a total gold content of 2.72Moz Au.

Table 3 : H-TSF assets in the WRTRP

Phase	H-TSF	Area (ha)	Height (m)	Length (m)	Width (m)	Tonnage (Mt)	Grade (g/t Au)	Content (Moz Au)
Phase 1	Driefontein 5	67.72	44	1,400	1,100	27.9	0.469	0.421
Phase 2A	Driefontein 3	72.76	45	2,000	500	49.8	0.47	0.752
	Kloof 1	86.99	36	1,250	1,000	27.9	0.325	0.292
	Libanon	93.64	60	1,700	1,000	73.3	0.272	0.641
Phase 2B	Venterspost North	60.68	54	1,300	800	54.5	0.274	0.480
	Venterspost South	30.51	27	700	850	12.7	0.331	0.135
Total		**412.3**				**246.1**	**0.344**	**2.721**

Source : Digby Wells 2015, Sibanye-Stillwater 2017, Sound Mining 2017, RVN Group 2017
Apparent computational errors due to rounding

DRDGOLD intends developing the WRTRP assets through a two-phase process as shown in Figure 4 (4a, 4b, 4c and 4d). The Phase 1 will include upgrading two existing plants on the Driefontein mining right that were originally designed to process low grade rock dump material. These existing plants are DP2 and DP3 plant as shown in Figure 3 and will be modified to process tailings material from the Driefontein 5H-TSF. Phase 1 is estimated to be commissioned within a year after implementation of the proposed transaction and will provide for:-

- hydro-mining of Driefontein 5H-TSF and slurry pumping to DP2 and DP3 plants at a total of 500ktpm over a period of 5 years. The tailings from the plants will be deposited onto Driefontein 4A-TSF and make-up water for reclamation and the mining purposes will be accessed from Driefontein 10 shaft. In order to achieve these targets the following will be the mining and plant water will accessed from Driefontein 10 shaft. In order to achieve these targets the following will be undertaken:-
    - the construction of a reclamation pump station and slurry pipeline at the Driefontein 5H-TSF and associated process water pump station and pipeline;
    - the upgrading of the DP2 and DP3 plants from their name plate capacity of 315ktpm to 500ktpm to treat additional tailings material and refurbishment of the conventional carbon-in-leach circuits;
    - the potential upgrading of the Driefontein 4A-TSF for additional tailings storage capacity; and

- further evaluation of all H-TSFs through a pilot plant will occur within 24 months and the evaluation of each resource will include:-
    - bulk samples to be trucked to DP3 for evaluation;
    - CIL, milling, flotation and concentrate leaching; and
    - blending of various resources to determine the optimal combination and mix ratio.

Phase 1 is expected to be cash generative with modest upfront capital investment required and the cash flows will be prioritised for the development of subsequent phases.

Phase 2 will deliver a central, high-volume, processing plant (CPP) capable of processing at least 1.2Mtpm of tailings and development of a new R-TSF including associated pipeline infrastructure, within an additional 24 month period. The design and costing of Phase 2 at a DFS level will be complete after the testwork undertaken during Phase 1 and should the final outcome prove positive, Phase 2A will be initiated to include the following for a 12 year life-of-mine (LoM):-

- hydro-mining of Driefontein 3H-TSF and processing through the CPP at a rate of 400ktpm with tailings disposal onto the R-TSF;
- hydro-mining of Kloof 1H-TSF and Libanon at 200ktpm and 600ktpm respectively;

The CPP will ultimately occupy approximately 75 hectares (ha) when fully constructed and will be situated to the south of the small town of Glenharvie, on Sibanye-Stillwater owned land between Kloof Shaft No1 and Kloof Shaft No 2. The design of the R-TSF has historically been through several iterations as the specifics of the “original” WRTRP changed. The R-TSF was originally designed for a 1.0Mtpm capacity over a 10 year LoM but this was increased in the 2017 update by SLR to 1.4Mtpm over a LoM of 17 years. The R-TSF has been designed in two stages as a lower and upper compartment and will accommodate considerably more tailings than that required for the WRTRP. The potential total design deposition rate is 4Mtpm but for the WRTRP only the lower compartment will be required at a design deposition rate of 1.4Mtpm and only the capital costs for this lower compartment have been applied to the WRTRP. If future expansion of the R-TSF capacity to 4Mtpm is required, the upper compartment can be constructed, and the cost will be for that user’s expense.

In Phase 2B, pipelines will be extended to access Venterspost North H-TSF and Venterspost South H-TSF which will extend the LoM for an additional five (5) years.

An “alternative option” should Phase 2 not proceed, is the continued use of DP2 and DP3 plants extended during Phase 1 to accommodate 500ktpm from Driefontein 3H-TSF and to extend the Driefontein 4A-TSF to contain the tailings. This option would provide a total 13 year LoM and would extend Phase 1 by eight years.

The total Project LoM is 20 years with some overlap at various points between phases when simultaneous production occurs.

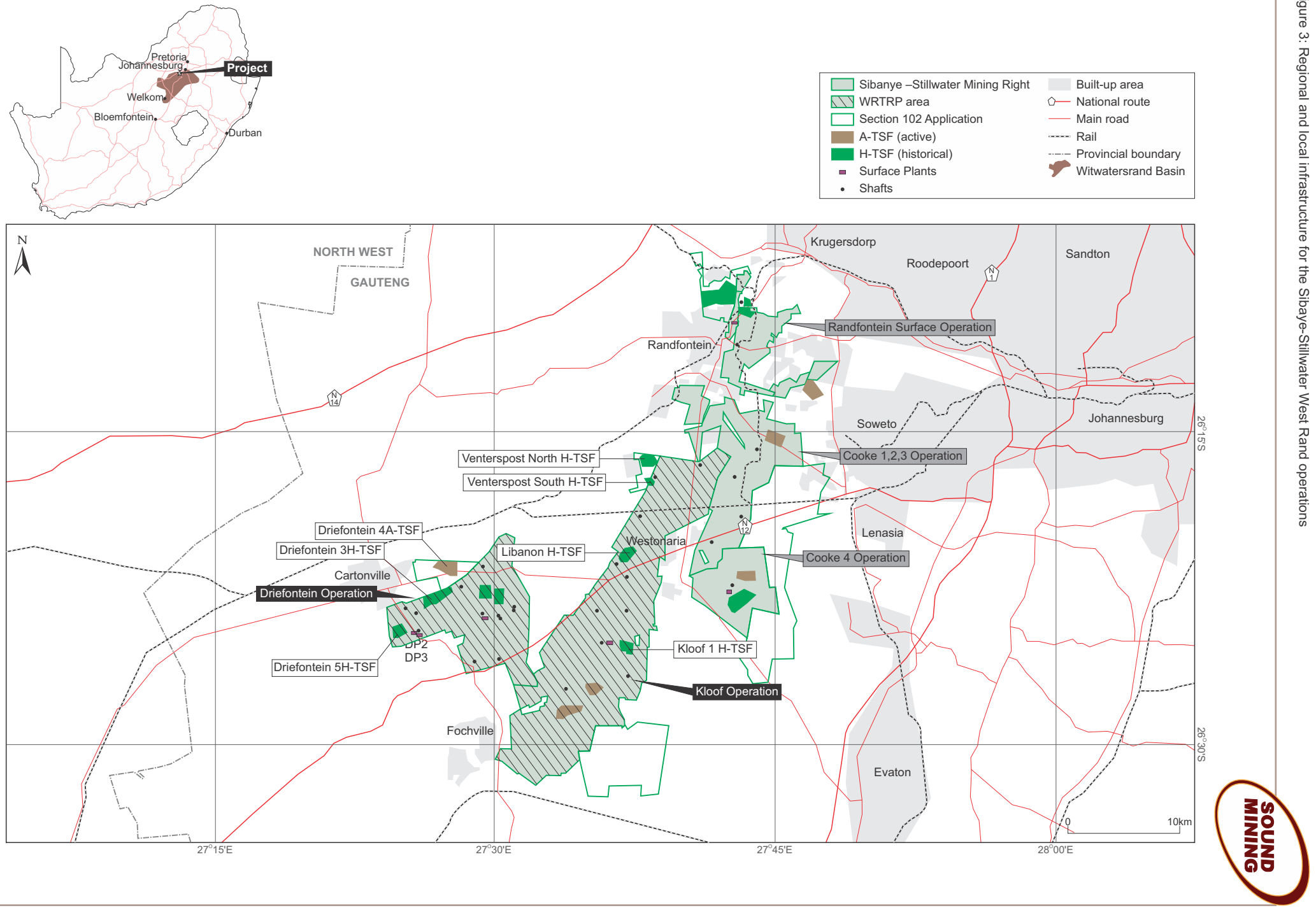
The infrastructure requirements for the WRTRP in terms of power supply and water availability are adequately provided for (Section 29 and Section 30).

9. Project outline – country profile

SR1.2(ii)

9.1. Political and economic climate

South Africa gained independence from Britain on 31 May 1910, and was declared a republic in 1961. From 1948 until 1990, the South African political and legal systems were based upon the concept of apartheid, and the first multiracial elections in 1994 brought an end to apartheid and ushered in black majority rule under the African National Congress (ANC), with a number of different political parties participating in the elections. The country continues to hold democratic, peaceful, free and fair elections, the last of which was won by the ANC in 2014, under the leadership of President Jacob Zuma. At the party’s national conference, in December 2017, the ANC voted Cyril Ramaphosa is the new ANC president.

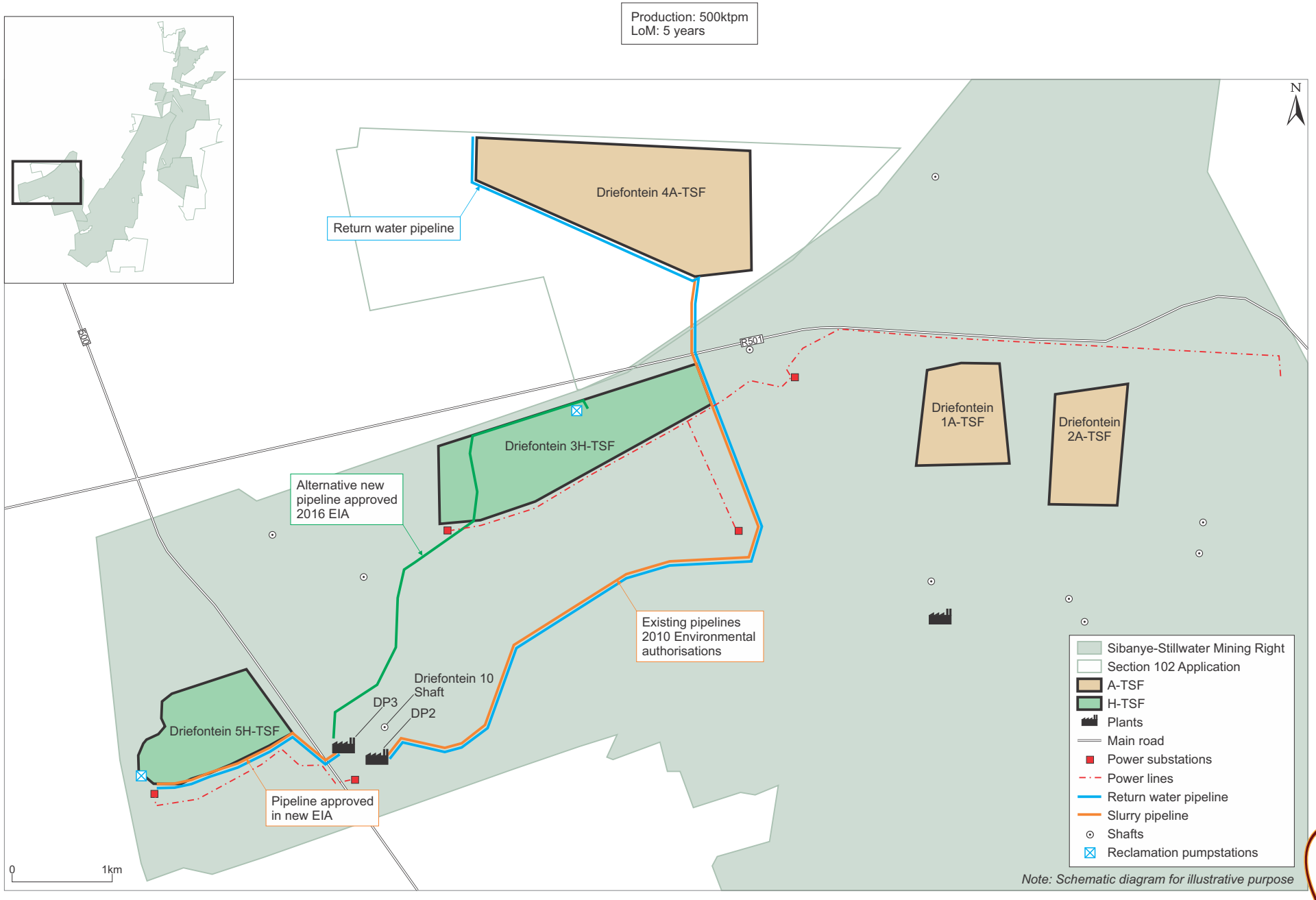


Source: Sibanye 2016

Figure 3: Regional and local infrastructure for the Sibaye-Stillwater West Rand operations

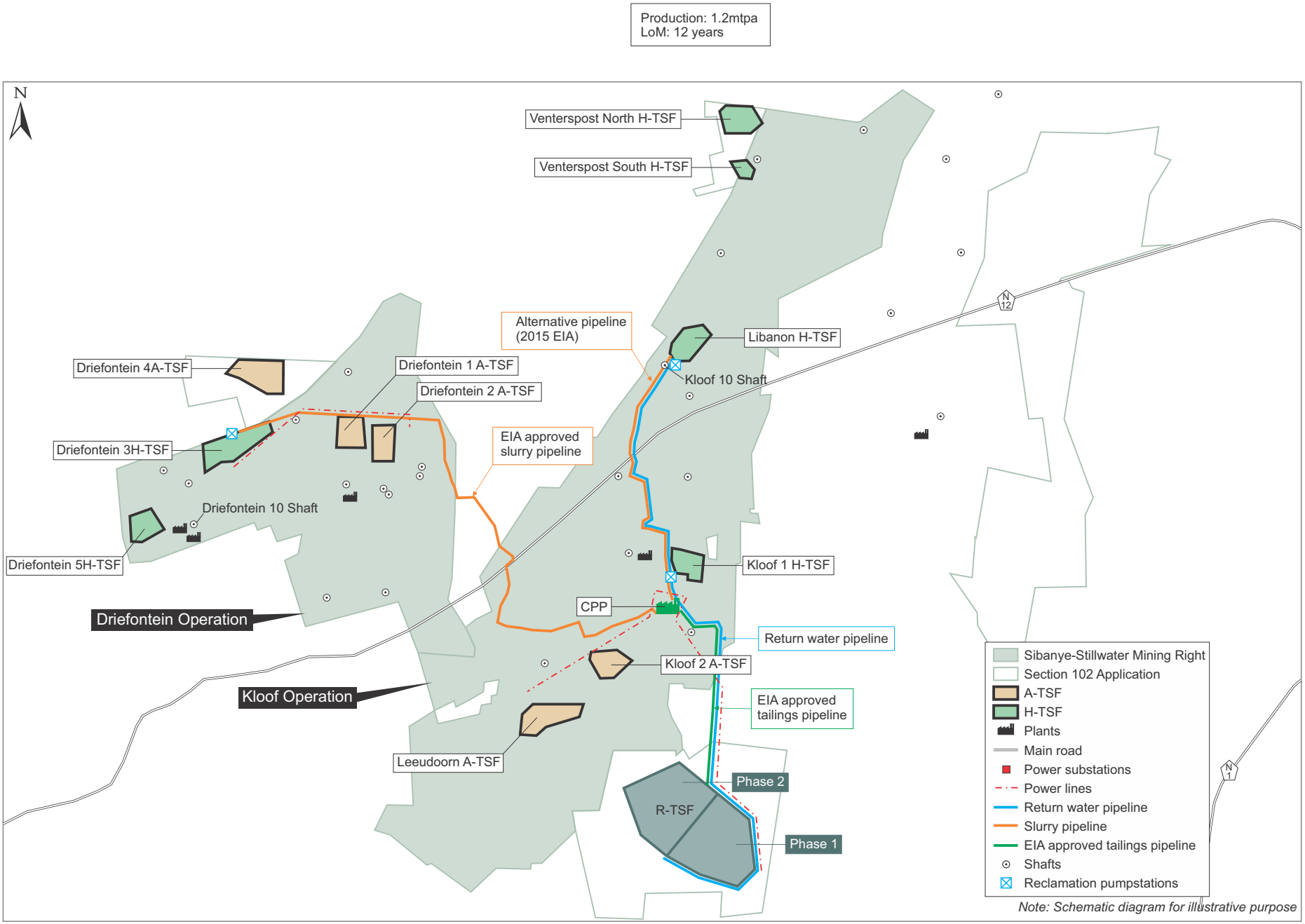
Source: Sound Mining 2017

Figure 4a: WRTRP development phases - Phase 1



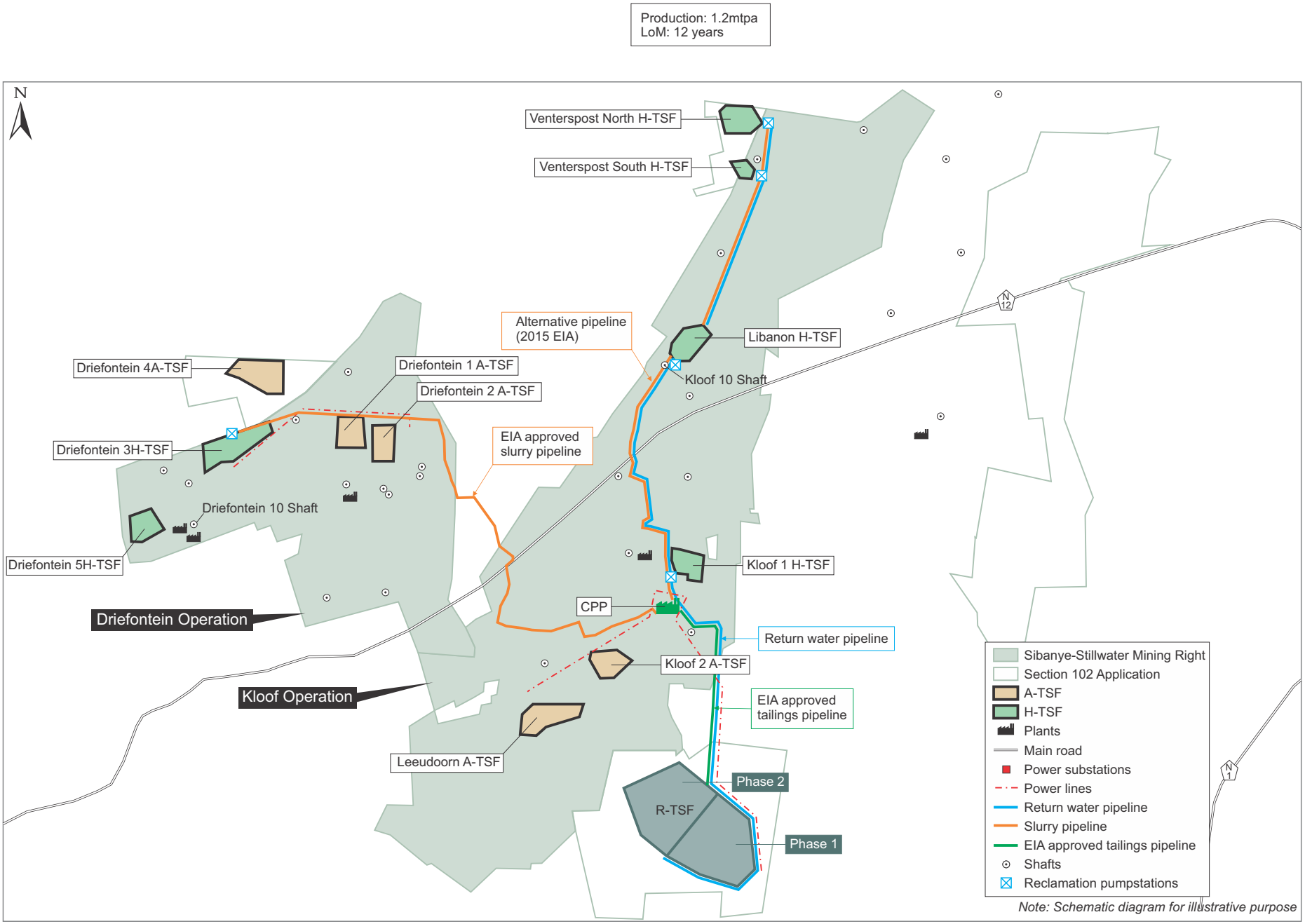
Source: Sound Mining 2017

Figure 4b: WRTRP development phases - Phase 2A



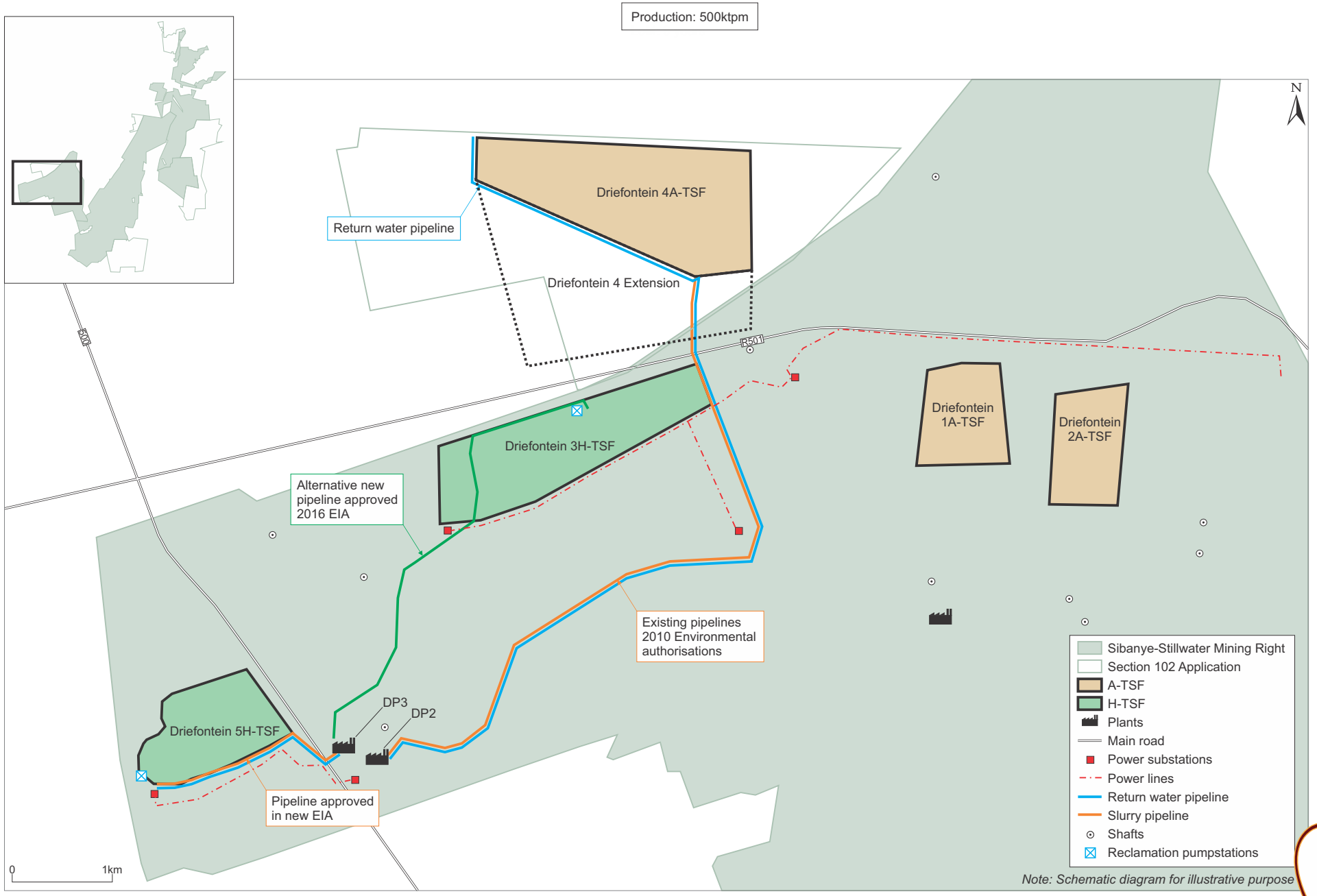
Source: Sound Mining 2017

Figure 4c: WRTRP development phases - Phase 2A



Source: Sound Mining 2017

Figure 4d: WRTRP development phases - Alternative option



South Africa is the most advanced economy in Africa and provides the gateway to Sub-Saharan Africa. It is classified as a middle-income emerging market, with well-developed financial, legal and judicial systems and modern infrastructure.

Between 2004 and 2008 the South African economy grew as a result of macroeconomic stability and a global commodities boom, but growth slowed in the second half of 2008 and 2009 due to poor global economic conditions, which influenced commodity prices and demand. Gross Domestic Product (GDP) fell almost 2% in 2009, worsening the country's already high unemployment levels. However, in 2010, 2011,2012 and 2013, the country again reflected a positive economic growth rate, with 2.8%, 3.4%, 2.2% and 2.2% real GDP growth rates, respectively (CIA, 2016). The economy expanded 0.7% year-on-year in the last three months of 2016, above market expectations of 0.6% with an annualised growth of 2% for the last quarter of 2017.

A recovery in agriculture and stronger growth in trade, finance, real estate, business and government services drove the expansion, offsetting contraction in mining, manufacturing and utilities. GDP Annual Growth Rate in South Africa averaged 2.89% percent from 1994 until 2017, reaching an all-time high of 7.10% in the fourth quarter of 2006 and a record low of -2.60% in the second quarter of 2009.

South African economic policy is fiscally conservative but pragmatic. The country attempts to control inflation by keeping it within an acceptable range (3% to 6%), maintains a budget surplus, uses State-owned enterprises to deliver basic services to low-income areas and provides social grants to a quarter of the population.

Currency and inflation volatility, poverty, income disparities, and poor availability of public services continue to characterise the country and inflation levels reached 4.6% in 2017.

9.2. Minerals industry

Mining and quarrying increased by 6.6% on the 2016 contributions to the GDP and accounted for 0.5 of a percentage point to GDP growth.

South Africa has a mature minerals industry developed from gold and diamond discoveries in the late 1800s and is the world's largest producer of platinum, chrome and vanadium and ranks highly in the production of diamonds, coal, iron ore and base metals.

One of the greatest challenges associated with the minerals and mining industry in South Africa is the political instability, concerns over the reliability of legal tenure, rising costs of labour, electricity, diesel and steel, among other costs. Labour and community unrest caused by low wages, particularly among contract workers and under-resourced communities has proved problematic in recent years and exacerbated municipalities' inability to provide adequate infrastructure to communities. The South African Mining Industry Report by BMI indicated that South Africa has the highest cost of labour as a percentage of total costs among the major producers, averaging approximately 60%, whereas peers such as the United States and Australia average between 30% to 40%. The high proportion of labour cost in South Africa is as a result of labour-intensive deep-level conventional mining prevalent in South Africa.

Other important concerns for the mining industry are the effect of HIV/Aids on the workforce and the recent downgrading of the country's credit risk rating to sub-investment grade. Although the South African political system has credibility, the political risk index, as reflected in BMI's South African Country Risk Report, indicates that factors such as the country's high degree of unionisation, the threat of industrial action and disruption to economic activity are a constant concern to investors.

9.3. Minerals policy and legislative framework

The South African Government has an extensive legal framework within which mining, environmental and social aspects are managed. Inclusive within the framework are international treaties and protocols, and national acts, regulations, standards, and guidelines which address international, national, provincial and local management areas. The role of the Government and the relevant regulatory authorities can be summarised as follows:-

- the custodian of environmental and mining legislation as a Constitutional imperative;
- a conduit between the public and mining companies to ensure that mineral rights holders satisfy the objectives of transforming the mining industry by, inter alia, increasing the number of black people in the industry to reflect the country's population demographics, to empower and enable them to meaningfully participate in and sustain the growth of the economy; thereby ensuring transparency to achieve accelerated and shared economic growth;
- advocate of sustainable development, from a socio-economic and environmental management perspective; and
- ultimate custodian of historical mining legacies, inclusive of abandoned mines.

The Government has significantly reformed its environmental legislation. The driving force behind this is the need to support the overall national objective of sustainable development. Most recently, in 2015, the government published the National Environmental Management Laws Amendment Bill for public comment and the Draft Revised Financial Provision Regulations were published in General Notice No. R1228 of 10 November 2017 in Government Gazette No. 41236 in respect of prospecting, exploration and mining or production operations. The applicable laws are summarised in Table 4. The list is not exhaustive:-

- the Constitution of South Africa (Act No.108 of 1996);
- Mines and Works Act, No. 27 of 1956;
- the Mine Health and Safety Act, No. 29 of 1996;
- the National Environmental Management Act, No. 107 of 1998 (NEMA),
- National Water Act, No. 36 of 1998 (NWA);
- National Nuclear Regulator Act, No. 47 of 1999 (NNRA);
- National Environmental Management: Biodiversity Act, No. 10 of 2004;
- National Environmental Management: Air Quality Act, No. 39 of 2004,;
- National Environmental Management: Waste Act, No. 59 of 2008 (NEM:WA);
- the Competition Act, No. 89 of 1998,
- the Companies Act, No. 71 of 2008;
- Mineral and Petroleum Resources Development Act (Act No.28 of 2002) (MPRDA);
- Mineral and Petroleum Resources Royalty Act (Act 28 of 2008) (MPRRA);
- Mining Titles Registration Act, No. 16 of 1967;
- Mining Titles Registration Amendment Act, No. 24 of 2003;
- Broad-Based Socio-Economic Charter (and associated amendments, 2010), also known as the Mining Charter;
- National Heritage Resources Act (Act No.25 of 1999) (NHRA);
- National Environmental Management: Protected Areas Act (Act No.57 of 2003) (NEM:PAA);
- National Environmental Management: Biodiversity Act (Act No.10 of 2004) (NEM:BA);
- National Forests Act (Act No.30 of 1998) (NFA);

- Hazardous Substances Act (Act No.15 of 1973) (HAS);
- Explosives Act (Act No.25 of 1956) (NEA);
- National Road Traffic Act, 1993, (Act No.93 of 1996) (NRTA); and
- New Broad-Based Black-Economic Empowerment Charter for the South African Mining Industry (also known as the New Mining Charter) to be reviewed 19 February 2018 by the North Gauteng High Court.

10. Project outline – topography, climate and local infrastructure

SR1.1(iii)

The WRTRP is located within the South African inland plateau region (Figure 5) and the H-TSF's comprising the WRTRP are located at elevations between 1,570mamsl and 1,720mamsl. The region is typical of a mature landscape with gentle rolling undulations and shallow sided river valleys as shown in the topocadastral maps Figure 6 to Figure 8.

Climatically, the area is classified as 'moderate eastern plateau' characterised by well-defined seasons characterised by warm to hot, moist summers and cool dry winters, often accompanied by frost (Figure 5). The temperate climate has an average ambient temperature of 20°C with dry winters between May and July (0°C to 18°C) and wet, warm summers between September to March (0°C to 27°C). The daily mean temperatures in January and July are 21.2°C and 9.8°C respectively. An average of 30 days of frost is recorded per year. The Randfontein area, on average, receives 571mm of rain per year, with most rainfall occurring during summer in the form of thunderstorms. The highest rainfall occurs in January (107mm) and the lowest in June (0mm). The wet season occurs from November to April. The climatic conditions have no effect on the mining operations at the Sibanye-Stillwater operations and are unlikely to be a risk to the DRDGOLD retreatment operations which can continue all year.

The vegetation of the region is typical savannah grassland but most of the area comprises disturbed grazing land and minor crop production. The major land uses in the area include agriculture in the form of maize and soya production as well as livestock grazing, formal and informal residential, mining and business uses.

Infrastructure and facilities in the Project area include formal and informal dwellings, buildings used for business purposes such as commercial farming infrastructure, mine infrastructure and roadside shops, privately owned infrastructure such as access roads, boreholes and dams, public infrastructure (roads and transmission lines), mine accommodation, as well as several abandoned residential structures. A large number of roads traverse the Project area including both tarred and gravel roads. These roads are used on a daily basis to commute between farms and mines, as well as to and from urban centres such as Carletonville and Fochville.
The WRTRP is located close to available services including water and power. The Merafong and Randfontein Local Municipalities will supply potable water to WRTRP, while Eskom, the national electricity supply company, will supply power.

11. Project outline – history of ownership and exploration activities

SR1.4(i)(ii); SV T1.6

Gold and uranium mining operations commenced in the late 1800s in the Witwatersrand Basin goldfields of South Africa, and have resulted in the accumulation of substantial amounts (approximately 1.3 billion tonnes (bnt)) of surface tailings and other mine residues. The possible re-treatment of H-TFSs in the West Rand area has a long and complex history with Gold Fields Limited (Gold Fields), Rand Uranium Limited (Rand Uranium), Harmony Gold Mining Company Limited (Harmony), Gold One International Limited (Gold One) and Sibanye-Stillwater completing a number of parallel, independent studies relating to the treatment of these H-TSFs. There is an approximate 15 year history of metallurgical testwork and process design which has been undertaken for a variety of combinations of assets and products recovered, as summarised in Table 4 and Figure 3. Whilst a substantial amount of the historical studies applied to specific combinations of assets and are not all relevant to the WRTRP in its current form, there is much historical information that has been referenced for the purposes of assessing the technical merits of the Project.
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Table 4 : Historical development of the WRTRP

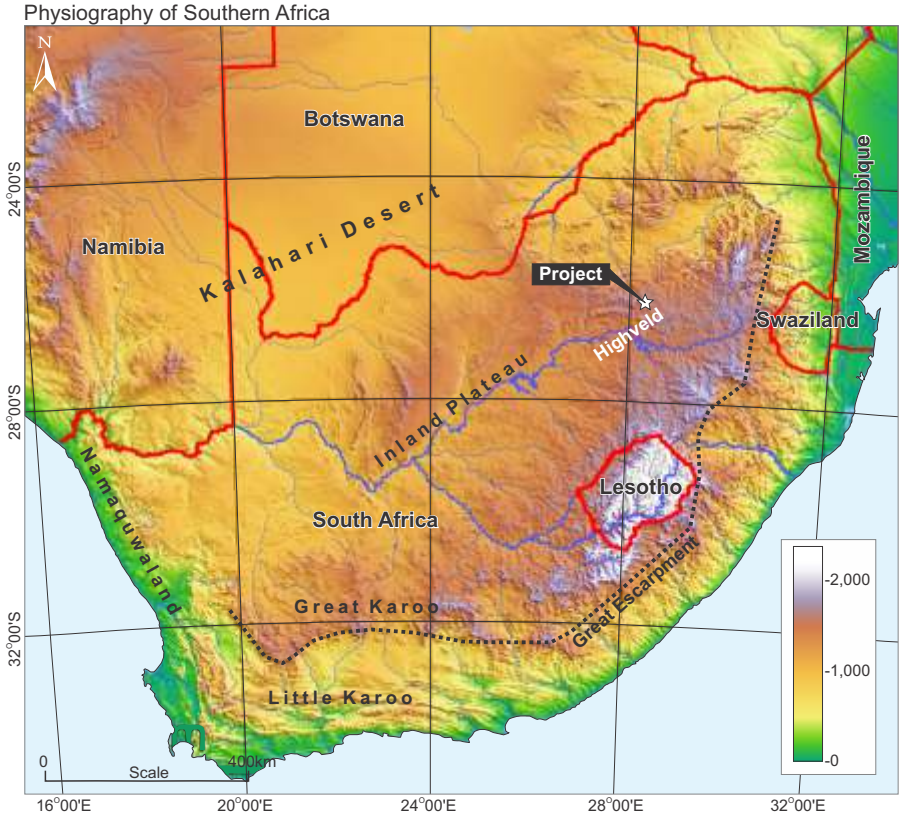
Owner	Period	Project and/or transaction	Properties	Activity	Comment	Consultants
Gold Fields Group Limited (Gold Fields)		West Wits Project (WWP)	Four mining complexes – Driefontein Complex (Driefontein 1, 2, 3, 4 and 5H-TSFs); Kloof Complex (Kloof1 and 2H-TSFs, Libanon and Leeudoorn H-TSFs; Venterspost Complex (Venterspost North and Venterspost South); and the South Deep Complex		Aimed at retreating several West Rand H-TSFs to recover gold, uranium and sulphur and storing the tailings on a new central tailings storage facility (CTSF)	
Gold Fields - subsidiary GFI Mining South Africa (Pty) Ltd	2009	West Wits Tailing Treatment Project (WWTTP)	Driefontein Complex, Kloof Complex, Libanon, Leeudoorn, Venterspost Complex and South Deep Complex	WWTTP Feasibility study near completion		Minxcon (Pty) Ltd undertook Mineral Resource estimation, mine scheduling and valuation of the project
Rand Uranium Limited (Rand Uranium)	2009	Cooke Uranium Project (CUP)	Cooke mining complex	CUP Feasibility study near completion	Treatment of the Cooke H-TSF for gold, uranium and sulphur. Arising tailings would be deposited onto the Geluksdal A-TSF located near the CTSF	DFS for CUP by Bateman Engineering (Pty) Limited included Front End Engineering Design (FEED). Bateman awarded execution contract but the project was cancelled due to the global economic crisis
Gold Fields and Rand Uranium	Late 2009	Discussion of synergy of WWTTRP and CUP - combination of WWTTP and CUP		Evaluation of a combined project	Significant re-engineering and metallurgical testwork required and the project was put on hold	
Rand Uranium	2010 to 2012	Completed the Cooke Uranium Project (CUP) and the Cooke Optimisation Project (COP)		CUP and COP Feasibility study completed	Applications for authorisations partially complete	
Gold One International Limited (Gold One)	2012	Acquisition of Rand Uranium and Ezulwini Mining Company (Ezulwini)		Revived the surface retreatment integration discussions - update CUP DFS		Bateman Tenova (2011 to 2012) requested to update CUP DFS engineering designs for a gold/uranium plant and creation of an acid plant
Gold One joint venture (JV) with Gold Fields	2012 to 2013	JV to investigate economic potential of concurrently re-processing current arisings and H-TSFs	H-TSFs and current arisings in the Carltonville/Westonaria/Randfontein region	Gold One/Gold Fields JV Scoping Study completed end 2012		

Owner	Period	Project and/or transaction	Properties	Activity	Comment	Consultants
Gold Fields unbundled GIF Mining South Africa (Pty) Limited and created Sibanye-Stillwater Gold Limited	early 2013	Unbundling of the Kloof-Driefontein Complex and Beatrix Gold Mines and listing of Sibanye-Stillwater on the JSE Limited and NYSE	Unbundling of the Kloof-Driefontein Complex and Beatrix Gold Mines			
Sibanye Gold Limited	2013	Acquisition from Gold One of the Rand Uranium and Ezulwini assets	As a result of the transaction Sibanye-Stillwater held most of the surface resources in the region	Gold One/Gold Fields JV Scoping Study completed extended to a PFS	PFS showed significant opportunity to extract value from the surface resources	
Sibanye-Stillwater	2015	Study initiated for the original version 1 West Rand Tailings Retreatment Project (V1-WRTRP)	Treatment of the Driefontein 3 and 5 H-TSFs using Ezulwini uranium process plant	DFS for the first phase of the V1- WRTRP		Tenova Bateman DFS for first phase of the V2-WRTRP
Sibanye-Stillwater	Dec 15	Integrated study on version 2 of the WRTRP (V2-WRTRP)	Cooke, Driefontein 3, Driefontein 5 and Cooke 4S H-TSFs	Integrated study for the production of gold, uranium and sulphuric acid – DFS for V2-WRTRP	DFS for V2- WRTRP. On completion of the DFS the project progressed to FEED level of accuracy whilst funding and permitting was sought	Tenova Bateman DFS for integrated V2-WRTRP
	2016	Decision to close Cooke No 4 Shaft		DFS to determine economic viability of using existing infrastructure including D2 plant and Ezulwini plants		

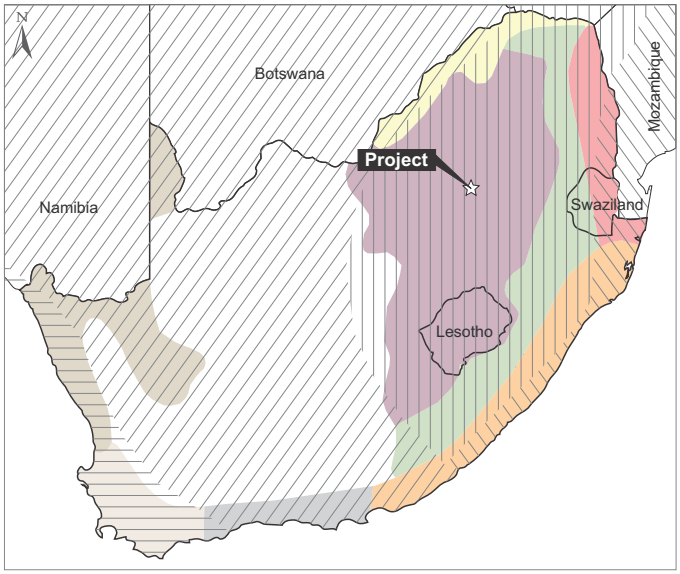
Source : Sibanye-Stillwater CPR 2017, Digby Wells 2015

Figure 5: Physiography, climate and vegetation of Southern Africa

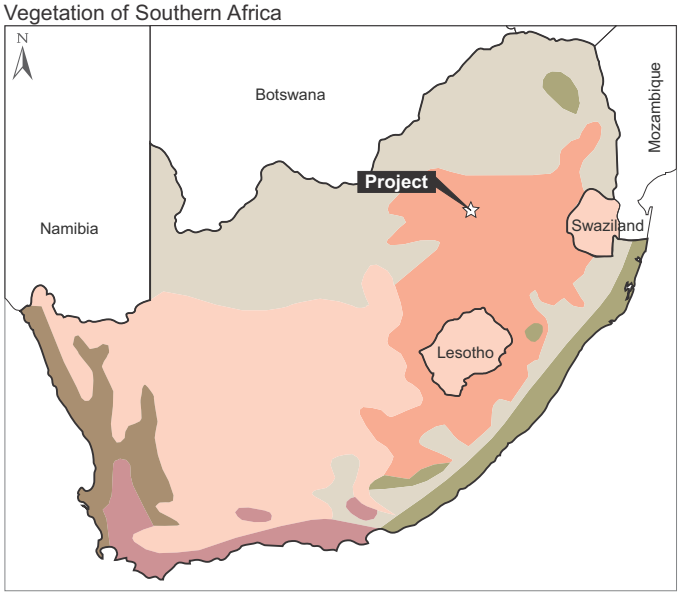
Physiography of Southern Africa



Climate and Rainfall of Southern Africa



Vegetation of Southern Africa

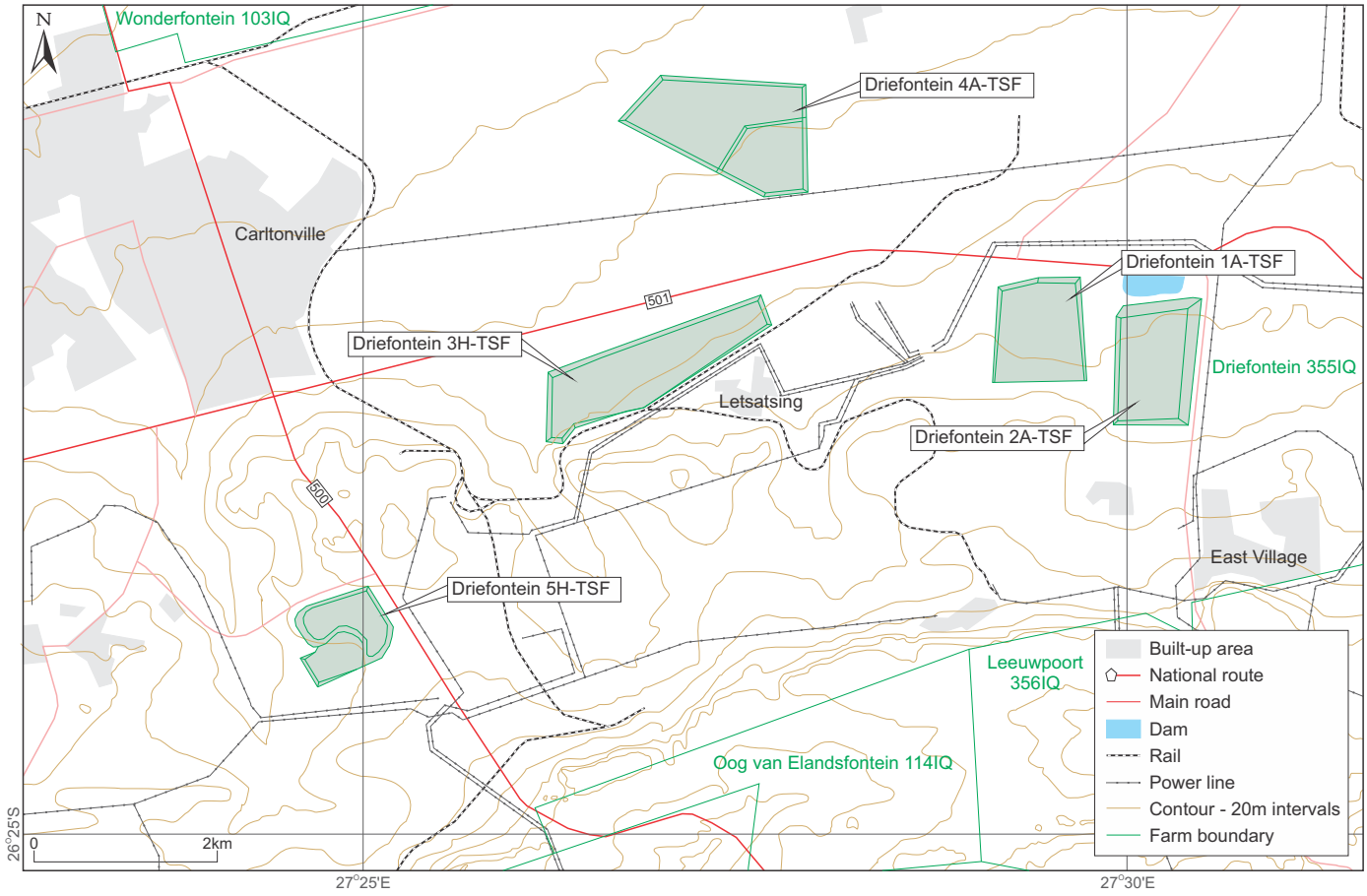


- Subtropical plateau
- Desert
- Mediterranean
- Semi-arid plateau
- Moderate coast
- Moderate eastern plateau
- Subtropical coast
- Escarpment
- Subtropical lowveld
- Dry continental
- Subtropical
- Summer rainfall
- Winter rainfall

- Nama Karoo
- Succulent Karoo
- Grassland
- Savannah
- Fynbos
- Forest

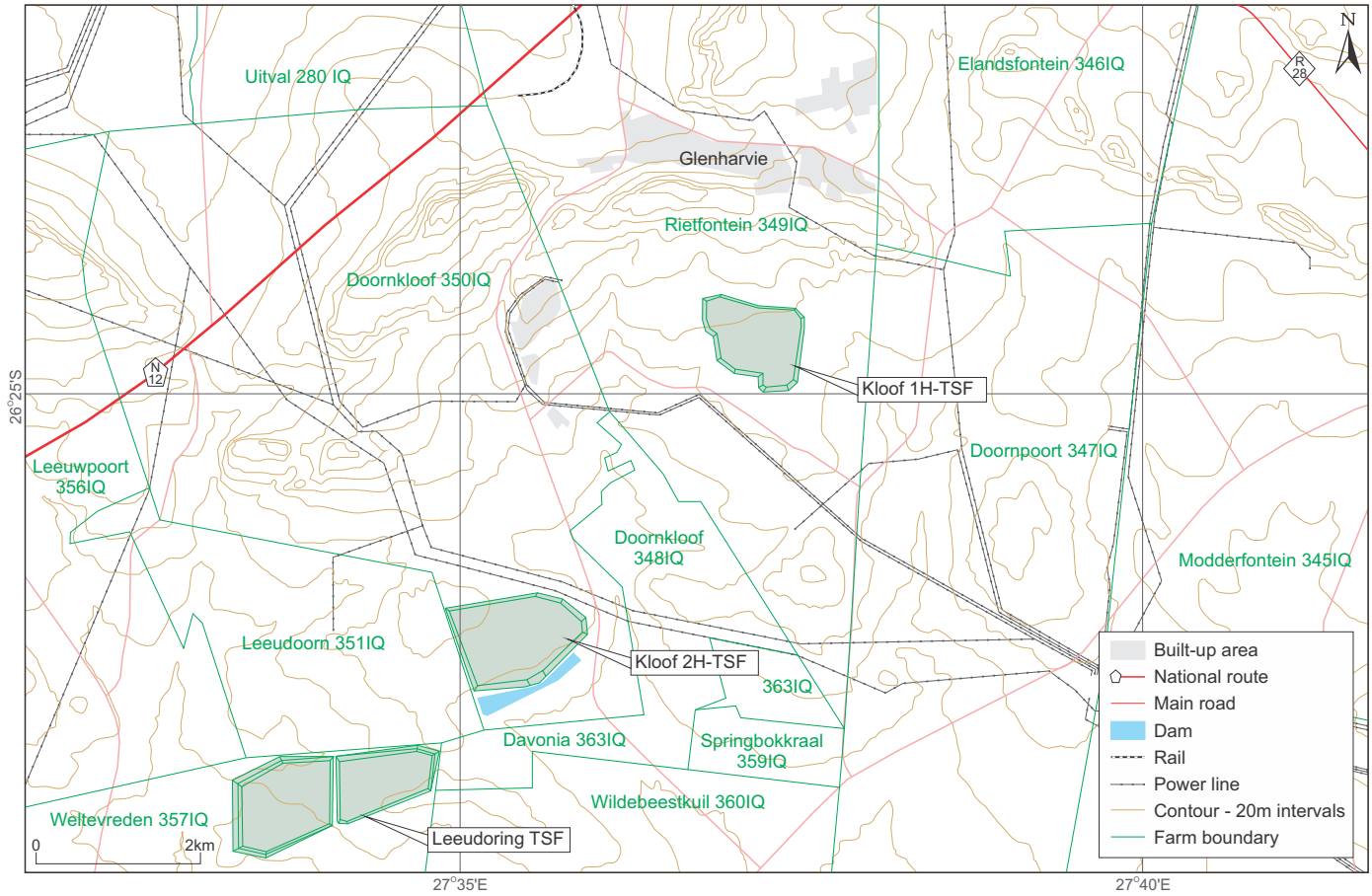
Source: Sound Mining 2017

Figure 6: Topocadastral map for the Driefontein H-TSFs



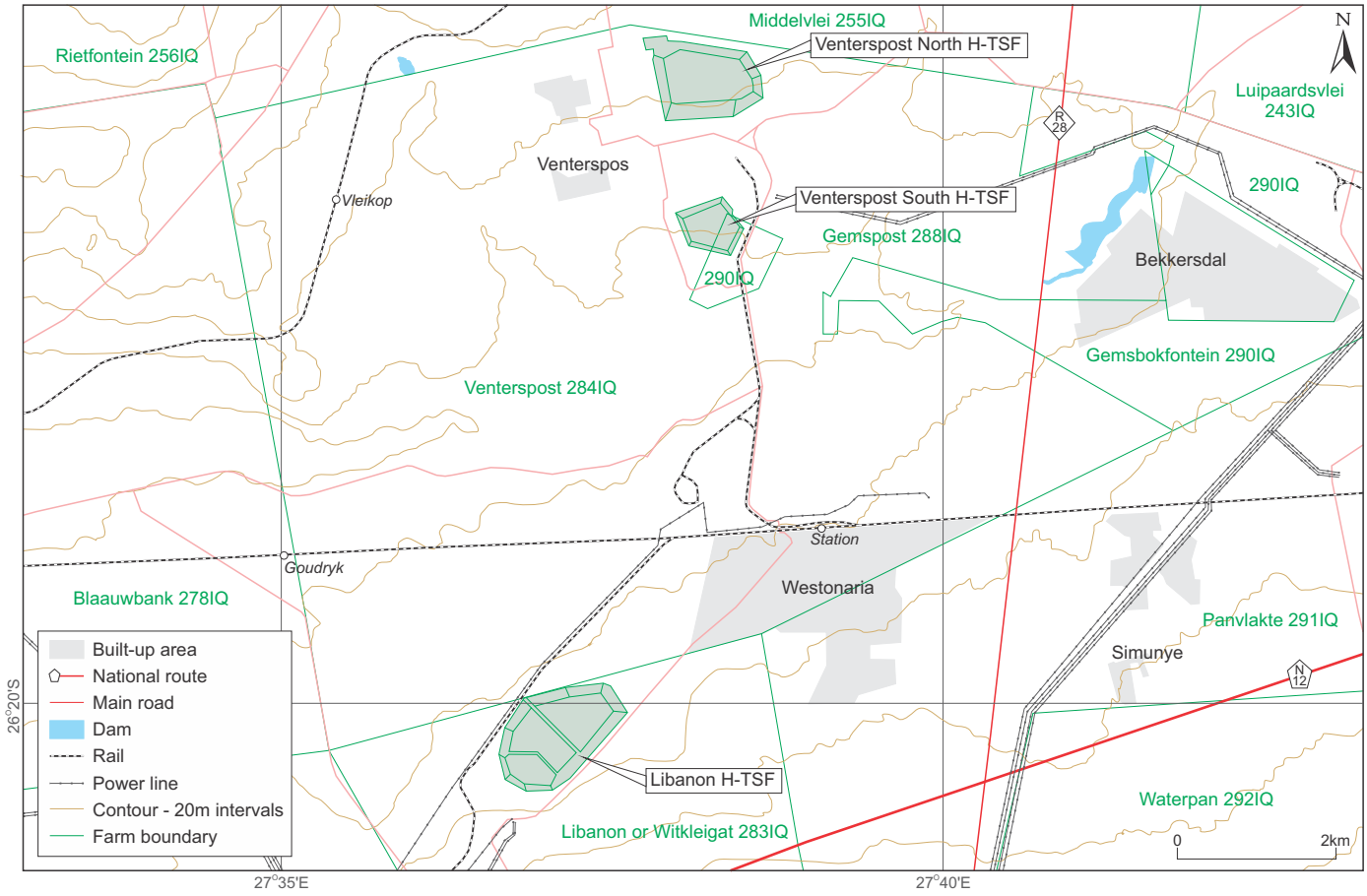
Source: Sound Mining 2017

Figure 7: Topocadastral map for the Kloof H-TSFs



Source: Sound Mining 2017

Figure 8: Topocadatral map for the Venterspost North H-TSF, Venterspost South H-TSF and Libanon H-TSF



Source: Sound Mining 2017

Prior to 2009 Gold Fields embarked on a project known as the West Wits Project (WWP) aimed at retreating several H-TSFs on its four mining complexes: Kloof, Driefontein, Venterspost and South Deep (Table 4) to recover residual gold, uranium and sulphur and storing the tailings on a new Central Tailings Storage Facility (CTSF).

Similarly, Rand Uranium had embarked on the Cooke Uranium Project (CUP), which endeavoured to treat the Cooke H-TSF for gold, uranium and sulphur and ultimately deposit the tailings onto the Geluksdal TSF, located very close to the CTSF. The two independent projects had similar operational and environmental mandates, within a 25km radius of each other.

In 2009 Gold Fields and Rand Uranium evaluated the potential synergy of an integrated retreatment plan for H-TSFs located within the South Deep, Cooke, Kloof, Driefontein and Venterspost mining complexes (Figure 1). Both the Rand Uranium– Cooke CUP and the Gold Fields – WWTTP (see Table 4) feasibility projects were nearing completion. However, a significant amount of re-engineering and confirmatory testwork would have been required to achieve a combined DFS and the combined project was stalled because of economic circumstances at the time.

In 2012 Gold One acquired Rand Uranium and in the same year acquired the Ezulwini Mining Company (Pty) Ltd (Ezulwini) in an agreement with First Uranium Corporation. During the same year Gold One, revived the tailings retreatment project and Gold Fields entered into a joint venture partnership with Gold One to investigate the economic viability of concurrently reprocessing current arisings and historical tailings from a number of sites situated in the greater Carletonville/Westonaria/Randfontein area. A Scoping study was concluded in late 2012.

In early 2013 Gold Fields unbundled its Kloof and Driefontein Complex and Beatrix gold mines in the Free State to create a separate entity in Sibanye Gold Limited and listed Sibanye Gold Limited as a fully independent company on both the JSE and the NYSE stock exchanges.

Subsequently, in October 2013, Sibanye Gold Limited purchased the interest held by Gold One in Rand Uranium and Ezulwini. The Gold One assets which became part of Sibanye-Stillwater included the Cooke Operations (underground mining and surface reclamation operations) for gold and uranium production. This transaction gave Sibanye Gold Limited control of the majority of the surface mineral resources in the region. A PFS was completed during 2013 and confirmed that there is a significant opportunity to extract value from the surface mineral resources. Subsequently, a number of DFSs have been completed on various combinations of H-TSFs as shown in Table 4.

Sibanye Gold Limited acquired United States registered Stillwater Mining Company in May 2017 and began trading as Sibanye Stillwater in August 2017.

12. Project outline – regional and adjacent properties

SR1.3(i)

A discussion of the characteristics of adjacent properties is usually relevant for typical mineral deposits but in this case understanding of the surface tailings deposits of adjacent properties bears little relevance to the WRTRP and such information is not available in the public domain.

13. History – historical Mineral Resource estimates

SR1.4(i)(ii)(iii)

Several previous Mineral Resource estimates have been undertaken for the assets that form part of the WRTRP. as summarised in Section 23.5.

14. Legal tenure and permitting

SR1.5(i)-(v), SVT1.5; JSE 12.9(h)(iv)

The authors of this CPR are not qualified to provide extensive commentary on legal issues associated with Sibanye-Stillwater or DRDGOLD's right to the described mineral and infrastructure assets. Sound Mining has undertaken a review of the legal aspects of the assets but no warranty or guarantee, be it express or implied, is made by the authors with respect to the completeness or accuracy of the legal aspects of this document.

The original documents of the underlying Sibanye-Stillwater mining rights have not been reviewed by Sound Mining but given the history of production by Sibanye-Stillwater and correspondence with the Department of Mineral Resources (DMR), Sound Mining considers that there is no reason to question the validity of the mining rights. Sibanye-Stillwater will continue to operate the Kloof and Driefontein Mines under the auspices of their mining rights whilst the WRTRP (Pty) Ltd (or the SPV) conducts its business.

An independent due diligence on the status of the legal aspects and permitting requirements of the WRTRP for DRDGOLD was conducted by Malan Scholes Inc. in Nov 2017. In addition, Exigo Sustainability (Pty) Ltd undertook a fatal flaw review of the environmental and permitting aspects of the Project for this CPR.

The H-TSFs of the WRTRP are situated on two mining rights obtained from the Department of Mineral Resources (DMR) in 2007, as summarised below and illustrated in Figure 3:-

- Driefontein mining right – new order mining right GP30/5/1/2/2/51MR issued in 2007 and valid until January 2037 totalling 8,561 hectares(ha) located in the Magisterial District of Oberholzer in the Gauteng Province. Sibanye-Stillwater is entitled to mine all declared material situated within this mining right and has all the necessary statutory requirements in place. The submission of an Environmental Management Programme (EMP) and Environmental Impact Assessment (EIA) are required by Section 39(1) of the MPRDA;
- Kloof mining right – new order mining right GP30/5/1/2/2/66MR issued 2007 and valid until 2027. The LoM is expected to extend until 2033. The new order mining right covers a total of 20,087ha, in the Magisterial District of Westonaria, in the Gauteng Province. Sibanye-Stillwater is entitled to mine all declared material falling within this mining right and has all the necessary statutory requirements in place.

In terms of the MPRDA (Act 28 2002) the following aspects are applicable to the reclamation of TSFs:-

- the reclamation of TSFs or residue deposits requires a mining right in accordance with the MPRDA (Malan Scholes 2017);
- Section 42A of the Minerals and Petroleum Resources Amendment Bill B15-2013 (MPRDA Amendment Bill) provides that the holder of a mining right with historical residues or stockpiles located within that mining right has the exclusive right to apply in terms of Section 102 of the MPRDA to amend its mining works programme to include such residues or stockpiles into the mining right within a period of two years from the commencement date of the MPRDA Amendment Bill. The amendment bill was referred back to parliament on the grounds that it was unconstitutional; and
- the owner of a residue deposit outside of a mining right has the exclusive right to apply for a mining right within a period of two years from the commencement of the MPRDA Amendment Act 2014.

The H-TSFs forming mineral resource assets of the WRTRP, namely Driefontein 3H-TSF and Driefontein 5H-TSF, Kloof 1H-TSF, Libanon H-TSF, Venterspost North H-TSF and Venterspost South H-TSF, in terms of the MPRDA are considered residue deposits and are held by Sibanye-Stillwater under the Driefontein and Kloof mining rights. In respect of these assets, Section 102 amendments to the mining rights have been made by Sibanye-Stillwater to permit the reclamation activities anticipated for the WRTRP. The H-TSFs listed above (see Table 3), forming part of the WRTRP, are included in the Exchange Agreement between DRDGOLD and Sibanye-Stillwater and are transferred from Sibanye-Stillwater to the SPV created to hold the WRTRP. In terms of that agreement the H-TSFs are classified as moveable assets and the Driefontein TSFs will be transferred to the WRTRP (Pty) Ltd (or SPV), as movable assets and, therefore, there is no requirement to transfer any part of the Driefontein mining right to the SPV.

Driefontein 4A-TSF whilst still active, is an historical movable asset created prior to the MPRDA becoming effective and as such requires no mining right as it will not be mined (Malan Scholes 2017). However, a Section 102 application was submitted to the Department of Mineral Resources (DMR) by Sibanye-Stillwater during 2016 to make provision for:-

- extending the Driefontein mining right boundary to include the Driefontein 4H-TSF on various portions of farm Vlakplaats 112IQ and a section of the RE of Ptn 2 of Driefontein 113IQ. The impact of the extension will enlarge the current mining right area to 9,490.62ha (Figure 3);
- reclamation of Driefontein 3H-TSF and Driefontein 5H-TSF; and

- the construction and operation of slurry thickeners, bulk water storage facility, roads powerlines, pipelines and pump stations on the Driefontein mining right as are required for the WRTRP.

The Driefontein Section 102 application was accompanied by an amended EMP and EIA and acknowledged by the DMR in February 2016 and is pending. The granting of the Driefontein Section 102 application is a condition precedent in the proposed transaction.

A Section 102 application was made by Sibanye-Stillwater in 2015 in respect of the Kloof mining right to include an additional 416.25ha representing the Venterspost North and Venterspost South H-TSFs and the inclusion of the R-TSF area measuring 4,105.58ha, into the existing mining rights. On approval of these Section 102 applications, the Kloof mining right will total 24,633.72ha and the reclamation of the H-TSFs will be approved together with the construction and operation of the required slurry thickeners, bulk water storage facility, roads powerlines, pipelines and pump stations.

In consideration of all legal aspects relating to the Kloof and Driefontein mining assets, Sibanye-Stillwater is unaware of any legal proceedings that may have an influence on the rights to extract minerals and the legal ownership of all mining and surface rights have been verified and is so stated in the Sibanye-Stillwater Kloof and Driefontein CPRs (December 2017).

Neither Sibanye-Stillwater nor DRDGOLD are aware of any outstanding legal disputes that are applicable to the WRTRP as stated in the Exchange Agreement signed on 22 November 2017. To the best of Sibanye-Stillwater and DRDGOLD's knowledge no land claims exist over the relevant properties and no outstanding legal disputes exist that could affect the WRTRP's right to further develop the assets. To the best of the Competent Peron's knowledge, all government permits have been either approved or are pending.

In summary, the security of tenure for the WRTRP rests in Sibanye-Stillwater being granted the Section 102 applications and thereby assuming the right to reclaim the H-TSFs on both mining rights. Thereafter, the transfer of the H-TSFs by Sibanye-Stillwater to the SPV for the WRTRP is considered the transfer of moveable assets and will not require transfer of the mining rights to the SPV. In terms of the Exchange Agreement all risks and benefits of the WRTRP's business passes from Sibanye-Stillwater to the SPV. According to the Project agreements the rehabilitation liability of the H-TSFs is transferred to the SPV. The portion of the Sibanye-Stillwater rehabilitation trust fund related to these assets will be transferred to the special purpose vehicle rehabilitation trust with any shortfall covered by an insurance policy. In addition, the SPV will assume responsibility for the 169 employees that currently operating the DP2 and DP3.

14.1. Material agreements, access and surface rights

The WRTRP is essentially governed by the Exchange Agreement signed 22 November 2017 between Sibanye-Stillwater and the WRTRP SPV, as discussed in detail in Section 1.1 and Section 14.

Sibanye-Stillwater, DRDGOLD and the SPV have developed a "Final Draft Use and Access Agreement" in November 2017 which, when finalised grants the SPV access rights to the following:-

- Kloof 10 shaft located in the Kloof mining right and Driefontein 10 shaft located in the Driefontein mining right for the purpose of pumping and supplying the required quantities of water to the WRTRP;
- the rights, servitudes and agreements for installation, supply and distribution of maintenance of power supply;
- existing and proposed pipeline routes;
- servitudes, wayleaves and surface right permits; and
- Driefontein 1 gold plant for the purpose of accessing the pilot plant, which will be relocated to DP3;

The surface rights agreements over both the Driefontein and Kloof mining rights for the TSFs and processing plant sites are adequate for the current Sibanye-Stillwater operations and would therefore be applicable also to the WRTRP. The status of the surface right agreements with private land owners for any newly envisaged infrastructure is unknown.

The central processing plant (CPP), which will ultimately occupy approximately 75ha when fully constructed, and will be situated to the south of the small town of Glenharvie, on Sibanye-Stillwater owned land between Kloof 1 shaft and Kloof 4 shaft. The site is centrally located to all the H-TSFs to be exploited and the anticipated future disposal area.

14.2. Permitting

A high level summary of the approvals and permitting required by the South African Department of Mineral Resources, the Department of Environmental Affairs and the Department of Water Affairs is shown in Table 5. An independent due diligence of the current status of the environmental permitting for the WRTRP was undertaken by Malan Scholes Inc. in November 2017.

14.2.1. Driefontein mining right area

In March 2016 Sibanye-Stillwater submitted an application for an Environmental Authorisation (EA) in terms of NEMA and a Waste Management Licence (WML) to authorise the activities associated with the WRTRP that would occur within the Driefontein mining right area (although it is possible that a WML may not be required for any of the activities associated with the WRTRP). Such activities included the reclamation of the Driefontein 3H-TSF and Driefontein 5H-TSFS, the inclusion of Driefontein 4A-TSF into the Driefontein mining right and construction and operation of the water treatment facilities, slurry thickeners, bulk water storage facilities, slurry pipelines, roads, powerlines and pump stations.

In correspondence between the DMR and Sibanye-Stillwater in 2016, the DMR stated it was prepared to grant the EA application and indicated the extent of the financial provision for closure. The closure quantum is currently in dispute as the stated requirement for value added tax (VAT) is not confirmed and awaits a ruling by the South African Revenue Service (SARS).

On the approval of the Driefontein EA, Sibanye-Stillwater will be in possession of an EA authorising the WRTRP activities. In order for the special purpose vehicle to undertake the activities in its own name, the EA will have to be transferred to WRTRP (Pty) Ltd. Furthermore, should the DMR not grant the amendment application, the special purpose vehicle could continue to undertake activities as a contractor in which case Sibanye-Stillwater would remain the holder of the EA.

14.2.2. Kloof mining right area

In March 2016 Sibanye-Stillwater submitted an application for an integrated EA and a WML for the proposed activities on the Kloof mining right area. Such activities include, the reclamation of various TSFs in the Kloof mining area and the following amendments to the Kloof EMPr describe the impacts of the construction and operation of the CPP, the construction and operation of the R-TSF and the associated return water dam, abstraction of makeup water from the K10 shaft; the construction and operation of an advanced water treatment facility, the construction and operation of roads, power lines, pipelines and pump stations associated with the above listed infrastructure; and the inclusion of Venterspost North and South in the Kloof Mining Area.

The DMR has stated it is prepared to grant the two applications and indicated that a financial provision for rehabilitation for a 10 year period be secured. Sibanye-Stillwater has made the necessary guarantees pending the resolution of a dispute with the DMR over the payment of VAT.

On the approval of the Kloof EA, Sibanye-Stillwater will be in possession of an EA authorising the WRTRP activities. In order for the special purpose vehicle to undertake the activities in its own name, the EA will have to be transferred to WRTRP (Pty) Ltd. Furthermore, should the DMR not grant the amendment application, the special purpose vehicle could continue to undertake activities as a contractor in which case Sibanye-Stillwater would remain the holder of the EA.

Table 5 : South African legal and permitting requirements

South African Legal and permitting requirements								
Governing Authority	**Minister of Mineral Resources**	**Minister of Water and Environmental Affairs**						
National Administration	Department of Mineral Resources (DMR)	National Department of Environmental Affairs (DEA)* and Department of Environmental Affairs and Development Planning (DEADP)						National Department of Water Affairs (DWA)
National Legislation	Mineral and Petroleum Resources Development Act (MPRDA)	National Environmental Management Act 1998 (NEMA)	National Environmental Management Waste Act 59 of 2008 (NEMWA)	National Heritage Resources Act 25 of 1999 (NHRA)	Water Services Act 108 of 1997 (WAS)	Nuclear Energy Act 1999 (NEA); National Nuclear Regulator Act 1999 (NNRA)	National Environmental Management Air Quality Act 39 0f 2044 (NEMAQA)	National Water Act (NWA)
Study Documents Required	Environmental Management Programme Report (EMPr)	Environmental Impact Assessment (EIA) under EIA Regulations 2010 (GNR 543)	Environmental Impact Assessment (EIA) under EIA Regulations 2010 (GNR 543)	Minimum Phase 1 Archaeological Impact Assessment	To be determined in consultation with relevant authorities	Study documents in support of application for registration	Atmospheric Emissions Licence application and Air Quality Impact Assessment	Integrated Water and Waste Use Licence (IWUL) in Terms of Section 22 of NWA
Authorisations Required:	Approved EMPr.	Authorisation (EA) must be granted. Under Section 24 of the NEMA it is not permitted to commence specific activities without environmental authorisation	Specified activities that require a permit or licence	Specified activities that require a permit or licence	Specified activities that require a permit or licence	Certificate of Registration with the NNR	A list of activities for which an atmospheric emission licence is required	Specified activities that require a permit or licence
		**In addition to the requirements listed above, the fulfilment of the requirements of the following National Acts maybe required*:- ▫ the National Environmental Management Biodiversity Act 10 of 2004 (NEMBA); ▫ the Conservation of Agriculture Act 42 of 1983 (CARA); ▫ National Forests Act 84 of 1998 (NFA); ▫ National Road Traffic Act 93 of 1996; ▫ The Explosive Act 26 0f 1956 (ExA) ▫Hazardous Substances Act 15 of 1973 (HAS) ▫ Mine Health and Safety Act 29 0f 1996 ▫Occupational Health and Safety Act 1993 ▫National environmental Management: Protected Areas Act 57 of 200 (NEM:PAA)						

14.3. Water Use Licences

Sibanye-Stillwater was granted two Water Use Licences (WUL) by the Department of Water and Sanitation in terms of Chapter 4 of the National Water Act (NWA) on 9 March 2017 for a period of 20 years (renewable at five year intervals)(licence numbers 10/C22B/ACFG/4976 and 10/C23E/ACEFGJ/4527). In terms of the licences, Sibanye-Stillwater is entitled to reclaim existing tailings through hydraulic means and treat the tailings in the associated processing plants. The water that will be used in the reclamation workings and the process plants will be sourced from underground workings at Driefontein 10 shaft (Phase 1) and Kloof 10 shaft (Phase 2A and Phase 2B) to a maximum of 2,555Mℓ/a and 9,487Mℓ/a respectively. After treatment, the slurry/tailings will be disposed into the R-TSF. The return water from the R-TSF will be contained in a return water dam and according to the licence will be treated in an advanced water treatment facility and discharged into Leeuspruit or disposed to dust suppression. Instead of this open configuration, DRDGOLD has opted for a closed water system throughout the project life so no water treatment or discharge into the surface water courses will occur.

With effect from the transaction date steps to transfer the WUL from Sibanye-Stillwater to the WRTRP will be required in accordance with the provisions of NWA including Sections 25 and 51. In accordance with the Dam Safety Regulations (DSR), a DSR licence and licence to impound will be required but it is unclear whether the applications for these licences will be made by Sibanye-Stillwater or by WRTRP following the transfer of the WUL to the special purpose vehicle.

14.4. Other permitting requirements

DRDGOLD has received an independent opinion that no Atmospheric Emissions Licence (AEL) is not required for the smelting of gold. Nonetheless, Sibanye-Stillwater has received a Provisional Atmospheric Emissions Licence (PAEL) in respect of the activities required for the operation of the CPP on 30 August 2017.

Heritage Impact Assessments were undertaken for both the Driefontein and Kloof areas affected by the activities of the WRTRP and submitted to the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Authority Gauteng (PHRA-G). Historical grave sites and heritage buildings were identified and recommendations made to preservation of these sites in the infrastructure planning.

Sibanye-Stillwater is the holder of Certificates of Registration (CoR) in terms of the National Nuclear Regulator (NNR) for both Driefontein and Kloof mining right areas but these CoRs are not transferable. At this stage it is unclear whether the special purpose vehicle will be required to apply for a CoR or a certificate of exemption in terms of Section 22 of the National Nuclear Regulation Act (NNRA).

The WRTRP will be undertaking mining activities in terms of in Section 102 of the Mine Health and Safety Act (MHSA) and consequently the provisions of the MHSA will apply to the Project. In the first exchange agreement, DRDGOLD warrants to maintain practises and procedures to ensure material compliance with the MHSA. However, the Use and Access Agreement assumes that the provisions of the MHSA do not apply to the activities to be undertaken by the special purpose vehicle. The Use and Access Agreement, consequently, contemplates that, as soon as reasonably possible after the effective date, the special purpose vehicle will confirm with the DMR that the activities to be undertaken are not subject to the MHSA. Any activities that are deemed subject to the MHSA, will be exempt from the health and safety obligations contemplated in the MHSA in respect of the activities constituting the WRTRP.

14.5. Royalties

SR1.6(i)

Ergo has been in operation for a considerable period and is not required to pay royalties. Mineral Royalties are not payable on transfer of gold from old mine dumps that existed before the coming into effect of the Mineral and Petroleum Resources Royalty Act, 2008. DRDGOLD, based on the similarity of the WRTRP with the Ergo operation, and advice from legal counsel, has applied a legal position/interpretation, to conclude that no royalties are payable for the WRTRP.

14.6. Liabilities

SR1.7(i))

The rehabilitation liabilities are discussed in Section 32.

15. Regional Geological setting, deposit and mineralisation

SR2.1(i), SVT1.7, SR2.1(ii),(v)(vi), SVT1.7; JSE 12.9(h)v)

The mineral assets considered in this CPR are historical surface residual tailings material from the mining of the West Witwatersrand Gold Fields and as such the nature of the underlying geology is not of direct relevance to the business of the WRTRP. However, an understanding of the scale and nature of the gold mineralisation that was targeted in the historical mining operations provides context for the investigation of the structure and composition of the H-TSFs. The surface geology is relevant to the siting of future WRTRP infrastructure.

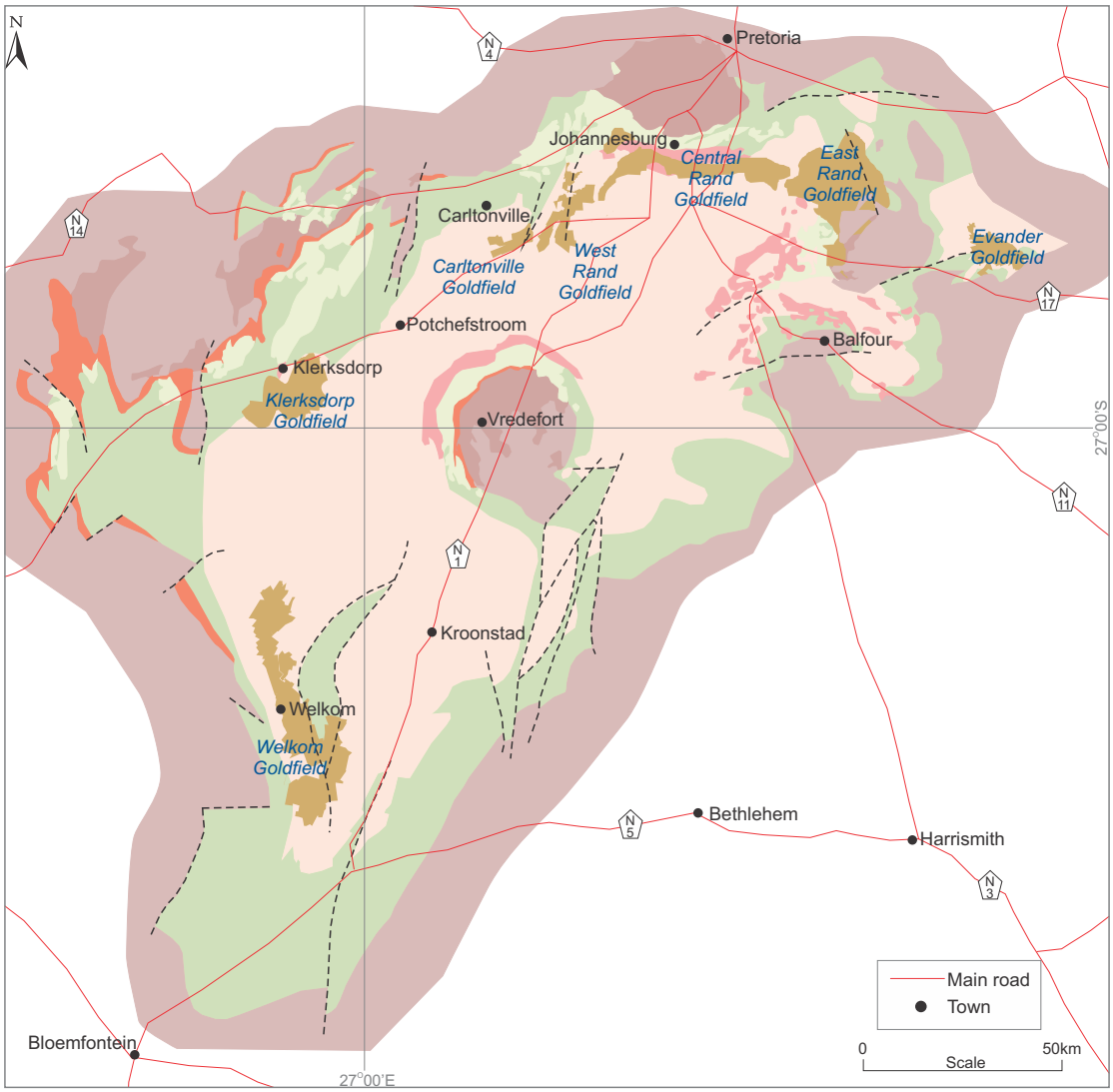
The assets of the WRTRP are located within the Far West Rand goldfield of the gold-bearing, late Archaean (2.7Ga to 3.2Ga), Witwatersrand sedimentary basin (Witwatersrand Basin) (Figure 9). The Witwatersrand Basin is the largest gold bearing metallogenic province globally and is a roughly oval-shaped sedimentary basin elongated in a northeast-southwest direction with a prominent basement dome, the Vredefort structure, at its core. The basin has a northsouth 160km long axis through the Welkom area and Johannesburg and a short, eastwest axis of approximately 80km. The Witwatersrand Basin is filled with approximately 14,000m of sedimentary and subordinate volcanic units and is underlain by an Archaean (>3.1Ga) granite-greenstone basement and the 3.08Ga to 3.07Ga Dominion Group. The basin is unconformably overlain, by units of the Ventersdorp Supergroup (~2.7Ga), the Transvaal Supergroup (~2.6Ga) and the Karoo Supergroup (~280Ma).

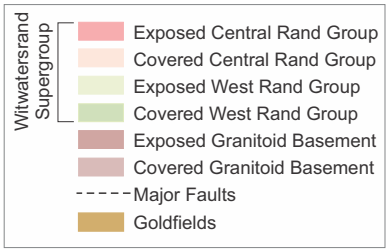
Only a small proportion of the Witwatersrand Basin is exposed at surface, namely in the area west and south of Johannesburg, and younger sediments and volcanics cover the vast majority of the remainder of the basin. The basin hosts numerous placer gold and uranium deposits which have been grouped geographically into distinct sub-basins or goldfields with some of the major goldfields being separated by gaps in which no economic placers have been discovered. The principle reefs of the geographically separated Gold Fields do not all occur at the same stratigraphic level. The goldfields are considered to represent major, diachronous, entry points of coarse-grained sediment into the basin and appear to be laterally coalesced fluvial braid-plains, where gold was concentrated within conglomerates developed primarily on erosional unconformities. The extent of the development of the various unconformities is greatest near the basin margins and decreases towards the more distal areas. Complex patterns of syn-depositional faulting and folding have caused significant variations in sediment thickness and sub-vertical to over-folded reef structures are characteristic of the basin margins.

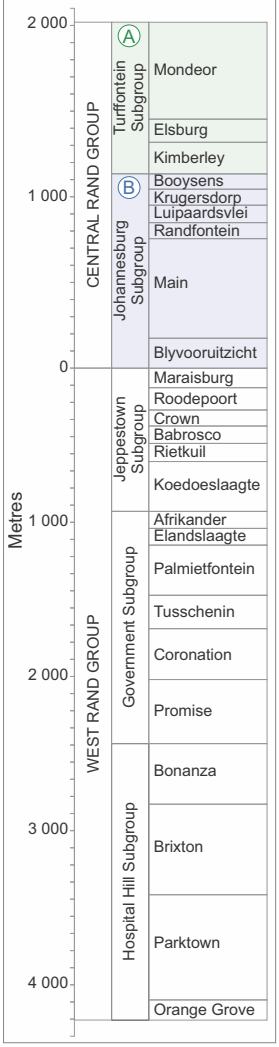
The majority of the economic reefs within the Witwatersrand Basin are narrow, 0.1m to 2m in thickness, quartz-pebble conglomerates located stratigraphically in the Central Rand Group and these reefs frequently display significant lateral continuity. Deposition in the Witwatersrand Basin is considered to have taken place along the interface between a fluvial system and a major body of still water or an inland sea with the source of the gold postulated as being a northerly Archaean Greenstone belt in which craton/plate interactions caused the development of mineralising hydrothermal activity and generated sedimentary environments where deposition could occur. Recent suggestions are that the Witwatersrand Basin is a portion of a retroarc-foreland basin formed in response to crustal thickening on the northern edge of the Kaapvaal Craton during collision with the Zimbabwe craton to the north. The origin of the gold mineralisation in the Witwatersrand Basin has been the source of debate for over 100 years. The debate has been historically divided between the syn-genetic or placer proponents and the epigenetic or hydrothermal model. The most widely accepted model appears currently to be the modified placer model in which placer gold grains have been remobilised after burial.

The Witwatersrand Basin has experienced a long and complex structural history which has been affected by several superimposed structural events which have been differentiated as syn- and post-deposition deformations. Syn-depositional deformation played a key role in the original distribution of sediments which controlled the locality of auriferous conglomerates and the thickness of enclosing sedimentary sequences.

Figure 9: Regional geological setting of the Witwatersrand Basin







A This river system illustrates the complex braided river patterns which dominated this environment. Numerous gravel bars and sandfilled channels were developed.

B A coastal alluvial plain is shown, with beach gravels close to the shoreline and sheets of river derived gravel covering the broad plain.

Source: Sound Mining 2017

Later faulting and folding of the sequence determined which parts of the Witwatersrand Basin remained buried, as well as the depths to mineable horizons, relative to the present-day surface.

The stratigraphy is broadly split into two Groups, namely the Central Rand and the West Rand Groups which in turn are split into a series of subgroups, formations and members (Figure 9). The stratigraphic structure of the Witwatersrand Supergroup at subgroup level is well understood, however at formation level correlation problems may be encountered between goldfields. However, the recognition of basin-wide disconformities, which can be used as a basis for stratigraphic correlation, permitted the correlation of formations between the various goldfields to higher comfort levels (McCarthy, 2006).

16. Local geological setting, deposit and mineralisation

SR2.1(ii)-(vii), SV1.7, SR2.1(ii),(v)(vi), SVT1.7; JSE 12.9(h)(v)

The Kloof and Driefontein mining complexes are located in the Far West Rand goldfield situated on the northwestern rim of the Witwatersrand Basin (Figure 9). The region is structurally complicated with a major structural fault, the West Rand Fault, separating the operations from the South Deep Gold Mine to the east with additional horst structures superimposed upon the southeast plunging West Rand Syncline including the Bank Fault, a large west dipping fault with a down-throw to the west. The structural features affect the preservation, depth and strike of the economic reefs.

The Kloof and Driefontein operations exploit three primary reefs, namely the Ventersdorp Contact Reef (VCR) located at the top of the Central Rand Group, the Carbon Leader Reef (CLR) near the base of the Central Rand Group and the Middelvlei Reef (MR), which stratigraphically occurs 50m to 75m above the Carbon Leader. Additional minor reefs include the Kloof and Libanon Reefs exploited in some operations.

In the area east of the Bank Break, the majority of mining takes place on the VCR, with minor contributions from the MR and the Kloof Reefs (Gold Fields 2010). West of the Bank Break the CL is generally a high grade reef and represents the major source of run-of-mine (RoM) with minor contribution from the VCR and MR.

The surface geology of the mining area comprises outliers of Karoo Supergroup shales and sandstones, followed by Pretoria Group sediments and the Chuniespoort Group dolomites of the Transvaal Supergroup). The Transvaal Supergroup comprises a 15,000 m thick sequence of relatively undeformed clastic sediments and volcanics. The principal elements of the Transvaal Supergroup include the clastic sediments of the Black Reef Formation (Figure 10), the chemical and clastic sediments of the Chuniespoort Group, and the clastic sediments and volcanics of the Pretoria Group. The Transvaal Supergroup represents the deposition of material in an initially small basin aged 2,643-2,061 Ma, which developed to cover an area of over 500,000 km^2. The basin then decreased in size in its terminal stages. The basin is asymmetrical, thinning rapidly to the north and more gradually to the south of an east-northeast-trending depositional axis. The present shape of the basin was largely controlled by post-Transvaal events, such as the Bushveld intrusion. The clastic sediments were derived from a mountainous source to the north-northeast of the basin. The depositional facies grade from braided fluvial arkoses, through tidal flat sediments to mature sandy shelf deposits that consist primarily of shales and carbonate shales. Up to 3,000 m of carbonate and iron formation were deposited on the macro-tidal shelf, indicating that the shelf and its surroundings must have been tectonically very stable for a considerable period of time.

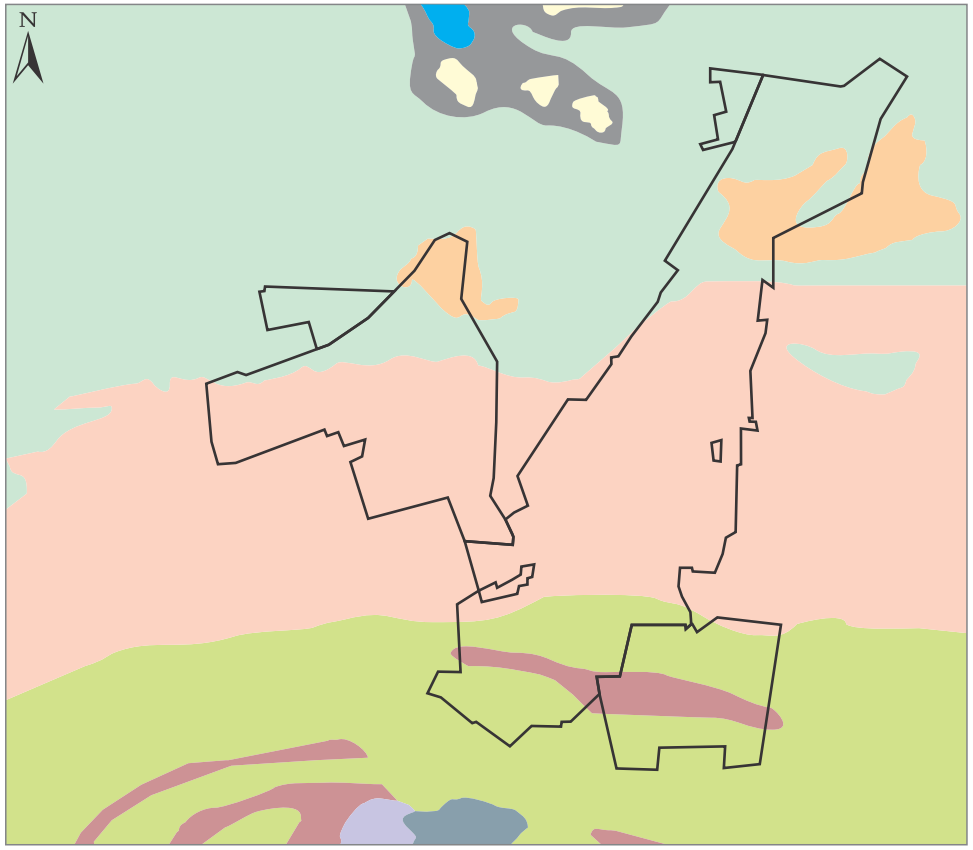
17. Project geological setting, deposit and mineralisation

SR2.1(ii)-(vii), SV1.7, SR2.1(ii),(v)(vi), SVT1.7; JSE 12.9(h)(v)

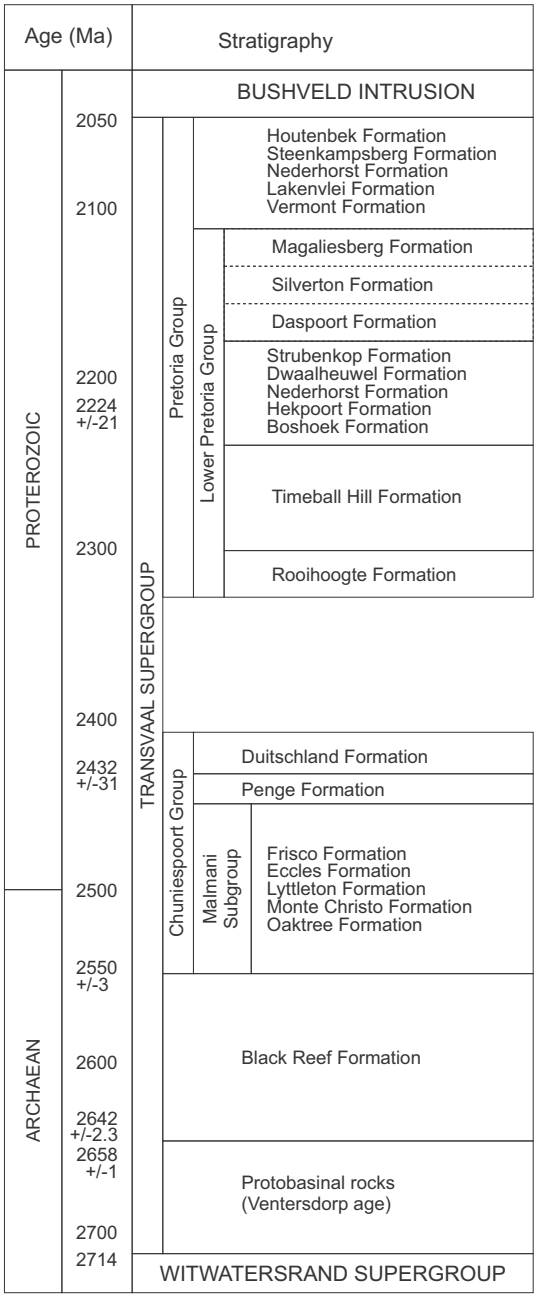
The TSFs contain the processed waste from the mining of auriferous and uraniferous ores from Driefontein, Kloof, Libanon and Venterspost operations. The H-TSFs have developed from the following mining operations:-

- the Driefontein mining complex H-TSFs comprise primarily processed Ventersdorp Contact Reef, Carbon Leader Reef and Middelvlei Reef;

Source: Sound Mining 2017



- Sibanye-Stillwater Mining Right
- Transvaal Supergroup
  - Black Reef Formation
  - Pretoria Group
    - Silverton Formation
    - Magaliesberg Formation
  - West Rand Group
    - Government Subgroup
    - Hospital Hill Subgroup
  - Chuniespoort Group
    - Malmani Subgroup
- Losberg Complex
- Vaalian Erathem
- Karoo Supergroup
  - Ecca Group



Note: Schematic diagram for illustrative purpose

Figure 10: Local geological setting

- the Kloof mining complex H-TSFs comprise primarily processed Ventersdorp Contact Reef, Middelvlei Reef and to a lesser extent the Kloof Reef;
- the Venterspost mining complex H-TSFs comprise primarily processed Middelvlei Reef and Ventersdorp Contact Reef;
- Libanon mine TSFs comprises material from the Ventersdorp Contact Reef, Libanon Reef, Kloof Reef and the Middelvlei Reef.

The composition of a TSF depends on the geochemical make-up of the material being mined and the chemicals used in the mining and extraction process. In addition, the internal structure of the H-TSF reflects the mining strategy and depositional methodologies employed for each operation. A single TSF can have portions of different composition and specific gravity due to changes in underlying orebody contribution, the deposition of tailings arising from different operations and differing depositional strategies. The bulk density of tailings material is a critical factor in the accurate estimation of tonnages and a view on the lateral and vertical variation in moisture content should be obtained. These factors can result in a considerable variation in gold content and distribution throughout a TSF and such variation has an impact on final recoveries and projected revenues for the operation.

In addition, secondary processes such as metal re-mobilisation, erosion, weathering, leaching and acid mine drainage can affect the geochemical characteristics of a TSF. These processes tend to progress faster in a TSF as weathering, erosion and oxidation are accelerated by the fine particle size of the material and leaching together with acid mine drainage occur due the large amount of water associated with TSFs. Gold can undergo mobilisation within the TSF with time and hence may exhibit areas of re-concentration and even be present in the sub-structure soil. The geochemical characteristics of the footprint geology, such as dolomites, granites, quartzites, has a bearing on the mobilisation dynamics of a TSF. Hence, depending on several factors such as footprint, age of deposition, beneficiation, primary reef origin of slimes, a TSF may exhibit areas/layers of differing grade profiles.

18. Exploration – methods and databases

The extent, morphology and structure of the H-TSFs is relatively simple compared to conventional mineral deposits. Consequently, the exploration programmes were also simple and straightforward, comprising:-

- surveying to determine physical dimensions and volumes – undertaken by Gold Fields in-house surveyors and independent ‘light detection and ranging’ LIDAR consultants;
- auger drilling programmes to permit sampling for gold content and mapping of the gold distribution – undertaken in two separate drilling campaigns by Gold Fields in 2007 and 2008-2009;
- metallurgical and flow sheet development testwork including historical studies by SGS and recent testwork by Mintek; and
- tailings toxicity tests and specific gravity determination – undertaken by SLR .

The required SAMREC Table 1 disclosure for the exploration programmes is provided in Table 6:-

Table 6 : SAMREC Table 1 disclosure for the exploration programmes

SAMREC Table 1 Section 3.1	Exploration	Gold Fields campaign 2007 to 2009
(i)	Describe the data acquisition or exploration techniques and the nature, level of detail, and confidence in the geological data used (i.e. geological observations, remote sensing results, stratigraphy, lithology, structure, alteration, mineralisation, hydrology, geophysical, geochemical, petrography, mineralogy, geochronology, bulk density, potential deleterious or contaminating substances, geotechnical and rock characteristics, moisture content, bulk samples etc.). Confirm that data	The H-TSFs were individually surveyed and the results confirmed in a LIDAR survey. The auger drilling campaigns provided information regarding the structure of the TSFs together with the gold grade distributions as discussed in Section 23.4. The electronic databases for each TSF have been reviewed and include surveyed drillhole collar co-ordinates, samples, sample numbers and sample assays. The drillholes were not downhole surveyed but as they are shallow < 70m in depth this is not considered significant

SAMREC Table 1 Section 3.1	Exploration	Gold Fields campaign 2007 to 2009
	sets include all relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc.	
(ii)	Identify and comment on the primary data elements (observation and measurements) used for the project and describe the management and verification of these data or the database. This should describe the following relevant processes: acquisition (capture or transfer), validation, integration, control, storage, retrieval and backup processes. It is assumed that data are stored digitally but hand-printed tables with well organised data and information may also constitute a database.	The primary dataset is the combined drillhole and assay database which are electronically stored and were verified by Gold Fields qualified staff. The QA/QC analytical results were reviewed by independent geochemist K Kenyon and any discrepancies noted and the relevant samples re-submitted for analysis
(iii)	Acknowledge and appraise data from other parties and reference all data and information used from other sources.	The exploration data was obtained by a previous owner, namely Gold Fields and has been acknowledged throughout
(iv)	Clearly distinguish between data / information from the property under discussion and that derived from surrounding properties	N/A
(v)	Describe the survey methods, techniques and expected accuracies of data. Specify the grid system used.	The TSFs were surveyed by Gold Fields in 2006 and again in a LIDAR survey for which accuracy ranged between 10cm and 20cm vertically and horizontally. The data was calculated in Hartebeeshoek94 and provided to Gold Fields in Cape LO27
(vi)	Discuss whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the estimation procedure(s) and classifications applied.	The drillhole grid and downhole sampling density are sufficient to establish both grade and geological continuity
(vii)	Present representative models and / or maps and cross sections or other two or three dimensional illustrations of results, showing location of samples, accurate drill-hole collar positions, down-hole surveys, exploration pits, underground workings, relevant geological data, etc	The location of the drillhole collars and the 3D cross sections through the deposits are provided in Figure 11 to Figure 16
(viii)	Report the relationships between mineralisation widths and intercept lengths. The geometry of the mineralisation with respect to the drill hole angle is particularly important. If it is not known and only the down-hole lengths are reported, confirm it with a clear statement to this effect (e.g. 'down-hole length, true width not known').	The mineralisation is disseminated throughout the TSFs and no definitive relationship exists between the vertical drillholes and the mineralisation

19. Exploration - geophysical characterisation

SR3.1(i)-(viii), SVT1.8

No geophysical investigation of the H-TSFs was undertaken in the exploration programmes.

20. Exploration – Lidar and surveying

A detailed helicopter based (LIDAR) survey was undertaken for the area in late 2008 by Gold Fields. The survey was conducted by Southern Mapping Company Ltd and the total area surveyed was approximately 44,000ha. The aerial survey was conducted using an aircraft mounted LIDAR system which scanned the ground below with a 70kHz laser. Digital colour images were also gathered to produce colour orthophotos. The survey was conducted at a height of 1,100m above datum with an image pixel size of 15cm. The vertical accuracy was 10cm and 20cm RMS horizontal accuracy. The survey was calculated in Hartebeesthoek94, LO27 projection with ellipsoidal heights. The data was supplied to Gold Fields in CAPE LO27 with orthometric heights. The LIDAR survey provided surface data from which three dimensional (3D) models of the TSFs were constructed.

The Driefontein 3H-TSF and Driefontein 5H-TSFs were surveyed in 2004 and 2006 respectively by Driefontein gold mine, the qualified person being Mr S Kolenic (Minxcon 2008).

The survey of the drillhole collars was undertaken by the Gold Fields Senior surface surveyor for the West Wits, Mr S Kolenic, using GPS laser survey methodology. In all instances it was found that the vertical positioning of the drillhole collars were offset from the surface of the TSFs as determined from the LIDAR survey. The offset ranges from approximately 0.5m to several metres. It was assumed that the LIDAR survey was the more accurate of the two surveys and the drillhole positions were moved to intersect the top of the TSF wireframes.

21. Exploration - drilling

SR 3.2(i) to (v), SVT1.8

Several historical exploration programmes and Mineral Resource estimates have been undertaken over the last twenty years that have contributed to the overall WRTRP exploration database, summarised as follows:-

- 2000 Mineral Resource estimate (Minxcon 2008);
- Gold Fields (2007) undertook an initial drilling campaign to estimate the Mineral Resources of its Driefontein 3H-TSF and Driefontein 5H-TSFs reported in Minxcon (Pty) Ltd report R2008-14 (2008);
- Gold Fields undertook a drilling campaign and Mineral Resource estimation in 2008 for 13 of its active and historical TSFs in the Kloof, Driefontein, Venterspost mining complex areas;

The SAMREC Table 1 disclosure for the drilling programmes is presented in Table 7:-

Table 7 : SAMREC Table 1 Drilling disclosure

SAMREC Table 1 Section 3.2	Drilling Techniques	Gold Fields 2007 to 2008 campaign	Gold Fields 2008 to 2009 campaign
	Properties included in the drilling campaign	Driefontein 3H-TSF and Driefontein 5H-TSFs	Driefontein 3H-TSF and Driefontein 5H-TSFs, Kloof 1, Libanon, Venterspost North and Venterspost South H-TSFs
(i)	Present the type of drilling undertaken and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	Details of the drilling campaign for the two H-TSFs are not provided in the Minxcon (Pty) Ltd report of 2008 (R2008-14) other than the statement that it was an auger drilling campaign based on a 100mx100m grid	The drilling was auger drilling with a fully portable hydraulic drill rig on either a 100x100m grid or a 200mx200m grid. All drillholes were vertical and generally no greater than 70m in depth. The drilling was undertaken using a fully portable hydraulic drill rig comprising a rotating spiral auger drill encased in a stainless steel core barrel/rod. The rod comprises a 50mm nominal bore drill rod and inner spiral, with the inner spiral rotating in the opposite direction to the outer casing, whilst advancing into the tailings material. The drilling is performed dry and due to the nature of the drilling the resultant samples are not oriented. Two drilling contractors were utilised for this project, namely Dump and Dune Drillers (Pty) Ltd and Gold Mine Sands and Slime Dam Drillers (Pty) Ltd. Both companies have experience in the drilling of tailings material and comply with industry practices.
(ii)	Describe whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, Technical Studies, mining studies and metallurgical studies.		The sampling methodology for auger drilling does not permit accurate orientation of samples and such orientation is not directly relevant to the understanding of the future mining methodologies
(iii)	Describe whether logging is qualitative or quantitative in nature; indicate if core photography (or costean, channel, etc.) was undertaken.	Drilling logs were kept by the drilling foreman but no sample logs or sample photographs were kept. Given the drilling methodology this is not considered inappropriate	Drilling logs were kept by the drilling foreman but no sample logs or sample photographs were kept. Given the drilling methodology this is not considered inappropriate
(iv)	Present the total length and percentage of the relevant intersections logged.	Total number of 154 drillholes	Total number of drillholes 1,026 with an approximate total length of 72,000m

SAMREC Table 1 Section 3.2	Drilling Techniques	Gold Fields 2007 to 2008 campaign	Gold Fields 2008 to 2009 campaign
(v)	Discuss the results of any downhole surveys of the drill-holes.		Downhole surveys were considered unnecessary as the drillholes were shallow, generally <70m deep

Source: Minxcon 2008,, 2009, Gold Fields 2009

Auger drilling of tailings material by its nature is intrinsically open to contamination and therefore requires particular care to ensure the results are adequate for use in a Mineral Resource estimate. The Gold Fields' drilling campaigns were conducted by drilling contractors independent of Gold Fields and experienced in the drilling of tailings material. The Gold Fields drilling programmes were supervised by in-house qualified geologists and a high degree of corporate governance from Gold Fields was evident. The drilling methodologies were independently reviewed by Minxcon for the 2009 Mineral Resource estimate and independently audited by SRK Consulting (Pty) Ltd (SRK) in 2008. There were no material exceptions noted by SRK as to the drilling process and Minxcon noted that a high standard of drilling and quality control was implemented. The drilling and sampling techniques were concluded to be of high standard, with sample contamination and losses kept to a minimum. The overall conclusion was that the drilling and sampling programmes were conducted to industry standards and suitable for incorporation into a Mineral Resource estimate.

Sound Mining was unable to independently verify the drilling methods as a result of the historical nature of the exploration programme and with no current exploration taking place. However, photographs within the Minxcon 2009 report demonstrate the methods used comply with the description provided. Sound Mining is of the opinion that the drilling method used is suitable for the type of mineralisation.

The location of the drillhole collars for the Driefontein, Kloof and Venterspost mining complexes H-TSFs are shown in Figure 11 to Figure 16.

22. Exploration – sampling techniques and data

SR 3.3(i) – (vi); 3.4(i)(ii)(iii); 3.5(i)-(iv); 3.6(i); 3.7(i), SVT1.8

The auger drill comprises a rotating spiral auger drill bit encased in a stainless steel core barrel. The core barrel comprises a 50mm drill rod and inner spiral, with the inner spiral rotating in the opposite direction to the outer casing, as the tailings material is penetrated. The extension rods and spiral augers have three lengths, namely 1.5m, 3.0m and 4.5m. The typical drilling cycle comprised the following sequence, repeated until the floor of the H-TSF was reached:-

- an initial sample was drilled with a 1.5m spiral auger/sample tube, after which the first sample was extracted;
- the subsequent sample was drilled with a 3.0m auger/sample tube and the 1.5m sample extracted;
- thereafter, a 4.5m spiral auger/sample tube was used and the sample extracted; and
- the succeeding samples were extracted from the 4.5m spiral auger plus a 1.5m extension rod, followed by a 3.0m extension rod and then a 4.5m drill rod.

The first two samples were extracted directly into new sample bags by using the drill rig to reverse the rotation of the spiral within the 1.5m and 3.0m auger/sample tubes. The sample bag was placed over the end of the tube to collect the sample following which the spiral auger and interior of the barrel were cleaned by using a cloth and a steel brush the remove the tailings material.

Subsequent samples were extracted by removing the spiral auger and the sample collected in a rubber trough. The first 10cm to 15cm of the sample were discarded as they would be the most likely to have contamination and the remainder of the sample was transferred into the bag at the end of the rubber trough. The sample bag was then closed, placed in sequence and the tickets added. The sample at the floor of the H-TSF is collected into two separate bags containing the soil/footprint sample and the lowermost tailings sample.

The required SAMREC Table 1 Section 3.3; 3.4; 3.5; 3.6 and 3.7 disclosure for the sampling techniques and data is provided in Table 8:-

Table 8 : SAMREC Table 1 disclosure for sampling techniques and data

SAMREC Table 1 3.3	Sampling Method, Collection, Capture and Storage	Gold Fields drilling campaigns 2007 to 2009
(i)	Describe the nature and quality of sampling	The samples comprised 1.5m lengths of the TSF material from the auger drill barrel which individually weighed 2kg to 4kg. The drilling sites were visited on two occasions by independent consultant K Kenyon who concluded the sampling and management of samples by the drillers was of a high quality, well controlled and from the evaluation of the quality control data, the number of errors made by the drillers was very small.
(ii)	Describe the sampling processes, including sub-sampling stages to maximise representivity of samples. This should include whether sample sizes are appropriate to the grain of the material being sampled. Indicate whether sample compositing has been applied.	The entire sample was collected and consequently the full length of the TSF was sampled, ensuring representivity. The 2kg to 4kg size of sample is considered suitable for the fine grain size of the tailings. The end of the drillhole sample, where it contained footprint material, was separated into tailings and footprint material and treated separately by the laboratory.
(iii)	Appropriately describe each data set (e.g. geology, grade, density, quality, diamond breakage, geo-metallurgical characteristics etc.), sample type, sample-size selection and collection methods.	The datasets derived from the sampling campaign related to the depths within the TSF, the gold assays for the 1.5m sample length and surveyed collar positions. The samples were not geologically nor geotechnically logged as these criteria cannot be obtained from an auger sample. The collection methods applied were standard for auger drilling campaigns
(iv)	Report the geometry of the mineralisation with respect to the drill-hole angle. State whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. State if the intersection angle is not known and only the down-hole lengths are reported.	The mineralisation is disseminated throughout the H-TSF and the entire deposit will be mined. Consequently, the orientation of the samples and possible structures within the H-TSFs are immaterial. The depositional history of the H-TSFs does affect the grade distribution to a limited extent and this is adequately demonstrated in the Mineral Resource estimation disclosure.
(v)	Describe retention policy and storage of physical samples (e.g. core, sample reject, etc.).	At the end of each day the samples were transported to a secure storage facility by the drilling team and handed over to the supervision of the Gold Fields Mineral Resource manager. The storage location of the remainder physical samples is unknown
(vi)	Describe the method of recording and assessing core and chip sample recoveries and results assessed, measures taken to maximise sample recovery and ensure representative nature of the samples and whether a relationship exists between sample recovery and grade, and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	No relationship exists between sample recovery and grade. The material is fine grained and the entire sample was collected so no preferential loss of fines is anticipated
(vii)	If a drillhole core sample is taken, state whether it was split or sawn	The samples were individually mixed by hand in stainless steel trays and halved, with one sample sent for analysis and the other kept for metallurgical analysis
3.4	**Sample Preparation and Analysis**	
(i)	Identify the laboratory/laboratories and state their accreditation status and Registration Number or provide a statement that the laboratories are not accredited.	The laboratories used were: SGS Lakefiled Research Africa (Pty) Ltd (T0169); Set Point Laboratories (T0223); ALS Chemex South Africa (Pty) Ltd (T0387) all of which are accredited by the South African National Accreditation System (SANAS) for gold assay. All three laboratories were independently inspected by K Kenyon and his report states "All three these laboratories follow best practice principles of quality management and have procedures of chemical analysis and assay that are accepted as fulfilling the requirements of compliancy demanded of modern mining companies. They use sample preparation equipment that complies with international accepted practice. They have installed highly developed laboratory information management systems with sample tracking. They all have highly evolved quality management systems in place with quality checks through the entire assay and analytical process.
(ii)	Identify the analytical method. Discuss the nature, quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.	Gold analysis was undertaken using standard fire assay methodology with gravimetric finish which is considered entirely appropriate for the sample type. The analysis is considered total in nature.
(iii)	Describe the process and method used for sample preparation, sub-sampling and size reduction, and likelihood of inadequate or non-representative samples (i.e. improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.).	The laboratory sample preparation was standard for auger drill samples and included drying, jaw crushing to a nominal 10mm if compacted, pulverising with a disc pulveriser and manual homogenisation. The final sample size submitted for assay was 500g and the likelihood the samples being non-representative is low
3.5	**Sampling Governance**	
(i)	Discuss the governance of the sampling campaign and process, to ensure quality and representivity of samples and data, such as sample recovery, high grading,	Sample recovery was virtually 100% excepting for small lengths of 10cm to 15cm of material at the top of the auger barrel which was discarded as being the most likely material to be contaminated from above. No selective sampling was undertaken and no sample bias is anticipated

SAMREC Table 1 3.3	Sampling Method, Collection, Capture and Storage	Gold Fields drilling campaigns 2007 to 2009
	selective losses or contamination, core/hole diameter, internal and external QA/QC, and any other factors that may have resulted in or identified samples bias.	
(ii)	Describe the measures taken to ensure sample security and the chain of custody.	The samples once collected from the site were transported to the laboratories by truck. All three laboratories have specific systems to monitor chain of custody. All sample data was captured into a LIMS on receipt and a comprehensive sample tracking process forms part of the LIMS Software. The LIMS are secure and prevent sample tampering. Sample weighing was captured directly onto the LIMS. The internal laboratory standards and blanks (between 2 and 4 per fifty) were inserted in every batch. Internal standards with a blind standard was used on all instruments. The laboratories undertake regular evaluation of overall performance by statistical evaluation of all QC data.
(iii)	Describe the validation procedures used to ensure the integrity of the data, e.g. transcription, input or other errors, between its initial collection and its future use for modelling (e.g. geology, grade, density, etc.).	The laboratory internal checking processes were standard and reliable. The results from the laboratories were checked by Mr K Kenyon and the Gold Fields geologists. The databases was comprehensively reviewed by Minxcon in 2007 and 2009. Several checks were undertaken on the importation of the data into DataMine$^{tm.}$ The data was again reviewed by Sound Mining in 2017 and no issues were highlighted
(iv)	Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified	No specific sample trail audit was conducted but Minxcon thoroughly reviewed the database for the Mineral Resource estimation and considered it reliable for inclusion in a Mineral Resource estimate. The drilling procedures were independently checked by SRK and considered suitable. Sound Mining reviewed the databases in 2017 and no risks or issues were identified
3.6	**Quality Control/Quality Assurance**	
(i)	Demonstrate that adequate field sampling process verification techniques (QA/QC) have been applied, e.g. the level of duplicates, blanks, reference material standards, process audits, analysis, etc. If indirect methods of measurement were used (e.g. geophysical methods), these should be described, with attention given to the confidence of interpretation.	Field quality control measures such as duplicates and blanks, were not described in the Minxcon report. However, it is clear from the laboratory reports that blanks and Certified Reference Materials (CRM) were included at least every 100 samples. The CRMs submitted were AMIS Standard AMS0046 at 0.67g/t Au; AMIS Standard AMS0080 at 1.14g/t Au and accredited blank AMIS Standard AMS0069 <0.002g/t Au. The spread of gold grades in the CRM is appropriate and the review of the quality control and quality assurance data by K Kenyon concluded that 13.7% of the total population of samples (13,000 samples) were outside of the 2 standard deviation limits allowed and were re-analysed. The overall conclusion was that the laboratory performance was acceptable
3.7	**Bulk Density**	
(i)	Describe the method of bulk-density / specific-gravity determination with reference to the frequency of measurements, the size, nature and representativeness of the samples.	The density determinations were undertaken for Driefontein 3H-TSF and Kloof H-TSF by Geostrada Engineering Materials Laboratory For further discussion see Section 22.2
(ii)	If target tonnage ranges are reported then the preliminary estimates or basis of assumptions made for bulk density or specific gravity(s) must be stated.	
(iii)	Discuss the representivity of bulk density samples of the material for which a grade range is reported.	
(iv)	Discuss the adequacy of the methods of bulk density determination for bulk material with special reference to accounting for void spaces (vugs, porosity etc.), moisture and differences between rock and alteration zones within the deposit.	
3.8	**Bulk Sampling and/or Trial Mining**	
(i)	Indicate the location of individual samples.	Historical hydro-mining was undertaken for Driefontein 5H-TSF between 1990 and 1993 during which period 7.6Mt was mined for 4,146.5oz. Driefontein 3H-TSF was mined for six months 1996 to 1997 and 1.39Mt was treated for 275oz.
(ii)	Describe the size of samples, spacing/density of samples recovered and whether sample sizes and distribution are appropriate to the grain size of the material being sampled.	
(iii)	Describe the method of mining and treatment.	
(iv)	Indicate the degree to which the samples are representative of the various types and styles of mineralisation and the mineral deposit as a whole.	

22.1. Analytical laboratories

As summarised in Table 8, three laboratories were used for sample analysis, namely SGS Lakefield Research Africa (Pty) Ltd (SGS) (T0169), Set Point Laboratories (Set Point) (T0223) and ALS Chemex South Africa (Pty) Ltd (Chemex) (T0387). All three laboratories are accredited by SANAS for gold assay. Sound Mining can confirm the SANAS accreditation for the laboratories used.

22.2. Bulk density

SR T3.7(i), SVT1.8

In general, the conversion from volume to tonnage in the case of mineral deposits is undertaken by the application of a density or the specific gravity determined experimentally on dry samples. Density is the mass per unit volume e.g. kg/m^3, whilst specific gravity (SG) is the ratio of the density of a substance to the density of a reference substance (usually water); and is a unitless ratio of the mass of a substance to the mass of a reference substance for the same given volume. Wet density measurements can be undertaken for samples with moisture content.

Bulk density, however is defined as the dry weight of a material per unit volume of that material. Bulk density considers both the solids and the pore space; whereas, density and specific gravity consider only the solids.

Historically there has been a suggestion that the density of the H-TSFs could vary with the lithology of the basement material. The Driefontein H-TSFS, the Venterspost H-TSFs and the Libanon H-TSF are located on Malmani Subgroup dolomites whilst the remainder are located on the non-dolomitic argillaceous and arenaceous sediments of the Timeball Hill and Hekpoort Formations. An independent study by Geostrada (Pty) Ltd in 2009 compared the densities for the Driefontein 3H-TSF located on Malmani dolomite and the Kloof 1H-TSF located on the non-dolomitic sediments. The techniques used to determine the densities were sampling a 300mmx300mm cube and using a Troxler density gauge. The results of the study are provided in Table 9 and shows that the averages of both H-TSFs are comparable, suggesting that the basement lithology does not significantly impact the density of the tailings material. The variance between samples for the Driefontein 3H-TSF is considerably higher than Kloof 1H-TSFs indicating that the density of the former is more variable than the latter. In addition, the moisture content of the material is relatively high, and in some places, reached a maximum of 22%.

Table 9 : Results for the Geostrada density testing for Driefontein 3H-TSF and Kloof 1H-TSF

Measurement	Unit	Driefontein 3H-TSF			Kloof 1H-TSF		
		Range of density	Average	Standard Deviation	Range of density	Average	Standard Deviation
Wet density	kg/m^3		1,733.43	142.55		1,721.33	80.23
Dry density	kg/m^3	1,342 to 1,752	1,498.57	101.92	1,384 to 1,599	1,490.93	50.03
Moisture content	%		16.69	5.912		16.41	2.548

Source : Geostrada 2009; Minxcon 2009

Historically, Gold Fields used an average density of 1.40t/m^3 in its Mineral Resource estimations. The average value was determined empirically from the historical production results of the Ergo operation. The average value of 1.40t/m^3 is confirmed by Ergo for its current operations and relies on the actual data from the processing of 2Mtpm of tailings material from the Witwatersrand basin over decades.

Further evidence in support of the use of an average density value of 1.40t/m^3 is provided by a comparison of the densities used by other companies in the business of tailings retreatment of Witwatersrand tailings, as summarised in Table 10. Both Minxcon (2009) and Sound Mining (2017) have used an average density of 1.40t/m^3 and consider this a reliable value based on substantial empirical evidence.

Table 10 : Dry densities used by other re-treatment companies for the Witwatersrand operations

Company	TSF	Dry density (kg/m^3)	Dry Density (t/m^3) values
Rand Uranium	West Rand Operations	1,45	1.45
Anglo Gold Ashanti	Vaal River Operations	1,45	1.45
Elsburg Tailings Complex	ERGO Mining (Pty) Ltd	1,42	1.42
Mintails SA	West Rand Projects	1,40	1.4

The use of a dry density in the estimation of an in situ Mineral Resource is standard best practice and the dry density value has been applied to the Sound Mining Mineral Resource estimate. However, the wet density and bulk densities are generally considered more appropriate for the conversion to Mineral Reserves and calculations of tailings tonnage production and revenues. In this case the effect of changing the density values in respect of the volume estimations shows that using a wet density of 1.45t/m^3 does not have a material effect on the tonnage estimation, increasing the tonnage by only 3.5% (Minxcon 2009).

22.3. Bulk sampling and/or trial mining

SR T3.8(i)

Historical hydro-mining was undertaken for Driefontein 5H-TSF between 1990 and 1993 during which period 7.6Mt was mined for 4,146.5oz of gold. Driefontein 3H-TSF was mined for six months over the 1996 to 1997 period and 1.39Mt was treated for 275oz.

23. Estimation and reporting of Exploration Results and Mineral Resources

SR4.1, 4.2, 4.3, 4.4, 4.5

The geological modelling and Mineral Resource estimation was originally undertaken for Gold Fields by Minxcon 2008 and 2009. Sound Mining (2017) has independently reviewed the database, geological models, estimation methodology, classification criteria and estimation results. The review concluded that the estimations are based on a suitable database of SAMREC compliant information and that no material issues were found that would affect the overall conclusions reached by Minxcon.

23.1. Geological models and interpretation

SR4.1(i) –(vi)

The exploration database has been demonstrated (Table 7 and Table 8) to comprise analytical data obtained from reliable laboratory assays on samples obtained from SAMREC compliant sampling and industry best practice drilling programmes. The drillhole grid spacing is close for typical TSFs drilling programmes and the entire depth of each H-TSF was sampled. The data density is therefore considered sufficient to assure continuity of mineralisation and structure and provides an adequate basis for estimation.

Such H-TSFs constructed from the tailings of Witwatersrand gold mining operations have been successfully and economically exploited for several decades and the geotechnical and geometallurgical characteristics are well understood from experience and from testwork on the WRTRP assets themselves. Apart from the potential risks identified in Section 33, which are easily mitigated, no factors of a geotechnical or geometallurgical nature have been identified that would have a significant effect on the prospects for eventual economic extraction.

The exploration database was imported into DataMine^{TM} Studio 3 software and data validation was undertaken to ensure the integrity and validity of the imported data. The samples for Driefontein 3H-TSF and Driefontein 5H-TSFs, for which the models were estimated in late 2007, represent 3m composite samples and not 1.5m composites. All the other H-TSFs samples were 1.5m in length with the bottom tailings sample length varying as described in Table 8.

Three dimensional wireframes were constructed from the LIDAR survey digital data and drillhole information. The top wireframe surface was constructed from the LIDAR data, whilst the base/footprint wireframe was constructed from the soil intercept depths from the drillhole data and the footprint perimeter. The wireframes comprised simple 3D representations of the volume of the TSFs and as such are not open to alternative interpretations.

As the entire deposits are to be mined, no geological losses or other geotechnical considerations were applied to the models or the Mineral Resource estimates. No co-products are included in the process design or the Mineral Resource estimation.

23.2. Estimation and modelling techniques

SR4.2(i)-(vi); SR4.4(i); 4.5(i)-(vi); SVT1.9; JSE 12.9(h)(ix)

Ordinary Kriging was undertaken for the gold grade estimation as the accuracy and efficiency of the kriged estimates can be tested, unlike other conventional estimation techniques such as nearest neighbour which have limited verification parameters. Simple kriging and inverse distance squared estimation were also conducted as confirmation. Due to the construction of the H-TSFs and potential gold remobilisation, a spatial grade distribution was anticipated and since Kriging is based on modelling the spatial variances within an orebody, it was considered the most reliable and accurate methodology for the task.

Capping of anomalously high grade values was applied to the assay values only of the higher grade Driefontein 5H-TSF (at 1.6g/t Au) and Kloof 1H-TSF (at 0.7g/t Au) facilities. The capping values were determined from the probability plots generated for each H-TSF. Capping in the variography stage of the estimation was to limit the excessive variances of the anomalously high grade from skewing the distribution away from the representative variance of the data distribution. Capping in the kriging stage was to limit the zone of influence that the ultrahigh grades have on the estimation of the surrounding areas.

The following parameters were applied in the kriging process:-

- 50mx50mx3m block size as derived from 100mx100m drillhole spacing and 1.5m sample lengths for all H-TSFs;
- subcells employed at a minimum of 10mx10mx3m (X, Y and Z);
- First search volume (SVOL1)
    - (X and Y) at approximately the variogram range;
    - Z search volume was in general the downhole variogram range equating to a search of 6m. Given the stratified nature of the H-TFSs an excessive search in the vertical direction could result in smearing of grades vertically;
    - minimum number of samples 12 in search volume one (SVOL1) equating to eight samples in a vertical direction from the point of estimation and four samples along the planar direction. The low minimum search parameters were to control the estimation effect from the adjacent drillholes in a planar sense. The effect of increasing the minimum number of samples to 24 was that it did not materially change the estimated grades;
    - maximum number of samples 40 in search volume one (SVOL1);
- Second search volume (SVOL2)
    - approximately 1.5 times the first search volume;
    - minimum number of samples 4; and
    - maximum number of samples 40.

The spatial inter-relationships of the sample grades were investigated with variograms. Both downhole and planar variograms were calculated and modelled.

The aim of the downhole variograms was to determine a nugget value and the applicable vertical range of continuity, whilst the planar variogram used the nugget value determined from the downhole variogram. The anisotropy (the difference, when measured along different axes, in a material's physical or mechanical properties) for gold in each TSF was investigated. The variograms were deemed best represented by omni-directional models and the variogram parameters are shown in Table 11.

The Z range of the planar variogram model is replaced by the range determined from the downhole variogram. Where necessary both the downhole and planar variograms were conducted using top-cuts, determined from the probability plots generated for each element for each TSF.

Table 11 : Variogram parameters

H-TSF	Parameter	Domain	Sill	Nugget %	Sill 1	X1 Range	Y1 Range	Z1 Range	Sill 2	X2 Range	Y2 Range	Z2 Range
Driefontein 3	Au	1	0.024	28.25	91.47	134	134	6	100	655	655	6
Driefontein 5	Au	1	0.029	17.97	68.51	124	124	6	100	545	545	6
Kloof 1	Au	1	0.008	55.55	82.82	120	120	6	100	406	406	6
Libanon	Au	1	0.018	44.94	91.59	130	130	10	100	522	522	10
Venterspost North	Au	1	0.025	28.96	90.98	123	123	10	100	385	385	10
Venterspost South	Au	1	0.020	29.31	75.80	117	117	6	100	272	272	6

Source : Minxcon 2009

23.3. Mineral Resource estimation and classification

SR4.2(i)-(vi); SR4.4(i); 4.5(i)-(vi); SVT1.9; JSE 12.9(h)(ix)

The H-TSFs Mineral Resources were estimated by Minxcon (2008 and 2009) and reviewed by Sound Mining (2017). No additional exploration in the form of drilling or grade estimation has taken place since the Minxcon estimation.

In compliance with the SAMREC Code, the applied Mineral Resource classification is a function of the confidence of the asset tenure and the entire process from drilling, sampling, geological understanding and geostatistical relationships. The WRTRP H-TSFs legal tenure is underpinned by the Sibanye-Stillwater mining rights, the applications for Section 102 amendments to those mining rights for the WRTRP activities, the amended EMPs and the signed agreements with Sibanye-Stillwater covering the Project's right to access and exploit the moveable assets. The drilling, sampling, analytical processes and governance of the exploration programmes have been appropriate and in-line with industry best practice and are considered to be of high confidence. The density used in the conversion from volume to tonnage has been determined from both in situ measured values and empirical data and is considered reliable.

In addition, the following statistical criteria were applied to the Mineral Resource classification:-

- number of samples used to estimate a specific block:-
    - Measured:- at least east 4 drillholes within variogram range and minimum of twenty 1.5m composited samples;
    - Indicated:- at least 3 drillholes within variogram range and a minimum of twelve 1.5m composite samples;
    - Inferred:- less than 3 drillholes within the variogram range.
- distance to sample (variogram range):-
    - Measured:- within at least 60% of variogram range;
    - Indicated:- within variogram range;
    - Inferred:- further than variogram range.

- lower confidence limit (blocks):-
    - Measured:- Less than 20% from mean (80% confidence);
    - Indicated:-20%–40% from mean (80%–60% confidence;
    - Inferred:- More than 40% (less than 60% confidence).
- Kriging efficiency:-
    - Measured:- more than 40%;
    - Indicated:- 20% to 40%;
    - Inferred:- less than 20%.
- Deviation from lower 90% confidence limit (data distribution within the resource area considered for classification):-
    - Measured:- less than 10% deviation from the mean;
    - Indicated 10% to 20%;
    - Inferred:- more than 20% .
- Kriged variance – a relative parameter used in conjunction with the other criteria.

Given that the entire deposits will be mined and processed no geological losses were applied in the estimation and no grade/tonnage curves were estimated. Minxcon reported the Mineral Resources for gold, U_3O_8 and S_2. with a gold equivalent cut-off grade applied as shown in Table 12. In accordance with the criteria noted above all of the H-TSF Mineral Resources were classified as Measured Mineral Resources.

Table 12 : Measured Mineral Resource estimate with gold equivalent cut-off grade applied (Minxcon 2009)

H-TSF	Cut-off equivalent grade (g/t)	Volume ('000m^3)	Density (t/m^3)	Tonnes ('000t)	Au Grade (g/t Au)	Au Content ('000g Au)	Au content ('000oz Au)
Driefontein 3	0.374	35,540	1.40	49,756	0.470	23,385	752
Driefontein 5	0.376	19,895	1.40	27,853	0.469	13,063	420
Kloof 1	0.418	17,513	1.40	24,518	0.333	8,164	262
Libanon	0.376	46,044	1.40	64,462	0.288	18,565	597
Venterspost North	0.378	31,370	1.40	43,918	0.308	13,527	435
Venterspost South	0.377	8,943	1.40	12,520	0.332	4,157	134
Total		**159,305**	**1.40**	**223,027**	**0.361**	**80,861**	**2,600**

In addition, Minxcon reported the Mineral Resources with no cut-off grade applied and this estimation was reviewed and verified by Sound Mining as shown in Table 13:-

Table 13 : Measured Mineral Resource estimate for WRTRP H-TSFs (Minxcon 2009 - as interrogated, verified and endorsed by Sound Mining 2017)

H-TSF	Cut-off grade (g/t)	Volume ('000m^3)	Density (t/m^3)	Tonnage ('000t)	Au Grade (g/t Au)	Au Content ('000g Au)	Au content ('000oz Au)
Driefontein 3	0	35,540	1.4	49,756	0.47	23,385	752
Driefontein 5	0	19,956	1.4	27,938	0.47	13,103	421
Kloof 1	0	19,931	1.4	27,903	0.33	9,068	292
Libanon	0	52,351	1.4	73,291	0.27	19,935	641
Venterspost North	0	38,954	1.4	54,536	0.27	14,943	480
Venterspost South	0	9,068	1.4	12,695	0.33	4,189	135
Total		**175,860**	**1.4**	**246,119**	**0.34**	**84,623**	**2,721**

Source : Minxcon 2009; interrogated, verified and endorsed by Sound Mining 2017
Compliant with the SAMREC Code 2016
Apparent computational errors due to rounding
In situ Mineral Resource estimate reported according to SAMREC Code requirements
Mineralisation widths are not relevant as the entire deposit is to be mined
Grades for each H-TSF are not regional averages
No geological losses applied
Density 1.40t/m^3

23.3.1. Mineral Resource verification

As stated in the 2016 CPR compiled by Sibanye-Stillwater (Competent Person's Report on the Material Assets of the West Rand Tailings Retreatment Project), the Mineral Resource estimation was based on the 2009 Minxcon report (Technical Report on the Surface Mineral Resource Estimation, Scheduling and Financial Valuation of the West Wits HTO Project, Gold Fields (Pty) Ltd, South Africa) and no further Mineral Resource estimation has been undertaken since that date.

In order to verify the 2009 Minxcon Mineral Resource estimate, Sound Mining received the following data sets which were used to interrogate the stated Mineral Resource:-

Table 14 : Data interrogated per H-TSF

H-TSF	Desurveyed Datamine borehole file containing mid-points of all samples with their associated assay values	Final Block Model
Driefontein 3	compall.dm	drth_krig_allfinal2b.dm
Driefontein 5	compall1_au_u_s.dm	dr5_krig_all fin.dm
Kloof 1	compall.dm	kl1_krig_all_final3c.dm
Libanon	compall1.dm	lib_krigall1_2010c.dm
Venterspost North	BHA.dm	vn_krig_all1_fin2d.dm
Venterspost South	COMPALL1.dm	vs_krig_all1_final2c.dm

Source : Sound Mining 2017

Accompanying the above data files and block models, files containing parameters used in the Datamine modelling process were also provided. These parameter files corresponded with the parameters stated in the Minxcon 2009 report.

No original laboratory assay reports were received for verification of the assay results.

Due to the samples having been collected and assayed in 1.5m lengths, no sample compositing was undertaken and these original sample lengths were used in the variography and kriging process.

The Mineral Resources as per the 2009 Minxcon report were declared at a gold equivalent cut-off per H-TSF as provided in Table 13, however in order to verify the gold component only of the Mineral Resource contained within each H-TSF block model it was necessary to investigate the Mineral Resource without this gold equivalent cut-off applied (Table 13).

In the verification process Sound Mining attempted to re-create the variography as stated in the Minxcon report (see Appendix 1: Figure 34 to Figure 39). Sound Mining was able to re-produce the statistics and demonstrate that the variography and the parameters used in the kriging process are reasonable. These parameters were then used for gold grade interpolation into the individual H-TSF block model structures provided by the client and the quantity and quality verified.

The results of Sound Mining's assay re-interpolation are shown in Table 15 and the conclusion is that the Minxcon 2009 Mineral Resource estimate methodologies and interpretation are reasonable and can be relied upon to reflect the Mineral Resource base for the WRTRP.

Table 15 : Block model verification

H-TSF	Volume ('000m³)		Tonnage (Mt)		Grade (g/t Au)		
	Minxcon Report	Minxcon Block model check by Sound Mining	Minxcon Report	Minxcon Block model check by Sound Mining	Minxcon Report	Minxcon Block model check by Sound Mining	Sound Mining re-interpolation
Driefontein 3	35.54	35,540	49.76	49,757	0.470	0.47	0.468
Driefontein 5	19.96	19,955	27.94	27,937	0.469	0.469	0.464
Kloof 1	19.97	19,930	27.96	27,903	0.325	0.325	0.324
Libanon	52.35	52,349	73.29	73,288	0.272	0.272	0.273
Venterspost North	38.96	38,954	54.55	54,536	0.274	0.274	0.273
Venterspost South	9.079	9,068	12.71	12,695	0.329	0.330	0.332
Total	**175.86**	**175,796**	**246.21**	**246,116**	**0.344**	**0.344**	**0.343**

Source : Sound Mining 2017

23.4. Cross sections and grade distribution

Cross sections and grade distribution through each H-TSF are provided in Figure 11 to Figure 16 Driefontein 3H-TSF and Driefontein 5H-TSFs have the highest average grade of 0.47g/t Au with isolated sections up to 0.80g/t to 1.05g/t Au. Driefontein 3H-TSF shows an overall tendency of increasing grade with depth whilst Driefontein 5H-TSF appears to have no such pattern. Venterspost North H-TSF and Kloof 1H-TSF show vague increases in grade with depth, whilst the opposite is the case for Venterspost South H-TSF with grades increasing quite markedly towards the surface. Libanon and Venterspost North display the lowest average grades but are both fairly large deposits of 73,291kt and 54,536kt respectively.

23.5. Historical Mineral Resource estimates

Historical Gold Fields Mineral Resource estimates prior to 2007 are shown in Table 16. The estimates were not reported as compliant with SAMREC and grades were estimated using three methods, namely Inverse distance squared, Inverse distance Cubed and Ordinary Kriging. The average grade remains the same compared to the 2017 estimate and the more accurate volume estimation from the LIDAR survey has resulted in a 7% increase in the contained ounces of gold.

Table 16 : Historical Mineral Resource estimates 2000 - 2001

H-TSF	Date surveyed	Volume ('000m³)	Density (t/m³)	Tonnage ('000t)	Grade (g/t Au)	Content ('000oz Au)
Driefontein 3	Sept 2000	33,867	1.4	47,529	0.45	689
Driefontein 5	Dec 2000	17,972	1.4	25,148	0.43	350
Kloof 1	Nov 2000	19,288	1.4	26,902	0.31	274
Libanon	Mar 2001	48,377	1.4	67,521	0.29	641
Venterspost North	Nov 2000	37,259	1.4	52,055	0.27	454
Venterspost South	Nov 2000	9,101	1.4	12,763	0.33	136
Total		**165,864**	**1.4**	**231,918**		**2,544**

Source : Minxcon 2009

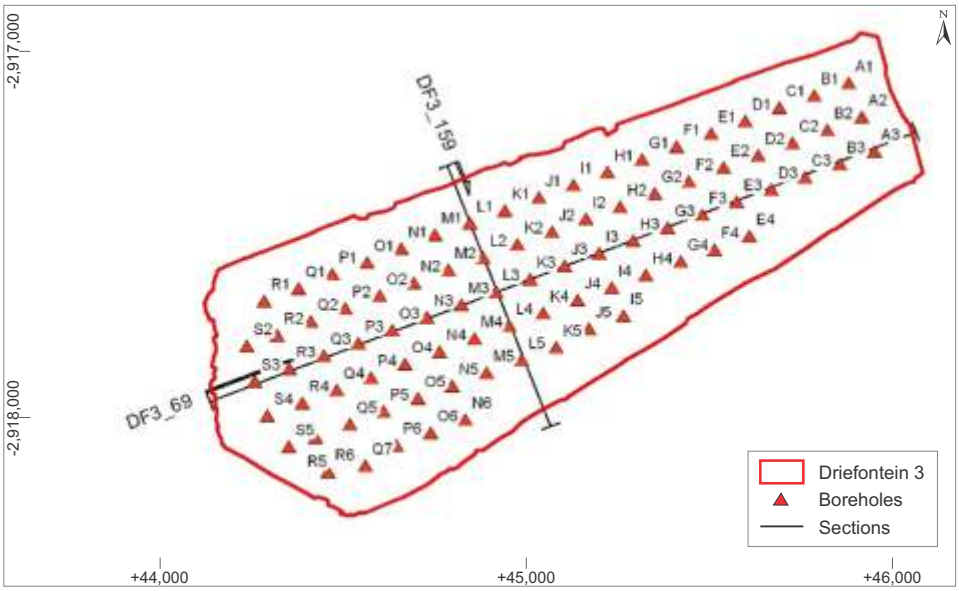
23.6. Reasonable and realistic prospects for economic extraction

SR4.3(i) – (viii), SR4.5(i)-(vi)

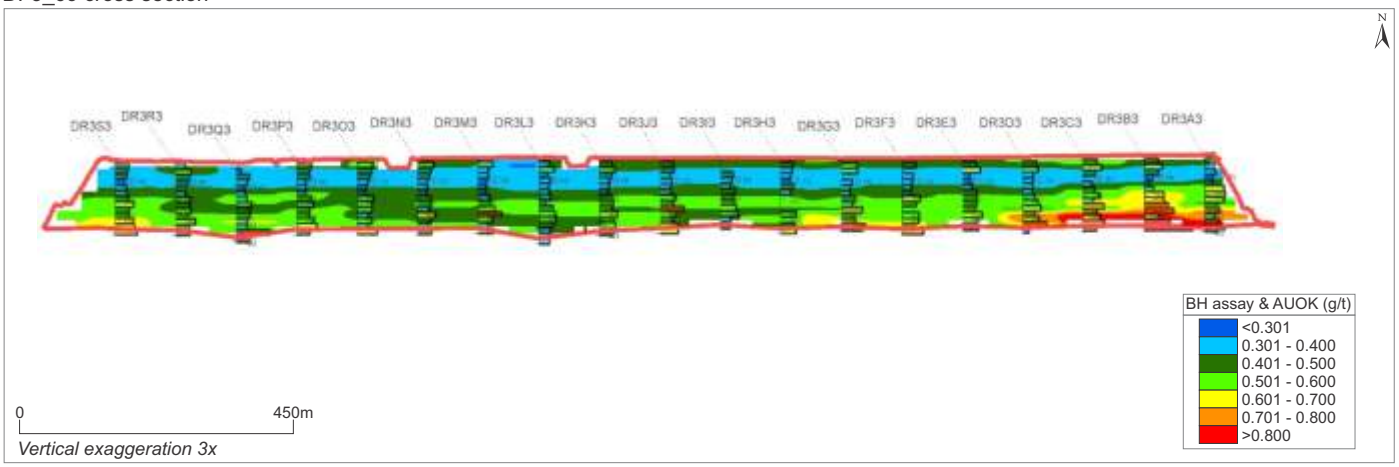
Mine plans and scheduling for the WRTRP (Section 24) have been based on the operational experience of Ergo on its Central Rand operations. The capital and operational costs of the infrastructure and mining equipment have been estimated specifically for the WRTRP at PFS levels of accuracy and all services including water and power are available and have been accurately costed. The processing facilities have been assessed from capital expenditure (capex) and operational expenditure (opex) perspectives at PFS levels of accuracy.

Figure 11: Cross sections and grade distribution - Driefontein 3H-TSF

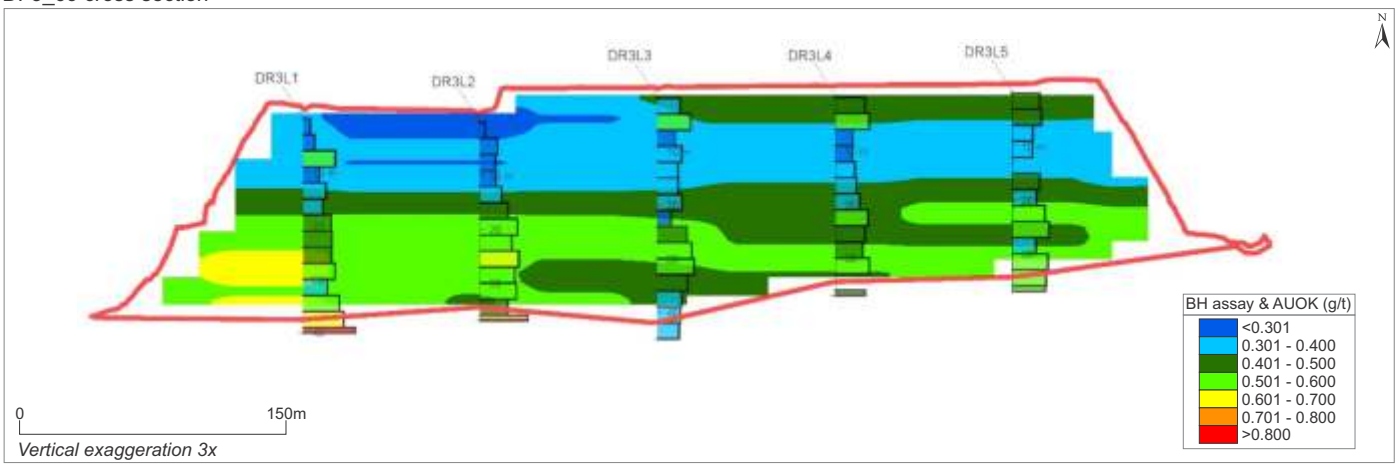
Driefontein 3H-TSF



DF3_69 cross section



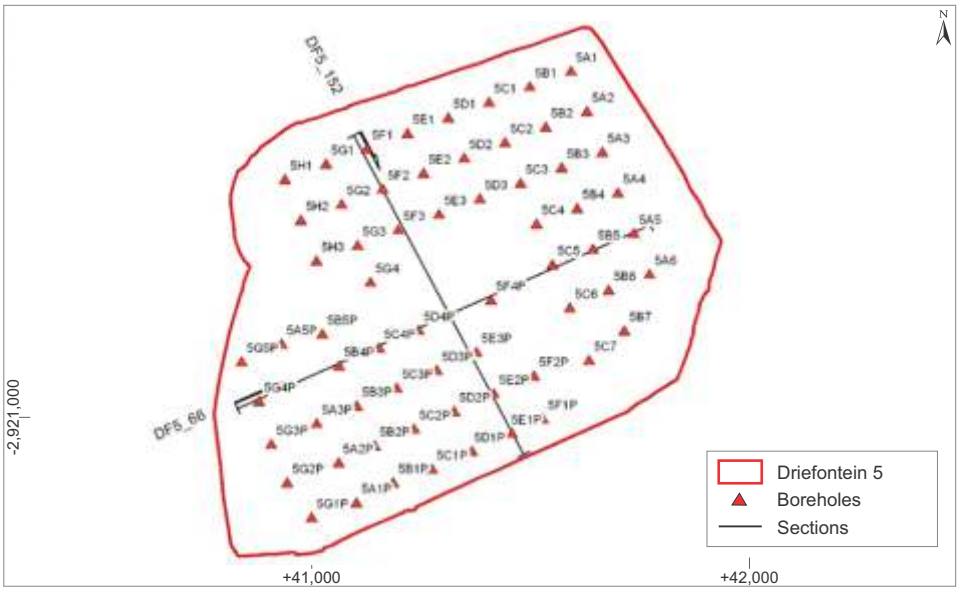
DF3_69 cross section



Source: Sound Mining 2017

Figure 12: Cross sections and grade distribution - Driefontein 5H-TSF

Driefontein 5H-TSF



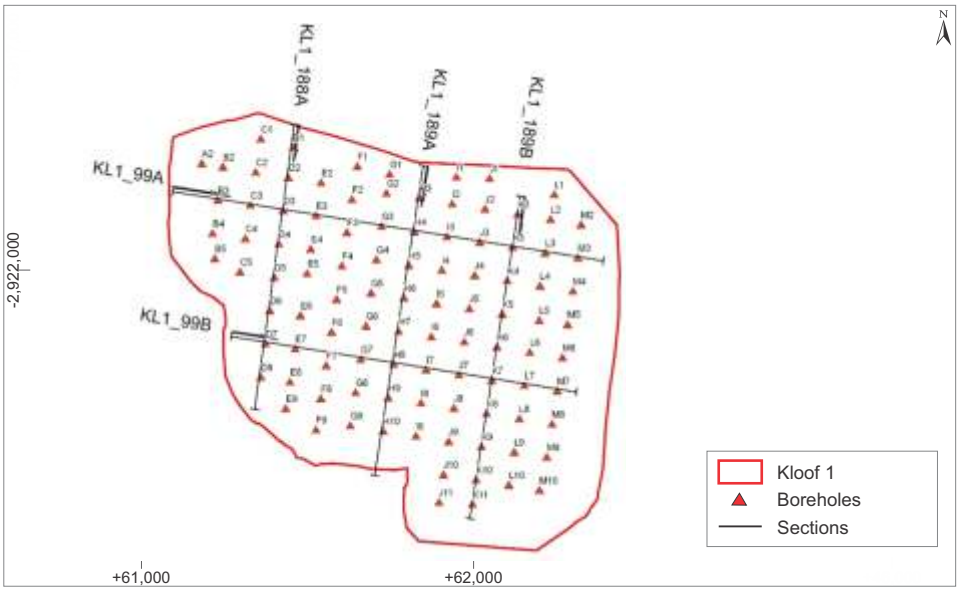
DF5_152 cross section

DF5_66 cross section

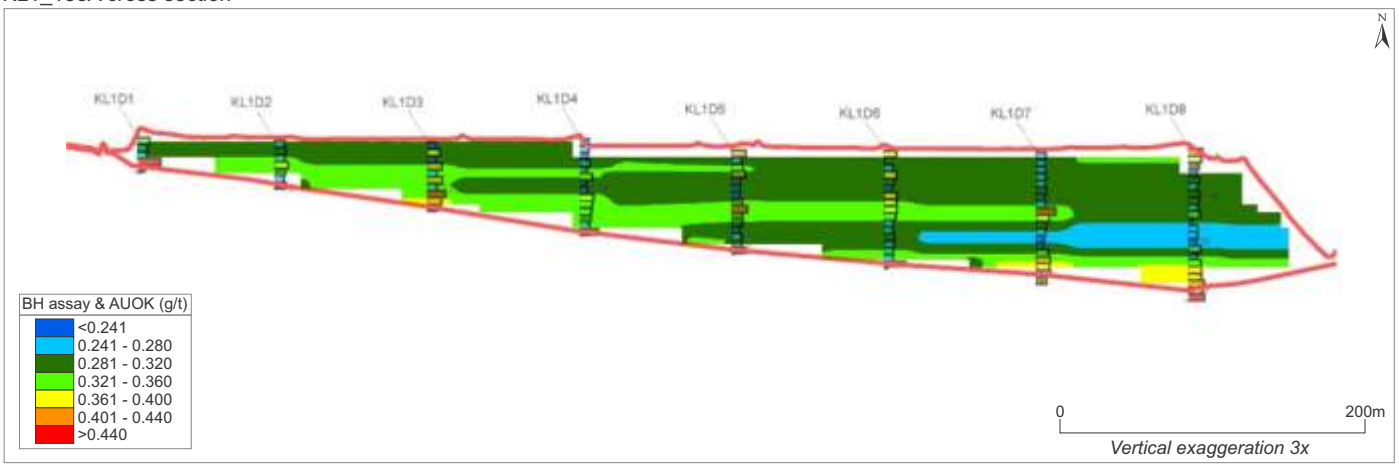
Source: Sound Mining 2017

Figure 13: Cross sections and grade distribution - Kloof 1H-TSF

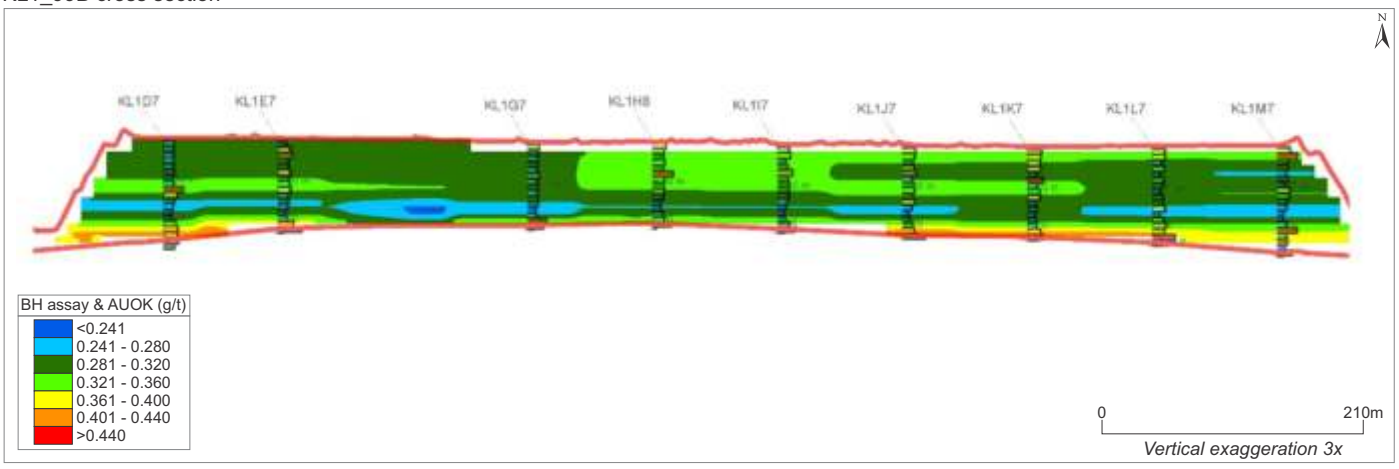
Kloof 1H-TSF



KL1_188A cross section



KL1_99B cross section

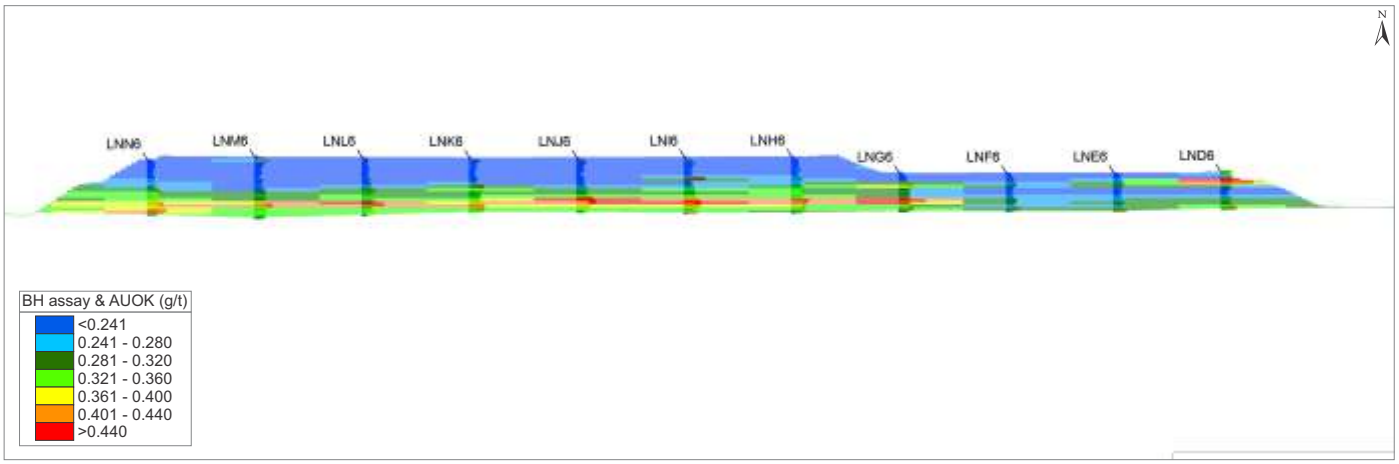


Source: Sound Mining 2017

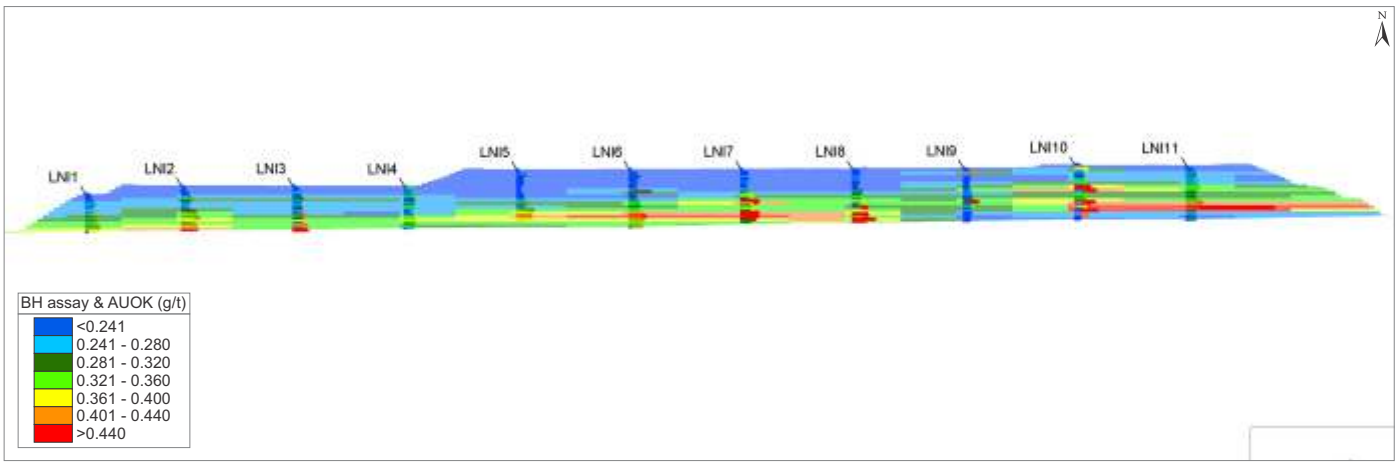
Figure 14: Cross sections and grade distribution - Libanon H-TSF

Libanon H-TSF

LNN6 cross section



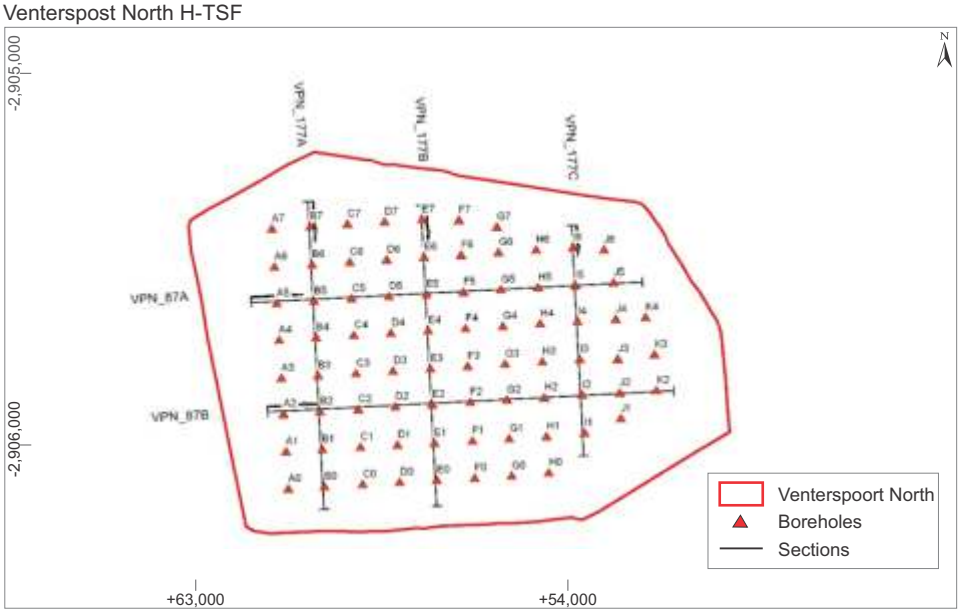
LN1 cross section



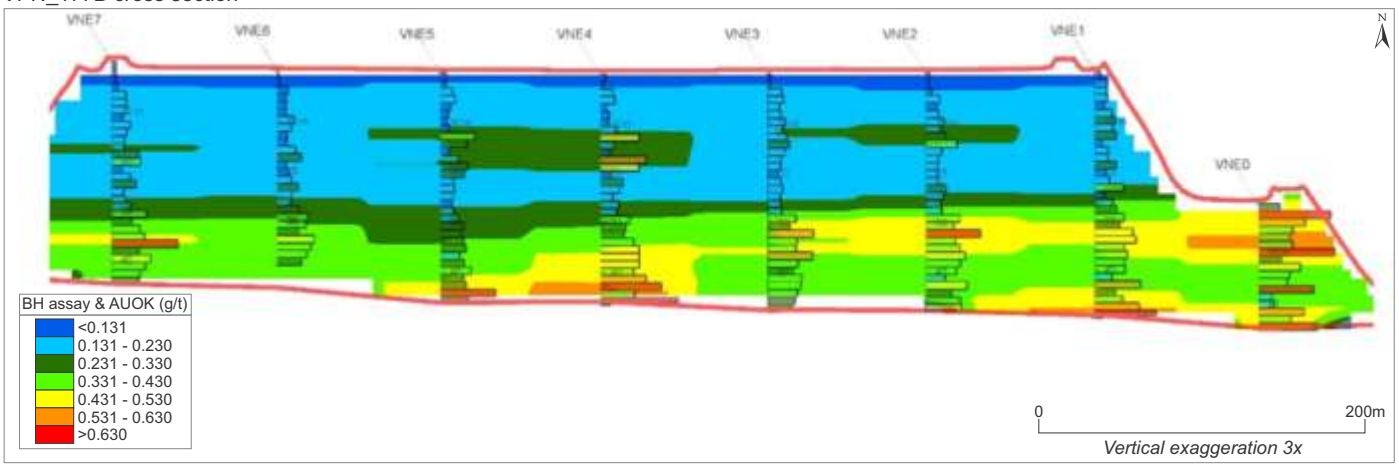
Source: Sound Mining 2017

Figure 15: Cross sections and grade distribution - Venterspost North H-TSF

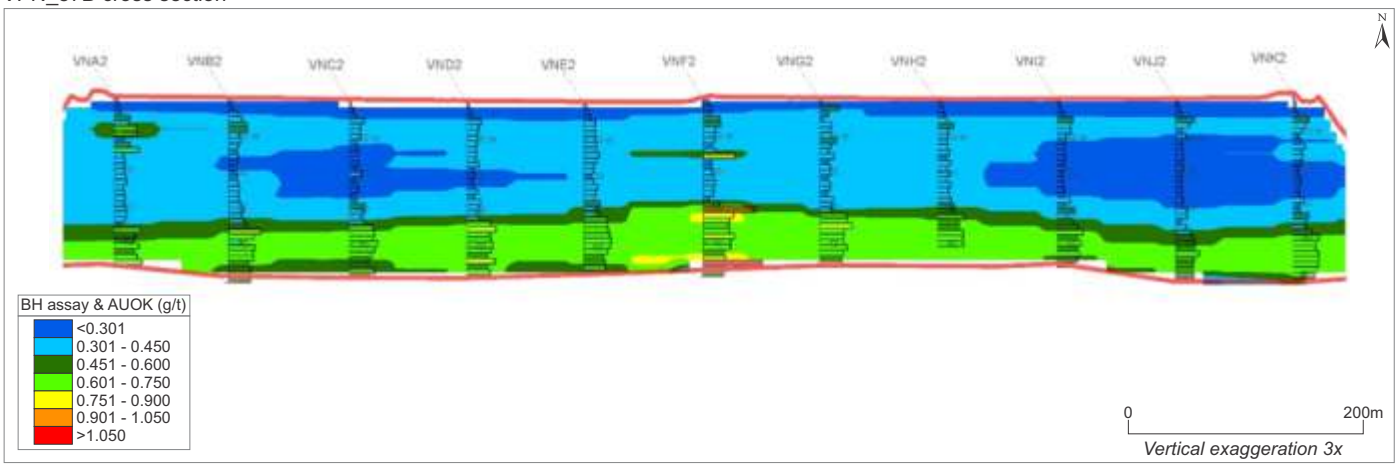
Venterspost North H-TSF



VPN_177B cross section



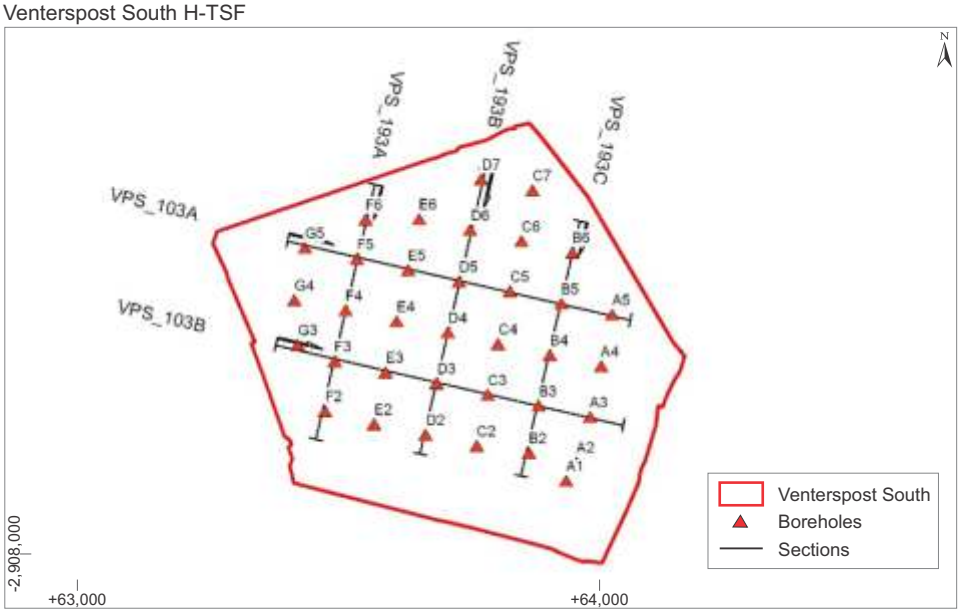
VPN_87B cross section



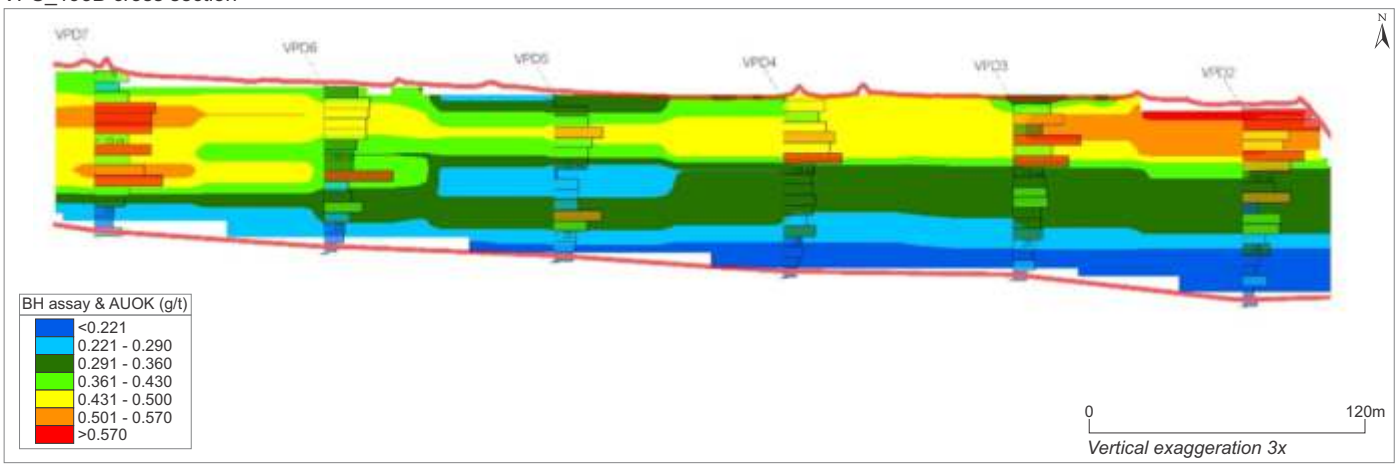
Source: Sound Mining 2017

Figure 16: Cross sections and grade distribution - Venterspost South H-TSF

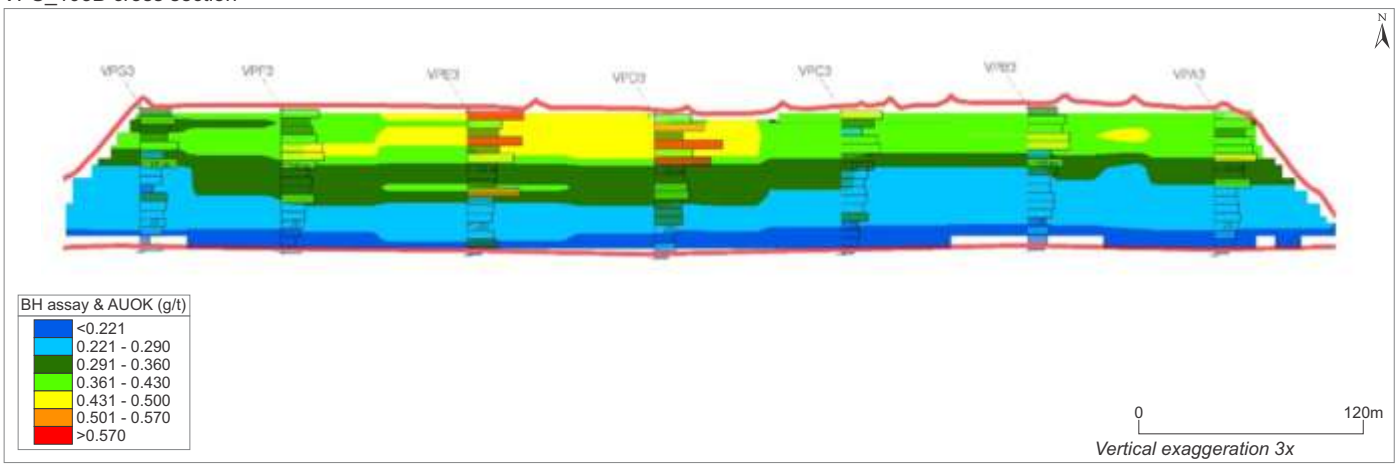
Venterspost South H-TSF



VPS_193B cross section



VPS_103B cross section



Source: Sound Mining 2017

The legal tenure is dependent upon approval of Section 102 applications but there are no envisaged impediments to the approvals. The MPRDA specifically provides for the exclusive right of a mining right holder to apply for the rights to exploit the residue deposits arising from the mining operations on that right. Access to the moveable assets has been provided in the 'Use and Access Agreement' with Sibanye-Stillwater. The granting of the necessary environmental authorisations and permits to commence operations are in place, and those currently outstanding for Phase 2 can be applied for in the timeframe to the commencement of Phase 2.

The economic analysis provided in this CPR is positive and gives comfort that there are reasonable prospects for eventual economic extraction at the gold price of USD1,300/oz. The WRTRP would continue to be economically viable even should the gold price decline to USD1,040/oz.

24. Technical studies –mine design

SR5.2(i)-(vii)

24.1. Mining operation

The mining method will be hydro-mining (or hydraulic mining) , which uses high-pressure water monitors to deliver a high-pressure water jet to hydraulically excavate unconsolidated tailings material within the H-TSF's (Figure 17). The water from the monitor mixes with the tailings and forms a slurry with a high solids content. The slurry will flow under gravity along channels at the base of the dump to a collection sump at the lowest elevation of the bench being mined. Finger screens will be used to remove debris that may impact pumping operations and a penstock will control water flow into the sump.

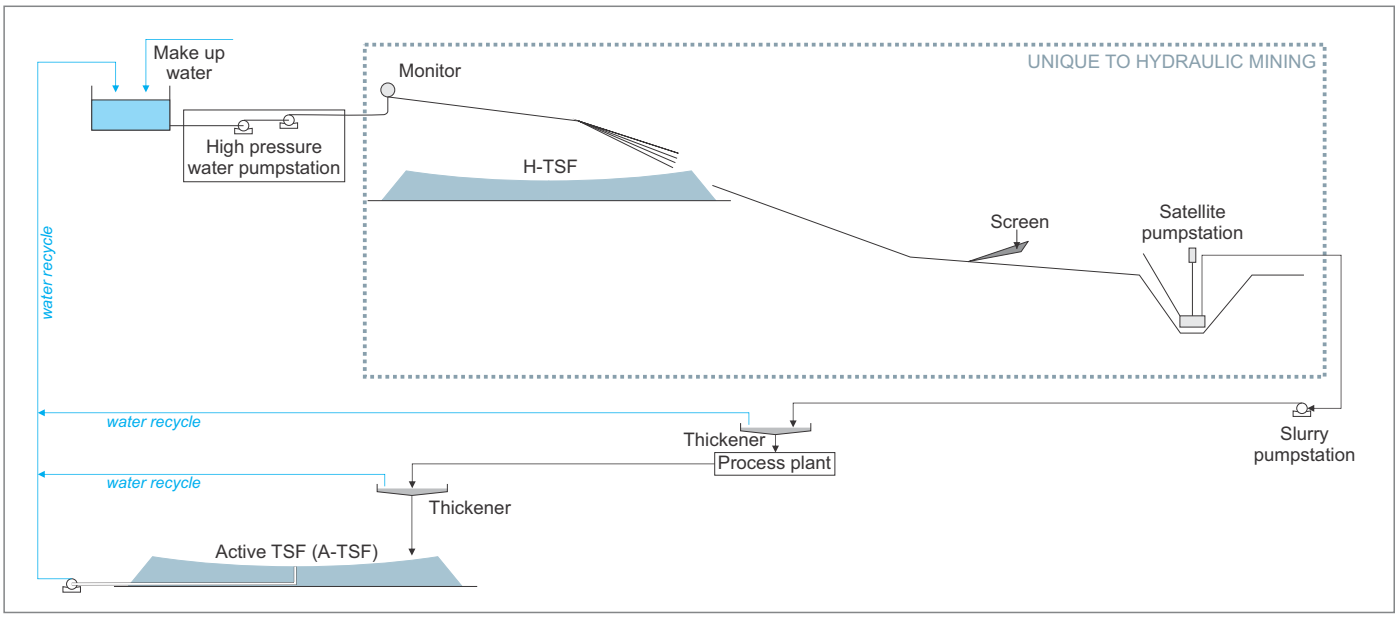
These monitors comprise 200mm self-propelled track monitor guns, each with production rates of up to 300ktpm. They discharge approximately 500m^3/hour of water at pressures up to 30bar through a 50mm nozzle and can be controlled remotely be the operator. In order to minimise hydraulic pressure losses and poor reclamation gun efficiencies, water will reach the monitor guns at a minimum pressure of 25bar.

Early forms of hydraulic mining were adapted from methods developed in the United Kingdom for the mining of primary kaolin deposits. These early attempts used a high-pressure monitor located at the base of the TSF to wash material from the base of the slope. A disadvantage of this approach is that by directing the water jet at the base of the slope, the slope is undercut and can become unstable, leading to uncontrolled failure of the slope. With sufficient off-set distance between the slope and the monitor and/or monitor operator, this is not necessarily a problem, however, given that many of the tailings dumps that are available for reprocessing are located in urban locations, a safer system of monitor operation has subsequently been developed. The majority of tailings dams that have been mined in the last 20 years have utilised a monitor located on the upper bench of the tailings dam, directing a water jet downwards to cut a stable slope surface into the face of the dam. This approach has been successfully applied by DRDGOLD within densely populated urban areas. It is inherently safe and allows for rapid changes in slope angles to cope with any operational variances that may be encountered. The resulting slopes usually consists of a 15m high bench with a 45° to 50° slope angle. High faces with consistent slope angles can be formed using the top-down hydraulic mining technique as shown in Figure 17.

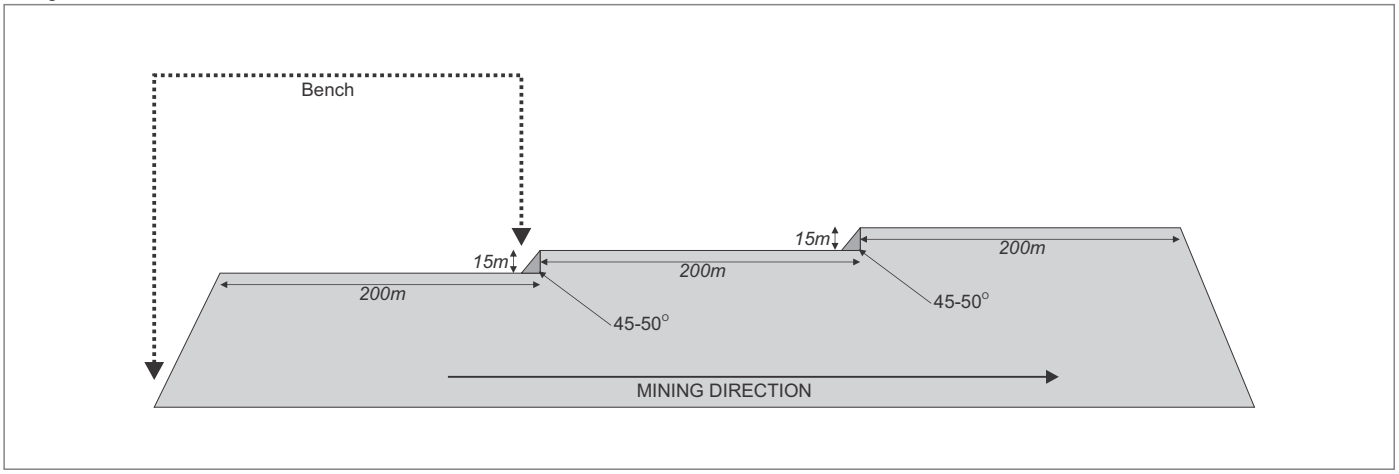
Increased production is achieved by the inclusion of additional units and this modular approach provides a high degree of flexibility that allows simultaneous mining at a number of points over a wide range of production rates and consequently, grade blending is readily achievable if required. Two mining units will be needed initially with an additional three units planned for Phase 2.

The slurry produced by the monitors will be controlled in terms of density by the operator. Actively moving the monitor and consistently cutting the face will result in a slurry with relatively high solids content. Experience from DRDGOLD's ongoing operations has demonstrated that slurries with 35% to 50% solids can consistently be achieved. The monitor guns will seek to maintain slurry densities above 1.44t/m^3 to 1.46t/m^3.

Figure 17: Mining methodology



Mining widths



Typical self propelled monitor gun in operation

Large consistent slope faces formed by top-down hydraulic mining

Track mounted monitor

Source: Sound Mining 2017, DRD Gold 2017

The H-TSFs consist of fine tailings material, with a typical particle size of 70% passing 75 micron (P75). Relatively flat flow channels will develop with gradients in the order of 1:100 meters. The position of the sump will change as mining proceeds along a bench, to limit the distance between the monitor and the sump. If too far from the active face, tailings material may drop out of suspension and reduce the solids content of the slurry pumped to the plant. However, the slurry tends to flow at a natural beaching angle which is generally self-correcting. If the slope gets too steep, flow velocities increase in the channels causing erosion until the equilibrium slope is attained. If the slope is too flat the solids settle out reducing the height of the mining face until the equilibrium slope is achieved (Figure 17).

A gravel pump mounted on a mobile tracked carrier will be used to extract the slurry from the collection sump. The suction of the gravel pump can be raised or lowered to control the quantity of water and solids extracted from the sump. The slurry will pass through three 6mm aperture polyurethane vibrating screen panels to remove finer debris which escaped the finger screens. This will occur prior to the slurry reaching the main slurry the pumps because these particles can cause blockages in the pipelines feeding the slurry to the processing plant. The vibrating screens at the slurry pump stations also serve to reduce the oversize load to the linear screens, operating at 0.8mm apertures at the plant.

After screening, the slurry will be collected in sumps from where multistage pumps will pump the slurry to be processed. Slurry densities received at the plant will be 1.44t/m^3 or higher. The clear water overflow from the thickener will be pumped back to a water storage tank, located close to the tailings dumps. Water from the storage tank will be used to feed the high-pressure monitors via a series of pumps and pressure boosting pumps.

24.2. Mining plan and layout

Hydro-mining and the re-deposition of tailings is a specialised activity and is accordingly outsourced by DRDGOLD to competent and experienced service providers. The hydro-mining performance assumptions in this study are based on similar tailings reclamation operations where the method has been successfully “tried and tested” over decades as a crucial part of DRD’s ongoing business. The equipment requirements, manning complements and necessary supporting infrastructure, in terms of water and power supply, are well understood and have been accurately planned by both DRDGOLD and their current service provider. No un-tested technical assumptions with regards the mining have been made.

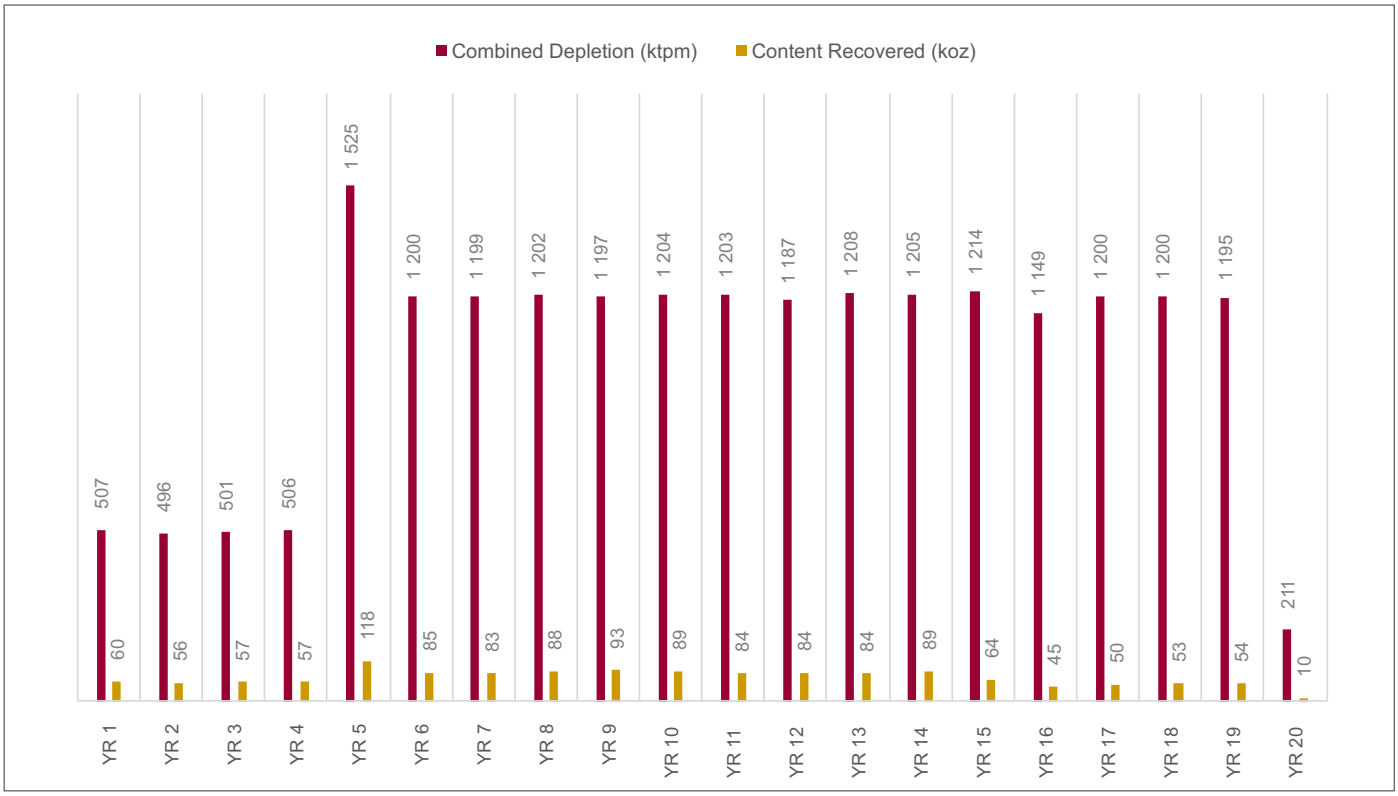
The monitors will remove the tailings material from the top of an H-TSF to the natural ground level in 15m layers as shown in Figure 19 at the depletion rates shown in Figure 32.

The monitor is positioned on the top of the working bench and directs a water jet down into the H-TSF. It will work the face along the front edge of the dam away from the collection sump and will returns in the opposite direction and back towards the sump when it reaches the far end of the dam. As the mining face advances the sump, screen and gravel pump are all periodically advanced along the long edge of the dam to stay as close as possible to the monitor. The track mounted gravel pump is located in the sump, whilst the skid mounted screening plant and slurry pumps are located on the bench above the sump adjacent to the long edge of the H-TSF.

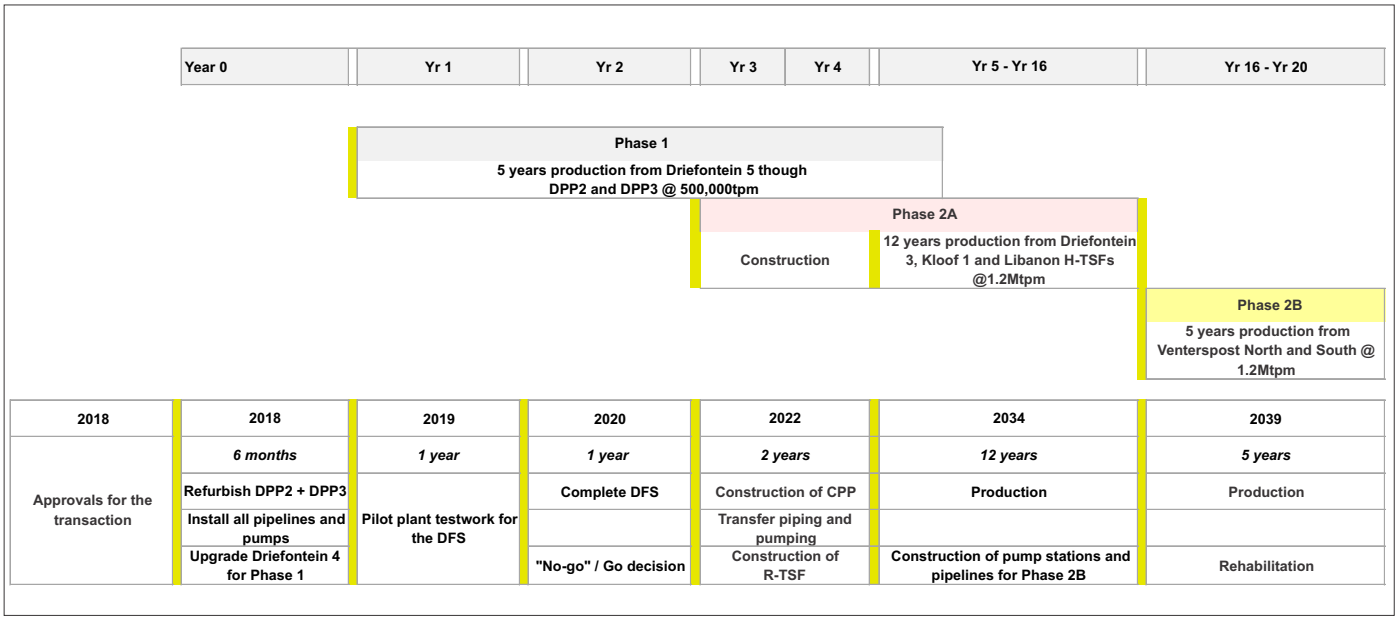
Where there is potential for higher grade material towards the bottom of an HTSF, a stepped bench approach will be adopted to access these bottom layers as early as possible. Horizontal benches of 100m to 200m, inclusive of the face angle, will be created to maintain safe working distances between simultaneous operations at different bench elevations. The layout is illustrated schematically in Figure 19 with the top 15m layer being reclaimed over a safe distance (± 200m) before the reclamation of a second 15m high layer commences. The top and second layer reclamation will progress simultaneously until a safe distance (±200m) for the third 15m layer is reached, and so forth until ground level is reached and the entire H-TSF reclaimed. The footprint of the final layer will be cleared and prepared for rehabilitation.

Figure 18: LoM production plan and project timeline

LoM production plan

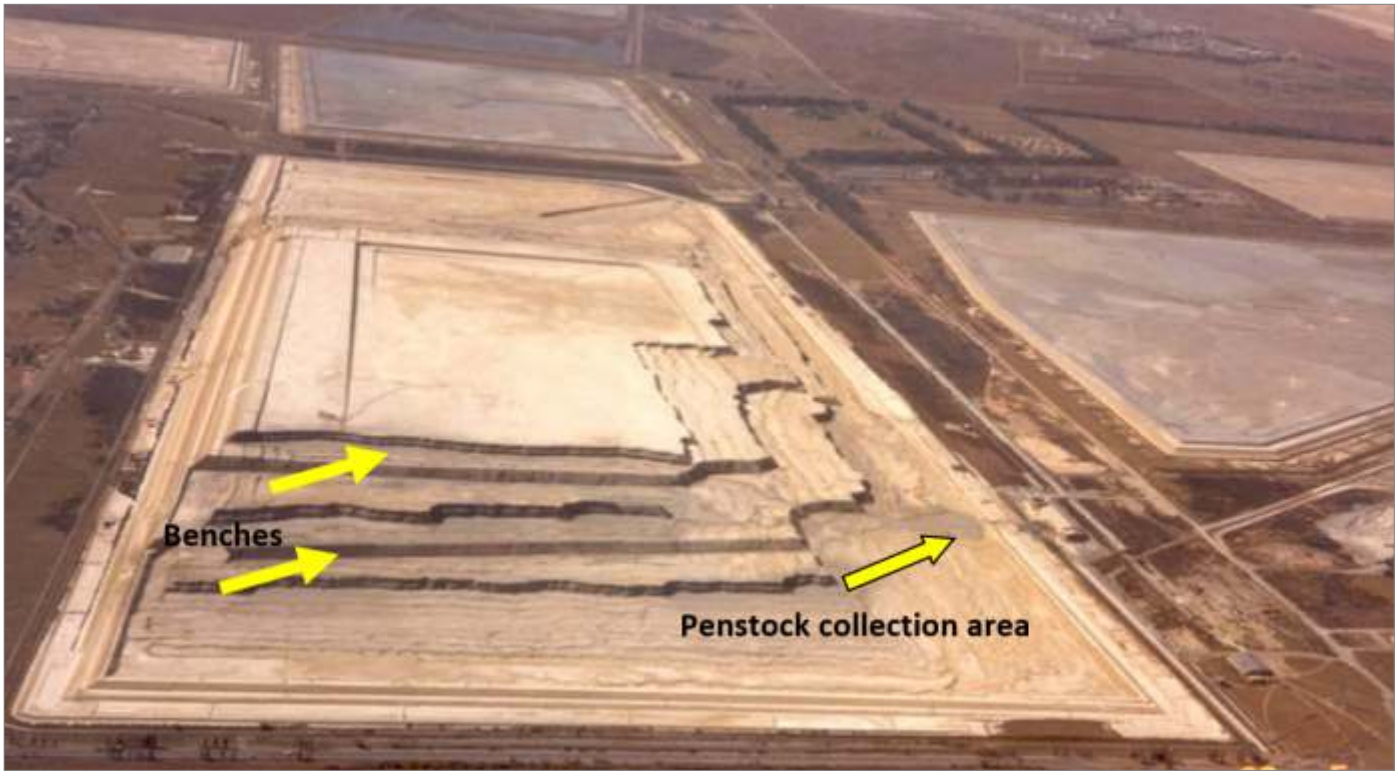


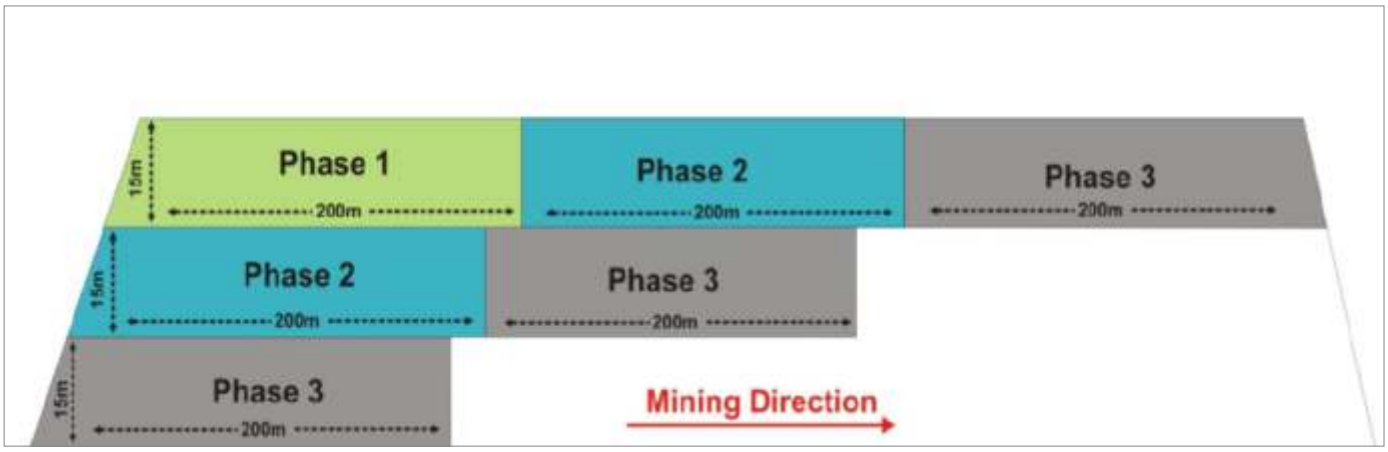
Project timeline



Source: Sound Mining 2017

Figure 19: Mining layout and sequencing





Source: Sound Mining 2017, DRD Gold 2017

24.3. Mining schedule

A LoM plan and production forecast for the 20 years of the WRTRP (Table 17 and Figure 32) was generated by the RVN Group (Pty) Ltd (RNV Group) for the WRTRP. Suitable software (i.e. Datamine^{TM} Studio 3) was used to optimise the schedule, which is summarised in Table 17 and Figure 18.

Table 17 : Summary of scheduled LoM production

Asset	Tonnage (kt)	Grade (g/t Au)	Recovery (%)	Yield (g/t)	Gold Sold (t)	Gold Sold (koz)
Driefontein 5 H-TSF	27,938	0.45	63.0	0.29	8	259
Driefontein 3 H-TSF	49,756	0.47	61.9	0.30	15	477
Kloof 1 H-TSF	27,903	0.32	44.6	0.15	4	133
Libanon H-TSF	73,91	0.28	48.5	0.13	10	316
Venterspost North H-TSF	54,536	0.27	39.3	0.10	6	177
Venterspost South H-TSF	12,695	0.33	39.3	0.12	1	47
Total	**246,119**	**0.344**		**0.18**	**44**	**1,408**

Source : DRDGOLD 2017

A series of cuts were developed and the optimisation was targeted to produce 0.5Mtpm and 1.2Mtpa of feed for processing for Phase 1 and Phase 2 respectively while maintaining 45° slope angles and 15m high benches, in order to preserve the geotechnical stability of the hydraulically formed pit slopes.

The depletion sequence and subsequent production schedule (i.e. the mine plan) for the WRTRP is designed to maximise grade and hence NPV, within the constraints of the layout as planned for each H-TSF. The in situ grades from the block models used for the Mineral Resource estimate are underpinned by a 100m by 100m drillhole grid with each mining block covered by at least one drillhole. The cross sections of the H-TSFs in Figure 11 to Figure 16 illustrate the anticipated grade distribution.

The H-TSF outlines were adjusted manually so that the required production could be attained. The 15m mining cuts for each horizontal bench were created and coded according to elevation. The horizontal bench levels and grade per mining block are illustrated in Figure 20 to Figure 25.

The Driefontein 5H-TSF was divided into four mining cuts from top to bottom with the thicker portion of the tailing dam in the northeast and the elevation decreasing from the northeast to southwest. The hydraulic mining would proceed in this direction permitting tailings material to flow freely with the decrease in elevation. The gold grades are high for normal Witwatersrand Gold Fields tailings material and no selective mining is appropriate. The horizontal bench levels and grade per mining block, as well as the production forecast are illustrated in Figure 20.

The Driefontein 3H-TSF is scheduled to be exploited at the start of Phase 2 and is planned to be mined in three horizontal benches (Figure 21). The thicker portion of the tailings dam is towards the north with the elevation decreasing slightly south to north. The mining would proceed east to west and selective mining was not deemed necessary.

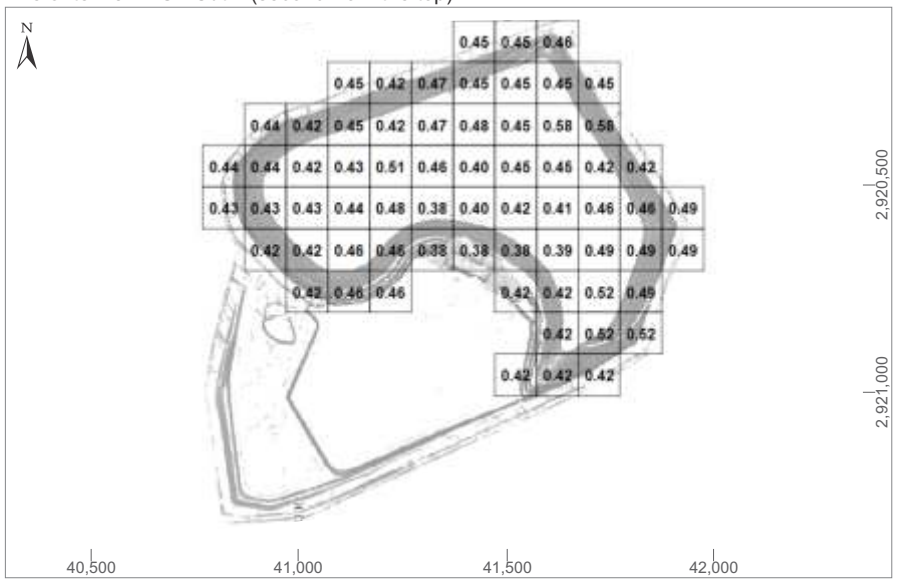
The thickest portion of the Libanon H-TSF is in the northeast with the elevation decreasing from northeast to southwest and the hydraulic mining should follow this direction. There are some portions of the H-TSF with low grades, mostly in the northeast and it may be required to blend these with some higher grade material from the same deposit (Figure 22).

The Kloof 1 H-TSF has good grades throughout and will be mined from east to west utilising the fall in elevation from north to south (Figure 23).

Source: Sound Mining 2017, DRD Gold 2017

Driefontein 5H-TSF Cut 1 (topmost)

Driefontein 5H-TSF Cut 2 (second from the top)



Driefontein 5H-TSF Cut 3 (third from the top)

Driefontein 5H-TSF production forecast

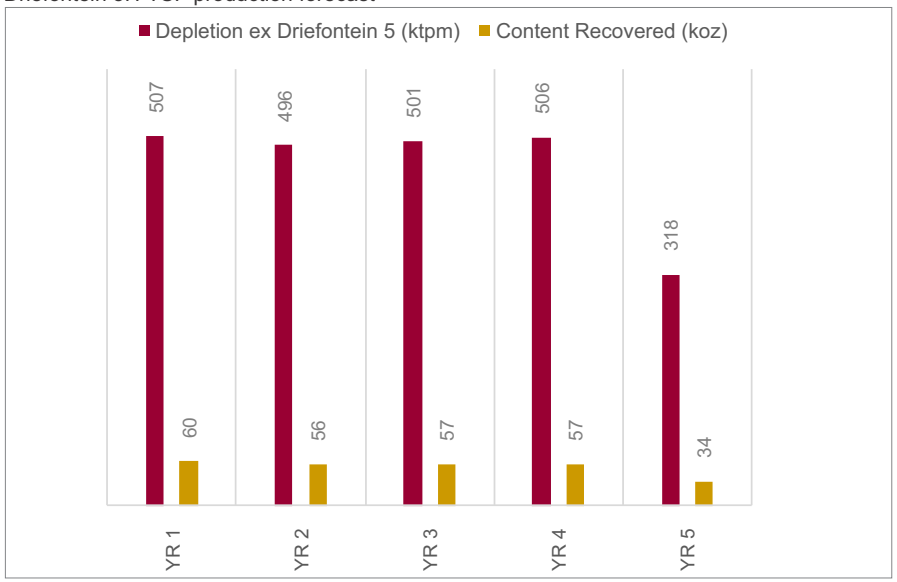
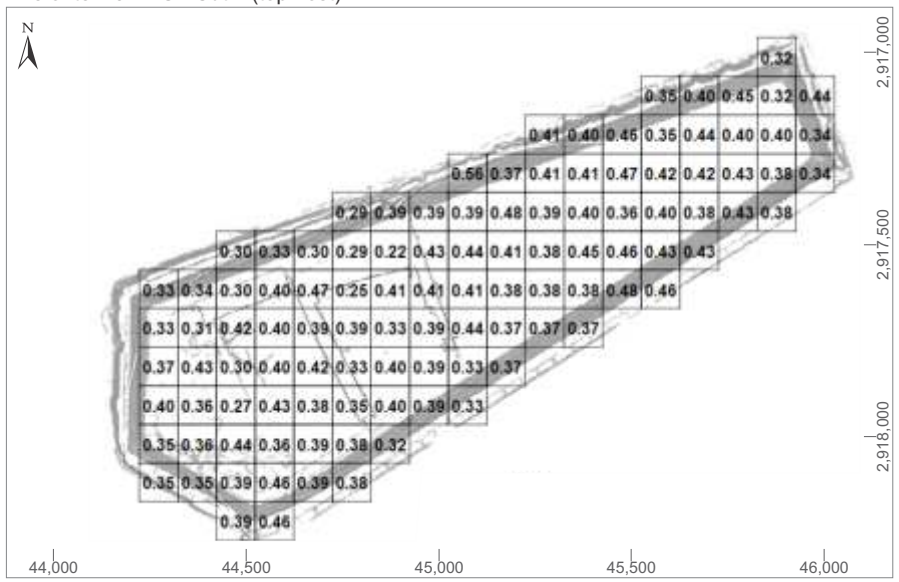


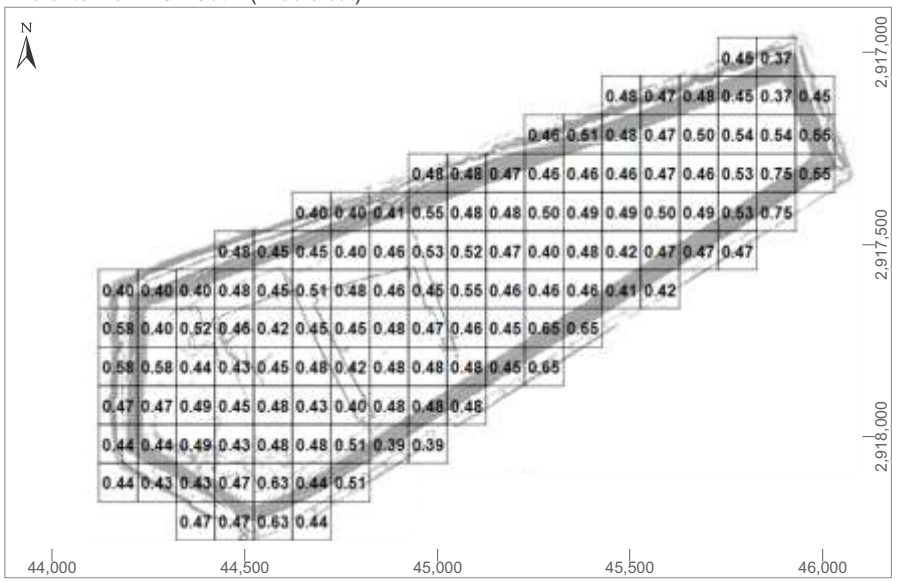
Figure 20: Driefontein 5H-TSF mining schedule and production forecast

Source: Sound Mining 2017, DRD Gold 2017

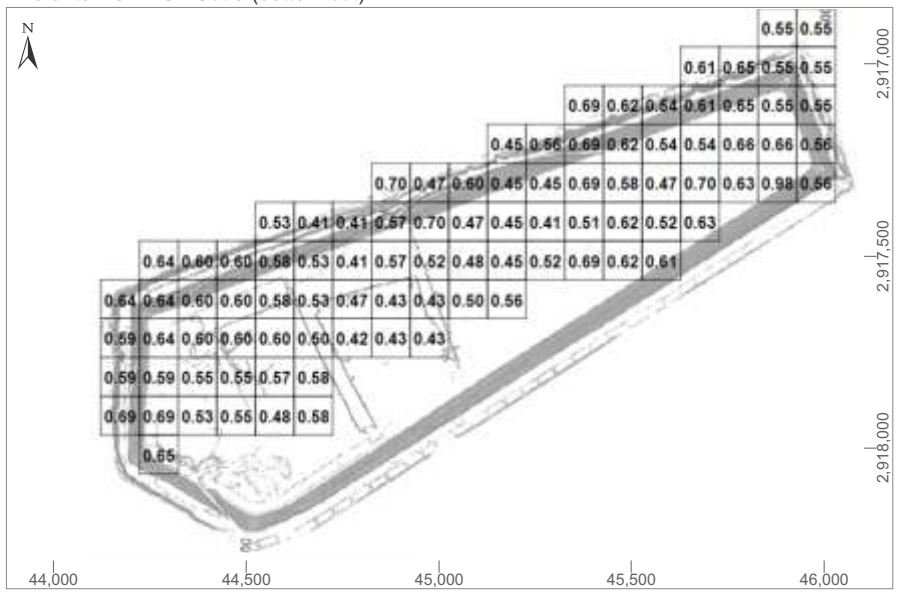
Driefontein 3H-TSF Cut 1 (topmost)



Driefontein 3H-TSF Cut 2 (middle cut)



Driefontein 3H-TSF Cut 3 (bottom cut)



Driefontein 3H-TSF production forecast

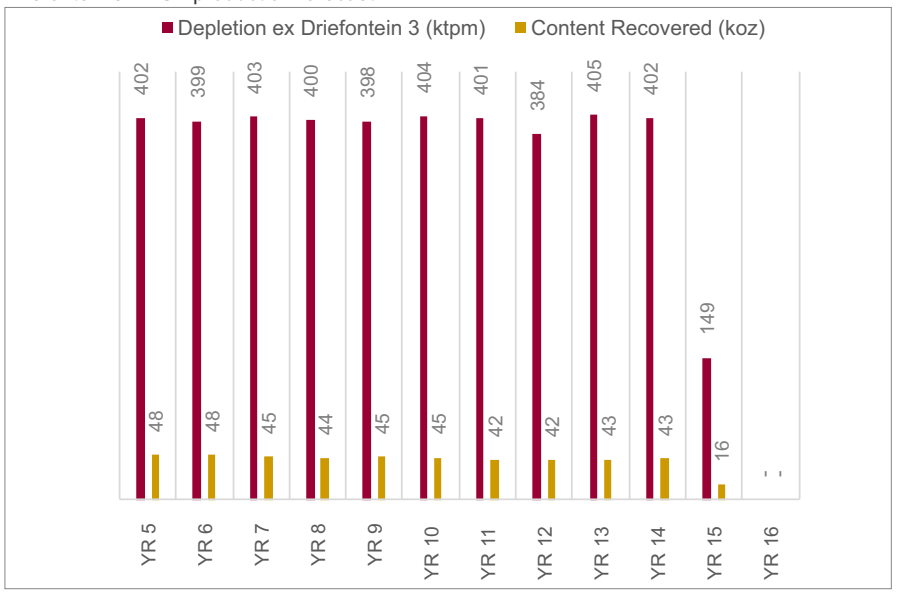
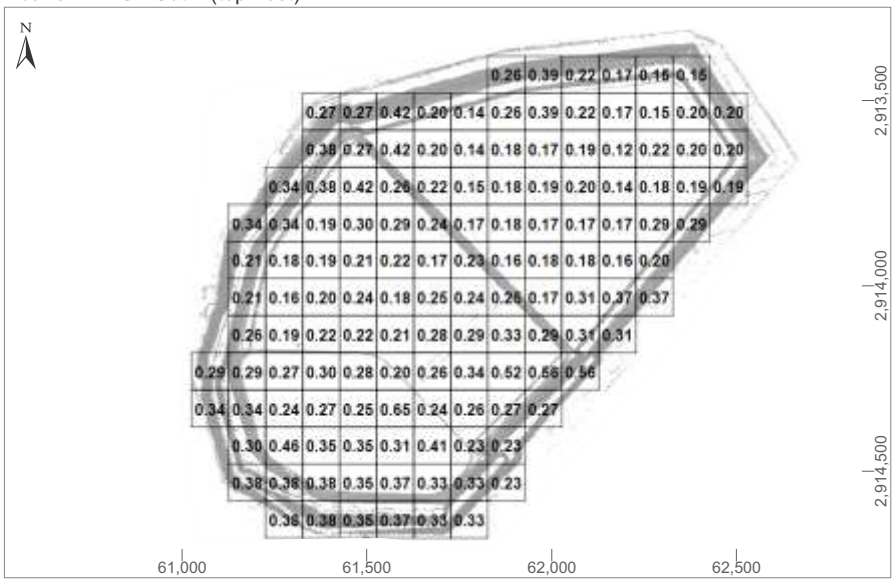


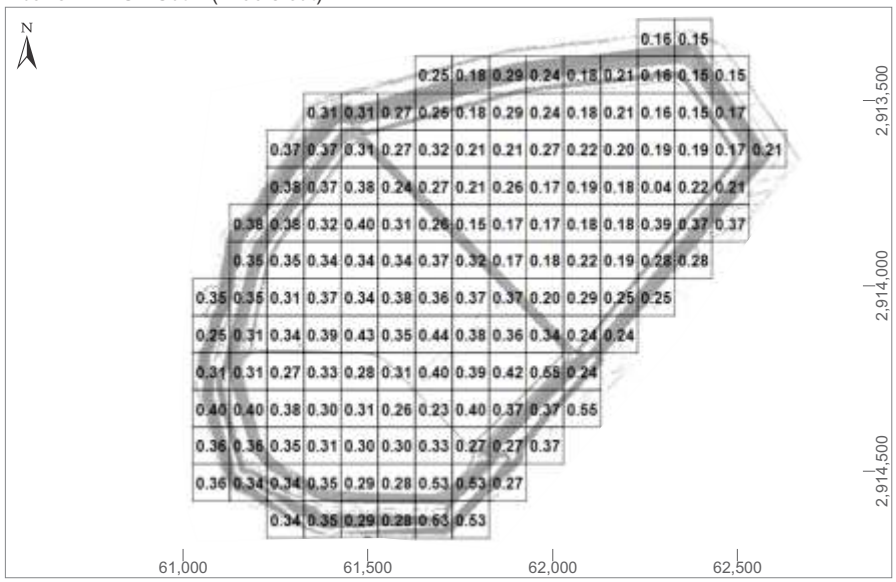
Figure 21: Driefontein 3H-TSF mining schedule and production forecast

Source: Sound Mining 2017, DRD Gold 2017

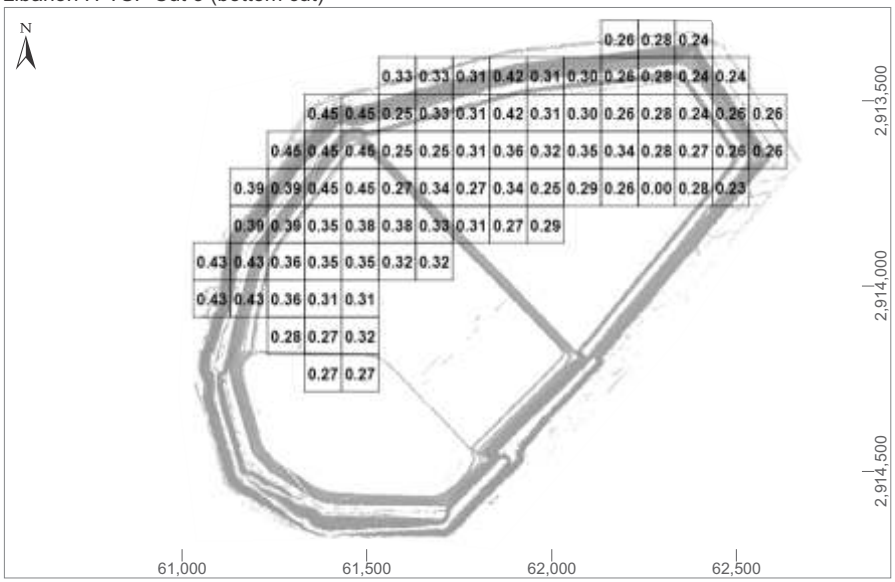
Libanon H-TSF Cut 1 (topmost)



Libanon H-TSF Cut 2 (middle cut)



Libanon H-TSF Cut 3 (bottom cut)



Libanon H-TSF production forecast

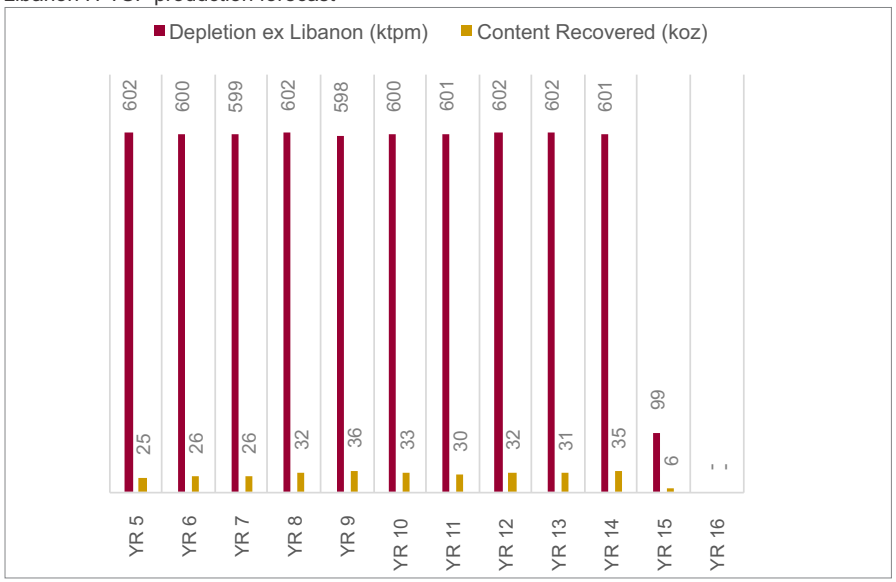
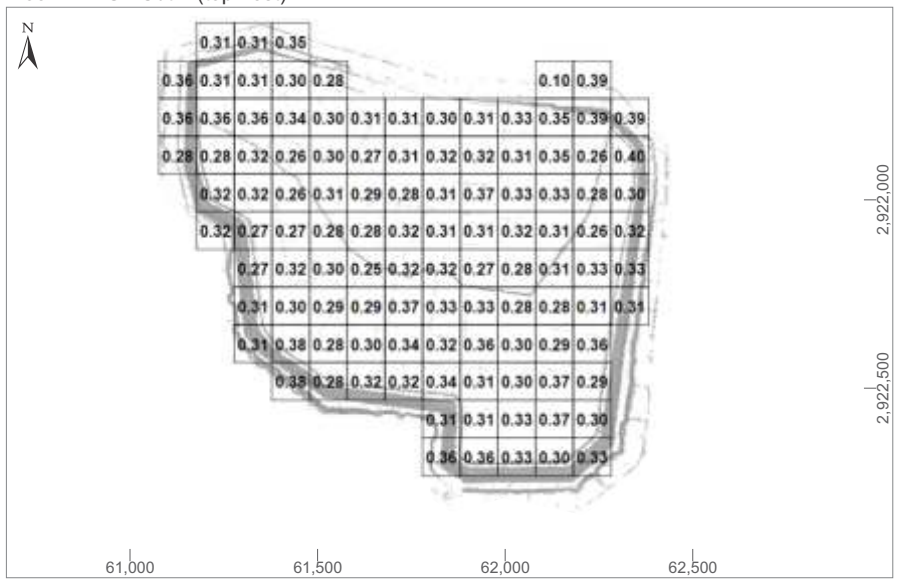


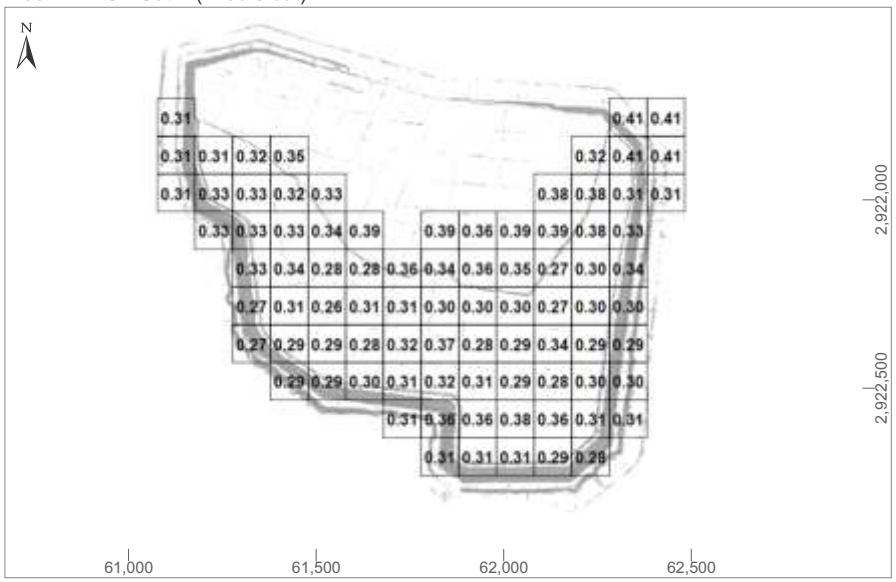
Figure 22: Libanon H-TSF mining schedule and production forecast

Source: Sound Mining 2017, DRD Gold 2017

Kloof 1H-TSF Cut 1 (topmost)



Kloof 1H-TSF Cut 2 (middle cut)



Kloof 1H-TSF Cut 3 (bottom cut)

Kloof 1H-TSF production forecast

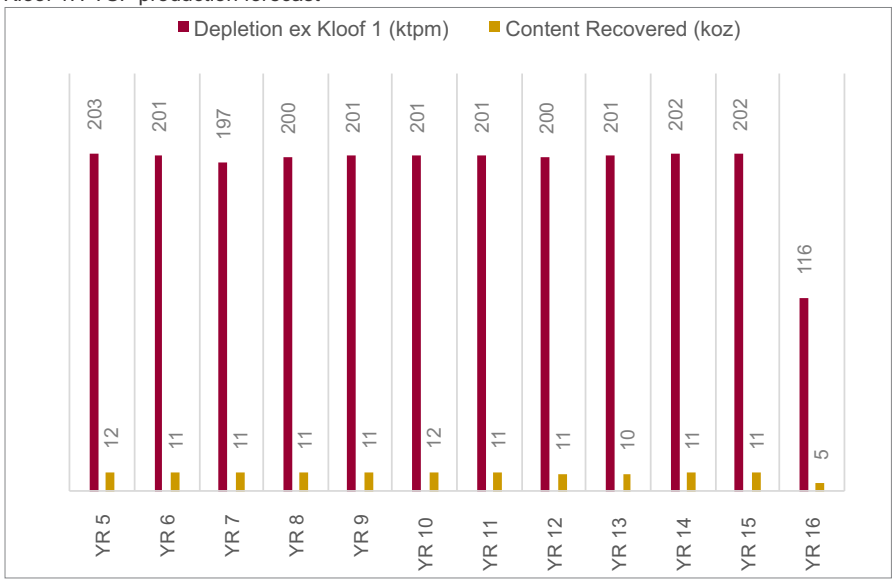
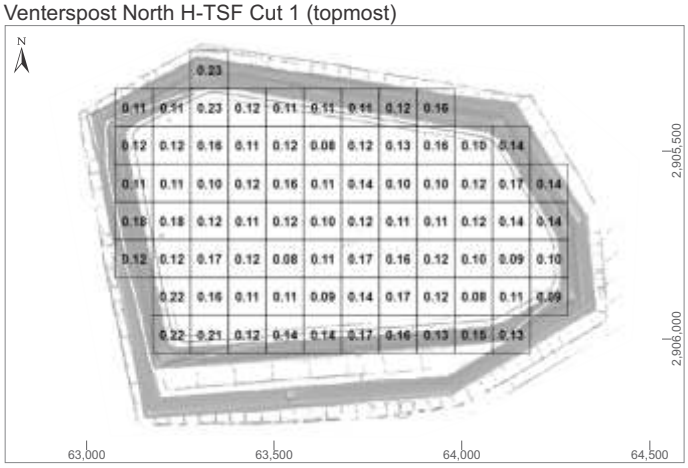


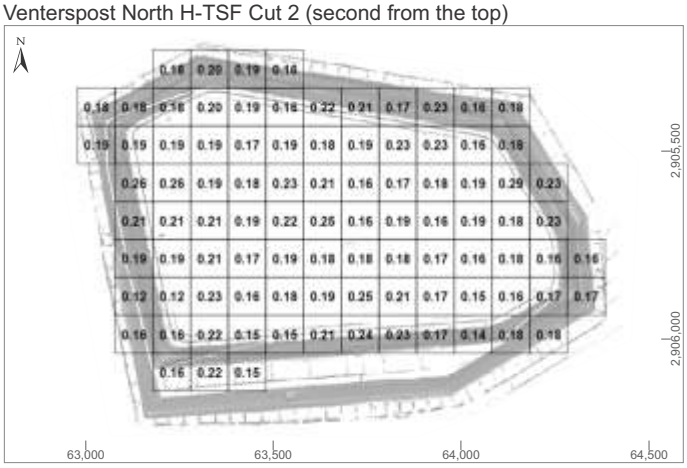
Figure 23: Kloof 1H-TSF mining schedule and production forecast

Figure 24: Venterspost North H-TSF mining schedule and production forecast

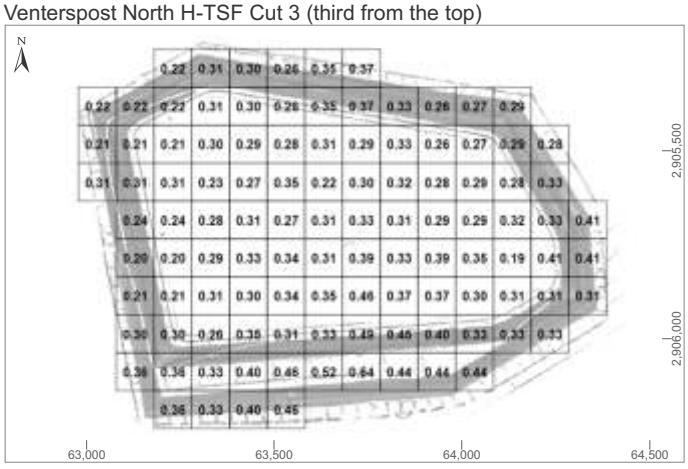
Venterspost North H-TSF Cut 1 (topmost)



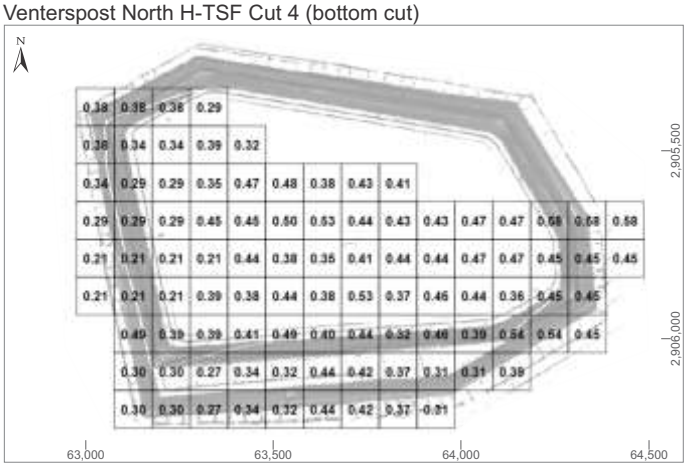
Venterspost North H-TSF Cut 2 (second from the top)



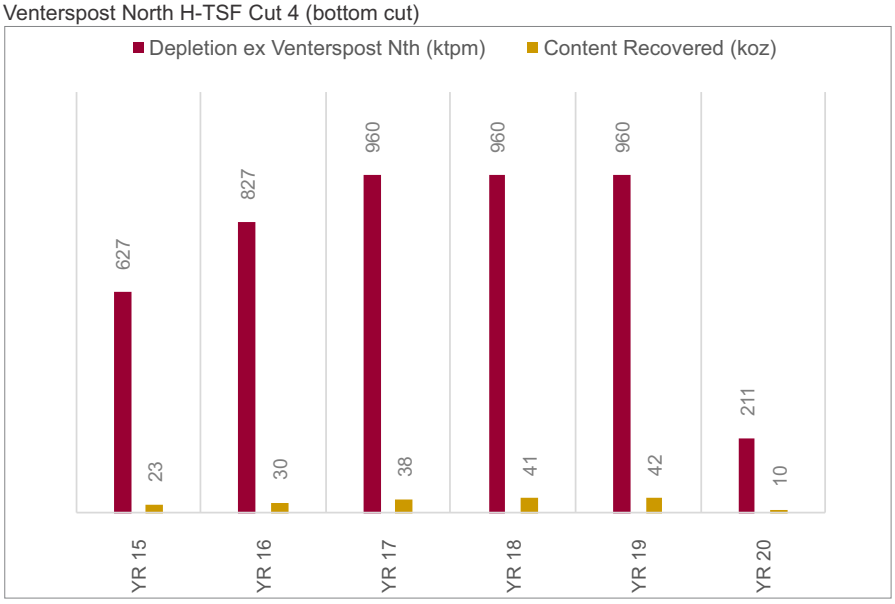
Venterspost North H-TSF Cut 3 (third from the top)



Venterspost North H-TSF Cut 4 (bottom cut)



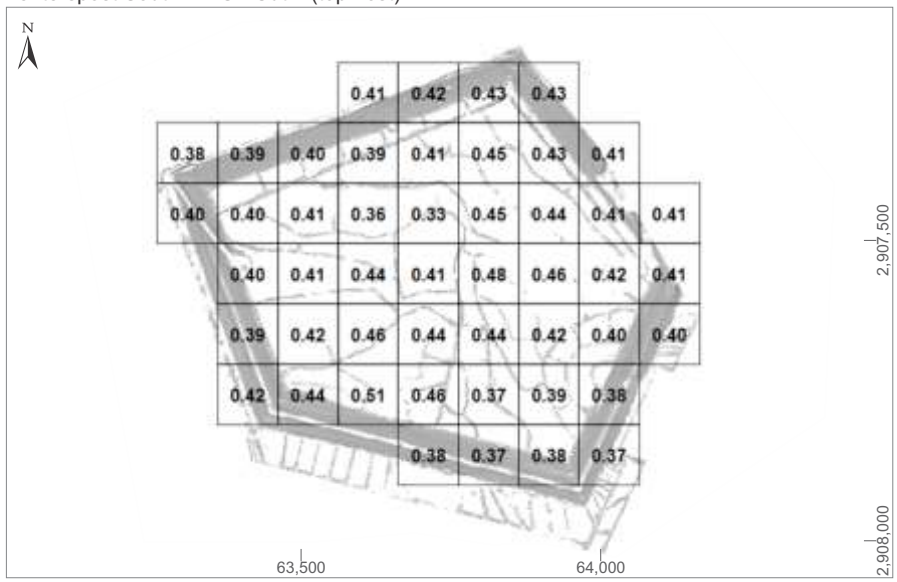
Venterspost North H-TSF Cut 4 (bottom cut)



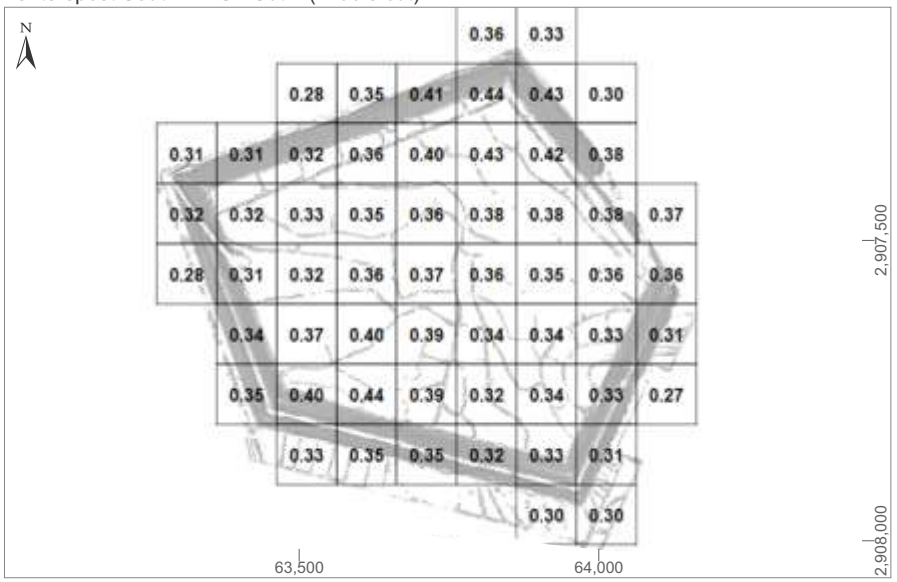
Source: Sound Mining 2017, DRD Gold 2017

Source: Sound Mining 2017, DRD Gold 2017

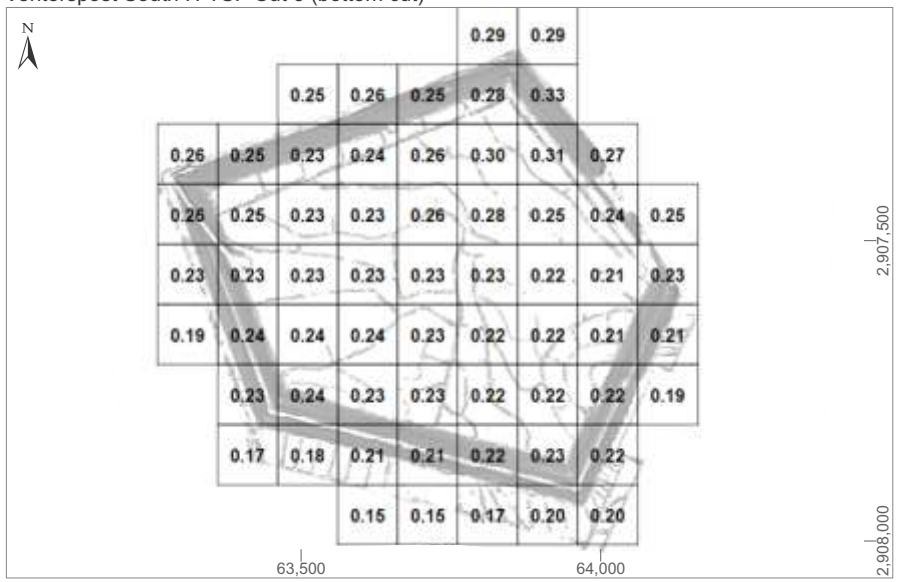
Venterspost South H-TSF Cut 1 (topmost)



Venterspost South H-TSF Cut 2 (middle cut)



Venterspost South H-TSF Cut 3 (bottom cut)



Venterspost South H-TSF production forecast

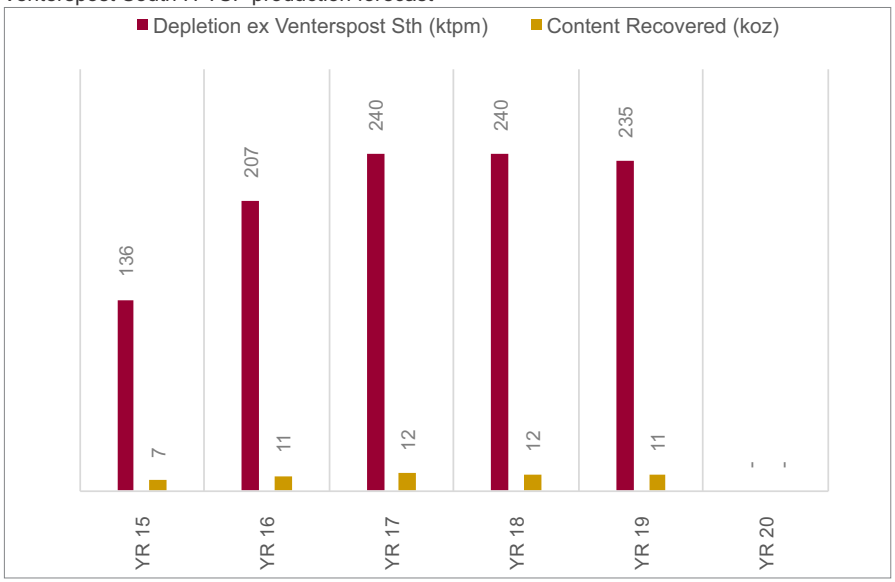


Figure 25: Venterspost South H-TSF mining schedule and production forecast

The Venterspost North H-TSF can be divided into two sections, namely a low grade top section (average 0.18g/t Au) and a high-grade bottom layer (0.35g/t Au). The layers are approximately 25m thick each on average. The grade distribution and production for Venterspost North H-TSF are shown in Figure 24.

The Venterspost South H-TSF shows an increasing grade from the bottom to the top. The deeper layers average 0.23g/t Au, the middle layer approximately 0.35g/t Au and the top layer 0.41g/t Au (Figure 25).

24.4. Mining – opex and capex

The cost and maintenance of the mining equipment, employees and other operational resources will be for the operating contractors' account and are underpinned by contractual agreements with DRDGOLD. No initial capital outlay for the mining will be applicable to the WRTRP and the supplied equipment will be in "mining units" with specific production capacities as shown in Table 18.

Table 18 : Mining equipment list

H-TSF	Tonnage (Mt)	Average production (ktpm)	Steady state production (ktpm)	Required units (No)
Driefontein 3	49.76	345	400	2
Driefontein 5	27.94	464	500	2
Kloof 1	27.90	193	200	1
Libanon	73.23	509	600	2
Venterspost North	54.54	464	960	3
Venterspost South	12.70	177	240	1

The mining contractor will need only two mining units initially but will require an additional three units for Phase 2.

The operating expenditure (opex) estimate for the mining and re-deposition of tailings is supported by actual operational figures and not only by computations from the various feasibility studies that have been undertaken for the WRTRP. They are presented in the working cost estimates as "contractor costs" for Phase 1 and Phase 2A with the Phase 2A contractor costs being adjusted for Phase 2B in the financial analysis when only the two Venterspost H-TSFs are mined.

The capital expenditure (capex) estimate for the pipeline and pumping design to move mined material to the respective plants for processing and for the return of the processed material for re-deposition, was undertaken by in-house DRDGOLD personnel using a bill of materials supplied by Paterson and Cooke, which company is experienced in such mining operations. The capital necessary for this and other infrastructure is provided in Section 31.

24.5. Mining risk and concluding remarks

Hydro-mining is well understood by both DRDGOLD and the current service provider responsible for the hydro-mining and pumping of slurry for processing, and the re-deposition of the tailings from the processing plants on the tailing storage facilities as planned.

DRDGOLD has no intention of redesigning its existing "tried and tested" processes. The responsible contractor will be entitled to decide on various operational alternatives and to deploy capital equipment and manage costs. This will however be in conjunction with DRDGOLD, as part of DRDGOLD's tactical planning for each H-TSF.

The CP has checked the integrity of the mine design and associated costs and is satisfied that the level of detail and accuracy is aligned with the requirements of a PFS.

Scrutiny of the LoM completed by independent mining specialists (i.e. the RVN Group) has revealed that the sequence of extraction and rate of mining have been planned in sufficient detail. The recoveries are supported by metallurgical testwork (Section 25) and the quantities and grades planned are consistent with those estimated in the Mineral Resource estimation.

Selective mining is not an option unless large sections of a H-TSF are rejected and mine scheduling has shown that this is unnecessary.

From a health and safety perspective, hydro-mining does not create, but rather ameliorates the airborne dust problem often associated with fine tailings material. Safe bench heights are governed by the materials strength which is influenced by the phreatic surface within a H-TSF. These have been dormant for many years and the phreatic surface is expected to be well below the surface of the dumps. The drilling programme to define the Mineral Resource did not encounter saturated zones or phreatic surfaces and so the risk of slope failure or liquefaction is considered to be low. A safety burm around the perimeter of the dump will prevent slurry from escaping from the H-TSF in the event of an unplanned slope failure. Slope stability is however easily managed and the hydrological aspects affecting the H-TSFs are not significant to the operation. Geo-hydrological studies for the R-TSF site have been undertaken and are described in Section 32.

The cost and maintenance of the mining equipment, as well as the employees required, will be for the contractor‘s account and will form part of the contractual agreements with DRDGOLD.

25. Technical studies – metallurgical testwork

SR5.3(i)-(vi)

The metallurgical characterisation of the H-TSFs has been included in numerous techno-economic studies from 2000 to date for various combinations of assets and processing flowsheets. The studies have ranged from Scoping Studies through PFS stage to DFS levels of accuracy as summarised in Table 4. The metallurgical testwork included evaluation of various processing options including direct leach, grinding, ultra-fine grinding and flotation. The review of the metallurgical testwork was undertaken by ENC Minerals (Pty) Ltd (ENC Minerals) .

The most comprehensive testwork has been performed on Driefontein 3H-TSF and Driefontein 5H-TSFs with slightly less detailed testwork having been performed on the Libanon, Kloof 1 and Venterspost North and South H-TSFs. The Driefontein 5H-TSF forms the source feed for the WRTRP-Phase 1 and the Driefontein 3H-TSF forms the basis for the alternative option to Phase 2. There is sufficient metallurgical testwork available to evaluate potential metallurgical performance for these two phases. The current metallurgical data available on the feed sources for WRTRP–Phase 2 of the project is to be supplemented by pilot plant trials to be performed on the various H-TSFs during Phase 1 operations. The results from these pilot plant trails will provide the detail required for the development of the DFS on WRTRP-Phase 2.

The recent metallurgical testwork sampling supports a PFS level of study. Additional, bulk sample trials through the pilot plant at the planned DFS stage will provide further confidence in the metallurgical characterisation of the source materials. The diagnostic leach results as well as Au deportment per size fraction of the Driefontein 3 and 5H-TSFs are included in Table 19, Table 20 and Table 21.

Table 19 : Full diagnostic leach tests on un-milled feed samples

Diagnostic results un-milled feed sample	Driefontein 3H-TSF		Driefontein 5H-TSF	
Association	Au Grade (g/t)	% Au	Au Grade (g/t)*	% Au
Gold available to direct cyanidation	0.24	54.7	0.22	52.4
Gold that is preg-robbed CIL	0.02	3.5	0.0	0.0
Gold associated with GCI digestible minerals	0.06	14.9	0.05	11.4
Gold associated with HNO_3 digestible minerals	0.03	6.9	0.04	10.3
Gold associated with carbonaceous matter	0.02	4.1	0.0	0.0
Gold associated with quartz (balance)	0.07	16.0	0.11	25.9
Total	**0.43**	**100**	**0.41**	**100**

Source : Mintek 2015

The diagnostic leach results (Table 19) indicate that direct cyanidation of the feed material should result in minimum plant recoveries of 54.7% (Driefontein 3H-TSF) and 52.4% (Driefontein 5H-TSF). There is however a further 20% of gold locked in silicates that could potentially be recoverable through increased liberation/grinding. This possibility is supported by the fact that approximately 30% of the contained gold is found in the coarse fractions (>106um). Historically the most favourable liberation on Witwatersrand Basin gold bearing ores have been achieved at grind sizes of <75um. Thus, both the diagnostic leach and assay by size results confirm the need to mill the coarse fractions in order to improve recovery.

Table 20 : Driefontein 3H-TSF feed sample assay by size

Particle size (µm)	Mass (%)	Cumulative mass (% mass)	Discrete Grade Au(%)	Discrete Distribution (%)			Cumulative Distribution (%)		
150	5.00	95	1.48	18.00	5.50	0.08	100.00	100.00	100.00
106	12.90	82	0.39	12.20	5.90	1.80	82.00	94.50	99.20
75	17.00	65	0.37	15.30	8.90	7.90	69.80	88.60	97.50
53	10.50	54.6	0.34	8.60	6.80	12.60	54.50	79.80	89.50
38	8.40	46.2	0.34	6.90	6.30	16.10	45.90	72.90	76.90
25	7.80	38.4	0.27	5.10	6.10	14.70	38.90	66.70	60.70
15	24.90	13.5	0.29	17.50	40.20	38.80	33.80	60.50	46.10
-15	13.50		0.5	16.30	20.30	7.30	16.30	20.30	7.30
Total	100.00			100.00	100.00	100.00			
Head Grade (calculated)			0.41						
Head Grade (measured)			0.43						
Variance			4.1						

Source : Mintek 2015

Table 21 : Driefontein 5H-TSF feed sample assay by size

Particle size (µm)	Mass (%)	Cumulative mass (% mass)	Discrete Grade Au(%)	Discrete Distribution (%)			Cumulative Distribution (%)		
150	5.5	94.5	1.13	15.2	4.1	0.9	100	100	100
106	10.8	83.6	0.62	16.3	4.8	1.9	84.8	95.9	99.1
75	15.1	68.5	0.34	12.4	7.9	6.1	68.6	91	97.2
53	10.6	58.0	0.27	6.9	6.3	11.9	56.1	83.2	91.1
38	8.7	49.3	0.32	6.7	6.4	16.1	49.2	76.9	79.2
25	9.0	40.3	0.31	6.8	7.9	17.6	42.5	70.5	63.1
15	22.0	18.3	0.23	12.3	36.9	33.6	35.7	62.6	45.5
-15	18.3		0.53	23.4	25.7	11.9	23.4	25.7	11.9
Total	100.0			100.0	100.0	100.0			
Head Grade (calculated)			0.41						
Head Grade (measured)			0.41						
Variance			0.7						

Source : Mintek 2015

The presence of preg-robbers in the tailings material can be ascertained from the results above. Preg-robbing is the phenomenon whereby the gold cyanide complex, $Au(CN)_2$, is removed from solution by the constituents of the ore. The preg-robbing components may be the carbonaceous matter present in the ore, such as wood chips, organic carbon, or other impurities, such as elemental carbon.

The actual content of the preg-robbers in the samples seems to vary from 0% up to 10% in certain samples. This pattern is consistent with results from other similar operations and is a function of the nature of the material being re-mined. In particular, areas on the H-TSF which contain organic matter and plants (ie side walls, reed beds etc) will have elevated pre-robbing content. It is thus best industry practice to design the plant with a Carbon-in-Leach (CIL) system and not a Carbon-in-Pulp (CIP) system. The current process design does allow for CIL to mitigate the impact of preg-robbers on recovery potential.

Based on the testwork, Sound Mining estimated that the following processing recoveries would be achievable on the various H-TSF feed sources:-

Table 22 : Summary of process recovery potential

H-TSF	Process recovery (%)
Driefontein 3	61.9
Driefontein 5	63.0
Kloof 1	44.6
Libanon	48.5
Venterspost North	39.3
Venterspost South	Assume similar to North

Source : Sound Mining 2017

26. Technical studies – process design DP2 and DP3 upgrade

The design and capital expenditure estimates for the upgrade of the DP2 and DP3 plants were undertaken independently by DRA to an accuracy level of 25%. The operational expenditure has been estimated from actual operational data from the Ergo operations. The design and costings for the plants have been reviewed by Sound Mining and benchmarked against other such retreatment facilities as a test of reasonableness. Sound Mining considers the design and costings to be appropriate for the envisaged project and in-line with industry standards.

The Phase 1 of the WRTRP entails the modification and refurbishment of the existing plants, DP2 and DP3, in order to treat 500ktpm of reclaimed material from the Driefontein 5H-TSF. The intention is that the refurbishment project will be implemented by an Engineering-Procurement-Construction-Management (EPCM) contractor who will complete the scope and hand-over the modified plants to the DRDGOLD operational team. The target completion for the Phase 1 is 1 September 2018. The upgrades include the following:-

- construction and upgrading of relevant pump stations and slurry pipelines and the associated process water pump station and pipeline;
- the upgrading of DP2 from the nameplate capacity of 315ktpm to 500ktpm with minor adjustments to DP3;
- refurbishment of the DP2 conventional carbon-in-leach plant (CIL) plant;
- upgrading of Driefontein 4A-TSF to a cyclone deposition system for additional deposition capacity and a higher rate of rise; and
- further evaluation of all the relevant H-TSF's through the WRTRP pilot plant at DP3.

The existing equipment installed in the DP2 plant will be utilised as far as possible and the existing primary ball mill, CIL tanks and thickeners will be used. One of the current residue buffer tanks will be converted to a surge tank to receive the mined tailings. The DP2 and DP3 upgraded process flow will comprise the following:-

- the slurry from the hydro-mining operation is pumped to a surge tank via a 25m^2 linear trash screen (800µm). Lime, sourced from the existing DP2 lime slaking plant, is added directly into receiving tank for pH control;
- from the receiving surge tank the slurry is pumped to the classification circuit in the milling section which comprises a series of cyclones from which the underflow gravitates either to the ball mill section or directly to the CIL plant;
- the CIL section comprises seven tank stages of 1,600m^3 per tank combining to approximately 12 hours residence time. Each tank is fitted with carbon retaining screens and a recessed impeller vertical spindle carbon transfer pump. Sodium cyanide solution is added to CIL Tank 1 in order to maintain the required concentration for the leach reaction to take place. Slurry flows downstream through the screens and via launders from CIL Tank 1 to CIL Tank 7 from where it exits to the 25m^2 tailings linear screen. Fine carbon is recovered from the screen overflow while the underflow is pumped by the CIL tailings pump to the tailings tank at the slurry receiving area;

- loaded carbon flows upstream from CIL Tank 7 to CIL Tank 1 and is recovered daily from the CIL tank 1 by batch transferring of carbon slurry to the loaded carbon screen and into a holding tank for transfer to the elution circuit.
- loaded carbon will be batch processed through a split 4t AARL elution circuit for gold stripping with the stripped solution reporting to 128m^3 holding tanks. From the holding tanks the solution will be passed through to the electrowinning unit;
- the precipitated gold concentrate will be filtered and smelted for casting in Dore bars in the gold recovery unit prior to dispatch to Rand Refinery Limited for final refining;
- the eluted carbon is thermally regenerated in a horizontal kiln at 700°C and returned to DP2 for re-use in the CIL circuit. Fresh carbon is added to the circuit as required; and
- CIL tailings and oversize waste from the incoming H- TSF re-mined slurry is stored in a mechanically agitated surge tank and pumped by the final tailings pumps to the Driefontein 4A-TSF.

26.1. Capex– DP2 and DP3 upgrade

The capital expenditure (capex) estimation of the processing portions of the WRTRP-Phase 1 was undertaken independently by DRA effective December 2017 at an accuracy level of 25%. Sound Mining reviewed the capex estimate for the upgrade to the DP2 and DP3 and is satisfied that the estimate is appropriate and in-line with similar projects with which it is familiar. The estimate shown in Table 23 excludes project management services and contingencies, both of which have been provided for in the total Project capex estimate.

The capex estimate for the gold recovery plant was undertaken by Azmet (Pty) Ltd as shown in Table 23:-

Table 23 : Capital expenditure for the upgrade of DP2 and DP3

Cost Element	Capital Cost Estimated (ZARm)
DRA estimate excluding gold recovery unit	
Civil works	0.360
Structural	4.820
Plate Work	0.676
Mechanicals	18.071
Piping	4.371
Electrical (E,C&I)	8.869
Transport	0.729
Sub-total (capex components from DRA)	37.896
Azmet gold recovery unit	
Mechanical	38.86
Civil works	2.40
MCC/fine carbon handling	8.41
Construction	1.40
Sub-total (capex components from Azmet)	51.07
Total	**88.97**

Source : DRA 2017, Azmet 2017

26.2. Opex – DP2 and DP3

The opex estimates for the Phase 1 DP2 and DP3 processing plants are provided in Table 24 and are based on actual operating costs for the Ergo operations. Included in the estimate is the contractor costs for mining of the H-TSFs and tailings re-deposition. A 15% contingency has been included in the financial analysis.

Table 24 : Opex estimates for Phase 1 including processing plants and mining

Description	Phase 1		
	Annual ('000ZAR)	Monthly ('000ZAR)	Cost per tonne (ZAR/t)
Consumables	5,376	448	0.90
Reagents	79,056	6,588	13.18
Power	80,916	6,743	13.49
Water	60	5	0.01
Wages (85% fixed)	53,300	4,442	8.88
Operating spares (70% fixed)	51,000	4,250	8.50
Contractors	30,000	2,500	5.00
Assay Laboratory	1,320	110	0.22
Security (fixed)	10,800	900	1.80
M&S (fixed)	72,000	6,000	12.00
Total	**383,828**	**31,986**	**63.98**

Source : Ergo 2017

27. Technical studies – process design - CPP

The process design for the central processing plant in the “original” WRTRP has been through many iterations and included uranium and sulphur extraction circuits in various PFSs and DFSs over the last ten years. However, DRDGOLD has made the strategic decision to implement the simple gold extraction process without uranium and sulphur extraction as illustrated in Figure 26. Consequently, the latest design and costing for the process plant do not include uranium and sulphur circuits with no additional environmental impact than previous designs or the current arisings from the Sibanye-Stillwater mining operations (see Section 28).

The PFS design and capital expenditure estimates for the CPP was undertaken independently by DRA effective as of December 2017. The operational expenditure has been estimated from actual operational data from the Ergo operations. The design and costings for the CPP were reviewed by Sound Mining and benchmarked against other such retreatment facilities as a test of reasonableness. They are considered to be appropriate for the envisaged project and in-line with industry standards.

The design criteria included a throughout of 1.2Mtpm as summarised in Table 25:-

Table 25 : CPP design criteria

Component	Units	Metric
CPP		
Throughput	tonnes per month (tpm)	1,200,000
	tph	1,818
Operational time	days per month (d/m)	30
Hours per day	hours per day (hr/d)	24
Daily operation	h/d	22
Utilisation	%	91.67
Volumetric Flow Rate	m^3/hr	2,504.74
Feed Grade	Au g/t	0.346
Dissolution	%	56.6
Washed residue grade	Au g/t	0.15
Dissolved loss	Au g/t	0.01
Overall leach recovery	%	53.7
Nominal leach residence time	hrs	12
Gold Recovered	g/t	0.186
Monthly Gold Produced	kgs	223
Upgrade Ratio		2,000
Gold Recovered	g Au/hour	338
Reagents		
Lime - bulk LG CIL addition	kg/t	1
Lime - total	tpm	1,200
Leach cyanide - bulk LG CIL addition	kg/t	0.25
Leach cyanide - total	tpm	300
Oxygen - bulk LG CIL addition	kg/t	0.5

Component	Units	Metric
Oxygen - total	tpm	600
Flocculant	kg/t	0.025
Flocculant	kg/month	11,880
Activated carbon - total	kg/month	36,000
Acid wash - total	tpm	120
Caustic - total	tpm	90
Sizing		
Maximum	microns (µm)	500
+150 micron	%	5.3
+106 micron	%	10.8
+75 micron	%	14.9
+53 micron	%	11.0
+38 micron	%	9.4
+25 micron	%	7.6
+15 micron	%	22.3
-15 micron	%	18.9
Moisture Content	%	10
Solids SG		2.73
Bulk SG		1.4
Return Water from Tailings	%	65
Power	kW	5,821
Resources		
Driefontein 3H-TSF		
Tonnes	Mt	50.5
Grade	Au g/t	0.47
Reclamation Rate	tpm	400,000
Resource Life	years	11
Kloof 1H-TSF		
Tonnes	Mt	28.4
Grade	Au g/t	0.325
Reclamation Rate	tpm	200,000
Resource Life	years	11.8
Libanon		
Tonnes	Mt	74.3
Grade	Au g/t	0.27
Reclamation Rate	tpm	600,000
Resource Life	years	10
Venterspost N&S		
Tonnes	Mt	68.2
Grade	Au g/t	0.285
Reclamation Rate	tpm	1,200,000
Resource Life	years	5

Source : Sibanye-Stillwater 2017, DRDGOLD 2017 and DRA 2017

The process flow for the CPP includes the following components, which are standard units, readily available and have been successfully used in the Ergo as well as other similar operations:-

- *slurry receiving and trash screening:* slurried material pumped from the hydraulic mining operation passes through a sampling station before being screened on two linear screens in parallel. The screen oversize discharges into the tailings tank before being pumped to the TSF, whilst the screen underflow collects in a 1,500m^3 agitated surge tank. The pH is adjusted by adding lime to the tank;
- *milling, classification and thickening*: the slurry is pumped from the surge tank to the milling and classification circuit, which comprises two streams, with stream 1 treating 60% of the throughput whilst the balance is fed to stream 2. Both circuits will be operated in the same manner.

  The classifying circuit is a series of cyclones, namely:

  - a primary cyclone: underflow deposits into the secondary cyclone feed sump to be fed to the secondary cyclone. Both the primary and secondary cyclones overflow deposit into the tertiary cyclone feed sump;

- the secondary cyclone: underflow gravitates to the (6.1m diameter x 7.3m length) 4,500kW mill sourced from the current DPP 2 plant. The material with a F80 of 150µm passes through the open milling circuit delivering a final product grind of 75µm P_{80};
- the slurry is pumped to the tertiary cyclones from which the overflow gravitates to the fines thickeners, whilst the underflow gravitates to the secondary cyclone feed sump. The thickener underflow combines with the milled material before being pumped to the CIL circuit whilst the thickener overflow collects in the 15,000m^3 process water pond.

Stream 2 is fitted with a smaller (4.9m diameter x 9.15m length) 3,000kW mill which is also sourced from the DP2. The circuit makes provision for the mills to be bypassed with the hydraulically mined material reporting directly to the CIL circuit.

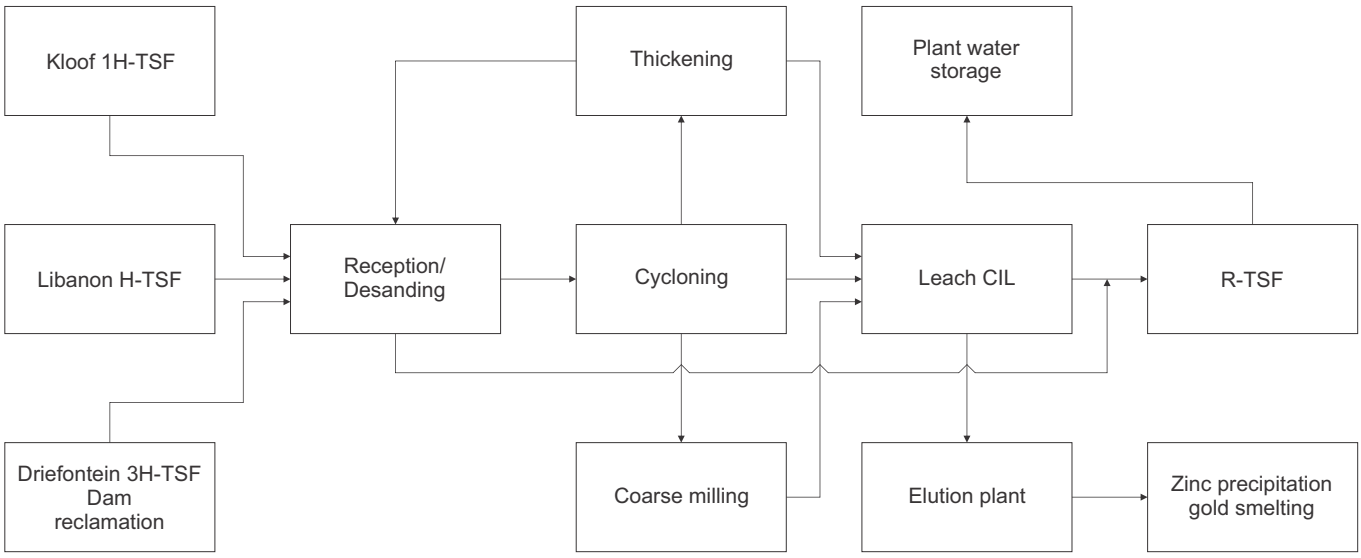
- *pre-conditioning and carbon-in-leach circuit:* material transferred from the milling and classifying circuit is preconditioned with further pH adjustments and the addition of oxygen. Oxygen levels and leach kinetics are further increased by passing the material through a bank of high shear reactors. Thereafter the material enters the first of ten CIL tanks and an online cyanide analyser is used to control the cyanide addition. Each CIL tank is fitted with an agitator and three oxygen spargers, allowing oxygen, consumed in the leach reaction, to enter the tank at high pressures. Each tank is fitted with two interstage screens, retaining the carbon during slurry transferral, whilst a single carbon transfer pump installed on each tank is used for carbon movement;
- *acid wash, elution and carbon regeneration:* loaded carbon transferred from CIL circuit is collected in a carbon storage hopper before being treated by a 3% hydrochloric acid (HCl) solution in a single 10t Acid Column. On completion of the acid wash cycle, the solution is fed to a neutralisation tank and pumped to the tailings storage facility. The acid washed carbon is then educted to either one of two 10t elution columns containing a caustic solution of 3% sodium hydroxide (NaOH) and 1% sodium cyanide (NaCN) and the solution is heated and pressurised. After the set temperature and pressure is achieved, the solution is transferred to the CIL pregnant solution tank. The carbon reports to one of two 750kg/hr carbon regeneration kilns via a vibrating screen from which the underflow collects in the fines carbon tank before being pumped to the fine carbon treatment area, and the screen overflow is pumped to the CIL circuit ; and
- *electrowinning*: the pregnant solution from the elution circuit is pumped through the electrowinning circuit consisting of two cells in parallel (per circuit). The electrowinning circulation continues for 18 hours, or until gold in solution value drops below a pre-set value measured by manual sampling. Cathodes removed from the electrowinning cells are transferred to calcining ovens, whilst the sludge reports to the sludge settling tank. Product from the calcining oven is moved by hand to an induction smelting furnace. Borax, silica, potassium nitrate and sodium carbonate are added to the furnace as flux chemicals to collect impurities. Gold and slag from the furnace are poured into a mould trolley where Dorê gold is recovered as the final product.

Raw water for the CPP is to be supplied from underground sources at Kloof 10 shaft and stored in a 300m^3 raw water tank. Process water generated in the thickeners and return water will be fed to a 15,000m^3 lined process water pond with a dirty water compartment to allow sufficient settlement of solid particles before overflowing to a clean compartment. A header system will be used for pressurised process water distribution.

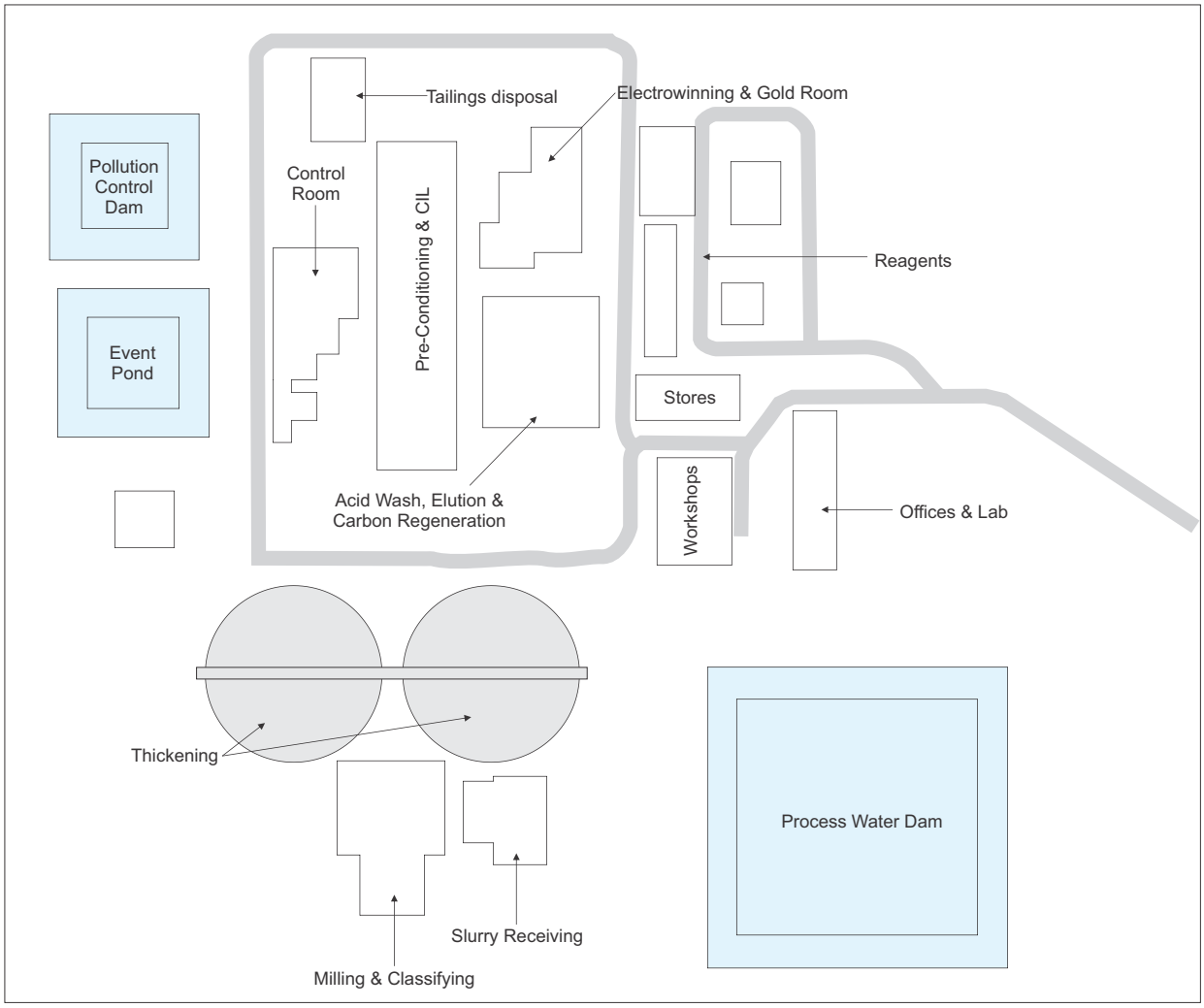
A detailed electrical Point of Delivery (POD) study was conducted by Tenova Bateman to identify the optimal power supply sources and upgrades required for both Phase 1 and Phase 2 of the Project. Existing infrastructure will be used as far as possible with upgrades to transformers required in certain areas. Overhead supply lines will be preferentially used for electrical supply to the various sites as discussed in more detail in Section 30.

The design for the CPP has been based on representative and adequate metallurgical testwork which will be supplemented in the DFS phase of project development by additional pilot plant trials. The plant design is based on actual operating plants and the confidence in the design will be strengthened in the trial pilot plant studies to be undertaken for the DFS. The mass balance for the plant is appropriate (Table 65) and the CPP has been included in the environmental permitting applications submitted by Sibanye-Stillwater to the DMR. The actual site of the CPP falls within the freehold area held by Sibanye-Stillwater.

Figure 26: Process flow for the CPP



CPP site plan



Source: Sound Mining 2017, DRD Gold 2017, DRA 2017

The tailings material arising from the new plant will be adequately stored in the R-TSF (Section 78 to Section 80) which will have excess capacity from both a depositional rate (1.4Mtpm) and final capacity perspective (289Mt). All the necessary infrastructure requirements have been considered and are considered appropriate for the project stage of development. Sound Mining concurs with DRA's recommendation that a comprehensive risk analysis be conducted during the Front End Engineering Phase (FEED) phase to identify any potential errors in preliminary quantities and additional refurbishments costs that cannot be identified at this point in time. No contingency has been made for this possibility and it is recommended that DRDGOLD provide contingency funding for this eventuality.

27.1. Capex estimate for the CPP

The capital costs for the CPP have been based to a large extent on historical information and preliminary designs using conservative assumptions (DRA 2017). The general approach applied to the estimation was to utilise cost elements from a recent, similar DRA project currently in execution with an updated mechanical equipment list for which industry quotations were obtained.

The DRA cost estimate was based on a project execution strategy whereby specific segments of the construction would be awarded to specialised contractors. An overall Project contingency of 15% was applied in the DCF model as well as a Project services fee allocation. Sound Mining considers the capex estimate for the CPP to reasonable and is in-line with the estimates for similar projects in the industry.

Table 26 : Capital expenditure for the CPP

Cost Element	Capital Cost (ZARm)
Earth Works	26.466
Civil Works	71.683
Structural	84.531
Plate Work	119.042
Mechanicals	383.721
Piping	79.555
Electrical (E,C&I)	161.383
Transport	6.136
Buildings	16.210
Pre-production	18.771
Spares	16.503
Total	**984.001**

Source : DRA 2017

27.2. Opex estimate for the CPP

The opex estimates for the Phase 2 CPP and mining operation is provided Table 27 and are based on actual operating costs for the Ergo operations. The opex estimates are based on real operating costs over the last five years and includes the contractor mining costs.

Table 27 : Opex estimates for the CPP and mining of Phase 2

	Phase 2		
	Annual ('000ZAR)	Monthly ('000ZAR)	Cost per tonne (ZAR/t)
Consumables	12,902	1,075	0.90
Reagents	189,732	15,811	13.18
Power (20% fixed)	198,660	16,555	13.80
Water	144	12	0.01
Wages (85% fixed)	57,031	4,753	3.96
Operating spares (70% fixed)	72,420	6,035	5.03
Contractors	76,320	6,360	5.30
Assay Laboratory	3,168	264	0.22
Security (fixed)	14,400	1,200	1.00
M&S (fixed)	72,000	6,000	5.00
Retrenchment provision	1,440	120	0.10
Total	**698,217**	**58,185**	**48.50**

Source : Ergo 2017

The opex estimates are considered by Sound Mining to be conservative although are higher than the opex for other reclamation projects. The reason for the higher opex is the considerably longer distance the slurry has to be pumped in comparison to other projects; the inherited, large labour force; and the inclusion of concurrent rehabilitation and other costs such as retrenchment provision.

28. Technical studies – infrastructure – Driefontein 4A-TSF and R-TSF

SR5.4(i)-(iii)

28.1. R-TSF – design criteria

The WRTRP entails the reclamation of approximately 246Mt of tailings from numerous geographically separated H-TSF sites and this operation will require adequate storage facilities for the new tailings arising from the Project. Phase 1 of the WRTRP will require the processing of the Driefontein 5H-TSF and re-deposition of the new tailings (approximately 30Mt) onto the currently active Driefontein 4A-TSFwhich will be upgraded to accommodate the additional deposition. The cost of the expansion and upgrade of the Driefontein 4A-TSF is estimated by Beric Robinson Tailings (Pty) Ltd (BRT) to be approximately ZAR16.1m.

The implementation of WRTRP-Phases 2A and 2B will require the establishment of a R-TSF to accommodate the over 216Mt of tailings material planned for the Phase 2 of the Project.

The site of the R-TSF was extensively studied as part of the original Gold Fields' WWP (Table 4) by Metago (Pty) Ltd and the Rand Uranium CUP by Golder Associates (Pty) Ltd (Golder 2010). Some of the H-TSFs reside on sensitive dolomitic areas which may be potentially impacted by seepage and runoff and the remnant radioactive materials contained within the tailings may pose a health risk to surrounding communities. Taking these factors into consideration, the WWP and CUPs advocated two separate, independent deposition facilities on the Transvaal Supergroup basement and the site selected by Gold Fields for the WWP was approved under NEMA for an area of 328ha to contain 750Mt to a maximum height of 110m. Although the permitting for this site has been granted, lower cost alternatives were identified.

The possibility of re-depositing the tailings onto the existing disturbed areas of the H-TSFs to be reclaimed was considered in the 2012 PFS and again in the 2015 DFS by Bateman Tenova. This option for various practicality reasons was rejected including the presence of sinkholes in the Driefontein and Kloof H-TSF sites.

Various studies post 2012 were undertaken at a DFS level of accuracy for different combinations of facility size and tailings geochemistry with the latest version being undertaken by SLR Consulting South Africa (Pty) Ltd (SLR Consulting) in January 2017 for the current configuration of the WRTRP- Phase 2, which does not include the previous criteria of uranium and sulphur extraction. The study was independently reviewed by Golder Associates (Pty) Ltd in 2017 which concluded that the design is fully compliant with South African legal requirements and standards of "good practice" with no significant risks or fatal flaws having been identified.

Conventional TSF construction methods which limit the rate-of-rise to <2.0m/yr would require a large footprint area for the R-TSF and given the extent of existing regional, municipal and mining related infrastructure in the area, the location of a suitably sized footprint to minimise impacts was challenging. Issues of property ownership, geology and the locations of streams, wetlands and dolomites also required consideration. Previous DFSs showed that conventional drywall, cyclone and thickened TSF construction methods would not be suitable or cost effective in the case of the WRTRP R-TSF, largely due to:-

- the relatively high slurry densities proposed to allow for optimal energy efficiencies and for the R-TSF to be developed at increased rates-of-rise which in turn will reduce the required footprint size of the facility;
- a requirement to consider a R-TSF development solution which involves a side slope which is rehabilitated concurrently up to the level of tailings as is considered best practice; and

- a need for the selected tailings deposition method to not increase the risk of acid generation of the reprocessed tailings.

A combination of field and laboratory testwork and numerical modelling as part of the 2015 DFS for the Project, has indicated that a maximum allowable rate of rise-of-rise of up to 3m/year can be achieved by using a spigot deposition system and maintaining tailings slurry relative density of between 1.55t/m^3 and 1.6t/m^3. The increased allowable rate of rise allows for a decrease in the required footprint area of the R-TSF and the footprint has been sized for a future total tailings treatment rate of up to 4.0Mtpm. In order to limit construction time prior to commissioning and to defer some capital expenditure, a phased construction of the R-TSF has been planned. The R-TSF will consist of a lower and upper compartment; with only the lower compartment constructed and developed as part of the WRTRP-Phase 2 (Figure 27). The compartment capacity calculations were based on the assumption that the lower and upper compartments will be stand-alone facilities independently constructed with the lower compartment having a capacity of 286Mt, a height of 49m, a footprint of 667ha and a tailings delivery rate of 1.4Mtpm (SLR 2017).

28.2. R-TSF – geotechnical and geochemical investigation

Geotechnical investigations were conducted in three phases to identify any geotechnical fatal flaws, confirm the viability of the entire R-TSF site and to improve the confidence in and accuracy of the costing estimates. The geotechnical studies showed that the R-TSF site is suitable for the construction of a TSF and its related infrastructure. The natural material available on site will generally be suitable, both qualitatively and quantitatively, for the construction of the various structures such as embankments, canals, foundations, roadways, compacted clay liners and for use as cover placement. In areas with collapsible topsoil an allowance was made to excavate and use this material for general compacted fill, and to use an impact roller to compact the remaining material from surface in order to reduce its collapse potential to acceptable levels thereby forming a suitable foundation in these areas.

The geochemical characterisation of the tailings and the estimation of the R-TSF pore water quality was based on geochemical work undertaken during previous phases of the Project in 2008, 2009 and 2010, as well as additional work undertaken as part of the 2015 DFS. The SLR design included one or a combination of seepage flux controls such as a suitable R-TSF cover, seepage interception system such as a curtain drain, incorporation of geomembrane liners to achieve sufficient reduction in the average concentration of conservative elements measured at the critical receiving environment. The previous studies assumed sulphide removal as part of the process to render the final tailings non-acid generating but the presence of other deleterious elements in the tailings material prescribed lining of the R-TSF and consequently the sulphur and uranium components were not removed in the latest process design. In addition to the geomembrane, an acid generating waste will however require a much more robust cover layer and other measures to ensure adequate protection of the environment from contaminated surface runoff and dust blow-off since the tailings would be acid-generating wherever it is exposed to oxygen.

The geochemical characterisation in accordance with the National Norms and Standards indicates that the processed tailings will classify as a Type 3 Waste requiring disposal at a facility with a prescribed Class C barrier or geomembrane. The key constituents that prevent a re-classification to a Type 4 Waste include arsenic, barium, chromium IV, copper, manganese, nickel, lead and antimony in the case of total concentrations, but more importantly arsenic in the case of leachable concentrations.

In addition to the geomembrane, additional mitigation measures were built into the design of the R-TSF to reduce the impact on groundwater quality:-

- special decant towers were designed to minimise the size of the supernatant pond on the TSF which results in reduced high seepage areas and reduces the overall contaminant plume progression;
- cascade ponds in place of catchment paddocks limit the migration of groundwater contaminants;

- spigot discharge of slurry deposition reduces the risk of acid drainage developing from the outer zone of the R-TSF by preventing the concentration of sulphides and is expected to contribute significantly to the improved overall drainage quality from the R-TSF; and
- concurrent rehabilitation of the side slopes of the R-TSF to reduce net infiltration of rainfall through the side slopes, which reduces the amount of water reporting as seepage to groundwater or the underdrains.

28.3. R-TSF – capex and opex estimations

The WRTRP-Phase 2 R-TSF capex estimation was undertaken by SLR Consulting in September 2016 and the estimate has been escalated by 8% to January 2018 quantum's. The capex estimate is provided in Table 28 and excludes project management costs and contingencies as these have been collated and applied on an overall project basis. The capex estimate was specifically for the lower compartment of the R-TSF for a deposition of 1.4Mtpm and a total storage capacity of 286Mt (Section 29.1). A comprehensive bill of quantities was drawn up and no contingencies or engineering design were included. Golder reviewed the design and was of the opinion that the accuracy of the quantities is adequate for the purposes of a DFS.

The SLR Consulting capex estimate included an Advanced Water Treatment Plant which does not form part of the WRTRP.

Table 28 : Lower compartment R-TSF capex estimate

Description	Cost ('000ZAR)
Preliminary and general	188,900
TSF	791,300
Silt trap	6,100
Return water dam	103,700
Piping	138,600
Total	**1,228,600**

Source: SLR Consulting September 2016

The opex for the R-TSF was estimated by SLR Consulting and has been included in the opex costs for Phase 2 (see Table 27) as part of the mining contractor costs. The mining contractor will be responsible for the hydro-mining as well as the re-deposition of the tailings after processing.

28.4. R-TSF closure costs

The closure costs for the lower compartment of the R-TSF were estimated by SLR Consulting in September 2016 and have been escalated by 8% to January 2018 figures:-

Table 29 : Lower compartment R-TSF closure cost estimate

Description	Cost (ZARm)
Preliminary and general	0.67
Dismantling and demolition	5.50
Grouting and backfilling	5.77
Earthworks	105.45
Soil preparation	0.19
vegetation	30.47
General site clean-up	0.29
Consultant costs	5.44
Total	**153.78**

Source : SLR Consulting 2016
Apparent computational errors due to rounding

Figure 27: R-TSF layout showing lower and upper development stages

Source: Sound Mining 2017, SLR 2017

29. Technical studies – infrastructure - water

The water supply to the WRTRP was designed in the 2015 DFS by Bateman Tenova (Table 4). Two water use licences have been granted for the Kloof and Driefontein components of the WRTRP (Section 14.3). The licences permit abstraction/pumping of water from underground workings at Kloof 10 shaft and Driefontein 10 shaft to a maximum of 9,487Mℓ/a and 2,555Mℓ/a respectively.

The water supply for the reclamation is a combination of reclaimed water and make-up water from underground mining sources at Driefontein 10 shaft for Phase 1 and Kloof 10 Shaft for Phase 2 (Figure 19). Multiple Diversified Water Utilities (DWU) water pumps, situated in the DP2 and DP3 sites during Phase 1, will draw water from large capacity storage tanks. The storage tanks will be utilised in series to generate the required volume and pressure. During Phase 2, the high-pressure water pumps will be either located in the CPP site, or for more distant resources, closer to the reclamation areas to improve power efficiency.

According to DRDGOLD (2017), the water requirement for Phase 1 hydro-mining and processing is 20M litres per day (ℓ/d) of which 6Mℓ/d will be supplied from pumping already impacted underground water from Driefontein 10 shaft and 14Mℓ/d will be provided in the form of the return water from the Driefontein 4A-TSF.

The hydro-mining and processing of the Driefontein 3H-TSF, Kloof 1H-TSF and Libanon H-TSF will require 14.3Mℓ/d; 7.2Mℓ/d and 21.4Mℓ/d respectively (a total of 42.9Mℓ/d). The mined tailings will be pumped to the CPP and the remaining water supply will be sourced from the return water from the R-TSF which is planned to be 35.6Mℓ/d and underground impacted water from Kloof 10 shaft. The Kloof 10 shaft has ample available capacity (36Mℓ/d) as well as existing storage capacity underground and on surface.

Sound Mining concludes that the available water supply more than adequately meets the WRTRP requirements including the make-up water during the dry season. The supply from underground sources at Driefontein 10 shaft and Kloof 10 shaft do not exceed the permissible pumping rates approved in the WULs.

New tailings will be disposed into the Driefontein 4A-TSF for Phase 1 and the R-TSF for Phase 2. The return water from these active TSFs will be contained in small return water dams and pumped to the process plants for re-use. According to the WULs the return water will be treated in an advanced water treatment facility and discharged into Leeuspruit or disposed to dust suppression. Instead of this open configuration DRDGOLD has opted for a closed water system throughout the project life so no water treatment or discharge into the surface water courses will occur. The final water still in use at the point of closure will be deposited onto the A-TSFs for evaporation.

Water will be supplied to reclamation areas and processing facilities from bulk water storage facilities and water pump stations at the water source will draw make up water for delivery via overland pipelines to the bulk water storage facilities.

The return water is saturated with $CaSO_3$ (gypsum) throughout the entire system due to the salt component in the Driefontein dumps, the relatively high salt count in the make-up water sources, as well as the fact that a component of the water volume will be recirculated. The dissolved salts pose a risk of scaling on the internal walls of the pipelines and will have to be mitigated. In addition, the effect of suspended or dissolved deleterious elements in the closed-circuit water, especially uranium and arsenic, will have to be investigated, effective treatments proposed in the DFS planning stage and costed into the rehabilitation provision.

30. Technical studies – infrastructure - power

The power supply design and costing for the “original” WRTRP was included in the 2015 DFS by Bateman Tenova and whilst the Project has changed in its scope since that point, the supply quantum and points of delivery (PoDs) for those aspects that remain unchanged, are appropriate to the current WRTRP.

For the purposes of the DFS it was assumed that power at a national level from Eskom would be available and no provision was made for alternative supplies. Power is currently supplied to the various Sibanye-Stillwater mines associated with the WRTRP from Eskom's 132kV and 44kV grid. Thereafter, the voltage is transformed down to 6.6kV.

A study was conducted to identify the various PoDs which would be the most suitable for the supply of power to the various components of the WRTRP. The selection criteria included the power and equipment availability within the substations and routing from the closest bulk power substation to the point of consumption. The PoDs feeding substations with sufficient installed capacity are shown in Table 30 and notification to Eskom of the increased required load (Nominal Maximum Demand – NMD) within existing contracts will be made at the appropriate time.

Table 30 : Power requirements for the WRTRP

Site Name	Eskom PoD	Additional Load (KVA)	Total Current Installed Capacity (KVA)	Rolling 12 months Maximum Demand (KVA)	Revised NMD Eskom (KVA)	Spare Capacity Remaining (KVA)	Percent Capacity Utilised (%)
Driefontein 3	West Driefontein 6 shaft	5,455	50,000	17,086	22,541	27,459	45
Driefontein 5	West Driefontein DP2 and DP3	5,866	40,000	25,377	312,423	8,757	78
Libanon	Kloof 10 shaft pumping station	6,081			21,281	18,719	53
CPP	Kloof MP1 (Kloof 1 shaft winders)	12,632	100,000	15,288	47,992	12,008	
RTSF	Kloof 4 shaft	1,195	80,000	63,341	64,746	15,464	80

Source : Bateman Tenova 2015

The Kloof 1 shaft winder substation will be upgraded with the purchase of two new transformers by Kloof mine to replace the existing four transformers in the substation. There are two spare transformer bays which will be utilised to supply power to the CPP from two new dedicated WRTR 132/11kV plant transformers as part of the project.

A new Eskom transformer is currently scheduled to be added to Kloof 4 shaft which will create redundancy thereby providing sufficient capacity to feed the RTSF.

Overhead lines will be utilised as far as possible throughout the Project to reduce the installation costs and reduce the risk of cable theft. The aggregate load requirement has been based on a conservative diversity factor of 0.8 for the low voltage loads, which represents a relatively flat load profile.

The provision of emergency power to the Project has been limited to providing only enough emergency power to ensure that selected critical process plant equipment will be able to re-start immediately in a power failure condition. Containerised diesel generators will be available at the CPP, DP2 and DP3.

The power requirement to the various components of the WRTRP has been shown to be within the current spare capacity to the Driefontein and Kloof mining complexes, and no significant project risk is identified that could prevent exploitation of the assets. Timeous modifications to the agreements with Eskom and sufficient allowance for the rising cost of power will have to be incorporated into the Project management and economic planning.

31. Technical studies – Infrastructure – pipelines and pumping

The hydro-mining, reprocessing and re-deposition of tailings material requires a pipeline network to be constructed. Slurry pipelines will be needed from the hydro-mining sites at the H-TSFs to the processing plants and tailings pipelines from these processing plants to the Driefontein 4A-TSF and R-TSF. In addition, high pressure water pipelines are necessary to supply the mining operations from bulk storage facilities and separate low pressure water transportation pipelines are needed to provide water to the processing plants via return water dams from the A-TSFs. The pipeline and pumping circuits for the "original" WRTRP were included in the 2015 Bateman Tenova DFS and several iterations of the pipeline routes, with alternative options, have been proposed since that time based on economic considerations and environmental authorisations.

A number of existing pipelines are present for which previous authorisations in 2010 were obtained and these routes and infrastructure, will be upgraded with the necessary amendments to the previous authorisations being required. The disturbed nature of the areas implies that such authorisations are unlikely to be unreasonably withheld.

The design for the pipelines was undertaken in-house by DRDGOLD specialists and supplied to Paterson and Cooke (Pty) Ltd for conversion to a Bill of Quantities. The costing of this Bill of Quantities was undertaken in-house and based on DRDGOLDs knowledge and experience, in-house data and supplier's quotations.

Existing mine servitudes will be utilised as far as possible for the overland piping, sensitive environments have been taken into consideration, as well as mine owned land and already disturbed areas. The pipeline routes have been designed to make use of the shortest possible routes, while making use of existing road servitudes. The use of the road servitudes will prevent additional impacts associated with the clearing and construction of the pipelines, as well as ensuring that the pipeline routes are easily accessible for maintenance requirements during the Operational Phase. Premised on the primary requirement of the pipeline routes selected being the shortest distance between the respective project activities, alternative routes were also considered which capitalised on avoiding identified environmental sensitive areas, predominantly wetland areas; crossing existing impacted land; maximising mine owned land; and assessing the operating costs pertaining to topographical considerations on pumping costs.

The preferred pipeline routes also considered the location of current servitudes, and the locations and frequency of wetlands. A summary of the current pipeline infrastructure required for the WRTRP is provided in Table 31 however this may be modified in the planned DFS.

Table 31 : Summary of pipeline and pumping infrastructure

Potential pipeline and pumping infrastructure	Approvals
Phase 1	
Pre-screening and slurry pumping reclamation station at Driefontein 5H-TSF hydraulic mining site	Section 102 and EMP amendment - pending
Fine screening and slurry transfer pump station at mining site	
Slurry pipeline between Driefontein 5H-TSF and DP2 and DP3	EIA 2015 approved
Tailings pipeline from DP2 and DP3 to Driefontein 4A-TSF	Existing infrastructure 2010 approved
Return water dam at Driefontein 4A-TSF and process water supply to DP2 and DP3	Section 102 and EMP amendment - pending
Process water make-up storage and pump station at Driefontein 10 shaft	Section 102 and EMP amendment - pending
Process water from Driefontein 10 shaft to DP2 and DP3	Section 102 and EMP amendment - pending
Phase 2	
Pre-screening and slurry pumping reclamation stations at Driefontein 3H-TSF	Section 102 and EMP amendment, and 2015 EIA approval
Fine screening and slurry transfer pump station at Driefontein 3H-TSF	
Slurry pipeline between Driefontein 3H-TSF and CPP	
Slurry pipeline and return water pipeline from Kloof 1 and Libanon H-TSFs	Requires approval
Tailings pipeline from CPP to the R-TSF	2015 EIA approved
Return water dam at the R-TSF with process water pump station to pump process water to CPP	

Detailed costing for the pipelines is based partially on quotations from suppliers, known costs from similar projects and factorised costs based on DRDGOLD's experience of similar projects. The Competent Persons consider that the pipeline infrastructure design is based on sound practical experience and no significant risks are anticipated. There will no doubt be some amendments to various EIAs and EMPs after the final DFS is completed to accommodate the upgrades in infrastructure delivery rates and potential changes to the routes already approved.

31.1. Capex for the piping and pumping infrastructure

The pipeline and pumping Bill of Quantities for the WRTRP was independently determined for DRDGOLD by Paterson and Cooke (Pty) Ltd in December 2017.The costings for these components was undertaken in-house by DRDGOLD and was based both on its experience in the reclamation industry and suppliers quotations. The WRTRP pipeline and pumping costs are provided in

Table 32 : Capex for the Phase 1 and Phase 2 pipelines and pumping stations

Description	Cost (ZARm)
Phase 1	
Driefontein 5H-TSF	39.96
DP2	21.01
Driefontein 4A-TSF	31.37
Return Water Dam at Driefontein 4A-TSF	17.38
Driefontein 10 Shaft Pump Station	10.47
Sub-total Phase 1	**120.19**
Phase 2A	
Kloof 10 Shaft	34.97
Driefontein 10 Process Water	11.52
Driefontein 3 H-TSF	133.08
Libanon H-TSF	119.05
Kloof 1 Shaft	26.03
CPP	87.37
R-TSF	85.32
Return Water Dam	44.42
CPP H20	36.11
Sub-total Phase 2A	**577.88**
Phase 2B provision	200.00

Source : Patterson and Cooke bill of quantities 2017, DRDGOLD cost estimates 2017

32. Environmental, social and governance (SAMESG) compliance status

SR1.5(ii,v); SR5.5(i-v); SG4.3(2); JSE 12.9(h)(viii)

The review of the environmental status was undertaken by independent environmental specialists Exigo (Pty) Ltd. The key environmental issues are discussed below, along with any associated liabilities (items for which a monetary value can be determined) and risks (items where levels of uncertainty are significant so that no monetary value can be applied). Risks or liabilities, that would generally be addressed in terms of accepted environmental practice and which do not have significant cost implications, have not been discussed. Comments are made relating to the nature of the risk/ liability, the level of uncertainty and the manner in which it has been addressed e.g. estimated cost, contingency item or flagged for future consideration.

32.1. South African legislative framework

SG3.3(1)

A detailed description of the legislative framework relevant to the WRTRP Project is provided in Table 5.

32.2. Permitting status

SR1.5(ii); SR5.5(i-ii); SG3.3(2)

The current environmental and social compliance status in relation to the South African legislative requirements for the Project was summarised in Sections 14.2, 14.3 and 14.4 and the following legal review therefore focuses on the relevant authorisations or permits required per Act.

32.2.1. The National Environmental Management Act (NEMA)

Environmental Authorisation has been applied for in terms of NEMA (Act 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations of 2014 as described below.

Driefontein mining right area
In March 2016 Sibanye-Stillwater submitted an application for an integrated EA and a WML for the proposed activities on the Driefontein mining right area (DMR Reference: GP 30/5/1/2/2 (51) MR).

In correspondence between the DMR and Sibanye-Stillwater in 2016, the DMR informed Sibanye-Stillwater that it was prepared to grant authorisation to the project and indicated that a financial provision for rehabilitation for a 10 year period be secured. Sibanye-Stillwater is currently in a dispute with the DMR regarding the amount that needs to be paid (with or excluding VAT) and is awaiting a ruling by the South African Revenue Service (SARS) in this regard.

On the approval of the Driefontein EA, Sibanye-Stillwater will be in possession of an EA authorising the WRTRP activities. In order for the special purpose vehicle to undertake the activities in its own name, the EA will have to be transferred to WRTRP (Pty) Ltd. Furthermore, should the DMR not grant the amendment application, the special purpose vehicle could potentially continue to undertake activities as a contractor in which case Sibanye-Stillwater would remain the holder of the EA.

Activities listed in the EIA Regulations, 2014 (GNR 983 and 984 of December 2014) as identified in the Driefontein Environmental Impact Assessment Report (EIR) that required environmental authorisation are listed in Table 33 .

Table 33 : Activities of Phase 1 for which Environmental Authorisation is required

Number and date of relevant Government Notice	Listed Activity No (s):	Description of listed activity	Description of project activity
GNR 983	Activity 11	The development of facilities or infrastructure for the transmission and distribution of electricity:- • outside urban areas or industrial complexes with a capacity of more than 33 but less than 275kV	The development of facilities or infrastructure for the transmission and distribution of electricity. The electrical switch gear will be 132kV (transmission will be either 6.6kV or 11kV).
GNR 983	Activity 12	The development of:- • infrastructure or structures with a physical footprint of 100m2 or more where such development occurs:- within a watercourse; • in front of a development setback; or • if no development setback exists, within 32m of a watercourse	Pipeline routes traversing watercourses
GNR 983	Activity 19	The infilling or depositing of any material of more than 5m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5m^3 from- • a watercourse.	Where pipeline routes cross watercourses.
GNR 984	Activity 6	The development of facilities or infrastructure for any process or activity which requires a permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.	Authorisations required in terms of NNRA, NWA and NEM: AQA.
GNR 984	Activity 17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	A Section 102 Amendment will be applied for to include Driefontein 4A-TSF into the Driefontein Mining Right.

Source : Digby Wells 2015; Exigo 2017

In terms of the above, it should be noted that the following activities have not been applied for in terms of the WRTRP scope as part of the current EA application for the Driefontein Mining Right:-

- Alternative to Phase 2: the expansion of the Driefontein 4A-TSF is being considered as an alternative to construction of the R-TSF. The proposed expansion of the Driefontein 4A-TSF will only cater for the reclamation of the Driefontein 3H-TSF.

The expansion of the Driefontein 4A-TSF has however not been authorised and is not included in the currently pending environmental authorisation application. A new EIA Application will need to be submitted to the DMR for the expansion of the Driefontein 4A-TSF should the alternative to Phase 2 be implemented after the completion of the DFS; and

- with regards to the pipelines between Driefontein 5H-TSF and DP2 and DP3 as well as the pipelines between the plants and Driefontein 4A-TSF, it is understood that these pipelines are either currently existing or will be authorised as part of the EA application which was submitted to the DMR in March 2016. Should any pipelines however fall outside the scope of the existing infrastructure or the application, a study would be required to determine whether authorisation is required.

Kloof mining right area

In March 2016 Sibanye-Stillwater submitted an application for an integrated EA and a WML for the proposed activities on the Kloof mining right area (DMR Reference: GP 30/5/1/2/2 (66) MR). In correspondence between the DMR and Sibanye-Stillwater in 2016, the DMR informed Sibanye-Stillwater that it was prepared to grant authorisation to the project and indicated that a financial provision for rehabilitation for a 10 year period be secured. Sibanye-Stillwater is currently in a dispute with the DMR regarding the amount that needs to be paid (with or excluding VAT) and is awaiting a ruling by the South African Revenue Service (SARS) in this regard.

Activities listed in the EIA Regulations, 2014 (GNR 983 and 984 of 4 December 2014) as identified in the Kloof Environmental Impact Assessment Report (EIR) that required environmental authorisation are listed in Table 34:-

Table 34 : Activities associated with the Project for which Environmental Authorisation is required

Number and date of the relevant Government Notice	Listed Activity No (s):	Description of listed activity	Description of project activity
GNR 983	Activity 9	The development of infrastructure exceeding 1,000 m in length for the bulk transportation of water or storm water::- • with an internal diameter of 0.36m or more; or • with a peak throughput of 120 litres per second (ℓ/s) or more	Transportation of water from K10 shaft to the Bulk Water Storage Facility (BWSF). The pipeline will have a diameter of at least 0.36 m with a daily throughput of approximately 230ℓ/s.
GNR 983	Activity 10	The development and related operation of infrastructure exceeding 1,000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes:- • with an internal diameter of 0,36m or more; or • with a peak throughput of 120ℓ/s or more	Pipelines to convey slurry and process water between the Return Water Dam (RWD) and R-TSF
GNR 983	Activity 11	The development of facilities or infrastructure for the transmission and distribution of electricity- • outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts	The development of facilities or infrastructure for the transmission and distribution of electricity. The electrical switch gear will be 132 kV (transmission will be either 6.6 kV or 11kV).
GNR 983	Activity 12	The development of infrastructure or structures with a physical footprint of 100m^2 or more where such development occurs:- • within a watercourse; • in front of a development setback; or • if no development setback exists, within 32m of a watercourse,	Pipeline routes traversing watercourses (approximately 25 crossings).
GNR 983	Activity 14	The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in	Diesel and reagents storage for the CPP. Diesel storage on site will be at least 80m^3 and in horizontal tanks. Total cyanide

Number and date of the relevant Government Notice	Listed Activity No (s):	Description of listed activity	Description of project activity
		containers with a combined capacity of 80m^3 or more but not exceeding 500m^3	storage will be approximately 150m^3; caustic storage 80m^3 and acid storage 40m^3.
GNR 983	Activity 19	The infilling or depositing of any material of more than 5m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5m^3 from:-	Where pipeline routes cross watercourses.
		• a watercourse.	
GNR 983	Activity 24	The development of a road with a reserve wider than 13.5m, or where no reserve exists, the road is wider than 8m.	Additional access roads to the R-TSF and CPP.
GNR 983	Activity 45	The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure:-	Upgrade of pipelines at K10 shaft.
		• has an internal diameter of 0.36m or more; or	
		• has a peak throughput of 120ℓ/s or more; and	
		• where the facility or infrastructure is expanded by more than 1,000m in length; or where the throughput capacity of the facility or infrastructure will be increased by 10% or more	
GNR 983	Activity 67	Phased activities for all activities	Construction of the CPP and R-TSF
		• listed in this Notice, which commenced on or after the effective date of this Notice; or	
		• similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices	
GNR 984	Activity 6	The development of facilities or infrastructure for any process or activity which requires a permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent	Authorisations required in terms of NNRA, NWA and NEM: AQA.
GNR 984	Activity 15	The clearance of an area more than 20ha of indigenous vegetation	Clearing of land for the construction of the CPP, RTSF and AWTF.
GNR 984	Activity 16	The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5m or higher or where the high water mark of the dam covers an area of 10ha or more	Construction of the RTSF and the RWD. The RTSF will have a final height of 100m and cover an area of 1,350ha. The RWD will have a wall height of 5m to 10m, and with a total storage volume of at least 3.5Mm^3
GNR 984	Activity 17	Any activity including the operation of that activity which requires a mining right as contemplated in section 22 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	Granting of a Section 102 Amendment to include the additional mining operations into the existing Kloof mining right.
GNR 984	Activity 21	Any activity including the operation of that activity associated with the primary processing of a mineral resource including winning, reduction, extraction, classifying, concentrating, crushing, screening and washing but excluding the smelting, beneficiation, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.	Reprocessing of gold tailings at the CPP.
GNR 984	Activity 28	Commencing of an activity, which requires an atmospheric emission license in terms of section 21 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004).	Authorisations required in terms of NNRA, NWA and NEM: AQA.

Source : Digby Wells 2015; Exigo 2017

In terms of the above, it should be noted that the following activities have not been applied for in terms of the new Project scope as part of the EA application for the Kloof Mining Right:-

- Phase 2: The proposed slurry pipeline from Libanon H-TSF and Kloof 1H-TSF to the CPP was identified as an alternative in the EIR. When granted, the authorisation will not be relevant to the newly preferred pipeline route; and

- the proposed slurry and return water pipelines between Venterspost North H-TSF, Venterspost South H-TSF and the Libanon TSF were not included to the EIR. Should these pipelines need to be constructed, or should existing pipelines be expanded, environmental authorisation will be required.

32.2.2. National Environmental Waste Management Act (NEM:WA)

In 2008 the Ministers of Mineral Resources and Environmental Affairs concluded an agreement on the "One Environmental System" for the country with respect to mining. Ministers adopted an integrated mine environmental management system and sought to align the MPRDA, NEMA, NEM:WA, NEM:AQA and NWA. In short, the agreement implied that environmental issues resulting from mining, prospecting, production and related activities will be regulated in terms of the NEMA, whilst the Minister of Mineral Resources will become a competent authority in terms of NEMA.

Following the acceptance of the above-mentioned agreement various amendments were made to environmental legislation, inter alia, the NEMA, MPRDA and NEM:WA. Significant to these amendments were the inclusion of residue stockpiles under the NEM:WA listed activities as well as the publication of regulations regarding the planning and management of residue stockpiles and residue deposits from the prospecting, mining, exploration or production operation in GNR 632 of 2015.

Transitional provisions specifically include the following:-

- any activity in terms of regulation 73 of the MPRDA relating to the management of residue stockpiles and residues deposits, that can be done in terms of a provision of GNR 632 of 2015, must be regarded as having been done in terms thereof;
- management measures of residue stockpiles and residue deposits approved in terms of the MPRDA, at the time of the coming into operation of GNR 632 of 2015, must be regarded as having been approved in terms thereof; and
- a holder of a right or permit in terms of the MPRDA must continue the management of the residue stockpiles and residue deposits in accordance with the approved management measures.

It is assumed that Sibanye-Stillwater's historical residue stockpiles and deposits have been approved in terms of the MPRDA and that it has an approved Code of Practice on Mine Residue Deposits as per regulation 73 (now repealed) of the MPRDA.

In terms of the WRTRP-"alternative option", the expansion of the Driefontein 4A-TSF will require a Waste Management Licence (WML). This was not included in any of the applications that are currently pending and a new application will need to be submitted to the DMR. As such the expansion of the A-TSF will need to comply with the provisions of Regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits. (GNR 632 of 24 July 2015). An Environmental Risk Assessment will have to be conducted in this regard as per the requirements of GNR 632.

In terms of the WRTRTP-Phase 2, the following waste management activities have been applied for in terms of GNR 921 of 13 November 2013 (as amended) under the NEM:WA (Act 59 of 2008) as identified in the Kloof Environmental Impact Assessment Report (EIR) which require a waste management licence.

Table 35 : Activities for Phase 2 requiring a Waste Management Licence

Number and date of the relevant Government Notice	Listed Activity No (s):	Description of listed activity	Description of project activity
GNR 921	Activity B (1)	The storage of hazardous waste in lagoons excluding storage of effluent, wastewater or sewage	Construction and operation of the R-TSF and the sewage treatment plant
GNR 921	Activity B (7)	The disposal of any quantity of hazardous waste	Operation of R-TSF
GNR 921	Activity B (11)	The establishment or reclamation of a residue stockpile or residue deposit	Establishment of the R-STF

Source : Digby Wells 2015; Exigo 2017

32.2.3. National Environmental Air Quality Act (NEM:AQA)

DRDGOLD has received an independent opinion that smelting of gold will not require an atmospheric emissions licence (AEL). However, AEL in terms of the NEM:AQA (Act 39 of 2004) has been applied for, for the following listed activities in terms of GNR 893 of 22 November 2013 (as amended) relating to the CPP:-

- Category 4, Subcategory 4.16: Smelting and converting of sulphide ore; and
- Category 4, Subcategory 4.17 Precious base metal production and refining.

The provisional AEL (PAEL) was issued on 30 August 2017 for the CPP and it should be noted that Exigo was only provided with the relevant AEL application form. Since there is no requirement for a AEL as per the independent opinion, the above application is irrelevant.

32.2.4. National Water Act (NWA)

The following water uses were authorised in the IWUL (Licence Number: 10/C22B/ACFGI/4976) of 9 March 2017 (Section 14.3). The IWUL is valid for a period of 20 years from the date of issuance and may be reviewed at interval of not more than 5 years. The activities for which the IWUL was granted includes *inter alia* those listed in Table 36. In addition, various Section 21 c and i water uses have also been authorised in the IWUL for wetland and watercourse crossings as well as construction within wetland areas. Should any of the pipelines proposed to be constructed as part of Phase 2A and 2B be located within 100m of a watercourse of 500m of a wetland, the IWUL will need to be amended to allow for these addition Section 21(c) and (i) water uses.

Table 36 : Activities for which an IWUL was granted

Water Uses	Description of water use	Properties	Total Volume / Capacity	Geographic Location
Section 21(a)	Abstraction of water from Kloof 10 shaft for use in reclamation of tailings on Driefontein 5H-TSF and Driefontein 3H-TSF	Portion 0 of Witkleigat 283 IQ	9,487,500m^3/a	S26°20'46.84" E27°36'36.48"
Section 21(g)	Driefontein 3H-TSF Pollution Control Dam	Portion 1 of Driefontein 113 IQ	9,600m^3	S26°22'9.91" E27°26'29.34"
Section 21(g)	Driefontein 5H-TSF Pollution Control Dam	Portion 9 and 24 of Blyvooruitzicht IQ	14,400m^3	S26°24'6.00" E27°24'25.71" E27°42'38.76" E27°37'12.42"
Section 21(g)	R-TSF	Various portions of Wildebeestkuil 360 IQ, Cardoville 358 IQ, Cardoville 364 IQ	1,300,000,000m^3	S26°29'51.60" E27°37'12.42"

Water Uses	Description of water use	Properties	Total Volume / Capacity	Geographic Location
		and Droogheuvel 521 IQ		
Section 21(g)	RTSF Return Water Dam	Portion 8 and 13 of Cardoville 364 IQ	1,561,768m^3	S26°31'18.58" E27°38'36.68"
Section 21(g)	Irrigation of haul roads	Various portions of Wildebeestkuil 360 IQ, Cardoville 358 IQ, Cardoville 364 IQ and Kalbasfontein 365 IQ	131,400m^3/a	S26°28'27.08" E27°36'51.12" S26°30'58.90" E27°39'32.92"

Source : Exigo 2017

The expansion of the Driefontein 4A-TSF should the "alternative option" be implemented will trigger a water use in terms of Section 21(g) and will require authorisation from the Department of Water and Sanitation (DWS).

In addition, due to the fact that the Project is part of a mining area, compliance with the provisions of the regulations on use of water for mining and related activities aimed at the protection of water resources published under the NWA in GN 704 of 1999 is required. Storm water is required to be managed in line with GN 704.

It is noted in the Malan Scholes due diligence report that a licence will also be required for the R-TSF in terms of the Dam Safety Regulations (GNR 139 of 24 February 2012). In addition to this licence, a licence to impound will also be required in terms of regulation 29 of GNR 139. . The above licenses will be applied for either as part of the DFS or after the DFS has been completed.

32.3. Legal aspects

SG3.3(1,2,3,4,5)

The legal aspects in terms of SAMSEG have been addressed in detail in Section 14 and Section 32.2.

32.4. Environmental parameters

SR4.1(iii); SR4.3(v); SG3.4(1,2); JSE12.9h(viii)

The H-TSFs are currently permanent sources of pollution on the surrounding environment. The EIAs for the proposed Project state that the H-TSFs are a source of dust generation which reduces the ambient air quality, as well as impacting on surrounding soils, wetlands and surface water resources due to the mobilised contaminants. In addition, the leaching and seepage of contaminants have significant impacts on the groundwater resources, specifically as the H-TSFs are located on sensitive dolomitic aquifers. The reclamation of these H-TSFs will result in long term positive impacts as the permanent pollution sources are removed from the regional landscape, although reclamation activities will result in operational impacts.

An important driver for reclaiming the H-TSFs is to relocate the new tailings storage facility to an area that is more suitable from a groundwater perspective. The ecological, social, land capability, visual and air quality impacts are however expected to be moved to the proposed CPP and R-TSF sites, and therefore adequate mitigation for these impacts, as well as for ground and surface water at the new sites will be critical.

The Driefontein 3H-TSF as well as the Libanon H-TSF, Venterspost North H-TSF and Venterspost South H-TSF are located on dolomitic outcrops, with Driefontein 5H-TSF located on Pretoria Supergroup formations which directly overlies the same dolomitic group (Figure 10). Any seepage from the H-TSFs is expected to migrate downwards into the aquifers. Monitoring data indicates elevated concentrations of sulphate, total dissolved solids (TDS) and nitrate in the groundwater which are all typical constituents associated with contamination emanating from gold mining areas. The pH ranges from 4.1 to 8 and is indicative of acid mine drainage (AMD) impacts associated with seepage from existing tailings and surface mining facilities.

The thickness of the dolomite ranges from the surface to 1,500m below ground level (mbgl) and historically contained vast quantities of water but which have been largely dewatered in targeted mining areas. The dewatering has resulted in numerous sinkhole formations that continue to affect the terrain presently. The H-TSFs are not lined and drain directly into the dolomitic systems. The dewatering activities of the underground operations result in a low pressure within the dolomite which encourages drainage from the H-TSFs.

The proposed R-TSF is underlain by Transvaal Supergroup Strubenkop shale, Daspoort quartzite and Silverton shale units. In addition to shales, sills of diabase intrusions were also encountered in some drillholes. There is no dolomitic risk in the area of the R-TSF, since the dolomite is found at a depth of more than 1.0km below surface.

The R-TSF site is largely unimpacted by groundwater pollution. The baseline groundwater quality of the site is good, with uranium concentrations below the detection limit (<0.004mg/L). The baseline sulphate concentration is less than 32mg/L in all of the hydrocensus boreholes which is well below the River Quality Objective (RQO) of 500mg/L.

The EIAs for the Project expect that the removal of the H-TSF off the underlying dolomite as part of the tailings reclamation project will improve water quality near the H-TSF's by removing the sources of contamination.

The construction and operation of the R-TSF is however expected to result in a contamination plume that will impact on groundwater quality. The main elements of concern that are expected to seep from the R-TSF being sulphate and manganese, and to a lesser extent also arsenic, uranium and iron. Without any mitigation measures being implemented during the operational and closure phase, the R-TSF is expected to have a negative impact on groundwater and surface water quality. The impact can potentially reach private boreholes and also the nearest surface water feature namely the Leeuspruit (directly to the north) and its tributary (to the south).

A number of options have been considered to minimise the potential impact of the R-TSF. The EIA identified the blast curtain design (or extended depth cut off perimeter drains) to be the preferred option from a financial perspective, while the application of a liner system was the most effective from an environmental perspective. The EIA commented that whilst the implementation of an interception drain is less effective environmentally than a liner, it would be more suitable than the Project not being undertaken at all.

A competent liner is expected to significantly reduce the seepage rate from the R-TSF. Since contaminants are mainly transported by the flowing water, the reduction of seepage rate will also reduce the salt load that seeps from the R-TSF to the groundwater to insignificant levels, even if the sulphides are not removed. The installation of a liner beneath the R-TSF will prevent a contamination plume for sulphate and manganese after 50 years of operation, with the contamination plume 100 years after closure being restricted to the R-TSF footprint. It should be noted that this is valid only if the liner remains competent even after closure and block seepages effectively, with no failures due to unforeseen circumstances.

Important to note is that the WUL awarded to the operation on 9 March 2017 approved the facility with a liner drainage system (and not the blast curtain design) with specific reference to geotextile. Provision was therefore made for a liner system as part of the current financial planning for the R-TSF. The geochemistry of the proposed R-TSF has been conducted and the seepage rate has been calculated. Appropriate monitoring and management plans were recommended.

Dust deposition results show that the area experiences dust deposition rates that are generally within the recommended residential limit specified by the National Dust Control Regulations. Some sites were however observed to be in violation of the recommended frequency of exceedance, especially during the dry winter months.

The current land use for the region is dominated by agricultural (crops and grazing) and mining activities. The land capability is dominated by Class II (intensive cultivation), Class III (moderate cultivation/intensive grazing) and Class VI (moderate grazing). Prior to the final rehabilitation of the reclaimed H-TSF's and any subsequent development thereafter, a radiation assessment will be completed to determine if any radioactive hotspots exist on site. Should radioactive hotspots exist, these will need to be excavated and taken to the R-TSF. When the radiation assessment reveals that the site falls within the National Nuclear Regulator's (NNR) clearance requirements for the proposed land use a report will need to be submitted to the NNR for approval. Once approved, the property will be rehabilitated with indigenous vegetation and upon final rehabilitation the site will be handed back to the land owner.

The establishment of the R-TSF and CPP will result in the clearance of agricultural land and wetland areas with a resultant the loss of topsoil as a resource, land capability and wetland habitats. The loss of land capability and wetland habitats cannot be mitigated, although the loss of wetland areas will be compensated for through a wetland offset strategy.

Impacts to soils will be mitigated through the correct stripping, stockpiling and use of the soil resources. There is no mitigation for the loss of 42.9ha of wetland habitat (about 4.4ha of Valley Bottom wetlands and 38.5ha of pans) in the R-TSF footprint. An offset strategy still needs to be compiled to compensate for the wetlands that are lost to the proposed project prior to any development on site.

The clearance of vegetation for infrastructure leaves the soils susceptible to erosion which in turn can result in the sedimentation of surface water resources, wetlands and the deterioration of aquatic habitats. These impacts will be mitigated through the development of temporary ditches during construction to collect any sediment runoff and will be sized to withhold a 1:50 year extreme rainfall event. The presence of the R-TSF may also impact on the surrounding environment due to the potential mobilisation of tailings material through runoff and windblown erosion. This will be mitigated through the implementation of wind breaks, concurrent rehabilitation of the R-TSF and the installation of silt traps.

Fauna and Flora Impact Assessments were conducted as part of the EIAs. Four site visits completed over two seasons and care was taken to investigate the possibility of rare and threatened species occurring on the proposed development areas as per the species identified in the Gauteng Department of Agriculture and Rural Development (GDARD) guidelines for biodiversity assessments.

The vegetation consists of Carletonville Dolomite Grassland and Gauteng Shale Mountain Bushveld (both with a vulnerable conservation status), as well as Rand Highveld Grassland (Endangered) and Soweto Highveld Grassland (Endangered). The remnant natural vegetation communities illustrate high ecological importance due to their ecosystem functioning. Despite their diminished ecological integrity they are seen to be valuable for biodiversity maintenance and therefore these communities, namely; grasslands, ridges and wetland vegetation should be conservation priorities. Transformed vegetation is not regarded to have high ecological importance due to poor integrity, limited ecosystem functioning and abundance of introduced alien vegetation species.

Ten flora Species of Special Concern were considered likely to occur on the development footprints, of which one species, Khadia beswickii, is considered to be vulnerable. The Nationally protected plant Boophone disticha (Poison bulb) (nationally Declining) was encountered throughout the grassland, including the footprint of the CPP. The plant species Hypoxis hemerocallidea (Star Flower) (provincially protected, nationally Declining) was encountered in the grassland vegetation type in the region of the pipeline to the west of the CPP. Mitigation measures should include obtaining permits and translocating protected plant species if and when encountered. Threatened fauna species likely to occur on site include amongst others the White-Tailed Mouse (Endangered) and Rough Haired Golden Mole (Vulnerable). No Listed Red Data bird species were identified during the field survey, however the Grass Owl (Vulnerable) is expected to occur within the wetland habitats. Red Data reptile species that has a low probability of occurring within the project area include the Giant Girdled Lizard (Vulnerable) and the Striped Harlequin Snake (Rare). None of the amphibians identified and expected for the area are of conservation concern. Red Data butterfly species expected to occur on site are the Marsh sylph, Roodepoort Copper and Highveld Blue.

Ridges and wetlands constitute High Sensitivity areas due to their role as process areas within the ecosystem. In addition, high sensitivity was given to areas occurring within a Threatened Ecosystem, and those areas that were pristine or close to pristine with low or no anthropogenic impacts. Areas occurring within Highly Significant C-Plan areas (unless heavily degraded) were also given a High Sensitivity, as were areas on steep rocky slopes and those that have high numbers of species of special concern. Areas of Medium Sensitivity include those natural areas with some anthropogenic change or degradation, with high numbers of species of special concern and moderate rocky slopes. Low Sensitivity was assigned to areas completely transformed or heavily degraded, on relatively flat ground.

A consolidated Heritage Resources Management process for Driefontein, and Kloof mining right areas was completed in 2016 for Sibanye-Stillwater. No fatal flaws were identified for the WRTRP; however, the Project is situated within a sensitive cultural landscape that must be considered during the various phases of the Project. A total of 27 heritage resources were identified through the Heritage Impact Assessment (HIA), within the development footprints of the proposed linear infrastructure outside existing servitudes, and within the development footprints of the CPP and the R-TSF. Of interest in terms of impact risks, the following significant heritage sites were identified:-

- “Later Farming Community” sites rated as of low significance identified close to the overhead power line to the R-TSF. The site is generally protected under section 35 of the NHRA and it was recommended that the site be recorded (detailed site mapping and possibly surface sampling). In addition, it was recommended that the proposed routing of the power line be amended as far as feasible to preserve the site in situ and, where not possible, the design of the proposed power line should ensure that pylons are at least 50m from the site. The extent of the site is to be determined by an accredited archaeologist and mapped in detail through the use of differential GPS technology to ensure that this recommendation is implemented correctly. Additionally, a Watching Brief process was recommend during the construction phase, entailing the presence of an accredited archaeologist to be on site during earth moving activities to assess any material culture exposed and guide the construction to minimise the risk of damage to the site;
- eight structures older than 60 years were identified and therefore afforded general protection under section 34 of the NHRA. The structures were rated as of negligible significance but it was recommended that a Section 34 Permit Application be obtained from PHRA-G prior to any direct impacts on these resources to ensure compliance with the NHRA and Chapter III of the Regulations to the Act.
- thirteen farmsteads older than 60 years were identified and rated as of negligible significance. A Section 34 Permit Application with PHRA-G would be required prior to any direct impacts on these resources to ensure compliance with the NHRA.
- four burial grounds of very high significance were identified. Two of the burials (BGG-015 and BGG-022) will be directly impacted upon by the proposed construction of the R-TSF. It was recommended that a Burial Grounds and Graves Consultation (BGGC) Process be undertaken in accordance with section 36 of the NHRA and Chapter XI of the Regulations to the Act to identify as far as possible the bona fide Next of Kin in order to reach an agreement with the Next-of-Kin and Sibanye-Stillwater/DRDGOLD to the management of the burial ground through a Conservation Management Plan. It was further recommended that, where in situ conservation of the burial grounds is not possible, a Grave Relocation Process (GRP) supported through the BGGC Process be completed.

  Two other burials (BGG-023 and BGG-027) were documented directly adjacent to the proposed CPP to RSTF pipeline routing and it was recommended that the sites be included in the BGGC Process. Furthermore, it was recommended that a 50m buffer be established around the burial grounds, the sites be clearly demarcated through fencing, and a Watching Brief process be implemented whereby the construction phase is monitored by an accredited archaeologist on site during earth moving activities to assess any material culture exposed and guide the construction to minimise the risk of damage to the site.

The South African Heritage Resources Agency (SAHRA) issued Final Statutory Comment on 22 April 2016 whereby the agency supported requirements and conditions as contained in the Heritage Impact Assessment Report (HIA) discussed above.

32.5. External social and political parameters

SR4.3(v);SR5.5(iv-v); SG3.5(1,2,3)

The Project is located in the West Rand District Municipality in Gauteng Province; that constitutes the following four local municipalities: Mogale City, Westonaria, Randfontein and Merafong City. The currently proposed Project is situated in the Westonaria and Merafong City Local Municipalities. Towns situated in the area include Fochville, Carletonville, Westonaria and Venterspost.

The most significant land uses within the project area are mining, agriculture, residential and businesses. Of these, agriculture covers the largest portion of the area, followed by mining and residential uses. The area includes a large number of both historical and existing mining activities. The municipality's human settlements are relatively scattered due to the mining activities taking place as well as the presence of dolomite.

The main contributor to the West Rand economy is tertiary services (66.7% of the Gross Domestic Product (GDP)), while other major contributors include finance and personal services, as well as government services. The mining sector contributed 11.2% of GDP and manufacturing 15.7%. The Westonaria and Merafong City economies are however far more dependent on the mining industry than the district in general.

The Westonaria Local Municipality's Spatial Development Framework demarcates the south of the municipality for mining and conservation. The dolomitic nature of the areas located to the north of the LM make the land primarily suitable for the agricultural and mining activities. In addition to mining, the northern regions of the LM have potential for the development of small-scale or subsistence farming opportunities.

The WRTRP is expected to provide a significant socio-economic contribution to the West Rand. The Westonaria unemployment rate is recorded at 42.0%, while Merafong City recorded an unemployment rate of 21.1%. It is estimated that approximately 2,000 jobs will be created during the construction phase and 500 during the operational phase. It is expected that the capital investment and contributions to the GDP associated with the WRTRP, along with the potential multiplier effects, will be significant over the life of the operation and is expected to provide a sustained contribution to the local and national economy.

The Project received widespread interest during the public participation phase of the EIA. Most of the issues and concerns raised by Interested & Affected Parties (I&APs) referred to environmental impacts that already exist, but respondents were of the opinion that the Project will exacerbate current conditions. These include dust from mining activities and associated potential health issues. A petition against the Project with 793 signatories was compiled in this regard by the No for Mega Dump (NFMD) Forum representing the community (farmers, business owners and residential areas). Possible negative impacts include community health, safety and security concerns, impacts on surrounding farms, water quality impacts and population influx. The potential for the local community becoming totally dependent on the Project for continued economic sustainability was cited as a long term potential impact during the decommissioning phase.

However, some of the I&APs did acknowledge that the Project is expected to have a long-term positive impact at the H-TSF sites. Positive impacts expected during the construction and operational phases included employment creation, skills development, local procurement of goods and services, as well as local and regional economic development. Improved quality of life and increased access to land were cited as positive impacts during the operational phase..

The Social Impact Assessment (SIA) indicated that unrealistic political and community demands for sharing in Project benefits can lead to community and labour unrest, political electioneering and community upheaval. The SIA also states that the existence of informal settlements in close proximity to the Project will pose a risk to the Project in terms of political stability and community relations/support.

In terms of International Finance Corporation (IFC) requirements, the Project proponent has a shared responsibility (together with the relevant local authorities and key stakeholders) to address project-induced in-migration to affected communities. Farmers in the project area are becoming increasingly hostile towards the mining industry and their reactions may contribute to already tense community relations and dynamics.

A Social Management Framework and Monitoring Plan was developed in order to ensure that the expected negative social impacts of the Project on host communities are managed, and that potential positive impacts on host communities are enhanced. Management measures place emphasis on aspects such as skills development and local economic development. The negative impacts, such as increased pressure on infrastructure and services, and economic dependence on the Project can be more effectively mitigated when the social benefits of the Project are enhanced. The SIA for the project anticipated that the consequence and/or probability of most negative impacts could be reduced. While not all negative impacts can be reduced to acceptable levels, most positive impacts will be significantly enhanced to maximise benefits to surrounding communities.

32.6. Internal social parameters

SR4.3(v);SR5.5(iv-v); SG3.5(1,2,3)

Refer to Section 32.5. The DRDGOLD makes provision for skills development and internships. Project training programmes are proposed to include members of the local communities.

32.7. Conformance and compliance status

SR7.1(i-ii); SG3.7(1,2)

Construction on the Project has not commenced, and therefore no environmental compliance audits are available. A due diligence report was compiled for DRDGOLD in respect of the WRTRP on 29 November 2017 by Malan Scholes to review and verify the status of authorisations and permits issued to Sibanye-Stillwater in terms of mineral and environmental legislation, the results of which have been presented.

Sound Mining concludes that the environmental permitting is appropriate for the current PFS level of study. Additional permitting and authorisations will be required once the final Project scope has been determined in the DFS. The project timeline beyond the DFS decision point permits adequate time for the submission of the applications and no fatal flaw is envisaged from a compliance perspective.

32.8. ESG closure liability estimate

SR1.7(i); SG3.8(1,2,3)

Review and commentary on the closure estimate and plans entails both of the following aspects which are discussed in more detail in the following sections :-

- discussion of the methodology of derivation of the costs/rates for the demolition, closure and rehabilitation; and
- comment on the adequacy of the financial provisions made for the Project.

32.8.1. Review of the inputs to the closure liability estimate

The 2015 Financial Provision Regulations under NEMA identifies three types of rehabilitation plans; the minimum content of each being prescribed by the regulations as follows:-

- the first is the ‘annual rehabilitation plan’, which lists the on-going rehabilitation activities required during the operational LoM;
- the second is the ‘final rehabilitation, decommissioning and closure plan’ which includes details of the final rehabilitation and ‘use of land’ following the mine’s

closure. “This plan focuses on bringing the mine to a point where it can close and must consider how the land will be used post-closure; and

- the third occurs post-closure and requires that the mine conduct an environmental risk assessment of latent and residual environmental impacts, covering an indefinite post-closure period.

The following assumptions and limitations were applied by Sound Mining in the review:-

- Bill of Quantities (BoQs) was not available as part of the review;
- according to the Digby Wells report (Digby Wells, 2015) the calculation of the quantities, footprints and volumes was undertaken by the Digby Wells GIS Unit and was assumed to be correct,
- quantities of steel and concrete structures/ buildings, fences and pipelines were received from the Project engineers and were assumed to be correct (Digby Wells, 2015);
- the costs are based on quotes from demolition and civil contractors and professionals wherever possible and takes into consideration the total labour costs, plant costs, fuel costs and construction costs. Bench marked against similar projects the estimates are reasonable;
- according to the Tenova Bateman DFS Alignment report (Tenova Bateman, 2015) the risk of future sinkhole development is of low to medium probability at most of the sites. Sinkhole and subsided areas have been costed for the 2016 updated closure provisions and it should be confirmed or defined contractually between DRDGOLD and Sibanye-Stillwater who would be liable for this financially should this occur at any stage during closure or post closure; and
- the infrastructure that was not included in the environmental authorisation applications submitted to the DMR (e.g. proposed Driefontein 4A-TSF extension and slurry and return water pipelines between Venterspost North H-TSF and Venterspost South H-TSF and the Libanon H-SF’s was not included in the financial closure liability calculations.

32.8.2. Quantum of the closure liability

The closure liability for the Project has been determined for two separate objectives, namely:-

- the disclosure to the DMR in EIAs for mining right amendments and environmental approvals as undertaken by Digby Wells 2015. The disclosure determines the quantum of the financial obligation and the guarantees required by the DMR for the Project; and
- the estimation of closure liability for financial provisioning and planning as undertaken by Golder and Associates (Pty) Ltd (Golder) on behalf of Sibanye-Stillwater in December 2016 and audited by Sibanye-Stillwater auditors for submission to the Minister

The closure costs have been determined on both an “unscheduled” and “scheduled” basis (Table 37). The unscheduled estimate is based on the costs of rehabilitating the H-TSF’s in their present state without any mining activity having taken place. The disclosure to the DMR by Sibanye-Stillwater and the quantum of the financial guarantees required was based on this unscheduled estimate.

The scheduled estimate assumes that mining takes place and that the final rehabilitation will be confined to the rehabilitation of the H-TSF footprints and the R-TSF.

For the purposes of the economic analysis, the Project must ensure that the financial provision is adequate for the current liability of all the H-TSFs which is the unscheduled estimate of the entire Project. Although not currently constructed, the Project will have to make provision for the R-TSF and the CPP which are integral to the Phase 2. Therefore the unscheduled closure obligation has been applied in the financial model and this includes the R-TSF and CPP.

Table 37 : Closure cost estimates

Asset	Unscheduled Cost (ZARm) (2016)	Unscheduled Cost (ZARm) (2017)	Scheduled cost (ZARm) 2016	Scheduled cost (ZARm) 2017
Driefontein 5H-TSF	35.56	38.40	8.11	8.7
Driefontein 4A-TSF	73.53	79.41	18.2	19.5
Driefontein 3H-TSF	48.21	52.07	9.55	10.3
Kloof 1H-TSF	44.79	48.37	7.82	8.4
Libanon H-TSF	50.93	55.00	11.88	12.8
Venterspost North H-TSF	19.83	21.42	8.91	9.6
Venterspost South H-TSF	11.91	12.86	11.91	12.8
R-TSF	143.32	154.79	143.32	153.4
DP2	47.18	50.95	47.18	50.95
DP3	34.82	37.61	34.82	37.61
Maintenance and aftercare costs	34.48	37.24	34.48	36.9
Total	**544.56**	**588.12**	**336.18**	**360.96**

Source ; Golder 2016, Sibanye-Stillwater 2016, DRDGOLD 2017

DRDGOLD is aware that as the mining of the H-TSFs progresses, the liability for the rehabilitation and closure continually decreases from the current ZAR588.12m to the final scheduled cost of ZAR360.9.6m. DRDGOLD will make appropriate application to the DMR for adjustments to the closure obligation in the light of this decreasing liability. In addition, it is understood that an environmental trust fund already exists with an amount (ZAR354m as of June 2017) allocated for this Project that will cover the current anticipated liability of ZAR360.96m.

According to the Project agreements the rehabilitation liability of the H-TSFs is transferred to the SPV. The portion of the Sibanye-Stillwater rehabilitation trust fund related to these assets will be transferred to the special purpose vehicle rehabilitation trust with any shortfall covered by an insurance policy.

32.8.3. Conclusions on the closure liability review

The inputs into the closure estimate are based on quotations from demolition and civil contractors, which may alter with changing scope but take into consideration all the anticipated costs. Bench marked against similar projects the estimates are considered reasonable.

The review has highlighted that some aspects of the Project have not been accounted for in the closure estimate. However, the current balance of the rehabilitation trust fund at ZAR354m (30 June 2017) more than adequately covers the scheduled closure of ZAR360.96m, and should the scheduled closure liability increase with the closure of additional infrastructure, this is not considered a significant risk to the Project.

The closure liability bank guarantees under Regulation 7 of the NEMA Financial Provision Regulations (2015) must ensure that the financial provision is, at any given time, equal to the sum of the actual costs of implementing the plans for a period of at least 10 years forthwith (this includes the annual rehabilitation, final, decommissioning and closure plans). This figure is required to be updated annually and adjusted. In the case of the WRTRP the annual updates will show reduced amounts as the tailings facilities decrease to only footprint rehabilitation

32.8.4. Recommendations

Sound Mining makes the following recommendations:-

- a risk assessment should be completed for the WRTRP as per Government Gazette No. R 1147 the NEMA Financial Provision Regulations (2015) to determine any residual or latent costs to be included. This includes the risk of sinkholes and water treatment;
- once DP2 and DP3 upgrades are confirmed, the financial provision for closure should be re-evaluated to determine if there are sufficient allowances made for decommissioning costs;
- the Financial Provision Regulations state that compliance with the regulations needs to be implemented by February 2019. This should be kept in mind with future updates to assure complete alignment;
- the Financial Provision Regulations are currently proposed for amendment. At present, the draft regulation in this regard has been gazetted which will reduce the ten years as provided for to three years and also excludes the costing of latent impacts. This is however still in draft and not yet applicable.

32.9. Risk analysis

SR4.1(iii); SR5.7(i); SG3.9(1,2)

The Project risk from an environmental perspective has been independently identified by Exigo as follows:-

- Sibanye-Stillwater is awaiting formal approval of the EMPRs submitted for Driefontein and Kloof mining rights pending the resolution of a dispute with the DMR over the payment of VAT as part of the rehabilitation guarantees;
- as stated in 1 there are a number of activities that were not included in the Environmental Authorisation applications that will still require a new EIA process to be followed and subsequent environmental authorisation prior to construction;
- the IWUL specifies that the licensee shall be responsible for acquiring access to land associated with activities in the licence as the Department of Water and Sanitation (DWS) cannot grant authority on land to which the licensee does not have legal access. The Project developers should ensure that negotiations for access to land should commence timeously;

With regard to the pending EA application for the Driefontein and Kloof Mining Right Areas, note should be taken of the following:-

- two similar projects have been embarked on previously, namely the WWP and the CUP. Elements of the CUP and WWP projects have been approved and authorised. Stakeholders and Departments however expressed their concern over the implementation of two similar projects in proximity to one another and the cumulative impacts thereof, and it was proposed that these projects be combined to provide a consolidated solution for the region. The WRTRP therefore integrates the WWP and CUP into a single project, thereby providing a better alternative to the separate development. It is therefore not foreseen that approval for the WRTRP will be withheld as there seems to be a drive from government for this initiative.
- the EIR's compiled for the Driefontein and Kloof Mining Right Areas provide the need and desirability of the WRTRP and lists all the envisaged benefits as a result of the implementation thereof. The benefits associated with the WRTRP further makes it likely that the project will be approved;
- two independent, parallel TSF site selection processes were completed by Golder in 2010 for the CUP and WWP. The Geluksdal TSF as part of the CUP has also been approved but was never implemented.

The two independent processes resulted in the identification of a common area for the construction of one new TSF that can accommodate the residue from the reclamation of the historical TSF's as proposed for the WRTRP. The preferred site for the R-TSF has been subjected to detailed studies, and has been issued with an IWUL, and it is therefore likely that this site will be approved;

- the Malan Scholes Due Diligence Report noted that applications for extension had been submitted to the DMR with regards to information requested by the DMR relating to the financial closure liability for the Kloof and Driefontein EA Applications. Exigo has however not been provided with the said extension applications or correspondence from the DMR granting the extensions. There is therefore a risk that should the extension not have been granted by the DMR, that both the Kloof and Driefontein EA Application could lapse in terms of the legislated timeframes provided for in the EIA Regulations 2014 (as amended);
- according to the Social Impact Assessment for the proposed larger project the following main social and political risks have been identified:-
    - physical and economic displacement of several vulnerable households would require detailed resettlement planning, which may have substantial time and cost implication for the Project;
    - illegal mining activities, and associated informal settlement, were also encountered in the Project area. In terms of the Extension of Security of Tenure Act, 1997 (Act No. 62 of 1997) (ESTA), any illegal land occupiers may also be entitled to certain tenure rights, which could prevent landowners and government from evicting them unless the provisions of ESTA have been met;
    - buying of property - Privately owned land is concentrated within the proposed R-TSF sites, with the most prominent land owners being Mr. J. Badenhorst, De Akker Trust and Mr. J Oosthuizen and would likely have to be rezoned to allow for mining activities, which could have timing implication for the implementation of the proposed operation. This will however only impact Phase 2 and enough time has been allowed for this through the implementation of Phase 1;
    - dust resulting from mining activities (and associated potential health issues) was an overriding concern. Agricultural activities may potentially be directly affected by the proposed project if it affects the quality or quantity of water, could potentially result in stakeholder conflict;
- potential health impacts associated with the Project stemming from air-quality impacts (in particular radioactive dust), exposure to residual contamination and water quality impacts (including acid mine drainage, especially downstream of historical mining sites) were a concern during the EIA process. Of particular importance, is the potential health impacts associated with dust fallout during the retreatment of existing H-TSFs and, eventually, the operation of the R-TSF. Dust fallout also represented one of the most important concerns of respondents, both in terms of its health impacts on people and animals, and its effect on agricultural crop; and

Various mitigation measures have been proposed in the EMP for these identified risks.

The project need and desirability is a major determining consideration by the competent authorities when deciding whether a project should be approved. The EIA seems to have taken due cognisance of the environmentally sensitive baseline conditions on site and proposes mitigation measures to lower negative impacts on the environment to acceptable levels.
From an environmental perspective the following aspects are expected to enhance the project's chances of approval as quoted from the Kloof EIA and EMPR prepared by Golder dated March 2016:-

- protection of sensitive dolomitic aquifers and water resources through:-
    - the removal of the historical TSFs, currently located on the dolomites; and

- the deposition of the reclaimed and reprocessed tailings onto the R-TSF, which is to be constructed on impermeable bedrock, away from sensitive dolomitic areas.

- reduction of health risk to surrounding communities by addressing persistent dust fallout from H-TSF's spread over a vast area, into a single well-managed best practice designed R-TSF;
- release of valuable land under the historical H-TSFs for residential, commercial, and agricultural needs. The final land uses of the H-TSF footprints will be determined based on a Closure Plan for the respective Mining Right areas.

33. Project risk analysis

A project risk analysis was undertaken by the contributing specialists and the DRDGOLD in-house risk team. The Project risks, their impact on the project and their final risk assessment after mitigation are provided in Table 38. No catastrophic risks were identified and all risks reviewed are either low to very low, excepting for those factors largely outside of DRDGOLD's control such as market conditions, political stability and regulatory issues. The overall assessment is that the Project is low risk.

Furthermore, the "alternative option" provides an even lower risk profile should, for any reason, the full WRTRP with Phases 1 and 2, is unable to proceed.

Table 38 : Project risk assessment

Potential risk	Comment	Likelihood	Consequence	Mitigation	Overall
Legal Tenure risk	Tenure sufficient for the Phase 1 LoM	Unlikely	Major	None required	Very Low
	Tenure insufficient for the Phase 2 - Kloof mining right expires five years before the end of Phase 2	Likely	Major	Application for renewal by Sibanye-Stillwater	Low
	Failure to grant Section 102 applications for the WRTRP activities and extension of the mining rights over Driefontein 4-TSF and the area for the R-TSF	Unlikely	Major	All mitigating factors have been undertaken	Low
	"Use and Access" agreement draft and unsigned	Unlikely	Major	It is in Sibanye-Stillwater's best interests to finalise the agreement	Low
Claims over land or company	No claims over the land envisaged for the WRTRP operation	Rare	Moderate		Very low
Country Risk	South African country risk in terms of changing legislation and political instability	Possible	Moderate	Inherent medium risk taken by all companies mining in South Africa	Medium
Labour laws, strikes and union activity	Negatively affected operations. Labour contracts for the mining operation for Alexander Forbes' account and risk.	Possible	Major	Inherent medium risk taken by all gold producers	Medium
Gold market movements	Market conditions vary according to global macroeconomic factors, investor demand, exchange rate fluctuations, inflation and interest rates. Project sensitive to gold price fluctuation	Possible	Moderate	Inherent medium risk taken by all gold producers	Medium
Geological and Resources	Geological conditions extremely well known. Mineral Resource estimates simple and based on SAMREC compliant data	Unlikely	Moderate	SAMREC compliant estimation has been undertaken	Low

Potential risk	Comment	Likelihood	Consequence	Mitigation	Overall
Specific gravity	Could affect the tonnage estimations and classification of the Mineral Resources	Possible	Moderate	Density measurement adequate and historical data from Ergo available	Low
Flooding	Excessive rain	Possible	Minor	Adequate storm water design in the mine plan	Low
Seismic activity, geotechnical failure and safety	The West Rand Basin is stable from a seismic perspective. The geotechnical aspects of the current H-TSF sites has been considered and resulted in the selection of the R-TSF site off the dolomites. DRDGOLD has an excellent safety record	Unlikely	Minor	Inherent low risk taken by all companies mining in the West Rand Basin and has been mitigated	Very low
Sampling and drilling	Compliant with SAMREC standards	Rare	Minor	Has been mitigated	Very low
QA/QC	Compliant with SAMREC standards	Rare	Minor	Has been mitigated	Very low
Audits and reviews	Several independent reviews. All deemed data suitable for Mineral resource estimation	Rare	Minor	Has been mitigated	Very low
Modeling techniques	Compliant with SAMREC standards	Rare	Minor	Has been mitigated	Very low
Grade	Grade distribution well known and mining plan and scheduling adjusted accordingly	Likely	Moderate	Has been mitigated	Very low
Mineral Resources estimation risk	The Mineral Resource estimation is compliant with SAMREC standards. All estimation of resources has inherent risk	Unlikely	Minor	Inherent in estimation methodologies and accepted in the industry	Low
Additional Ore Reserves to extend LoM	Additional resources can be identified as other H-TSF exist in the area	Possible	Major	None required	Low
Mining	Ergo has been operating successfully late 1990s. The only risk is falling gold price and economies of scale	Unlikely	Major	Adequate size of operation and economies of scale	Medium
Mining methodology inadequacy	Successful mining operation with no need to change methodology	Rare	Moderate	None required	Very low
Mining production shortfalls	Production targets being met at Ergo. Safety record excellent so unlikely health and safety stoppages. Labour contracted so stoppages for strikes low risk	Unlikely	Moderate	None required	Low
Pumping adequacy	Critical to the success of the business	Unlikely	Major	Adequate experience and design	Low
R-TSF	Design and costing based on 2015 DFS. Will require an update. Optimisation possible	Likely	Major	Confirmation of the design will be required, and costs can be optimised	Medium
CPP	Full risk assessment still required	Likely	Moderate	None required at this stage	Medium
LoM plan issues	Sound Mining reviewed and satisfied with production estimates and processing recovery estimates	Unlikely	Moderate	Has been mitigated	Low
Ore Reserve estimation risks	Compliant with SAMREC standards. All Ore Reserve estimation has inherent risks	Unlikely	Minor	Has been mitigated	Inherent low risk taken by all mining companies
Processing plant	Based on fully operational examples at design criteria specifications	Rare	Moderate	Has been mitigated	Very low
Refurbishment	Will be required if additional reserves are identified and the LoM extended. No capex determined at this stage for such refurbishment	Possible	Moderate	None required	Medium
Lower recoveries	Currently operating at specified design recoveries	Possible	Moderate	None required at this stage	Medium

Potential risk	Comment	Likelihood	Consequence	Mitigation	Overall
Higher operational costs	Based on operational informatio	Unlikely	Moderate	None required	Low
Regulatory challenges	Inability to proceed due to regulatory issues. Sound Mining considers that at the present status these hurdles should be easily mitigated. Typical issue facing South African mining industry	Possible	Major	Beyond DRD control	Low
Environmental permitting	WUL licence granted. 2105 EIA and EMP amended to include WRTRP activities	Very likely	Moderate	Timeous application	Low
Environmental permitting for infrastructure	Likely that further amendments required to cover plant modifications, pipeline route changes and pumping rate changes from original applications	Likely	Moderate	Timeous applications for amendments	Low
Environmental monitoring and rehabilitation risk	Full approval of EIA and EMPr in place. Water monitoring on the R-TSF forms part of the operating costs. Provision of the rehabilitation costs covered by Sibanye-Stillwater trust fund with additional insurance policy. Included in the DCF	Unlikely	Moderate	None required at this stage	Low
Grave relocation	Grave relocation process, consultation and compensation negotiations with Next-of Kin to be completed	Very likely	Moderate	Timeous consultation and negotiations	Medium
Capital Costs	Capital costs considered acceptable estimates and staggered over the LoM	Unlikely	Moderate	None required at this stage	Low
Funding for Phase	Insufficient funding available to initiate Phase 2	Possible	Major	Proceeding with “alternative route”	Medium
Operational costs	Operational costs for the LoM were compared to actual costs of production. Sound Mining considers them appropriate for a hydraulic mining operation and comparable to Witwatersrand Basin operations of a similar nature	Unlikely	Moderate	None required at this stage	Low
Labour provision	DRDGOLD taking over 164 employees from Sibanye-Stillwater retrenchment provision required	Likely	Moderate	Provision in the budget required	Medium
Project Implementation timing	Dependent on approval by the Competition Commission	Unlikely	Moderate	None required at this stage	Medium
Project closure	Timing dependent on inclusion of currently active A-TSFs as per the Exchange Agreement. New legislation could affect current provision requirements	Likely	Moderate	None required at this stage	Medium
Non-governmental impact	None anticipated	Rare	Minor	None required	Very low
Compliance with host country laws	The operational status of Ergo confirms full compliance with the MPRDA, all environmental regulations and tax and royalty requirements	Rare	Major	None required	Very low
Sufficient funding for remediation and rehabilitation	Provision in the LoM adequate for current legislative requirements. Resolution of the dispute with SARS required before finalisation	Rare	Major	None required at this stage	Very low
Historical experience with host country laws	Operational status since 1990s proves experience	Rare	Major	None required	Very low

34. Market review

SVT1.19

Gold is one of the noble metals of the periodic table, traditionally prized for its aesthetic qualities and its permanence. However, because of its superior electrical conductivity, resistance to corrosion and other desirable combinations of physical and chemical properties, gold emerged in the late 20th century as an essential industrial metal. Gold performs critical functions in computers, communications equipment, spacecraft, jet aircraft engines, and electronic products. In addition, gold retains a unique status among all commodities as a long-term store of value. Historically gold has been essentially considered a monetary metal, and most of the bullion produced each year went into the vaults of government treasuries or central banks.

34.1. Global supply

The global gold market supply is founded on primary gold production and secondary recycling, the latter of which contributes approximately 30% to the total 3,100t produced in 2015 and 2016. Primary production decreased 2% in 2017 to 3,038t (Table 50). In general, smaller gold mining operations were negatively affected by the continued lower commodity price and increasing costs with the consequential closure of some United States, Mexican and other small scale operations. In 2016, worldwide gold production was unchanged from that in 2015, because increased production in some larger producing countries such as Canada offset the decrease in production from smaller operations. However, in 2017 production dropped precipitously in China and Australia, the world's top two producers.

The amount of scrap gold also fell, helping to drive the decline in supply.

Table 39 : Global gold reserves and production

Country	2015 production (t)	2016 production (t)	Mineral Reserves (t)
United States	214	209	3,000
Australia	278	270	9,500
Brazil	81	80	2,400
Canada	153	170	2,400
China	450	455	2,000
Ghana	88	90	990
Indonesia	97	100	3,000
Papua New Guinea	135	125	1,400
Mexico	60	65	1,500
Peru	145	140	1,400
Russia	102	120	1,700
South Africa	145	130	6,000

Source ; USGS 2017

Chinese gold mine production, the largest producer since 2007, registered a fifth consecutive year-on-year decline in Q3 2017. Recently imposed regulations, which target the discharge of cyanide in tailings, impact production. The dispute between Acacia Mining and Tanzania's government significantly disrupted production in that country, leading to a fall in total Q3 2017 production of 15% and the company announced its intention to scale back its Bulyanhulu project to manage losses caused by the government's concentrate export ban. Output from Burkino Faso also fell 15% as operations at the Inata project were scaled back.

New mines reporting ramped-up production boosted some countries' output. Mine production in Suriname grew by an impressive 90%, driven by Newmont's Merian mine moving towards full capacity. In Canada, output rose 10% based on the increases at Brucejack and Hope Bay mines, both of which started commercial production earlier in 2017. In Argentina, the 15% increase in gold mine production was due to a combination of a ramp-up in production at the Cerro Negro mine and a strong quarter at Veladero mine.

The start-up of new mines in 2017 was limited but a number of new mines are expected to enter production in 2018. Such projects include the Natalka project in Russia, which began commissioning in September 2017 and is expected to ramp up to full production by the end of 2018; Canada's Rainy River project was expected to start commercial production in November 2017 and Houndé in Burkino Faso, which was expected to pour gold before the end of 2017.

Table 40 : Global supply

Global gold market supply	2016	2017
Total tonnes (t)	1,168.4	1,146.4
Mine production (t)	851.8	841.0
Recycled gold (t)	335.0	315.4

34.2. Global demand

Views on the market demand in the public domain are quite divergent. Demand for physical gold rose to 1,895t in the first half of 2017, a 17% increase over the same period last year which led to the view that the fundamentals for gold were trending in a positive direction with demand increasing and supply decreasing.

However, according to the World Gold Council, overall demand in Q3 2017 fell 9% to 915(t), its lowest since 2009 and the annual demand was forecast to be 3,900t to 4,000t, compared to 4,347 tonnes in 2016. Gold demand has not been below 4,000t on an annual basis since 2009. The Exchange Traded Fund (ETF) inflows 2017 were a fraction of the inflows in 2016.

Meanwhile, total supply dropped between 2% and 5% (Table 51) in the first half of 2017 and mine output was stagnant, falling by 0.2%.

34.3. Gold price

The gold price in 2016 was 9% more than the price in 2015 and was 24% lower than the record-high annual price in 2012. The gold price (https://goldprice.org) in 2016 fluctuated through several cycles. The gold price began the year at the lowest level of the year and trended upward through July, with significant increases in the average monthly prices in January through March. Following the United Kingdom's referendum vote to leave the European Union, the price increased to the year-to-date high (and projected annual high) of USD1,372.98/oz. In October, the price dropped significantly, with an investor sell-off coinciding with improved economic data in the United States.

The overall trend in the gold price for the last ten years is shown in Figure 28:-

An upwards move in the gold price to ZAR18,500/oz is shown in December 2017, which equates toZAR576,000/kg. Alternatively, the price history for gold in USD/oz for the past ten years (Figure 33) shows that gold has been trading at around the USD1,300/oz level since 2011.

The performance of the ZAR against the USD over the past two years is shown in Figure 33. While South Africa is experiencing significant local currency fluctuations against all major currencies, it indicates that the South African Rand is unlikely to trade below ZAR13.50 to the USD over the long term.

Gold produced from the WRTRP will be delivered to the Rand Refinery for sale. DRDGOLD has a long standing offtake agreement with the Rand Refinery according to which gold is sold on the prevailing spot in ZAR. When applying a long term exchange rate of ZAR13.5/USD to a realistic USD1,300/oz gold price, it would not be unreasonable for DRDGOLD to anticipate an average real gold price of ZAR564,245/kg from Rand Refinery Limited over the longer term.

35. Economic analysis

SR5.8 (i)-(iv); SVT1.12, SVT1.3, SVT1.4, SVT1.5, SVT1.6, SVT1.7, SVT1.8, SVT1.9, SVT1.10, SVT1.11

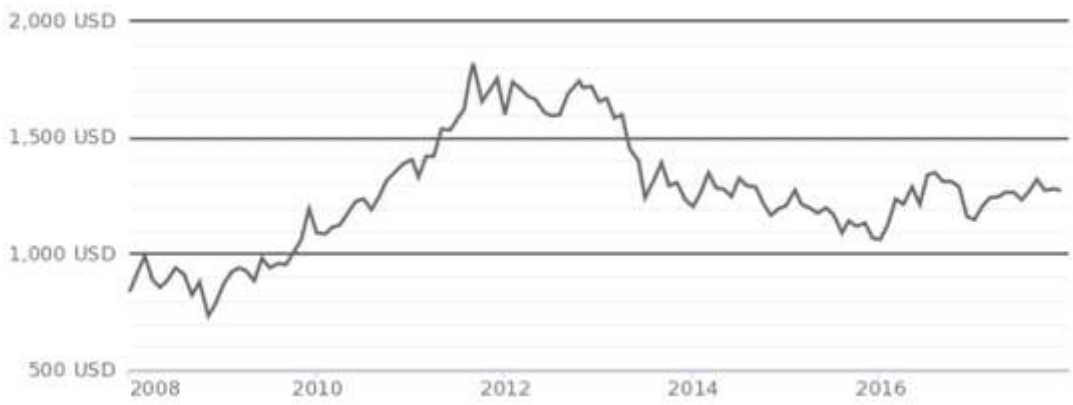
Sound Mining was commissioned by DRDGOLD in an Engagement Letter dated 23 November 2017, to perform an independent economic analysis and a valuation of the WRTRP which was compiled in accordance with the SAMVAL Code as amended in 2016. Terms economic analysis and valuation have been used interchangeably hereafter in the disclosure. The nature of the analysis is an indication of the economic viability of the Project and its robustness in terms of changing market conditions. A consequence of this economic analysis is that project values are derived and presented at varying commodity prices and discount ranges. It should be noted that the economic analysis specifically relates to the mineral assets of the WRTRP and does not relate to the company or its other assets.

Figure 28: Gold price trends and exchange rate fluctuations over the past ten years

Gold Price over the past ten years (ZAR/oz)

Source: https://goldprice.org

Gold Price over the past ten years (USD/oz)



Source: https://worldgoldcouncil.org

Exchange rate (ZAR/USD)

Source: https://tradingeconomics.com

The disclosure for SAMVAL compliance is provided as follows:-

- *scope of work*: the scope of work was to complete an independent economic assessment of the WRTRP for the purpose of supporting a Category 1 Transaction according to the JSE Listings requirements. The Project includes all the assets listed in the description of assets. It is valued as an independent entity with no attributable value calculated;
- *independence*, the Competent Valuator (CV) has no present or prospective interest in the Mineral Assets, and the results of this report have no bearing or consequence on the professional fees earned for this work. Furthermore, the CV has no bias with respect to the Mineral Assets that are the subject of this CPR, or to DRDGOLD, the commissioning entity for this assignment. The CV's credentials and experience and signature to this CPR are included in Section 43;
- *economic analysis date*: the effective date of the economic analysis is 31 December 2017 and all of the inputs into the assessment have been obtained from the various specialist consultants and are valid as at that date with minor exceptions escalated from 2016 costs;
- *property-location, history and ownership*: historical tailings dam located on Sibanye-Stillwater's Driefontein and Kloof mining rights in the West Rand as provided in Sections 8 and 14;
- *legal tenure and infrastructure*: Sections 14and 28;
- *geology, mineralisation, exploration*: Section 15, 16, 17 and Sections 18 to 22;
- *mining, Mineral Resources and Reserves*: Section 24 23, 24 and 37;
- *processing and environmental aspects*: Section 25, 26, 27, and Section 32;
- *previous valuations:* Sound Mining is unaware of any previous valuations that have been determined in accordance with the guidelines of the SAMVAL Code; and,
- *site visit*: an inspection and assessment of the assets, which included the associated infrastructure, surface structures and processing facilities, was undertaken by several members of the Sound Mining team, followed by discussion and enquiry with key personnel. The forecast planning and scheduling information was analysed, together with the associated costs and capital assumptions.

35.1. Independence, capability and Competent Valuator statements

SVT1.0

The Competent Person and Valuator (CP and CV) for the gold Mineral Reserves was Mr. Vaughn Duke of Sound Mining. Mr. Duke has 32 years experience in the minerals industry as a mining engineer, including twelve years specialising in the assessments and economics of Witwatersrand gold mining. He is registered with the Engineering Council of South Africa.

The facts presented in the technical review are correct to the best of the CV's knowledge. The Competent Valuator has no bias with respect to the assets reviewed or to the parties involved in the compilation of the CPR. The assets have been visited and the analyses and conclusions are limited only by the level of study and reported forecasts and conditions. All opinions, findings and conclusions expressed in this economic assessment are those of Sound Mining and are based on information provided by DRDGOLD. These opinions, findings and conclusions reflect various techno-economic conditions, assumptions and interpretations (commodity prices, currency exchange rates, consumer price indices and other conditions) as at the effective date of this CPR (31 December 2017) that can change significantly over a relatively short period of time and, with new information. As such, the information and opinions contained in this CPR may also be subject to change.

Drafts of this CPR were provided to DRDGOLD, but only for the purposes of confirming both the accuracy of the factual material and the reasonableness of assumptions relied upon in the CPR.

35.2. Valuation approaches in SAMVAL

In terms of SAMVAL, three valuation approaches are generally accepted, namely the income (or cash flow) approach, the market approach and the historical cost approach. The methodologies used in valuing a mineral asset differ depending on the developmental stage of the project (i.e. exploration, development and production properties):-

- income: used to value development and production properties and relies on the "value in use" principle and requires determination of the present value of future cash flows over the useful life of the mineral asset;
- market: used to value exploration and development properties and which is based on the relative comparisons of similar properties for which a transaction is available in the public domain. The market approach relies on the principle of "willing buyer, willing seller" and requires that the amount obtainable from the sale of the mineral asset is determined as if in an "arms-length" transaction; and
- historical cost: used to value early stage exploration properties and which relies on the historical and future exploration expenditure.

The CV is required to apply at least two valuation approaches. The relationship between the maturity of the property and the approach to the valuation as presented in the SAMVAL Code are reproduced in Table 41.

Table 41 : Valuation methodologies per project development

Valuation approach	Early stage exploration	Advanced exploration	Development property	Production property	Dormant properties		Defunct
					Economically viable	Economically not viable	
Income	Not generally used	Less widely used	Widely used	Widely used	Widely used	Not generally used	Not generally used
Market	Widely used	Widely used	Less widely used	Quite widely used	Quite widely used	Widely used	Widely used
Cost	Widely used	Widely used	Not generally used	Not generally used	Not generally used	Less widely used	Quite widely used

Source: SAMVAL Code 2016

The selection of an appropriate valuation approach is dependent on the availability of information on the assets. The WRTRP can be classified as a "Development Property" as it has significant, detailed cost and capital information specific to the geographic and economic locality of its assets. Accordingly, the Income Approach and Market Approach have been selected for the economic analysis. The results from the assessment approaches and methods employed must be weighed and reconciled into a concluding opinion of the value. The reasons for giving a higher weighting to one method or approach over another must be stated. The valuation is presented in ZAR, which is the currency of the transaction.

35.3. Income approach analysis for the WRTRP

SVT1.12

Sound Mining has utilised the guidelines provided in the SAMREC Code on the use of the income approach assessment of a mineral asset to conduct the economic analysis of the Project. The CV used a Discounted Cash Flow (DCF) model in real 2017 terms. It is based on the production as forecast from the H-TSFs (i.e. revenue forecast), with due regard to appropriate financial model inputs and reasonable assumptions informed by Sound Mining's review of the Project's technical basis and associated cost estimations (i.e. revenue, opex and capex forecasts).

Considering the stage of development of the Project and the uncertainties of future global economics, as well as exchange rate, interest rate and gold price uncertainties, a real money DCF model is deemed more appropriate than an escalated DCF model, as an escalated DCF model would require the prediction of very uncertain input parameters.
The Mineral Resources for the relevant H-TSFs and LoM planning and study work associated with their exploitation were reviewed by Sound Mining, and these form the basis of the DCF portion of the economic analysis. Sound Mining considers the inputs to the forecast cashflow from the various study work to constitute an overall PFS level of accuracy.

Revenue forecast and related inputs
The gold production and sales profiles (as shown in Figure 18 and Figure 29) ramp up over the first four years of production with a production average of 1.8tpa Au sales. Steady state production averages 2.8tpa Au sales from 2023 to 2032 before decreasing to approximately 1.6tpa Au sales from phase 2B until anticipated closure in 2038. Total gold recovered and forecast to be sold from the 246.1Mt of H-TSF material treated equivalent to approximately 1.4Moz. The increased gold sales in 2023 at the start of Phase 2 occurs as a consequence of Phase 2A starting production prior to the completion of Phase 1.

The revenue related input parameters to the DCF model are shown in Table 42:-

Table 42 : Input parameters for the DCF

Parameter	Unit	Metric	Comments
ZAR/USD exchange rate	ZAR/USD	13.5	See Section on Market Review
Gold price	USD/oz	1300	See Section on Market Review
Mining losses and dilution	%	0	From modifying factors
Grade of H-STFs	g/t Au	0.27 to 0.47	From geological block model
Process recovery	%	63 to 39	From testwork

Source : Sound Mining Dec 2017; DRDGOLD 2017

The forecast revenue profile was determined using DRDGOLD's production plan and a real long term gold price of ZAR564,245.00 (i.e. USD1,300/oz at an exchange rate of ZAR13.5/USD1).

All of the H-TSF material will be processed with no losses or dilution anticipated and the processing recoveries are supported by testwork and benchmarked plant performance data. The grade of the material reporting for processing deteriorates over the LoM. The average yield from Phase 1 is 0.29g/t, which drops to 0.19g/t for Phase 2A and then to 0.11g/t for Phase 2B. This is due to both lower quality dump material and diminishing processing recoveries resulting from the application of a more conservative recovery (since metallurgical testwork is less sufficient than the other H-TSFs) . The anticipated recoveries for the respective H-TSF's are presented below:

- 63.0% for Driefontein 5 H-TSF material;
- 61.9% for Driefontein 3 H-TSF material;
- 44.6% for Kloof 1 H-TSF material;
- 48.5% Libanon H-TSF material; and
- 39.3% for Venterspost North and Venterspost South H-TSF material.

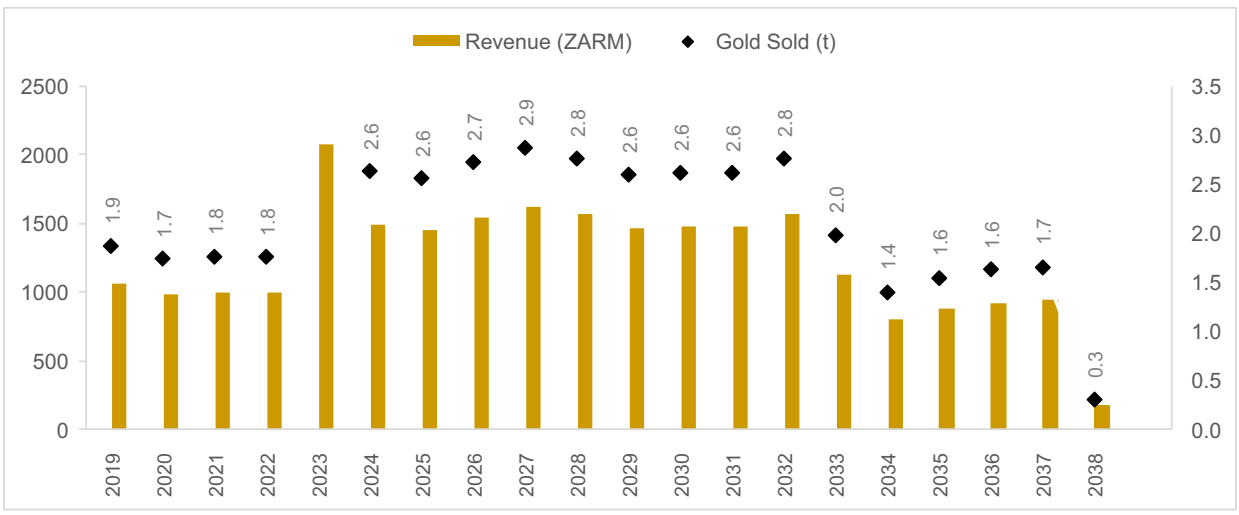
35.3.1. Capital expenditure forecast and related inputs

SVT1.18

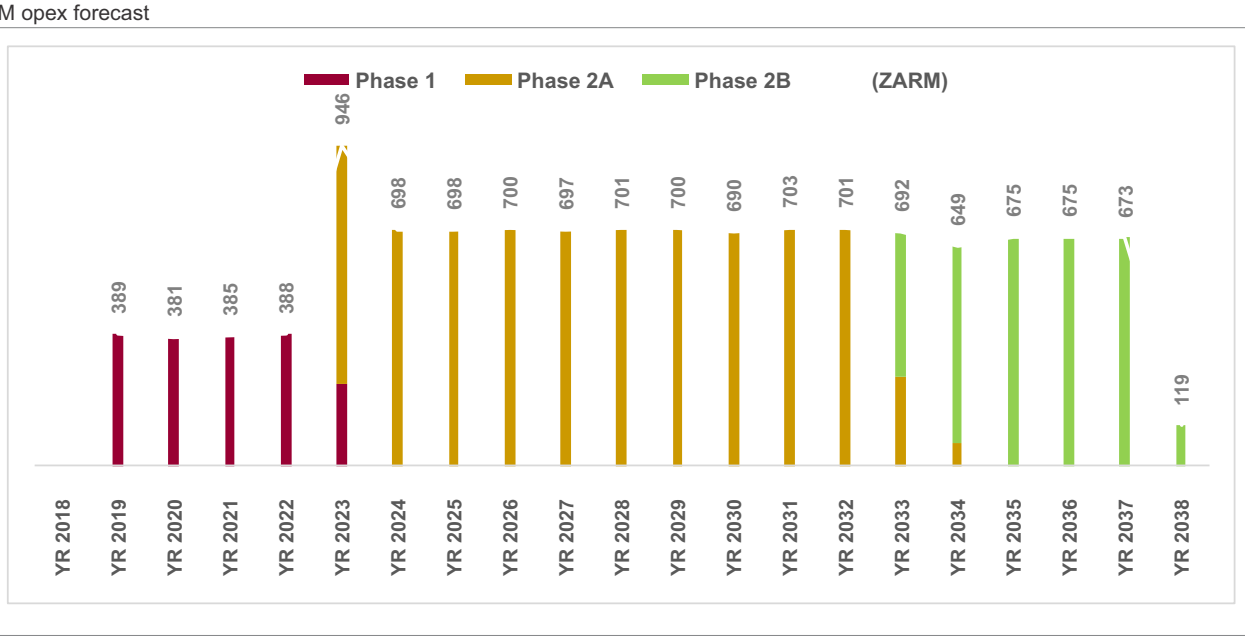
The capex forecast quantum and timing forecasts used in the financial model are illustrated in Figure 30 and discussed in more detail below.

Figure 29: Revenue and LoM opex forecasts

Revenue forecast



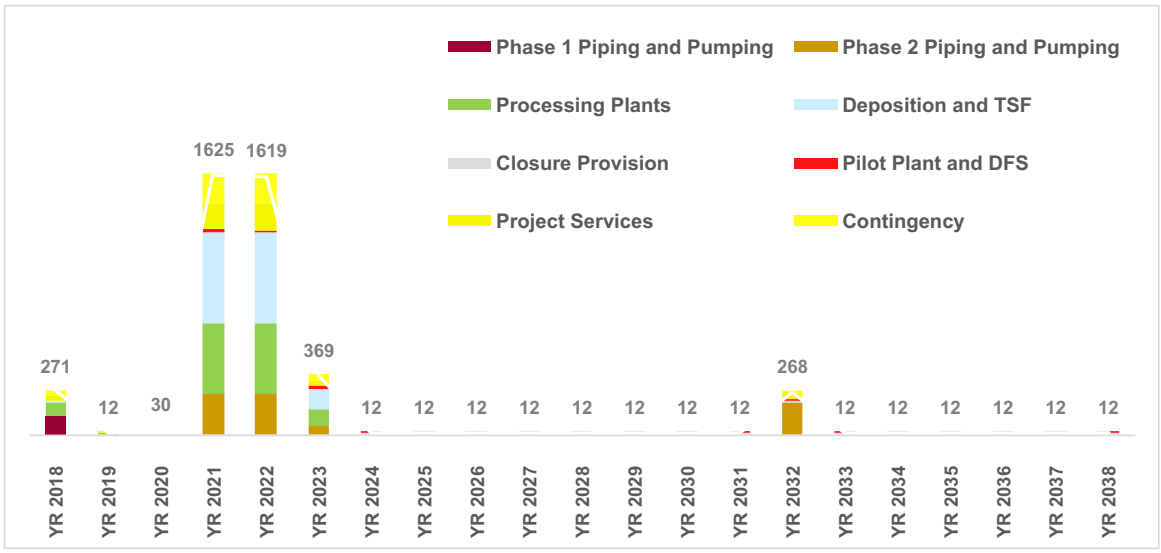
LoM opex forecast



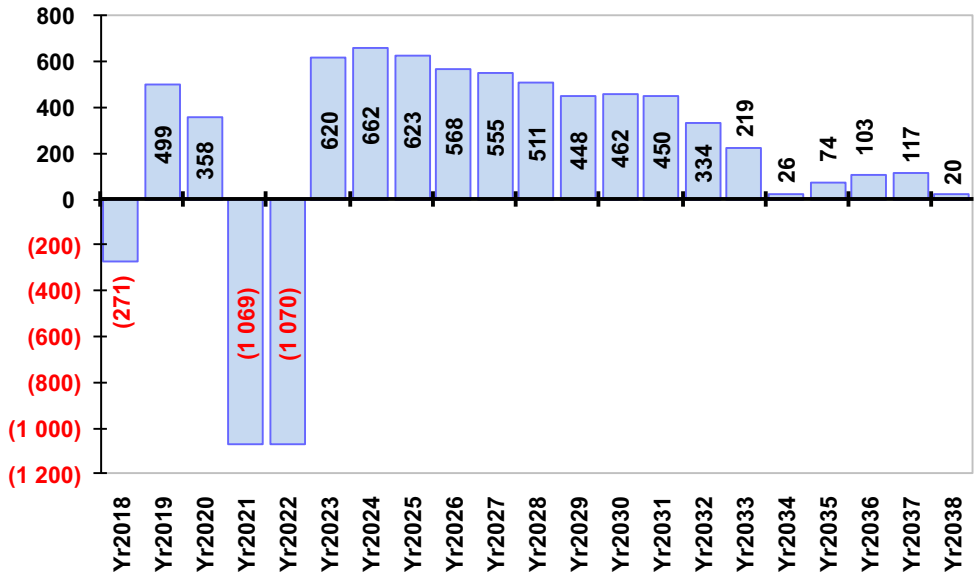
Source: Sound Mining 2017

Figure 30: Capex forecast and timing with annual real cash flow

Capex forecast (ZARm)



Annual real cash flow (ZARm)



Source: Sound Mining 2017

The various direct and indirect capex requirements for Phase 1 and Phase 2 are summarised in Table 45. The WRTRP will need to provide for closure and this will for part of indirect capex as shown in Table 44. In addition, a provision of 13% was included for project services and a contingency of 15% has been allowed for operational unknowns and some engineering uncertainty.

As can be expected for a mining operation of this nature, a sustaining capital provision of 1.5% of total operating costs will be necessary and appropriate to cover for capital Items for processing, future haul roads and other general requirements for the operation over it's LoM. This is excludes from the capex costs.

Table 43 : Phase 1 and Phase 2 direct capital expenditure

Item	Budget (ZARm)	Proportion (%)
Phase 1 - piping and pumping for mining and re-deposition	120	4
Phase 2 - piping and pumping for mining and re-deposition	778	24
Processing plants	1,073	33
A-TSF's for re-deposition	1,245	39
Total for direct capex	**3,216**	**100**

Source : Sound Mining 2017; DRDGOLD 2017

Table 44 : Phase 1 and Phase 2 indirect capex estimate

Item	Budget (ZARm)
Closure provision	215
Pilot plant studies and Phase 2 DFS	30
Project services @ 13% of	418
Contingency @ 15%	482
Total	**1,146**

Source : Sound Mining Dec 2017; DRDGOLD 2017

A more detailed capex breakdown is provided in Table 45:-

Table 45 : Summary direct and indirect capex for Phase 1 and Phase 2

Project component	Capex (ZARm)
Phase 1 capex	
Mining / redeposition	120
Upgrades to DPP2 and DPP3	38
Gold recovery plant	51
Upgrade to Driefontein 4A-TSF	16
Pilot and DFS	0
Sub-total direct capex	**225**
Contingency 15%	34
Project services 13%	29
Sub-total Phase 1 direct and indirect capex	**288**
Phase 2 capex	
Mining / redeposition	778
Lower compartment H-TSF	1,229
Construction of CPP	984
Sub-total Phase 2 direct capex	**2,991**
Contingency 15%	449
Project services 13%	389
Sub-total Phase 2 indirect capex	**3,828**
Closure provision	215
Pilot study and DFS (Phase 1)	30
TOTAL	**4,361**

Source : Sound Mining Dec 2017
Excludes sustaining capex (stay-in-business capex)

35.3.2. Operating expenditure forecast and related inputs

SVT1.18

The operating expenditure (opex) estimate as forecast in the DCF model is shown in Figure 29 and summarised in Table 46. The CP has interrogated the sources of the various quantities used for the opex estimates and is satisfied that they collectively meet and in places exceed the level of confidence associated with a PFS. Accordingly, a contingency of 15% has been applied in the valuation to cater for any uncertainty with respect to the overall Project's opex estimate of ZAR63.97/t for Phase 1 and ZAR48.49 for Phase 2.

Table 46 : Phase 1 and Phase 2 opex forecast

Parameter	Phase 1 (ZAR/t)	Phase 2 (ZAR/t)
Wages	8.88	3.96
Contractors	5.00	5.30
Stores	22.79	19.32
Utilities	13.50	13.81
Overhead	13.80	6.10
Totals	**63.97**	**48.49**

Source : Sound Mining 2017; DRDGOLD 2017

The opex estimates have been based on quantities from mine planning and feasibility study work undertaken for the Project, together with up to date information (e.g. bill of materials) from DRDGOLD's Ergo operations on the East Rand and similar information from other specialist service providers. The basis of the operating cost estimates for the WRTRP is outlined below:-

- wages make up 14% and 8% of the operating cost estimate for Phase 1 and Phase 2 respectively. The cost estimate was derived by using the manning schedules as planned by DRD for the WRTRP together with their latest actual salary structures;
- the mining contractors' estimate amounts to 8% and 11% of the operating cost estimate for Phase 1 and Phase 2 respectively. The estimate covers the hydro-mining operations, the re-deposition of tailings, and the operation of the pump stations at the respective mining sites. It is supported by the contracts currently in place and written confirmation from the contractor that the contracted rates would apply equally to the WRTRP. The piping routes and distances have been planned and costed in detail and included in the capital estimate. The maintenance of the pipes and pumps that do not fall under the responsibility of the contractor will be done by DRD personnel;
- stores comprise 36% and 40% of the operating costs for Phase 1 and Phase 2 respectively. DRD's latest bill of materials has been applied to the quantities as planned for the WRTRP. The cost estimate also includes ZAR1,300/kg Au to cater for the cost of refining which cost is supported by existing contracts with Rand Refinery;
- utilities constitute 21% and 28% of the operating cost estimate for Phase 1 and Phase 2 respectively. The cost for water is based on site specific information from Sibanye-Stillwater and current Eskom tariffs were applied to a detailed study completed on the overall power requirement for both Phase 1 and Phase 2; and
- overheads are estimated to amount to 22% of the combined operating costs. This estimate was provided by DRD and a breakdown thereof is presented in Table 47.

The split of overhead costs is summarised in Table 47 and it includes a retrenchment provision of approximately ZAR18.0m that is expected to be incurred during the course of the LoM. Another provision has been made for the training and skills development which would normally form part of a social and labour plan that needs to be funded by the operations. These have both been included in the opex as part of the overheads.

Table 47 : Overhead cost breakdown

Parameter	Cost monthly ('000ZAR)
Finance, admin and management	2,550
Human Resources	500
Instrumentation	450
Metallurgical research	250
Mineral Resource management	250
Environmental-ad hoc spillage etc	1,000
Security (management)	375
Health and Safety	275
Projects	350
Retrenchment	120
Total	**6,120**

35.3.3. DCF model

The cash flow analysis is reported in South African Rands (ZAR). The economic inputs are based on information received from DRDGOLD, The World Gold Council and the various consultants who contributed to the technical sections of this CPR throughout the course of Sound Mining's review. The DCF is based on real 31 December 2017 money terms, which is consistent with the economic analysis date.

The overall post-tax pre-finance cash flow is presented in Figure 31and the model confirms that the Project remains cash positive from 2018 until the final 4 years where there are marginal cash flows.

Tax was calculated as per South African legislation. The corporate tax rate applied is based on the mining tax formula that uses capital expenditure and assessed tax losses. The assets will be part of a new entity with no unredeemed capital or assessed losses as at 31 December 2017.

Capital expenditures are written off in the year incurred. The assets will essentially form part of DRDGOLD usual business, which is not subject to the Mineral Royalties Act and so the formula for unrefined metals was not included in the DCF valuation

Working capital has not been included as part of this assessment. The establishment costs are all fully covered in the capital estimates and DRDGOLD reportedly does not wait long for payment from Rand Refinery Limited following gold delivery.

A discount rate of 6% (in real terms), consistent with the nature of the Project and operating company's cost of capital and risk profile, was applied to the cash flow (i.e. DRDGOLD's weighted average cost of capital is the preferred discount rate). The result is a post-tax real net present value (NPV) of ZAR2,121m. The change in NPV's over a range of discount factors from 2% to 10% is provided in Table 48 and illustrates the economic robustness of the Project. An internal rate of return (IRR) of 38% was also computed. The Project remains economically positive with decreasing gold price to a critical point of USD1,040/oz where after the Project becomes negative.

Table 48 : NPV at different discount rates

Discount Rate	2.00%	4.00%	6.00%	8.00%	10.00%
NPV	3,351	2,662	2,121	1,694	1,355

Source : Sound Mining Dec 2017

35.3.4. Value per Project Phase from the income approach

The DCF model was used to also examine the distribution of this value between the respective phases of the project. Table O provides a breakdown of the value add between phases.

Table 49 : Distribution of value over WRTRP phases

Phases	Revenue (ZARm)	Opex (ZARm)	Capex (ZARm)	NPV_6 (ZARm)	IRR (%)
Phase 1 for 5 years only	4,479	2020	343*	1,275	164
Phase 1 and Phase 2A for 16 years	20,297	10,290	4,246	2,020	36
Phase 1, Phase 2A and Phase 2B for 20 years	24,626	14,098	4493	2,121	37

Source : Sound Mining Dec 2017
* Includes closure provision and DFS pilot plant testwork over and above the indirect capital

The Project will have recovered 60% of it's value after only 5 years for a capital outlay of only 7% of the total budget. A total of 95% of the value accrues after Phase 1 and Phase 2A but 95% of the capital will have been required. The remaining portion of the total project is marginal.

35.3.5. Risk and sensitivity analysis

SR5.7 (i); SVT1.15]

The achievability of LoM plans, budgets and forecasts cannot be assured as they are based on economic assumptions, many of which are beyond the control of the company. Future cash flows and profits derived from such forecasts are inherently uncertain and actual results may be significantly more or less favourable.

The technical risk factors as identified by Sound Mining are provided in Table 38. These and other environmental factors can impact the anticipated revenue, opex and capex forecasts and accordingly have been assessed against upside or downside changes of between -20% and +20%. These consequential potential impacts are presented in Table 50 and the same potential impact on the value of the WRTRP is illustrated graphically in Figure 33. The graph clearly shows that the largest impact on the Project's potential value is effected by a change in revenue.

Table 50 : Financial sensitivity on NPV_6 of the WRTRP

Variance	80.00%	90.00%	100%	110.00%	120.00%
Revenue	-14	1,080	2,121	3,139	4,146
Capex	2,635	2,379	2,121	1,862	1,600
Opex	3,217	2,672	2,121	1,557	965

Source : Sound Mining Dec 2017

35.4. Market approach

The market approach relies on the principle of "willing buyer, willing seller" and requires that the amount obtainable from the sale of an asset is determined as if in an arm's length transaction. The market approach valuation method requires comparison with relatively recent transactions of assets that have similar characteristics to those of the asset being valued. It is generally based upon a monetary value per unit of resource (where available) or per unit of defined mineralisation.

No transactions comparable with the WRTRP are available for use in the market approach and the assets under consideration (i.e. the H-TSFs) are unusual in that they are not similar to the traditional gold mining operations in South Africa. Sound Mining therefore considered the Enterprise Value (EV) per ounce as an indication of a possible value for the assets. The EV is from the market capitalisation of each company as at December 2017.

Sound Mining has performed a search of public listed companies active in the gold mining industry to construct a database from information in the public domain. Gold mining companies vary in terms of the particular assets that they own, the depth and size of their actual operations and so the data set was then filtered to limit it to gold mining companies that are similarly able to profitably produce gold from low grade (i.e. < 1.5g/t) material that is close to, or on top of the surface, and which are able to operate profitably at yields below 1.5g/t. Twelve companies remained and are presented in Table Table 51. An assumed average recovery of 90% was applied to the Mineral Reserves so that a value for each ounce of gold likely to be recovered and sold (i.e. ZAR/oz Au sold) could be estimated for a better benchmark.

Table 51 :Publicly listed companies with low grade profitable operations

Property	Enterprise Value (ZARm)	Mineral Reserves (Moz)	Potential sales (Moz)	Benchmark (ZAR/oz)
Kinross Gold Corp.	89,952	31	28	3,224
Yamana Gold, Inc.	428,889	14	13	3,404
Alamos Gold Inc.	32,130	8	7	4,463
Detour Gold Corp.	31,198	16	14	2,167
New Gold, Inc.	29,957	15	14	2,219
NovaGold Resources Inc.	21,329	20	18	1,185
Eldorado Gold Corp.	16,794	19	17	982
Harmony Gold Mining Ltd.	13,776	23	21	666
Fortuna Silver Mines Inc.	11,248	2	2	6,249
Pan African Resources PLC	6,378	11	10	644
Lydian International Limited	3,496	3	3	1,295
Golden Queen Mining Co. Ltd.	315	1	1	350

Source : Sound Mining Dec 2017

Both sentiment and intrinsic value play a part in a decision to trading and as a consequence these values only provide an indicative range for EV. The EV per ounce (EV/oz) (or market value per ounce (MV/oz)) of Mineral Reserve was determined from the dataset for each company and these values were then plotted against the associated Mineral Reserves to provide a basis for comparison as shown in Figure 33. Trend lines were generated and plotted with an upper and lower limit on either side of the mean and both DRDGOLD and the WRTRP (based on the NPV from the DCF model) are shown for comparative purposes.

The value attributed to the Project from the market approach is shown in Table 52. The indicative values generated for the WRTRP assets with a Mineral Reserve content of 1.4Moz ranges from ZAR630m to ZAR6,510m. A value of ZAR3,570m can be attributed to the WRTRP by the market approach if an average is assumed.

Table 52 : Range of values from the market approach

Range	MV/oz (ZAR/oz)	Indicated Value (ZARm)
High	4,650	6,510
Middle	2,550	3,570
Low	450	630

Source : Sound Mining Dec 2017

Source: Sound Mining 2017

Revenue Forecast		Tot / Avg	Yr 2018	Yr 2019	Yr 2020	Yr 2021	Yr 2022	Yr 2023	Yr 2024	Yr 2025	Yr 2026	Yr 2027	Yr 2028	Yr 2029	Yr 2030	Yr 2031	Yr 2032	Yr 2033	Yr 2034	Yr 2035	Yr 2036	Yr 2037	Yr 2038
Phase 1	kt	27 938	-	6 089	5 951	6 012	6 072	3 814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2A	kt	150 950	-	-	-	-	-	14 483	14 400	14 388	14 428	14 367	14 451	14 440	14 240	14 490	14 460	5 412	1 390	-	-	-	-
Phase 2B	kt	67 231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9 158	12 400	14 400	14 400	14 342	2 531
Feed to Plant	kt	246 119	-	6 089	5 951	6 012	6 072	18 297	14 400	14 388	14 428	14 367	14 451	14 440	14 240	14 490	14 460	14 570	13 790	14 400	14 400	14 342	2 531
Recovered Phase 1	kg	8 217	-	1 881	1 747	1 769	1 764	1 056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Recovered Phase 2A	kg	28 036	-	-	-	-	-	2 626	2 639	2 568	2 736	2 880	2 773	2 607	2 625	2 617	2 776	1 040	150	-	-	-	-
Recovered Phase 2B	kg	7 391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	954	1 263	1 560	1 636	1 667	311
Gold Recovered	kg	43 644	-	1 881	1 747	1 769	1 764	3 682	2 639	2 568	2 736	2 880	2 773	2 607	2 625	2 617	2 776	1 994	1 413	1 560	1 636	1 667	311
Gold Sold	kg	43 644	-	1 881	1 747	1 769	1 764	3 682	2 639	2 568	2 736	2 880	2 773	2 607	2 625	2 617	2 776	1 994	1 413	1 560	1 636	1 667	311
	koz	1 403	-	60	56	57	57	118	85	83	88	93	89	84	84	84	89	64	45	50	53	54	10
Gold Revenue	ZAR M	24 460	-	1 061	986	998	996	1 919	1 489	1 449	1 544	1 625	1 565	1 471	1 481	1 477	1 566	1 106	825	880	923	941	161
WRTRP Revenue Forecast	ZAR M	24 626	-	1 061	986	998	996	2 078	1 489	1 449	1 544	1 625	1 565	1 471	1 481	1 477	1 566	1 125	797	880	923	941	176

Operating Expenditure Forecast		Tot / Avg	Yr 2018	Yr 2019	Yr 2020	Yr 2021	Yr 2022	Yr 2023	Yr 2024	Yr 2025	Yr 2026	Yr 2027	Yr 2028	Yr 2029	Yr 2030	Yr 2031	Yr 2032	Yr 2033	Yr 2034	Yr 2035	Yr 2036	Yr 2037	Yr 2038
Wages	ZAR M	248	-	54	53	53	54	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contractors	ZAR M	140	-	30	30	30	30	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stores	ZAR M	637	-	139	136	137	138	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Utilities	ZAR M	377	-	82	80	81	82	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Overhead	ZAR M	386	-	84	82	83	84	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total Phase 1	ZAR M	1 787	-	389	381	385	388	244	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wages	ZAR M	598	-	-	-	-	-	57	57	57	57	57	57	57	56	57	57	21	6	-	-	-	-
Contractors	ZAR M	800	-	-	-	-	-	77	76	76	76	76	77	77	75	77	77	29	7	-	-	-	-
Stores	ZAR M	2 917	-	-	-	-	-	280	278	278	279	278	279	279	275	280	279	105	27	-	-	-	-
Utilities	ZAR M	2 084	-	-	-	-	-	200	199	199	199	198	200	199	197	200	200	75	19	-	-	-	-
Overhead	ZAR M	921	-	-	-	-	-	88	88	88	88	88	88	88	87	88	88	33	8	-	-	-	-
Sub-total Phase 2A	ZAR M	7 319	-	-	-	-	-	702	698	698	700	697	701	700	690	703	701	262	67	-	-	-	-
Wages	ZAR M	266	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36	49	57	57	57	10
Contractors	ZAR M	249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	46	53	53	53	9
Stores	ZAR M	1 299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	177	240	278	278	277	49
Utilities	ZAR M	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	126	171	199	199	198	35
Overhead	ZAR M	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	76	88	88	87	15
Sub-total Phase 2B	ZAR M	3 153	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	429	582	675	675	673	119
Contingency @15%	ZAR M	1 839	-	58	57	58	58	142	105	105	105	104	105	105	104	105	105	104	97	101	101	101	18
Total Operating Expenditure Forecast	ZAR M	14 098	-	448	438	442	447	1 088	803	802	805	801	806	805	794	808	806	796	746	777	777	773	137

Capital Expenditure Forecast		Tot / Avg	Yr 2018	Yr 2019	Yr 2020	Yr 2021	Yr 2022	Yr 2023	Yr 2024	Yr 2025	Yr 2026	Yr 2027	Yr 2028	Yr 2029	Yr 2030	Yr 2031	Yr 2032	Yr 2033	Yr 2034	Yr 2035	Yr 2036	Yr 2037	Yr 2038
Driefontein 5H-TSF	ZAR M	40	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DPP2	ZAR M	21	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Driefontein 4A-TSF	ZAR M	31	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Return Water Dam at Driefontein 4A-TSF	ZAR M	17	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Driefontein 10 Shaft Pump Station	ZAR M	10	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total Phase 1 Mining / Re-deposition	ZAR M	120	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kloof 10 Shaft	ZAR M	35	-	-	-	16	16	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Driefontein 10 Process Water	ZAR M	12	-	-	-	5	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Driefontein 3 H-TSF	ZAR M	133	-	-	-	60	60	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Libanon H-TSF	ZAR M	119	-	-	-	54	54	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kloof 1 Shaft	ZAR M	26	-	-	-	12	12	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Venterspost TSFs	ZAR M	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-
CPP	ZAR M	87	-	-	-	39	39	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R-TSF	ZAR M	85	-	-	-	38	38	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Return Water Dam	ZAR M	44	-	-	-	20	20	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CPP H20	ZAR M	36	-	-	-	16	16	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total Phase 2 Mining / Re-deposition	ZAR M	778	-	-	-	260	260	58	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-
Phase 1: To Upgrade DPP2 and DPP3	ZAR M	38	28	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 1: Desorption and Recovery Plant	ZAR M	51	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2: To Construct CPP	ZAR M	984	-	-	-	443	443	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total Processing Plants	ZAR M	1 073	79	9	-	443	443	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 1: To Upgrade Driefontein 4 A-TSF	ZAR M	16	12	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lower Compartment R-TSF	ZAR M	1 229	-	-	-	553	553	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total TSF for Re-deposition	ZAR M	1 245	12	-	-	557	553	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Capex	ZAR M	3 216	212	9	-	1 260	1 256	279	-	-	-	-	-	-	-	-	200	-	-	-	-	-	-
Closure Provision	ZAR M	215	-	-	-	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Phase 2 Pilot Plant and DFS	ZAR M	30	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Services @13%	ZAR M	418	28	1	-	164	163	36	-	-	-	-	-	-	-	-	26	-	-	-	-	-	-
Contingency @15%	ZAR M	482	32	1	-	189	188	42	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-
Indirect Capex	ZAR M	1 146	59	3	30	365	364	90	12	12	12	12	12	12	12	12	68	12	12	12	12	12	12
Total Project Capital	ZAR M	4 361	271	12	30	1 625	1 619	369	12	12	12	12	12	12	12	12	268	12	12	12	12	12	12
Sustaining Capex @1.5% from 2024	ZAR M	132	-	-	-	-	-	-	12	12	12	12	12	12	12	12	12	12	11	-	-	-	-
Total Capital Expenditure	ZAR M	4 493	271	12	30	1 625	1 619	369	24	24	24	24	24	24	24	24	280	24	23	12	12	12	12
Total Operating & Capital Costs	ZAR M	18 591	271	460	468	2 067	2 066	1 457	827	826	829	825	830	829	818	832	1 086	820	769	789	789	785	148
Cash Flow Before Tax	ZAR M	6 035	(271)	601	518	(1 069)	(1 070)	620	662	623	715	800	735	642	663	644	480	305	28	91	134	155	27
Taxation	ZAR M	(1 797)	-	(103)	(160)	-	-	-	-	-	(147)	(245)	(224)	(194)	(201)	(195)	(146)	(86)	(2)	(18)	(31)	(38)	(7)
Cash Flow After Tax	ZAR M	4 237	(271)	499	358	(1 069)	(1 070)	620	662	623	568	555	511	448	462	450	334	219	26	74	103	117	20

Figure 31: DCF summary

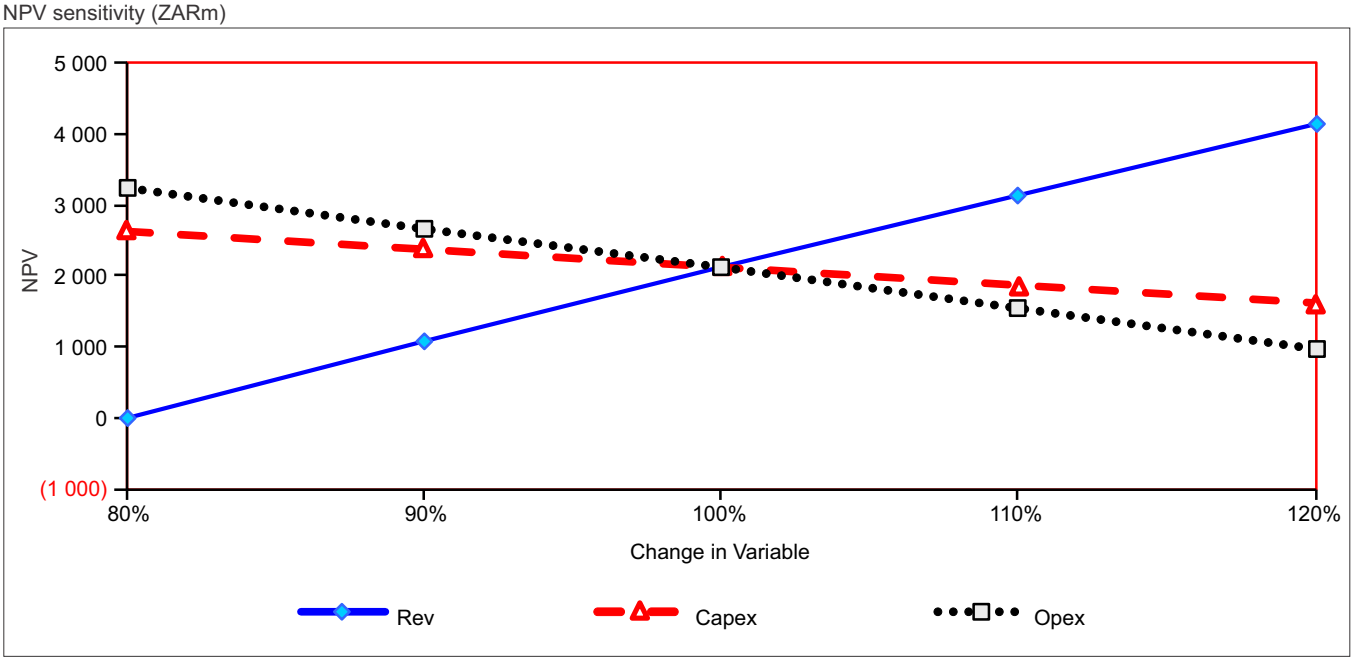
Source: Sound Mining 2017

Depletion Forecast		Tot / Avg	Yr 2018	Yr 2019	Yr 2020	Yr 2021	Yr 2022	Yr 2023	Yr 2024	Yr 2025	Yr 2026	Yr 2027	Yr 2028	Yr 2029	Yr 2030	Yr 2031	Yr 2032	Yr 2033	Yr 2034	Yr 2035	Yr 2036	Yr 2037	Yr 2038
Phase 1 depletion from Driefontein 5	*(kt)*	**27 938**		6 089	5 951	6 012	6 072	3 814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Content mined	*(kg)*	**13 043**		2 985	2 772	2 808	2 801	1 677	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insitu grade mined	*(g/t Au)*	**0.47**		0.49	0.47	0.47	0.46	0.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Content recovered @ 63%	*(kg)*	**8 217**		1 881	1 747	1 769	1 764	1 056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yield	*(g/t Au)*	**0.29**		0.31	0.29	0.29	0.29	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2A depletion from Driefontein 3	*(kt)*	**49 756**		-	-	-	-	4 822	4 783	4 835	4 799	4 779	4 842	4 814	4 611	4 857	4 820	1 794	-	-	-	-	-
Content mined	*(kg)*	**23 159**		-	-	-	-	2 401	2 389	2 271	2 234	2 261	2 254	2 129	2 088	2 144	2 178	809	-	-	-	-	-
Insitu grade mined	*(g/t Au)*	**0.47**		-	-	-	-	0.50	0.50	0.47	0.47	0.47	0.47	0.44	0.45	0.44	0.45	0.45	-	-	-	-	-
Content recovered @ 61.9%	*(kg)*	**14 336**		-	-	-	-	1 487	1 479	1 406	1 383	1 400	1 395	1 318	1 293	1 327	1 348	501	-	-	-	-	-
Yield	*(g/t Au)*	**0.29**		-	-	-	-	0.31	0.31	0.29	0.29	0.29	0.29	0.27	0.28	0.27	0.28	0.28	-	-	-	-	-
Phase 2A depletion from Kloof 1	*(kt)*	**27 903**		-	-	-	-	2 432	2 418	2 359	2 401	2 412	2 410	2 411	2 403	2 412	2 429	2 425	1 390	-	-	-	-
Content mined	*(kg)*	**8 857**		-	-	-	-	822	763	760	777	798	811	795	740	725	763	769	335	-	-	-	-
Insitu grade mined	*(g/t Au)*	**0.32**		-	-	-	-	0.34	0.32	0.32	0.32	0.33	0.34	0.33	0.31	0.30	0.31	0.32	0.24	-	-	-	-
Content recovered @44.6%	*(kg)*	**3 950**		-	-	-	-	367	340	339	346	356	362	354	330	323	340	343	150	-	-	-	-
Yield	*(g/t Au)*	**0.14**		-	-	-	-	0.15	0.14	0.14	0.14	0.15	0.15	0.15	0.14	0.13	0.14	0.14	0.11	-	-	-	-
Phase 2A depletion from Libanon	*(kt)*	**73 291**		-	-	-	-	7 229	7 199	7 194	7 229	7 175	7 199	7 215	7 226	7 221	7 212	1 192	-	-	-	-	-
Content mined	*(kg)*	**20 103**		-	-	-	-	1 593	1 692	1 698	2 075	2 318	2 095	1 926	2 067	1 993	2 243	404	-	-	-	-	-
Insitu grade mined	*(g/t Au)*	**0.27**		-	-	-	-	0.22	0.24	0.24	0.29	0.32	0.29	0.27	0.29	0.28	0.31	0.34	-	-	-	-	-
Content recovered @ 48.5%	*(kg)*	**9 750**		-	-	-	-	772	821	823	1 006	1 124	1 016	934	1 002	967	1 088	196	-	-	-	-	-
Yield	*(g/t Au)*	**0.13**		-	-	-	-	0.11	0.11	0.11	0.14	0.16	0.14	0.13	0.14	0.13	0.15	0.16	-	-	-	-	-
Phase 2B depletion from Venterspost North	*(kt)*	**54 536**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	7 525	9 920	11 520	11 520	11 520	2 531
Content mined	*(kg)*	**14 710**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 865	2 399	3 007	3 262	3 378	798
Insitu grade mined	*(g/t Au)*	**0.27**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.25	0.24	0.26	0.28	0.29	0.32
Content recovered @ 39%	*(kg)*	**5 737**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	728	936	1 173	1 272	1 317	311
Yield	*(g/t Au)*	**0.11**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	0.09	0.10	0.11	0.11	0.12
Phase 2B depletion from Venterspost South	*(kt)*	**12 695**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 633	2 480	2 880	2 880	2 822	-
Content mined	*(kg)*	**4 241**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	581	840	993	932	897	-
Insitu grade mined	*(g/t Au)*	**0.33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.36	0.34	0.34	0.32	0.32	-
Content recovered @ 39%	*(kg)*	**1 654**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	227	327	387	363	350	-
Yield	*(g/t Au)*	**4 951.05**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	0.13	0.13	0.13	0.12	-
Phase 1	*kt*	**27 938**	-	6 089	5 951	6 012	6 072	3 814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phase 2A	*kt*	**150 950**	-	-	-	-	-	14 483	14 400	14 388	14 428	14 367	14 451	14 440	14 240	14 490	14 460	5 412	1 390	-	-	-	-
Phase 2B	*kt*	**67 231**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9 158	12 400	14 400	14 400	14 342	2 531
Feed to Plant	*kt*	**246 119**	**-**	**6 089**	**5 951**	**6 012**	**6 072**	**18 297**	**14 400**	**14 388**	**14 428**	**14 367**	**14 451**	**14 440**	**14 240**	**14 490**	**14 460**	**14 570**	**13 790**	**14 400**	**14 400**	**14 342**	**2 531**
Recovered Phase 1	*kg*	**8 217**	-	1 881	1 747	1 769	1 764	1 056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Recovered Phase 2A	*kg*	**28 036**	-	-	-	-	-	2 626	2 639	2 568	2 736	2 880	2 773	2 607	2 625	2 617	2 776	1 040	150	-	-	-	-
Recovered Phase 2B	*kg*	**7 391**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	954	1 263	1 560	1 636	1 667	311
Gold Recovered	*kg*	**43 644**	**-**	**1 881**	**1 747**	**1 769**	**1 764**	**3 682**	**2 639**	**2 568**	**2 736**	**2 880**	**2 773**	**2 607**	**2 625**	**2 617**	**2 776**	**1 994**	**1 413**	**1 560**	**1 636**	**1 667**	**311**
Gold Sold	*kg*	**43 644**	-	1 881	1 747	1 769	1 764	3 682	2 639	2 568	2 736	2 880	2 773	2 607	2 625	2 617	2 776	1 994	1 413	1 560	1 636	1 667	311
	koz	**1 403**	-	60	56	57	57	118	85	83	88	93	89	84	84	84	89	64	45	50	53	54	10

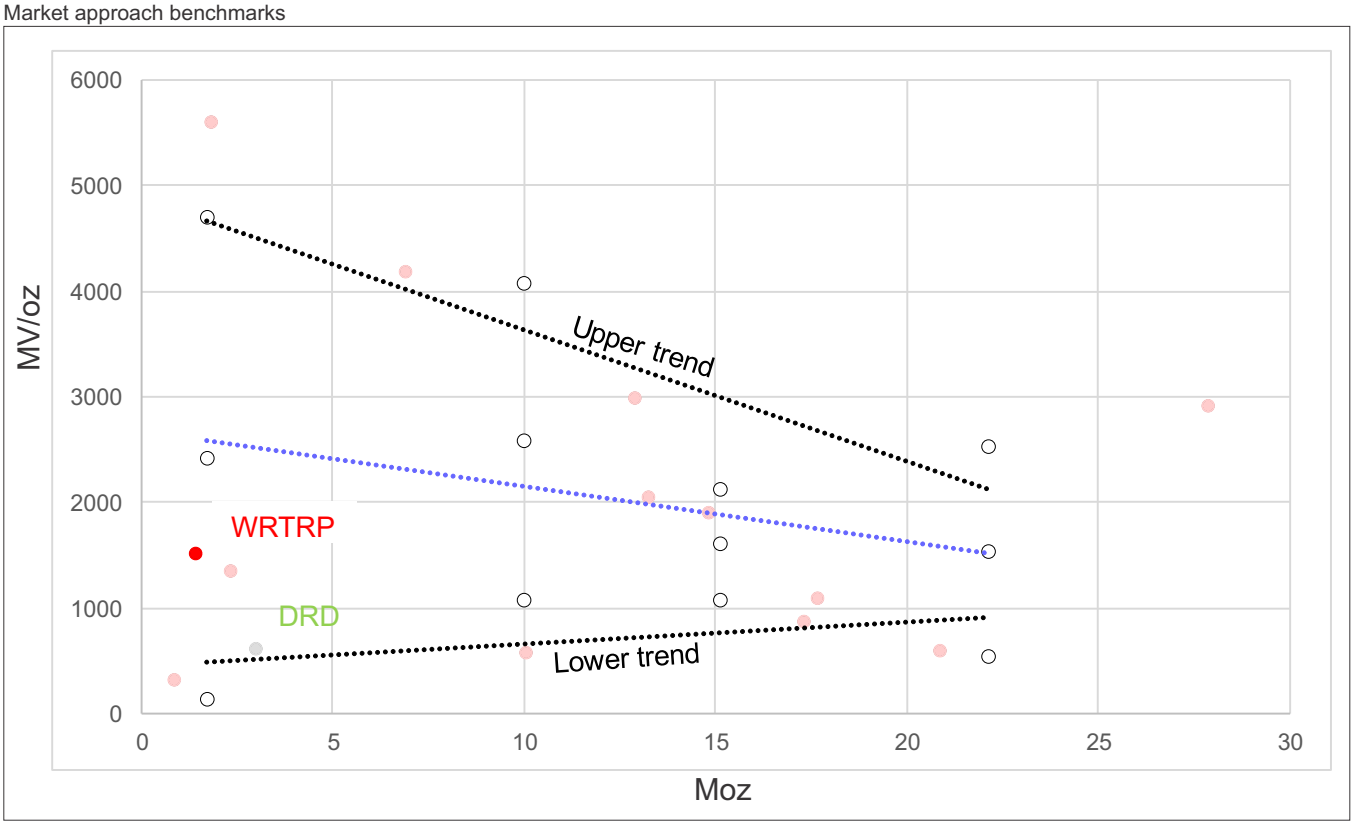
Figure 32: Annual depletion for the WRTRP

Figure 33: NPV sensitivity and Market Approach benchmarks

NPV sensitivity (ZARm)



Market approach benchmarks



Source: Sound Mining 2017

35.5. Economic analysis results, summary and conclusion

SVT1.13, SVT.14

The economic analysis of the WRTRP results in values from the income and market approaches in accordance with the principles of the SAMREC Code. The summary of the analysis is shown in Table 53.

Table 53 : Summary economic analysis

Approach	Lower value (ZARm)	Middle value (ZARm)	High value (ZARm)
Market	630	3,570	6,510
Income	0	2,121	4,146

Source : Sound Mining Dec 2017

The market approach analysis is based on a mix of listed companies that do not necessarily capture the unique makeup of the Project. Accordingly, Sound Mining does not consider it to be a true reflection of the likely market value of the Project.

The income approach requires a minimum of a PFS for the declaration of Mineral Reserves. In the case of the WRTRP, there is a high level of confidence in the Mineral Resource estimate. The operating cost estimates are well defined by information from the rest of DRDGOLD's operations. The capital estimates are for tried and tested exploitation methodologies and engineering structures. As a consequence, Sound Mining are of the opinion that the overall confidence in the WRTRP currently exceeds that normally ascribed to a PFS. Accordingly, Sound Mining is more comfortable with the value of ZAR2,121m as determined by the income approach as reflective of the economic merits of the Project. The lower and higher values are consistent with a 20% positive or negative move in the gold price.

In conclusion, Figure 33 illustrates that while DRDGOLD is trading at values closer to the lower range, the preferred value for WRTRP from the income approach places it closer to the middle range of benchmarked values, which means that a positive contribution to the value of DRDGOLD can be expected.

The "alternative option" indicated an NPV_6 of approximately ZAR2.7 billion (bn) due to the higher yield from Driefontein 5H-TSF and Driefontein 3H-TSF and significantly lower capital expenditure than the combined Phase 1 and Phase 2 of the Project. The "alternative option" presents a high NPV at lower risk in the short term. However, DRDGOLD indicated, that consistent with its strategy, it aims to exploit the large regional mineral resource; to rehabilitate a much larger footprint than just the Driefontein 3H-TSF and Driefontein 5H-TSF footprints and to establish infrastructure that provides the strategic advantage and opportunity of regional consolidation far beyond the existing resources. This larger and longer term focus renders the risk of exposure to the long term gold price less significant. Upside potential for the Phase 2 Project that has not been considered in the valuation include the following:

- conservative recoveries applied to phase 2B due to less metallurgical testwork performed;
- unscheduled closure included in the DCF model, although only the cash flows relating to scheduled closure will be required; and
- project services of 13% was applied throughout the capital expenditure which may be largely absorbed by DRDGOLD's management capacity.

These opinions, findings and conclusions reflect various techno-economic conditions, assumptions and interpretations (commodity prices, currency exchange rates, consumer price indices and other conditions) as at the effective date of this CPR (31 December 2017) that can change significantly over a relatively short period of time and, with new information. As such, the information and opinions contained in this CPR may also be subject to change.

The JSE requirements for a CPR for a Mineral Company, as defined in the Listing Requirements, have been complied with.

36. Exploration budget

SR8.1: JSE 12.9h(vi); JSE 12(e)(i)(ii)(iii)

The historical exploration expenditure by Sibanye-Stillwater was approximately ZAR320m.

No additional drilling programmes are envisaged but an allowance of ZAR30m has been provided in the Project economic analysis to fund the metallurgical testwork, pilot plant studies and the completion of the future DFS. This allowance is considered reasonable for such a study.

37. Estimation and reporting of Mineral reserves

SR 6(i)-(iii); 6.2; 6.3(i)-(vi); SVT1.9; SVT1.10; JSE12.9(h)(ix)

The Mineral Reserves have been prepared in accordance with the classification criteria of the SAMREC Code. The Mineral Reserve tabulation was completed under the supervision of Vaughn Duke, Pr. Eng of Sound Mining, who is a Competent Person as defined in the SAMREC Code.

In order to declare a Mineral Reserve, it is necessary to develop, to a PFS level of accuracy, a mine plan with revenue and cost forecasts to confirm that the operation will be viable. Suitable software was used in conjunction with the latest geological block model of the H-TSFs to generate a mining plan with operational sequencing and a production schedule (i.e. a revenue forecast).

Modifying factors associated with the reclamation of tailings material have been captured in the mine design, and in the associated technical aspects that informed the capital forecast and operating cost estimates for the WRTRP. The following comments are relevant:-

- there is no mining dilution as each of the H-TSFs are to be re-mined and processed in their entirety;
- a LoM plan was generated by DRDGOLD. It has been reviewed and tested for economic viability in a discounted cash flow (DCF) model developed for the economic assessment. Positive cash flows are evident through to the end of the LoM;
- cognisance has been taken of the geotechnical considerations with regard to the safety of the operation and long-term stability of the H-TSFs and the R-TSF;
- the hydrological aspects affecting the surface deposits do not impact the mining operation. Geo-hydrological studies for the R-TSF site have been undertaken and are described in Section 33; and
- a mining rate of 300ktpm has been considered for each monitor with it's associated equipment.

37.1. Mineral Reserve tabulation

The modifying factors have been captured in the mine design and associated technical aspects that informed the capital forecast and operating cost estimates which were derived as part of study completed for the WRTRP. The Dec 2017 Mineral Reserve estimate for the WRTRP is provided in Table 26:-

Table 54 : SAMREC compliant Mineral Reserve estimate for the WRTRP - Sound Ming (Dec 2017)

Category	Tonnes (Mt)	Grade (g/t Au)	Content (t Au)	Content (Moz Au)
Driefontein 5 H-TSF	27.94	0.47	13.10	0.42
Driefontein 3 H-TSF	49.76	0.47	23.39	0.75
Kloof 1 H-TSF	27.90	0.33	9.07	0.29
Libanon H-TSF	73.29	0.27	19.94	0.64
Proved Mineral Reserve	**178.89**	**0.37**	**65.49**	**2.10**
Venterspost North H-TSF	54.54	0.27	14.94	0.48
Venterspost South H-TSF	12.70	0.33	4.19	0.13
Total Probable Mineral Reserve	**67.23**	**0.28**	**19.13**	**0.62**
Total Mineral Reserve	**246.12**	**0.34**	**84.62**	**2.72**

Source : Sound Mining Dec 2017
Apparent computational errors due to rounding and are not considered significant
Mineral Reserves are reported at the head grade and at delivery to plant
The Mineral Reserves constitute the feed to the gold plants over 20 years.
The Mineral Reserves are stated at a price of ZAR564,245/kg as at 31 December 2017.
Although stated separately, the Mineral Resources are inclusive of Mineral Reserves;
There are no Inferred or Indicated Mineral Resources included in the Mineral Resource statement. However, the Mineral Reserves for the Venterspost North and Venterspost South H-TSF have been classified as Probable due the level of uncertainty regarding the associated processing recoveries assigned in the LoM plans.
Uranium has been excluded in the mineral reserve estimate as it is not being recovered as part of the Project;
Grade and quantity measurements are reported in metric units (Mt) rounded to two decimal places.
The input studies are to the prescribed level of accuracy. The capital and operating costs are supported by quotations and zero-based costing techniques; and
The Mineral Reserve estimates contained herein may be subject to legal, political, environmental or other risks that could materially affect the potential development of such Mineral Reserves

38. Summary, interpretation and conclusions

Sound Mining has prepared this SAMREC, SAMVAL and SAMESG compliant CPR on DRDGOLD's WRTRP for submission to the JSE in support of its Category 1 transaction with Sibanye-Stillwater. The CPR was compiled in order to incorporate all the available and material information that potential future finance providers and their advisors would reasonably require in order to make balanced and reasoned judgements regarding the techno-economic merits of the Project.

In order, to prepare the CPR, Sound Mining and its technical associates undertook independent techno-economic reviews of the exploration data base; the Mineral Resource estimates; the processing plant design and costing; the mine plans, production scheduling and Mineral Reserves; the infrastructure; the environmental and social compliance status and an assessment of the environmental rehabilitation liabilities required on closure of the Project.

The technical information was then incorporated into a Project economic analysis, reported on a non-attributable basis, to demonstrate the economic viability and robustness of the Project.

On fulfilment of the transaction with Sibanye-Stillwater, the WRTRP will comprise the H-TSFs and processing plants as described in Table 1 and includes the land for the development of a R-TSF and a CPP. DRDGOLD will acquire the selected surface processing plants and tailings assets by way of the acquisition of a 100% shareholding in a special purpose vehicle, WRTRP (Pty) Ltd from Sibanye-Stillwater. On implementation of the proposed acquisition, DRDGOLD will allot and issue approximately 265 million new ordinary shares in the share capital of DRDGOLD that will result in Sibanye-Stillwater holding approximately 38% of all ordinary shares in the share capital of DRDGOLD.

The WRTRP is an advanced gold reclamation project for which the components of the Project are at a PFS level of accuracy whilst some of the BCEs are at a DFS level of accuracy. The cost estimates accuracies range between 5% and 25% and given this discrepancy all costs were reported without contingency and an overall project contingency of 15% was applied in the economic analysis.

DRDGOLD intends developing the WRTRP assets through a two-phase process. The Phase 1 will include upgrading two existing plants DP2 and DP3 to process tailings material from the hydro-mining of Driefontein 5H-TSF at a total of 500ktpm over a period of 5 years. The tailings from the plants will be deposited onto Driefontein 4A-TSF and the mining and plant water will be accessed from Driefontein 10 shaft. Phase 1 will provide additional pilot plant testwork results for incorporation into a DFS at which point a strategic decision will be made whether to progress onto Phase 2 or take an alternative route.

Phase 2 will deliver a CPP capable of processing at least 1.2Mtpm of tailings and development of a new R-TSF, with water supply from Kloof 10 shaft and return water from the R-TSF. The development of Phase 2 will be staggered from a construction and capex perspective with Phase 2A comprising hydro-mining of Driefontein 3H-TSF and processing through the CPP at a rate of 400ktpm with tailings disposal onto the R-TSF and hydro-mining of Kloof 1H-TSF and Libanon at 200ktpm and 600ktpm respectively, over a total 12 year LoM.

In Phase 2B, pipelines will be extended to access Venterspost North H-TSF and Venterspost South H-TSFs which will extend the LoM for an additional 5 years.

An “alternative option” for Phase 2 is the continued use of DP2 and DP3 plants extended during Phase 1, to accommodate 500ktpm from Driefontein 3H-TSF and to extend the Driefontein 4A-TSF to contain the tailings. This option would provide a total 13 year LoM and would extend Phase 1 by eight years.

Phase 1 is expected to be cash generative with minimal upfront capital investment required and the cash flows will be prioritised for the development of subsequent phases.

38.1. Legal tenure and permitting

The authors of this CPR are not qualified to provide extensive commentary on legal issues associated with Sibanye-Stillwater or DRDGOLD’s right to the described mineral and infrastructure assets. Several reviews of the legal aspects of the WRTRP have been undertaken with a high-level review by Sound, an independent due diligence on the status of the legal aspects and permitting requirements of the WRTRP for DRDGOLD by Malan Scholes in Nov 2017 and a fatal flaw review of the environmental and permitting aspects of the Project for this CPR by Exigo.

Sound Mining concludes that valid mining rights exist for the Driefontein and Kloof areas which permit the reclamation of residue deposits or tailings storage facilities. Sibanye-Stillwater will continue to operate the Kloof and Driefontein Mines under the auspices of its mining rights whilst the WRTRP conducts its business.

In respect of the WRTRP assets, Section 102 amendments to the mining rights have been made by Sibanye-Stillwater to permit the reclamation activities anticipated for the WRTRP. In correspondence between the DMR and Sibanye-Stillwater in 2016, the DMR stated it was prepared to grant the applications and indicated the extent of the financial provision for closure. The closure quantum is currently in dispute as the stated requirement for value added tax (VAT) is not confirmed and awaits a ruling by the South African Revenue Service (SARS).

The H-TSFs forming part of the WRTRP, are included of the Exchange Agreement between DRDGOLD and Sibanye-Stillwater and are to be transferred from Sibanye-Stillwater to the SPV created to hold the WRTRP. In terms of that agreement the H-TSFs are classified as moveable assets and will be transferred to the SPV, as movable assets and, therefore, there is no requirement to transfer any part of the mining rights to the SPV. The current DRDGOLD owned Ergo reclamation operations are not subject to royalty payment and a similar arrangement is envisaged for the WRTRP.

The review of the environmental permitting concluded that the Section 102 amendments, once granted, will satisfy most of the requirements for the WRTRP, with some exceptions having been noted, whereby additional amendments will be required for the Driefontein 4A-TSF and various piping routes for Phase 2. These are not considered fatal flaws and sufficient time is available for the application of the appropriate additional requirements.

The rehabilitation liability of the H-TSFs is transferred to the SPV. The portion of the Sibanye-Stillwater rehabilitation trust fund for these assets will be transferred to the special purpose vehicle rehabilitation trust with the remaining requirements by an insurance policy. In addition, the SPV will assume responsibility for the approximately 169 employees that currently are in Sibanye-Stillwater employ and operate the DP2 and DP3. Sound Mining considers that DRDGOLD has made sufficient financial provision for retrenchment of this work force, should the need arise, in its overheads allocation.

The Exchange Agreement provides for access to various infrastructure on the mining rights, notably water and power supply, but the status of the surface right agreements with private land owners for any newly envisaged infrastructure is unknown. Sound Mining considers this a manageable risk.

Sibanye-Stillwater has been granted two WUL by the Department of Water and Sanitation for a period of 20 years and the water that will be used in the reclamation workings and the process plants will be sourced from underground workings at Kloof 10 shaft and Driefontein 10 shaft to a maximum of 9,487Mℓ/a and 2,555Mℓ/a respectively. After treatment, the slurry/tailings will be disposed into the R-TSF. DRDGOLD has opted for a closed water system throughout the project life so no water treatment or discharge into the surface water courses will occur. Steps to transfer the WUL from Sibanye-Stillwater to the WRTRP will be required in accordance with the provisions of NWA including Sections 25 and 51. In accordance with the Dam Safety Regulations, a DSR licence and licence to impound will be required but it is unclear whether the applications for these licences will be made by Sibanye-Stillwater or by WRTRP following the transfer to the WUL to the SPV.

Sibanye-Stillwater has received a Provisional Atmospheric Emissions Licence (PAEL) in respect of the activities required for the operation of the CPP on 30 August 2017. Atmospheric Emissions Licences in terms of NEM:AQA are not required for the elution and smelting of gold.

Heritage Impact Assessments were undertaken for both the Driefontein and Kloof areas affected by the activities of the WRTRP and submitted to the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Authority Gauteng (PHRA-G). Historical grave sites and heritage buildings were identified and recommendations made to preservation of these sites in the infrastructure planning and construction.

Sibanye-Stillwater is the holder of Certificates of Registration (CoR) in terms of the National Nuclear Regulator (NNR) for both Driefontein and Kloof mining right areas but these CoRs are not transferable. At this stage it is unclear whether the special purpose vehicle will be required to apply for a CoR or a certificate of exemption in terms of Section 22 of the National Nuclear Regulation Act (NNRA).

The WRTRP will be undertaking mining activities in terms of in Section 102 of the Mine Act (MHSA) and consequently the provisions of the MHSA will apply to the Project. In the first exchange agreement, DRDGOLD warrants to maintain practises and procedures to ensure material compliance with the MHSA.

However, the Use and Access Agreement assumes that the provisions of the MHSA do not apply to the activities to be undertaken by the SPV. The Use and Access Agreement, consequently, contemplates that, as soon as reasonably possible after the effective date, the SPV will confirm with the DMR that the activities to be undertaken are not subject to the MHSA. Any activities that are deemed subject to the MHSA, will be exempt from the health and safety obligations contemplated in the MHSA in respect of the activities constituting the WRTRP and apply for exemption.

38.2. Geological setting

The mineral assets considered in this CPR are historical surface residual tailings material from the mining of the West Witwatersrand Gold Fields and as such the nature of the underlying geology is not of direct relevance to the business of the WRTRP. However, an understanding of the scale and nature of the gold mineralisation that was targeted in the historical mining operations provides context for the investigation of the structure and composition of the H-TSFs. The surface geology is relevant to the siting of future WRTRP infrastructure.

The assets of the WRTRP are located within the Far West Rand goldfield of the gold-bearing, late Archaean (2.7Ga to 3.2Ga), Witwatersrand sedimentary basin (Witwatersrand Basin). The Witwatersrand Basin is the largest gold bearing metallogenic province globally and is a roughly oval-shaped sedimentary basin with a northsouth 160km long axis through the Welkom area and Johannesburg and a short, eastwest axis of approximately 80km.

The Witwatersrand Basin is filled with approximately 14,000m of sedimentary and subordinate volcanic units and is underlain by an Archaean (>3.1Ga) granite-greenstone basement and the 3.08Ga to 3.07Ga Dominion Group. The basin is unconformably overlain, by units of the Ventersdorp Supergroup (~2.7Ga), the Transvaal Supergroup (~2.6Ga) and the Karoo Supergroup (~280Ma).

Deposition in the Witwatersrand Basin is considered to have taken place along the interface between a fluvial system and a major body of still water or an inland sea with the source of the gold postulated as being a northerly Archaean Greenstone belt in which craton/plate interactions caused the development of mineralising hydrothermal activity and generated sedimentary environments where deposition could occur. Recent suggestions are that the Witwatersrand Basin is a portion of a retroarc-foreland basin formed in response to crustal thickening on the northern edge of the Kaapvaal Craton during collision with the Zimbabwe craton to the north. The origin of the gold mineralisation in the Witwatersrand Basin has been the source of debate for over 100 years. The debate has been historically divided between the syn-genetic or placer proponents and the epigenetic or hydrothermal model. The most widely accepted model appears currently to be the modified placer model in which placer gold grains have been remobilised after burial.

The stratigraphy is broadly split into two Groups, namely the Central Rand and the West Rand Groups which in turn are split into a series of subgroups, formations and members.

The Kloof and Driefontein mining complexes located on the northwestern rim of the Witwatersrand Basin. The region is structurally complicated with a major structural fault, the West Rand Fault, separating the operations from the South Deep Gold Mine to the east and the structural features affect the preservation, depth and strike of the economic reefs.

The Kloof and Driefontein operations exploit three primary reefs, namely the Ventersdorp Contact Reef (VCR) located at the top of the Central Rand Group, the Carbon Leader Reef (CLR) near the base of the Central Rand Group and the Middelvlei Reef (MR), which stratigraphically occurs 50m to 75m above the Carbon Leader. The H-TSFs contain the processed waste from the mining of auriferous and uraniferous ores from Driefontein, Kloof, Libanon and Venterspost operations as follows:-

- the Driefontein mining complex H-TSFs comprise primarily processed Ventersdorp Contact Reef, Carbon Leader Reef and Middelvlei Reef;
- the Kloof mining complex H-TSFs comprise primarily processed Ventersdorp Contact Reef, Middelvlei Reef and to a lesser extent the Kloof Reef;
- the Venterspost mining complex H-TSFs comprise primarily processed Middelvlei Reef and Ventersdorp Contact Reef;
- Libanon mine TSFs comprises material from the Ventersdorp Contact Reef, Libanon Reef, Kloof Reef and the Middelvlei Reef.

The surface geology of the mining area comprises outliers of Karoo Supergroup shales and sandstones, followed by Pretoria Group sediments and the Chuniespoort Group dolomites of the Transvaal Supergroup. The principal elements of the Transvaal Supergroup include the clastic sediments of the Black Reef Formation, the chemical and clastic sediments of the Chuniespoort Group, and the clastic sediments and volcanics of the Pretoria Group.

In general, the composition of a TSF depends on the geochemical make-up of the material being mined and the chemicals used in the mining and extraction process. In addition, the internal structure of the TSF reflects the mining strategy and depositional methodologies employed for each operation. The bulk density of tailings material is a critical factor in the accurate estimation of tonnages and a view on the lateral and vertical variation in moisture content should be obtained. These factors can result in a considerable variation in gold content and distribution throughout a TSF and such variation has an impact on final recoveries and projected revenues for the operation.

In addition, secondary processes such as metal re-mobilisation, erosion, weathering, leaching and acid mine drainage can affect the geochemical characteristics of a TSF.

These processes tend to progress faster in a TSF as weathering, erosion and oxidation are accelerated by the fine particle size of the material and leaching together with acid mine drainage occur due the large amount of water associated with TSFs. Gold can undergo mobilisation within the TSF with time and hence may exhibit areas of re-concentration and even be present in the sub-structure soil.

The geochemical characteristics of the footprint geology, such as dolomites, granites, quartzites, has a bearing on the mobilisation dynamics of a TSF. Hence, depending on several factors such as footprint, age of deposition, beneficiation, primary reef origin of slimes, a TSF may exhibit areas/layers of differing grade profiles.

38.3. Exploration

The extent, morphology and structure of the H-TSFs is relatively simple compared to conventional mineral deposits. Consequently, the exploration programmes were also simple and straightforward, comprising:-

- surveying to determine physical dimensions and volumes;
- auger drilling programmes to permit sampling for gold content and mapping of the gold distribution, independently audited;
- metallurgical and flow sheet development testwork;
- tailings toxicity tests and specific gravity determination.

The required SAMREC Table 1 disclosure for the exploration programmes is provided and the review by Sound Mining concluded that the drilling programmes were suitable for the deposit type and that the drilling and sampling techniques were of a high standard, with sample contamination and losses kept to a minimum. The drilling and sampling programmes were conducted to industry standards and the results are considered SAMREC compliant and suitable for incorporation into a Mineral Resource estimate.

The analytical laboratories used in the exploration programme are all ISO certified for gold analysis and all three these laboratories follow best practice principles of quality management and have procedures of chemical analysis and assay that fulfil the requirements of international best practice. The QA/QC of the field and laboratory verification procedures were independently audited and considered appropriate. Full length samples were taken and are considered representative of the disseminated mineralisation which has no orientation or structural control other than grade variations due to deposition variations and secondary remobilisation of the gold. This gold distribution within the H-TSFs is adequately understood from the geological modelling.

Historically there has been a suggestion that the density of the H-TSFs could vary with the lithology of the basement material. The Driefontein H-TSFS, the Venterspost H-TSFs and the Libanon H-TSF are located on Malmani Subgroup dolomites whilst the remainder are located on the non-dolomitic argillaceous and arenaceous sediments of the Timeball Hill and Hekpoort Formations. An independent density study by Geostrada concluded that the basement lithology does not significantly impact the density of the tailings material. Historically, Gold Fields used an average density of 1.40t/m^3 in its Mineral Resource estimations and the average value of 1.40t/m^3 is confirmed by Ergo for its current operations and relies on the actual data from the processing of 2Mtpm of tailings material from the Witwatersrand basin over decades.

Further evidence in support of the use of an average density value of 1.40t/m^3 is provided by a comparison of the densities used by other companies in the business of tailings retreatment of Witwatersrand tailings. Sound Mining has used an average density of 1.40t/m^3 and considers this a reliable value based on substantial empirical evidence. The use of a dry density in the estimation of an in situ Mineral Resource is standard best practice and the dry density value has been applied to the Sound Mining Mineral Resource estimate. However, the wet density and bulk densities are generally considered more appropriate for the conversion to Mineral Reserves and calculations of tailings tonnage production and revenues. In this case the effect of changing the density values in respect of the volume estimations shows that using a wet density of 1.45t/m^3 does not have a material effect on the tonnage estimation.

38.4. Mineral Resource estimation

The geological modelling and Mineral Resource estimation was originally undertaken for Gold Fields by Minxcon 2009. Sound Mining has independently reviewed the database, geological models, estimation methodology, classification criteria and estimation results.

The exploration database was demonstrated to comprise analytical data obtained from reliable laboratory assays on samples obtained from SAMREC compliant sampling and industry best practice drilling programmes. The drillhole grid spacing is close for typical TSFs drilling programmes and the entire depth of each H-TSF was sampled. The data density is therefore considered sufficient to assure continuity of mineralisation and structure and provides an adequate basis for estimation.

Such H-TSFs constructed from the tailings of Witwatersrand gold mining operations have been successfully and economically exploited for several decades and the geotechnical and geometallurgical characteristics are well understood from experience and from testwork on the WRTRP assets themselves. Apart from the potential risks identified in Section 34, which are easily mitigated, no factors of a geotechnical or geometallurgical nature have been identified that would have a significant effect on the prospects for eventual economic extract.

The exploration database was imported into DataMineTM Studio 3 software and data validation was undertaken to ensure the integrity and validity of the imported data. Three dimensional wireframes were constructed from the LIDAR survey digital data and drillhole information. The top wireframe surface was constructed from the LIDAR data, whilst the base/footprint wireframe was constructed from the soil intercept depths from the drillhole data and the footprint perimeter. The wireframes comprised simple 3D representations of the volume of the H-TSFs and as such are not open to alternative interpretations. As the entire deposits are to be mined no geological losses or other geotechnical considerations were applied to the models or the Mineral Resource estimates.

No sample compositing was undertaken and Ordinary Kriging was undertaken for the gold grade estimation as this is considered the most reliable and accurate methodology for this deposit type. Capping of anomalously high grade values was applied to the assay values only of the higher grade Driefontein 5H-TSF (at 1.6g/t Au) and Kloof 1H-TSF (at 0.7g/t Au) facilities. The kriging process used applied using 50mx50mx3m (X, Y and Z directions) block size with subcells employed at a minimum of 10mX10mX3m. The spatial inter-relationships of the sample grades were investigated with variograms and were deemed best represented by omni-directional models.

The classification of the Mineral Resources was based on suitable statistical criteria and all of the Mineral Resources were classified in the Measured category. The Sound Mining review and verification confirms minimal variance between the Minxcon and Sound Mining estimates.

In compliance with the SAMREC Code, the applied Mineral Resource classification is a function of the confidence of the asset tenure and the entire process from drilling, sampling, geological understanding and geostatistical relationships.

The WRTRP H-TSFs legal tenure is underpinned by the Sibanye-Stillwater mining rights, the applications for Section 102 amendments to those mining rights for the WRTRP activities, the amended EMPs and the signed agreements with Sibanye-Stillwater covering the Project's right to access and exploit the moveable assets. The drilling, sampling, analytical processes and governance of the exploration programmes have been appropriate and in-line with industry best practice and are considered to be of high confidence. The density used in the conversion from volume to tonnage has been determined from both in situ measured values and empirical data and is considered reliable. Sound Mining concludes that the estimations are based on a suitable database of SAMREC compliant information. Sound Mining was able to re-produce the Minxcon variograms and was able to demonstrate that the variography and the parameters used in the kriging process are appropriate. The conclusion is that the Minxcon 2009 Mineral Resource estimate methodologies and interpretation are reasonable and can be relied upon to reflect the Mineral Resource base for the WRTRP. Sound Mining identified no material issues that would affect the overall conclusions reached by Minxcon.

38.5. Mine design and mine plan

The mining method for the WRTRP will be hydraulic mining (also known as hydro-mining), which uses high-pressure water monitors to deliver a high-pressure (25bar to 30bar) water jet to hydraulically excavate unconsolidated tailings material within the H-TSF's. The method is not new and has been tried and tested over decades of successful Ergo reclamation and re-deposition operations. No un-tested technical assumptions with regards the mining have been made for the WRTRP. Water will be delivered to the monitors through a network of pipes (RVN Group 14 December 2017). They will remove the tailings material from the top of a H-TSF to the natural ground level in 15m layers. The top-down monitoring approach can be used to form consistent stable slopes that can be varied according to the material properties of the tailings that are being reprocessed. Horizontal bench widths of between 100m and 200m, inclusive of the face angle, will be created and managed to maintain safe working distances between simultaneous operations at different bench elevations. The design is for bench face angles to be in the region of 45° to 50°.

Water from the monitors mix with the tailings to form a slurry with a high solids content. The slurry is channelled along the base of the H-TSF to a sump at the lowest elevation of the bench being mined. The position of the sump changes as mining proceeds along a bench, to limit the distance between the monitor and the sump. If too far from the active face, tailings material may drop out of suspension and reduce the solids content of the slurry pumped to the plant. The slurry will be pumped via a pipeline to a processing facility where the solids are separated from the water using a thickener. Excess water is then pumped back to the TSF to be re-used by the high-pressure monitors.

Hydro-mining and re-deposition, although not complicated, is a specialised activity, and will accordingly continue to be outsourced to competent and experienced service providers. The operating expenditure (opex) estimate for the mining and re-deposition operations in this CPR is supported by actual operational figures and not only by computations from the various feasibility studies that have been undertaken and completed for the WRTRP. The cost and maintenance of the mining equipment, as well as the employees required, will be for the contractor‘s account and will form part of the contractual agreements with DRDGOLD.

The performance assumptions in this study are based on experience and information from decades of similar tailings reclamation operations and so the equipment requirements, manning complements and necessary supporting infrastructure, in terms of water and power supply, are well understood by DRDGOLD and have been used in the planning for the WRTP. Information, which includes an up to date bill of materials, has been used together with the planned quantities to estimate the associated costs for the WRTRP and these estimates have been endorsed by the current Ergo service provider.
The pipeline and pumping design and capex estimate has been undertaken by in-house DRDGOLD personnel and independent specialists familiar with such mining operations.

Specific mining schedules were developed for each H-TSF using the block models and grade distribution that was used for the Mineral Resource estimate. These schedules were integrated into a 20 year LoM production plan for the WRTRP which detailed how the total production of 246.12Mt would be accessed from the various H-TSFs.

The CP has checked the integrity of the mine design and associated costs and is satisfied that the level of detail and accuracy is aligned with the requirements of a PFS.

38.6. Metallurgical testwork and processing

The metallurgical characterisation of the H-TSFs has been included in numerous techno-economic studies from 2000 ranging from Scoping Studies through PFS stage to DFS levels of accuracy. The metallurgical testwork included evaluation of various processing options including direct leach, grinding, ultra-fine grinding and flotation.

The most comprehensive testwork has been performed on Driefontein 3H-TSF and Driefontein 5H-TSFs with slightly less detailed testwork having been performed on the Libanon, Kloof 1 and Venterspost H-TSFs. There is sufficient metallurgical testwork available to evaluate potential metallurgical performance for Phase 1 and Phase 2 and the Phase 2 information will be supplemented by pilot plant trials to be performed on the various H-TSFs during Phase 1 operations. The results from these pilot plant trails will provide the detail required for the development of the DFS on WRTRP-Phase 2.

Historically the most favourable liberation on Witwatersrand Basin gold bearing ores have been achieved at grind sizes of <75µm. Both the diagnostic leach and assay by size results confirm the need to mill the coarse fractions in order to improve recovery.

The presence of preg-robbers in the tailings material is indicated and it is best industry practice to design the reclamation plants plant with a CIL system to mitigate the impact of preg-robbers on recovery.

The design and capital expenditure estimates for the upgrade of the DP2 and DP3 plants were undertaken independently by DRA to a PFS level of accuracy. The operational expenditure has been estimated from actual operational data from the Ergo operations. The Sound Mining review of the design and costings for the plants and benchmarking against other such retreatment facilities as a test of reasonableness, showed that the design and costings to be appropriate for the envisaged project and in-line with industry standards. The capex for the upgrades is ZA88.87m, with Phase 1 opex, which includes the contractor mining, is ZAR63.97/t.

The process design for the CPP has been through many iterations in various PFSs and DFSs over the last ten years. DRDGOLD has made the strategic decision to implement the simple gold extraction process that has proven successful in its Ergo operations. The design and capital expenditure estimates for the CPP was undertaken independently by DRA to a PFS accuracy level of 25% effective as of December 2017. The operational expenditure has been estimated from actual operational data from the Ergo operations. The design and costings for the CPP was reviewed by Sound Mining and benchmarked against other such retreatment facilities as a test of reasonableness.
The conclusion is that the design and costings are considered appropriate for the envisaged project and in-line with industry standards.

The design criteria included a throughout of 1.2Mtpm and is comprised of standard units, readily available which have been successfully used in the Ergo operations. The process flow includes:-

- a slurry receiving and screening circuit where the pH is adjusted;
- a milling, classification and thickening circuit which includes a series of cyclones;
- a pre-conditioning and CIL circuit where material transferred from the milling, classifying and thickening circuit is preconditioned with further pH adjustments and the addition of oxygen. Oxygen levels and leach kinetics are further increased by passing the material through a bank of high shear reactors. Thereafter the material enters the first of ten CIL tanks and an online cyanide analyser is used to control the cyanide addition;
- an acid wash, elution and carbon regeneration circuit where loaded carbon transferred from CIL circuit is collected in a carbon storage hopper before being treated by a 3% hydrochloric acid solution, neutralised and the acid washed carbon is then educted to either one of two 10t elution columns containing a caustic solution of 3% sodium hydroxide (NaOH) and 1% sodium cyanide (NaCN) and the solution is heated and pressurised;
- the electrowinning and smelting where the pregnant solution from the elution circuit is pumped through the electrowinning circuit consisting of two cells in parallel (per circuit). The electrowinning circulation continues for 18 hours, or until gold in solution value drops below a pre-set value measured by manual sampling. Cathodes removed from the electrowinning cells are transferred to calcining ovens, whilst the sludge reports to the sludge settling tank. Product from the calcining oven is moved by hand to an induction smelting furnace.

Borax, silica, potassium nitrate and sodium carbonate are added to the furnace as flux chemicals to collect impurities. Gold and slag from the furnace are poured into a mould trolley where Dorê gold is recovered as the final product.

Raw water for the CPP is to be supplied from underground sources at Kloof 10 shaft and process water generated in the thickeners and return water will be fed to a 15,000m^3 lined process water pond with a dirty water compartment to allow sufficient settlement of solid particles before overflowing to a clean compartment.

A detailed electrical Point of Delivery (POD) study was conducted by Tenova Bateman to identify the optimal power supply sources and upgrades required for both Phase 1 and Phase 2 of the Project.

The design for the CPP has been based on representative and adequate metallurgical testwork which will be supplemented in the DFS phase of project development by additional pilot plant trials. The plant design is based on actual operating plants and the confidence in the design will be strengthened in the trial pilot plant studies to be undertaken for the DFS. The mass balance for the plant is appropriate and the CPP has been included in the environmental permitting applications submitted by Sibanye-Stillwater to the DMR. The actual site of the CPP falls within the freehold area held by Sibanye-Stillwater. The tailings material arising from the new plant will be adequately stored in the lower compartment of the R-TSF which will have excess capacity from both a depositional rate (1.4Mtpm) and final capacity perspective (289Mt). All the necessary infrastructure requirements have been considered and are considered appropriate for the project stage of development. Sound Mining concurs with DRA's recommendation that a comprehensive risk analysis be conducted during the Front End Engineering Phase (FEED) phase to identify any potential errors in preliminary quantities and additional refurbishments costs that cannot be identified at this point in time. No contingency has been made for this possibility and it is recommended that DRDGOLD provide contingency funding for this eventuality.

The capital costs for the CPP were estimated at ZAR984.0m and were based to a large extent on historical information and preliminary designs using conservative assumptions. The estimate further assumed that the Project would be executed on a Lump Sum Turnkey (EPC) or Agreed Target (ATC) basis as is the current preference in the industry. A contingency provision was included in the overall Project contingency. Sound Mining considers the capex estimate for the CPP to reasonable and is in-line with the estimates for similar projects in the industry.

The opex estimates for the Phase 2 processing plants and contractual mining are based on actual operating costs for the Ergo operations. The opex estimates exclude contingency as they are based on real operating costs over the last five years and includes the contractor mining costs. Opex estimate is ZAR48.49/t.

The opex estimates are considered by Sound Mining to be conservative and are apparently higher than the opex for other reclamation projects. The reason for the higher opex is the considerably longer distance the slurry has to be pumped in comparison to other projects; the inherited labour force and the inclusion of concurrent rehabilitation and other costs such as retrenchment provision.

38.7. Infrastructure – R-TSF

The WRTRP entails the reclamation of approximately 245Mt of tailings from numerous geographically separated H-TSF sites and this operation will require adequate storage facilities for the new tailings arising from the Project. Phase 1 of the WRTRP will require the processing of the Driefontein 5H-TSF and re-deposition of the new tailings (approximately 30Mt) onto the currently active Driefontein 4A-TSF which will be upgraded to accommodate the additional deposition. The cost of the expansion and upgrade of the Driefontein 4A-TSF is estimated to be approximately ZAR16.1m.

The implementation of WRTRP-Phases 2A and 2B will require the establishment of a R-TSF to accommodate the over 200Mt of tailings material planned for the Phase 2 of the Project.

The site of the R-TSF was extensively studied as part of the original Gold Fields and the Rand Uranium projects. Some of the H-TSFs reside on sensitive dolomitic areas which may be potentially impacted by seepage and runoff and the remnant radioactive materials contained within the tailings may pose a health risk to surrounding communities. The new facility was planned for development on the Transvaal Supergroup basement and the site selected by Gold Fields for the WWP was approved under NEMA for an area of 328ha to contain 750Mt to a maximum height of 110m. Although the permitting for this site has been granted, amendments will be required to facilitate the R-TSF.

Laboratory testwork and numerical modelling has indicated that a maximum allowable rate of rise-of-rise of up to 3m/year can be achieved. The increased allowable rate of rise allows for a decrease in the required footprint area of the R-TSF and the footprint has been sized for a future total tailings treatment rate of up to 4.0Mt/m. In order to limit construction time prior to commissioning and to defer some capital expenditure, a phased construction of the R-TSF has been planned. The R-TSF will consist of a lower and upper compartment; with only the lower compartment constructed and developed as part of the WRTRP-Phase 2. The compartment capacity calculations were based on the assumption that the lower and upper compartments will be stand-alone facilities independently constructed with the lower compartment having a capacity of 286Mt, a height of 49m, a footprint of 667ha and a tailings delivery rate of 1.4Mtpm.

The geochemical characterisation of the tailings and the estimation of the R-TSF pore water quality was based on geochemical work undertaken during previous phases of the Project in 2008, 2009 and 2010, as well as additional work undertaken as part of the 2015 DFS. The geochemical characterisation in accordance with the National Norms and Standards indicates that the processed tailings will classify as a Type 3 Waste requiring disposal at a facility with a prescribed Class C barrier or geomembrane. The key constituents that prevent a re-classification to a Type 4 Waste include arsenic, barium, chromium IV, copper, manganese, nickel, lead and antimony in the case of total concentrations, but more importantly arsenic in the case of leachable concentrations.

The WRTRP-Phase 2 R-TSF capex estimation is ZAR1,228.6m specifically for the lower compartment of the R-TSF for a deposition of 1.4Mtpm and a total storage capacity of 286Mt (Section 29.1).

38.8. Infrastructure – power, water and pipelines

The water supply to the WRTRP was designed by Bateman Tenova. Two water use licences have been granted for the Kloof and Driefontein components of the WRTRP. The licences permit pumping of water from underground workings at Kloof 10 shaft and Driefontein 10 shaft to a maximum of 9,487Mℓ/a and 2,555Mℓ/a respectively. The hydro-mining and processing of the Driefontein 3H-TSF, Kloof 1H-TSF and Libanon H-TSF will require 14.3Mℓ/d; 7.2Mℓ/d and 21.4Mℓ/d respectively (a total of 42.9Mℓ/d).
The remaining water supply will be sourced from the return water from the R-TSF and underground impacted water from Kloof 10 shaft. Sound Mining concludes that the available water supply more than adequately meets the WRTRP requirements. The supply from Driefontein 10 shaft and Kloof 10 shaft do not exceed the permissible pumping rates approved in the WULs.

According to the WULs the return water will be treated in an advanced water treatment facility and discharged into Leeuspruit or disposed to dust suppression. Instead of this open configuration DRDGOLD has opted for a closed water system throughout the project life so no water treatment or discharge into the surface water courses will occur.

The power supply design and costing for the WRTRP by Bateman Tenova assumed that power from Eskom would be available and no provision was made for alternative supply. Power is currently supplied to the various Sibanye-Stillwater mines associated with the WRTRP from Eskom's 132kV and 44kV grid. The power requirement of the WRTRP is within the current spare capacity to the Driefontein and Kloof mining complexes, and no significant project risk is identified.

The hydro-mining, reprocessing and re-deposition of tailings material requires a pipeline network to be constructed. Slurry pipelines will be needed from the hydro-mining sites at the H-TSFs to the processing plants and tailings pipelines from these processing plants to the Driefontein 4A-TSF and R-TSF.

In addition, high pressure water pipelines are necessary to supply the mining operations from bulk storage facilities and separate low pressure water transportation pipelines are needed to provide water to the processing plants via return water dams from the A-TSFs. The pipeline and pumping circuits for the “original” WRTRP were completed by Bateman Tenova but several iterations of the pipeline routes, with alternative options, have since been proposed based on economic considerations and environmental authorisations. A number of pipelines exist for which previous authorisations in 2010 were obtained. These routes and infrastructure, will be upgraded and amendments to the previous authorisations undertaken. The disturbed nature of the areas implies that such authorisations are unlikely to be unreasonably withheld.

The design for the pipelines was undertaken in-house by DRDGOLD specialists and supplied to Paterson and Cooke (Pty) Ltd for conversion to a Bill of Quantities. The estimates of this Bill of Quantities was undertaken by DRDGOLDs using both in-house data and supplier’s quotations.

The capex estimate for the pipeline and pumping is ZAR120.19m and ZAR777.88m for Phase 1 and Phase 2 respectively.

38.9. Environmental permitting and liability

The review of the environmental status was undertaken by independent environmental specialists Exigo. The authorisations required for listed activities under NEMA, NEM:WA, NEM:AQA and NWA were reviewed in detail with commentary provided for each listed activity. EIA, EMPrs and environmental authorisations exist for the Kloof and Driefontein mining areas but some aspects of these will require amendments to facilitate scope changes for the WRTRP. The potential areas requiring amendment have been sited. Sound Mining concludes that the environmental permitting is appropriate for the current PFS level of study. The project timeline beyond the DFS decision point permits adequate time for the submission of the amendment applications and no fatal flaw is envisaged from a compliance perspective.

Some heritage and culturally significant areas have been identified and will need to be accommodated in the DFS construction plans and monitored during actual construction.

The WRTRP is expected to provide a significant socio-economic contribution to the West Rand. The unemployment rate is recorded 42.0%, and approximately 2,000 jobs will be created during the construction phase and 500 during the operational phase of the WRTRP. It is expected that the capital investment and contributions to the GDP associated with the WRTRP, along with the potential multiplier effects, will be significant over the life of the operation and is expected to provide a sustained contribution to the local and national economy.

The Project received widespread interest during the public participation phase of the EIA. Most of the issues and concerns raised by Interested and Affected Parties (I&APs) referred to environmental impacts that already exist, but respondents were of the opinion that the Project will exacerbate current conditions. A petition against the Project with 793 signatories was compiled in this regard by the “No for Mega Dump” (NFMD) Forum representing the community (farmers, business owners and residential areas). Possible negative impacts include community health, safety and security concerns, impacts on surrounding farms, water quality impacts and population influx. The Project is expected to have a long-term positive impact that include employment creation, skills development, local procurement of goods and services, as well as local and regional economic development.

The Social Impact Assessment indicated that unrealistic political and community demands for sharing in Project benefits can lead to community and labour unrest, political electioneering and community upheaval. The SIA also states that the existence of informal settlements in close proximity to the Project will pose a risk to the Project in terms of political stability and community. Farmers in the project area are becoming increasingly hostile towards the mining industry and their concerns may need to be addressed.

A Social Management Framework and Monitoring Plan was developed to manage the expected negative social impacts of the Project on host communities are managed. Negative impacts on infrastructure and services, can be more effectively mitigated when the social benefits of the Project materialse.

Most negative impacts can be reduced to acceptable levels, and most positive impacts will be enhanced to maximise benefits to surrounding communities.

The closure liability for the Project has been determined for two separate objectives, namely:-

- the disclosure to the DMR in EIAs for mining right amendments and environmental approvals as undertaken by Digby Wells 2015. The disclosure determines the quantum of the financial obligation and the guarantees required by the DMR for the Project; and
- the estimation of closure liability for financial provisioning and planning as undertaken by Golder and Associates (Pty) Ltd (Golder) on behalf of Sibanye-Stillwater in December 2016 and audited by Sibanye-Stillwater auditors for submission to the Minister

The closure costs have been determined on both an “unscheduled” and “scheduled” basis. The unscheduled estimate is based on the costs of rehabilitating the H-TSF’s in their present state without any mining activity having taken place. The disclosure to the DMR by Sibanye-Stillwater and the quantum of the financial guarantees required was based on this unscheduled estimate.

The scheduled estimate assumes that mining takes place and that the final rehabilitation will be confined to the rehabilitation of the H-TSF footprints and the R-TSF.

The unscheduled closure estimate is ZAR588.120m and the scheduled closure estimate ZAR360.96m. DRDGOLD is aware that as the mining of the H-TSFs progresses, the liability for the rehabilitation and closure continually decreases from the current to the final scheduled cost. DRDGOLD will make appropriate application to the DMR for adjustments to the closure obligation in the light of this decreasing liability. In addition, it is understood that an environmental trust fund already exists with an amount (ZAR354m as of June 2017) allocated for this Project.

According to the Project agreements the rehabilitation liability of the H-TSFs is transferred to the SPV. The portion of the Sibanye-Stillwater rehabilitation trust fund related to these assets will be transferred to the SPV rehabilitation trust with any shortfall covered by an insurance policy. The current quantum in the trust fund, once escalated to December 2017, will largely cover the scheduled closure estimate. In the case of the WRTRP the annual liability updates required by the DMR will show reduced amounts as the tailings facilities decrease to only footprint rehabilitation

The inputs into the closure estimate are based on quotations from demolition and civil contractors, which may alter with changing scope but take into consideration all the anticipated costs. Bench marked against similar projects the estimates are considered reasonable.

The review has highlighted that some aspects of the Project have not been accounted for in the closure estimate. However, the current balance of the rehabilitation trust fund at ZAR354m, once escalated to December 2017, will largely cover the scheduled closure cost of ZAR360.96 and should the scheduled closure liability increase with the closure of additional infrastructure, this is not considered a significant risk to the Project economics.

The closure liability bank guarantees under Regulation 7 of the NEMA Financial Provision Regulations (2015) must ensure that the financial provision is, at any given time, equal to the sum of the actual costs of implementing the plans for a period of at least 10 years forthwith (this includes the annual rehabilitation, final, decommissioning and closure plans). This figure is required to be updated annually and adjusted. In the case of the WRTRP the annual updates will show reduced amounts as the tailings facilities decrease to only footprint rehabilitation

38.10. Mineral Reserves

The Mineral Reserves have been estimated on the basis of using hydro-mining to recover tailings material from H-TSFs located on surface. The Mineral Reserves have been prepared in accordance with the classification criteria of the SAMREC Code.

In order to declare a Mineral Reserve it is necessary to develop, to a PFS level of accuracy, a mine plan with revenue and cost forecasts to confirm that the operation will be viable. Modifying factors associated with the reclamation of tailings material have been captured in the mine design, and in the associated technical aspects that informed the capital forecast and operating cost estimates for the WRTRP. These include a mining rate of 300ktpm for each monitor with it's associated equipment, a 100% mining recovery and no mining dilution. The H-TSFs were constructed using cycloned-tailings to form the dam walls and accordingly no dilution is anticipated. Hydraulic mining enables total recovery of the tailings material and there is also the potential of additional mineralised material that could result from ground below the H-TSFs. This additional potential has not been included in the Mineral Reserve Estimate.

Mine planning has also taken cognisance of the geotechnical considerations with regard to the safety of the operation and long term stability of the H-TSFs and the R-TSF. The hydrological aspects with regard to the H-TSFs do not impact the mining operation. The Dec 2017 Mineral Reserve estimate for the WRTRP is provided in the table below:-

Table 55 : SAMREC compliant Mineral Reserve estimate for the WRTRP - Sound Mining (Dec 2017)

Category	Tonnes (Mt)	Grade (g/t Au)	Content (t Au)	Content (Moz Au)
Driefontein 5 H-TSF	27.94	0.47	13.10	0.42
Driefontein 3 H-TSF	49.76	0.47	23.39	0.75
Kloof 1 H-TSF	27.90	0.33	9.07	0.29
Libanon H-TSF	73.29	0.27	19.94	0.64
Proved Mineral Reserve	**178.89**	**0.37**	**65.49**	**2.10**
Venterspost North H-TSF	54.54	0.27	14.94	0.48
Venterspost South H-TSF	12.70	0.33	4.19	0.13
Total Probable Mineral Reserve	**67.23**	**0.28**	**19.13**	**0.62**
Total Mineral Reserve	**246.12**	**0.34**	**84.62**	**2.72**

Source : Sound Mining Dec 2017
Apparent computational errors due to rounding and are not considered significant
Mineral Reserves are reported at the head grade and at delivery to plant
The Mineral Reserves constitute the feed to the gold plants over 20 years.
The Mineral Reserves are stated at a price of ZAR564,245/kg as at 31 December 2017.
Although stated separately, the Mineral Resources are inclusive of Mineral Reserves;
There are no Inferred or Indicated Mineral Resources included in the Mineral Resource statement. However, the Mineral Reserves for the Venterspost North and Venterspost South H-TSF have been classified as Probable due the level of uncertainty regarding the associated processing recoveries assigned in the LoM plans.
Uranium has been excluded in the mineral reserve estimate as it is not being recovered as part of the Project;
Grade and quantity measurements are reported in metric units (Mt) rounded to two decimal places.
The input studies are to the prescribed level of accuracy. The capital and operating costs are supported by quotations and zero-based costing techniques; and
The Mineral Reserve estimates contained herein may be subject to legal, political, environmental or other risks that could materially affect the potential development of such Mineral Reserves

38.11. Capital and operational expenditure

SR5.8

The capital costs for the WRTRP were based to a large extent on historical information and preliminary designs using conservative assumptions and are summarised below. Sound Mining considers the capex estimate for the WRTRP to reasonable and is in-line with the estimates for similar projects in the industry.

The WRTRP capex estimates have been undertaken for Phase 1 and Phase 2, however if for any reason the DFS suggests that the "alternative option" is more favourable, the capex for the "alternative option" has been estimated at ZAR318m.

The opex estimates for the WRTRP have been based on quantities from mine planning and feasibility studies undertaken for the Project, together with up to date information (e.g. bill of materials) from DRDGOLD's Ergo operations on the East Rand. The CP has interrogated the sources of the various quantities used for the opex estimates and is satisfied that they collectively meet and in places exceed the level of confidence associated with a PFS. Accordingly, a contingency of 15% has been applied in the valuation to cater for any uncertainty with respect to the overall Project's opex estimate of ZAR63.97/t for Phase 1 and ZAR48.49 for Phase 2.

The overhead costs include a retrenchment provision of ZAR18m that may be incurred over the LoM as well as training and skills development. Refining costs of ZAR1,300/kg have been included in the opex estimate under “Stores”.

Table 56 : Summary capex for Phase 1 and Phase 2

Project component	Capex (ZARm)
Phase 1 capex	
Mining / redeposition	120
Upgrades to DPP2 and DPP3	38
Gold recovery plant	51
Upgrade to Driefontein 4A-TSF	16
Pilot and DFS	0
Sub-total direct capex	**225**
Contingency 15%	34
Project services 13%	29
Sub-total Phase 1 direct and indirect capex	**288**
Phase 2 capex	
Mining / redeposition	778
Lower compartment H-TSF	1,229
Construction of CPP	984
Sub-total Phase 2 direct capex	**2,991**
Contingency 15%	449
Project services 13%	389
Sub-total Phase 2 indirect capex	**3,828**
Closure provision	215
Pilot study and DFS (Phase 1)	30
TOTAL	**4,361**

Source : Sound Mining December 2017

Table 57 : Summary opex for Phase 1 and Phase 2

	Phase 1 (ZAR/t)	Phase 2 (ZAR/t)
Wages	8.88	3.96
Contractors	5.00	5.30
Stores	22.79	19.32
Utilities	13.50	13.81
Overhead	13.80	6.10
Totals	**63.97**	**48.49**

Source : Sound Mining 2017; DRDGOLD 2017

38.12. Gold market trends and gold price

The global gold market supply is founded on primary gold production and secondary recycling, the latter of which contributes approximately 30% to the total 3,100t produced in 2015 and 2016. Primary production decreased 2% in 2017 to 3,038t. In general, smaller gold mining operations were negatively affected by the continued lower commodity price and increasing costs with the consequential closure of some United States, Mexican and other small scales operations. In 2016, worldwide gold production was unchanged from that in 2015, because increased production in some larger producing countries such as Canada offset the decrease in production from smaller operations. However, in 2017 production dropped precipitously in China and Australia, the world’s top two producers. The amount of scrap gold also fell, helping to drive the decline in supply.

The start-up of new mines in 2017 was limited but a number of new mines are expected to enter production in 2018. Such projects include the Natalka project in Russia, which began commissioning in September 2017 and is expected to ramp up to full production by the end of 2018; Canada’s Rainy River project was expected to start commercial production in November 2017 and Houndé in Burkino Faso, which was expected to pour gold before the end of 2017.

Views on the market demand in the public domain are quite divergent. Demand for physical gold rose to 1,895 tons in the first half of 2017, a 17% increase over the same period last year which led to the view that the fundamentals for gold were trending in a positive direction with demand increasing and supply decreasing. However, according to the World Gold Council, overall demand in Q3 2017 fell 9% to 915(t), its lowest since 2009 and the annual demand was forecast to be 3,900t to 4,000t, compared to 4,347 tonnes in 2016. Gold demand has not been below 4,000 tonnes on an annual basis since 2009. The Exchange Traded Fund (ETF) inflows 2017 were a fraction of the inflows in 2016.

The gold price has responded to significant political events in 2016 was 9% more than the price in 2015 and was 24% lower than the record-high annual price in 2012. The gold price (https://goldprice.org) in 2016 (fluctuated through several cycles. Following the United Kingdom's referendum vote to leave the European Union, the price increased to the 2016 year-to-date high (and projected annual high) of USD1,372.98/oz. In October, the price dropped significantly, with an investor sell-off coinciding with improved economic data in the United States. A current upwards move in the gold price to ZAR18,500/oz (ZAR576,000/kg) has been apparent.

Alternatively, the price history for gold in USD/oz for the past ten years shows that gold has been trading at around the USD1,300/oz level since 2011. While South Africa is experiencing significant local currency fluctuations against all major currencies, the South African Rand is unlikely to trade below ZAR13.50 to the USD over the long term.

Gold produced from the WRTRP will be delivered to the Rand Refinery for sale. DRDGOLD has a long-standing offtake agreement with the Rand Refinery according to which gold is sold on the prevailing spot in ZAR. When applying a long-term exchange rate of ZAR13.5/USD to a realistic USD1,300/oz gold price, it would not be unreasonable for DRDGOLD to anticipate an average real gold price of ZAR564,245/kg from the Rand Refinery over the longer term.

38.13. Economic analysis

An economic analysis of the WRTRP was undertaken according to SAMVAL principles utilising the income and market approaches.

38.13.1. Income approach

The income approach used a discounted cash flow model was created for the Project with the following input parameters included:-

- a ZAR/USD exchange rate of 13.5; a gold price of USD1,300/oz (ZAR564,245/kg);
- a range of discount rates between 2% to 10% with 6% as the preferred metric;
- a provision of 13% was included for Project Services;
- a contingency of 15% has been allowed for capex; and
- a sustaining capital provision of 1.5% of total operating costs.

The total capex requirements for Phase 1 and Phase 2 total ZAR4,362m.

The opex estimate includes a retrenchment provision and training and staff development programme contributions excluding contingency amount to is ZAR63.97/t for Phase 1 and ZAR48.49 for Phase 2.

The DCF is based on real 31 December 2017 money terms results in a post-tax real net present value (NPV) of ZAR2,2.121m. and an IRR of 38%. The change in NPV's over a range of discount factors from 2% to 10% is provided in Table 58:-

Table 58 : NPV at different discount rates

Discount Rate	2.00%	4.00%	6.00%	8.00%	10.00%
NPV	3,351	2,662	2,121	1,694	1,355

Source : Sound Mining Dec 2017

The overall post-tax pre-finance cash flow confirms that the Project remains cash positive from 2018 until the final 4 years where there are marginal cash flows. The Project remains economically positive with decreasing gold price to a critical point of USD1,040/oz, whereafter the Project becomes negative.

The DCF model was used to also examine the distribution of this value between the respective phases of the project as shown in Table 59:-

Table 59 : Distribution of value over the WTRP phases

Phases	Revenue (ZARm)	Opex (ZARm)	Capex (ZARm)	NPV_6 (ZARm)	IRR (%)
Phase 1 for 5 years only	4,479	2020	343*	1,275	164
Phase 1 and Phase 2A for 16 years	20,297	10,290	4,246	2,020	36
Phase 1, Phase 2A and Phase 2B for 20 years	24,626	14,098	4493	2,121	37

Source : Sound Mining Dec 2017
* Includes closure provision and DFS pilot plant testwork over and above the indirect capital

The Project will have recovered 60% of it's value after only 5 years for a capital outlay of only 7% of the total budget. A total of 95% of the value accrues after Phase 1 and Phase 2A but 95% of the capital will be required. The remaining portion of the total project is marginal.

The "alternative option" indicated an NPV of approximately ZAR2.7 billion (bn) due to the higher yield from Driefontein 5H-TSF and Driefontein 3H-TSF and the lower capital expenditure as compared to the Phase 2 of the Project. However, DRDGOLD indicated, that consistent with its strategy, it aims to exploit the large regional mineral resource; to rehabilitate a much larger footprint than just the Driefontein 3H-TSF and Driefontein 5H-TSF footprints and to establish infrastructure that provides the strategic advantage and opportunity of regional consolidation far beyond the existing resources. This larger and longer term focus renders the risk of exposure to the long term gold price less significant. Upside potential for the Phase 2 Project that has not been considered in the valuation include the following:-

- conservative recoveries applied to phase 2B due to less metallurgical testwork performed;
- unscheduled closure included in the DCF model, although only the cash flows relating to scheduled closure will be required; and
- project services of 13% was applied throughout the capital expenditure of Phase 2.

38.13.2. Market approach

The market approach relies on the principle of "willing buyer, willing seller" and requires that the amount obtainable from the sale of the asset is determined as if in an arm's length transaction. The market approach valuation method requires comparison with relatively recent transactions of assets that have similar characteristics to those of the asset being valued. No comparable transactions are available in the public domain and the assets under consideration are unusual in that they are not similar to the traditional gold mining operations in South Africa. Sound Mining therefore considered Enterprise Value (EV) per ounce as an indication of the possible value for the assets.

Sound Mining constructed a database from information in the public domain on gold mining able to profitably produce gold from low grade (i.e. < 1.5g/t Au) material that is close to, or on top of the surface, and which are able to operate profitably at yields below 1.5g/t Au. Twelve companies were identified and plotted against the associated Mineral Reserves to provide a basis for comparison. The value attributed to the Project from the market approach is shown in Table 60. The indicative values generated for the WRTRP assets with a Mineral Reserve content of 1.4Moz ranges from ZAR630m to ZAR6,510m. A value of ZAR3,570m can be attributed to the WRTRP by the market approach if an average is assumed.

Table 60 : Range of values from the market approach

Range	MV/oz (ZAR/oz)	Indicated Value (ZARm)
High	4,650	6,510
Middle	2,550	3,570
Low	450	630

Source : Sound Mining Dec 2017

38.13.3. Concluding opinion of value

The economic analysis of the WRTRP was based on both the income and market approaches in accordance with the principles of the SAMREC Code. The summary of the analysis is shown in Table 61.

Table 61 : Summary economic analysis

Approach	Lower value (ZARm)	Middle value (ZARm)	High value (ZARm)
Market	630	3,570	6,510
Income	0	2,121	4,146

Source : Sound Mining Dec 2017

The market approach analysis is based on a mix of listed companies that do not necessarily capture the unique makeup of the Project. Accordingly, Sound Mining does not consider it to be a true reflection of the likely market price (i.e. value) of the Project. Accordingly, Sound Mining is more comfortable with the value of ZAR2,121m as determined by the income approach as reflective of the economic merits of the Project.

38.14. Overall concluding remarks

Sound Mining is of the opinion that the WRTRP is a low risk, profitable Project based on methodologies and systems that are currently effective in Ergo operations. Throughout the technical studies the input assumptions have been conservative and there is certainly opportunity for optimisation of designs. Scrutiny of the LoM completed by independent mining specialists (i.e.the RVN Group) has revealed that the sequence of extraction and rate of mining have been planned in sufficient detail. The recoveries are supported by metallurgical testwork (Section 25) and the quantities and grades planned are consistent with those estimated in the Mineral Resource estimation.

Both the DRDGOLD management team and the proposed mining contractor have considerable experience in such operations and no risks that cannot be mitigated, have been identified. Hydromining is well understood by DRD and they have no intention of redesigning their existing “tried and tested” processes.

The CP has checked the integrity of the mine design and associated costs and is satisfied that the level of detail and accuracy is aligned with the requirements of a PFS. The responsible contractor will be entitled to decide on various operational alternatives and to deploy capital equipment and manage costs. This will however be in conjunction with DRDGOLD, as part of DRDGOLD’s tactical planning for each H-TSF. The cost and maintenance of the mining equipment, as well as the employees required, will be for the contractor‘s account and will form part of the contractual agreements with DRDGOLD.

From a health and safety perspective, hydro-mining does not create, but rather ameliorates the airborne dust problem often associated with fine tailings material. A safety burm around the perimeter of the dump will prevent slurry from escaping from the H-TSF in the event of an unplanned slope failure. Slope stability is however easily managed during the actual operations and the hydrological aspects affecting the H-TSFs are not significant to the operation.

The WRTRP has been has devised not only as an economically viable business but also as a strategic opportunity to positively contribute to the re-organisation of the vast H-TSFs in the region and to mitigate the environmental risk in the region.

The WRTRP is fairly unique in that it has an inherent optionality unusual in mining projects of this size. Each Phase of the project is economically viable as a standalone opportunity and there are several decision points throughout the project life which permit proceeding with an alternative option should commodity prices or other consideration make the alternative more attractive.

39. Recommendations

Several of the contributing studies to the WRTRP have identified areas that could benefit from optimisation or additional consideration in the DSF planned for the Project. These are listed below:-

- CPP
  - there are potential reductions in capex with a refined design as the design assumptions are conservative;
  - the use of more refined designs for steelwork and platework to reduce uncertainty and risk could reduce the associated cost;
  - the sourcing of quotations on a competitive tender basis could also provide an opportunity for a reduced cost; and
  - value engineering can be undertaken during the FEED phase.
- R-TSF
  - trade-off studies should be commissioned when the detailed design is undertaken;
  - comparison of the possibility of placing a compliant geomembrane liner with the cost of constructing a blast curtain and operating the system for 150 years. An independent study would identify cost saving opportunities especially as the R-TSF represents considerable capital expense;
  - a trade-off study to compare proposed operating scheme (raising method) and outer slope profile with a conventional raising method and profile;
  - possible replacement of the penstock with a barge;
  - investigation of an alternative barrier or interception system;
  - investigation of the effectiveness of twin compartments to reduce earthworks volume;
  - reduction or elimination of the embankment undercut;
  - elimination of the over drain and reduce under drainage;
  - investigation of the possibility of reducing inter bench slope and use of conventional paddocks;
  - examination of the need for final cover to upper surface; and
  - re-assessment of the waste classification.

- Risks: it is recommended that a comprehensive risk analysis be conducted prior to the commencement of the Project. Risks to the Project are errors in preliminary quantities and additional refurbishments costs that cannot be identified at this point in time leading to additional costs. 8.2 The use of more refined designs for steelwork and platework to reduce uncertainty and risk, could reduce the associated costs.
- the sourcing of quotations on a competitive tender basis could also provide an opportunity for a reduced cost; and
- the identification of other opportunities to make use of the installed equipment in the design could also provide a reduced cost.

40. Signatures

All of the CPs are responsible for the declarations in Sections 2, Section 3, Section 4 and Section 6. Additional responsibilities are provided below:-

Mr V. Duke
Competent Person and Competent Valuator
Sound Mining
Sections 24, 33, 35, 37, 28, 29, 30, 31

Ms F. Harper
Competent Person
Sound Mining
All Sections

Mrs D Van Buren
Competent Person
Sound Minig
Section 23

Mr E. Nel
Competent Person
ENC Minerals
Sections 25, 26, 27, 28

Dr J. J.P Vivier
Competent Person
Exigo
Sections 32, 14.2

Mr H. Gildenhuis
Competent Person
Exigo
Sections 32, 14.2

Effective Date of this CPR : 31 December 2017

41. References

Author/company	Date	Title	Source
Azmet (Pty) Ltd	Dec 17	Supply of an AZMET modular desorption and recovery plant for the WRTRP for DRD Gold	Azmet (Pty) Ltd
Berric Robinson Tailings (Pty) Ltd	Nov 17	Conceptual Solution for disposal of 30Mt on Driefontein 4 Tailings dam	Berric Robinson Tailings (Pty) Ltd
Berric Robinson Tailings (Pty) Ltd	Nov 17	Conceptual Solution for disposal of 80Mt on extended Driefontein 4 Tailings dam	Berric Robinson Tailings (Pty) Ltd
Coults, B.	Jul 05	Environmental Impact Assessment for Sibanye Gold Limited's West Rand Tailings Retreatment Project	Digby Wells Environmental (Pty) Ltd - GOL2376
Digby Wells Environmental (South Africa) (Pty)	Jul 15	Environmental Impact Assessment for Sibanye Gold Limited's West Rand Tailings Retreatment Project	Report GOLD2376
Digby Wells Environmental (South Africa) (Pty)	Mar 16	Environmental Impact Assessment and Environmental Management Programme for the Amendment of the existing EMP and Inclusion of Listed Activities Associated with Operations at Driefontein Mining Right Area, Sibanye Gold Limited	Digby Wells Environmental (South Africa) (Pty) – DMR Reference number GP30/5/1/2/2/(55) MR
Digby Wells Environmental (South Africa) (Pty)	Mar 16	Environmental Impact Assessment and Environmental Management Programme for the Amendment of the existing EMP and Inclusion of Listed Activities Associated with Operations at Kloof Mining Right Area, Sibanye Gold Limited	Digby Wells Environmental (South Africa) (Pty) - DMR Reference number GP30/5/1/2/2/66() MR
DRDGOLD Limited and Sibanye-Stillwater presentation	22 Nov 17	Creating an industry leading surface mining partnership	DRDGOLD Limited and Sibanye-Stillwater presentation
DRDGOLD Limited and Sibanye-Stillwater presentation	Nov 17	Press release	DRDGOLD Limited and Sibanye-Stillwater press release presentation
DRA SA (Pty) Ltd	Dec 17	Nexus project phase 1 Capital cost	DRA SA (Pty) Ltd
DRA SA (Pty) Ltd	December 2017	Nexus project phase 2 Capital cost	DRA SA (Pty) Ltd
Geostrada (Pty) Ltd	2009	Detailed provided in Technical Report on the Surface Mineral Resource Estimation, Scheduling and Financial Valuation of the West Wits HTO Project, Gold Fields (Pty) Ltd	Minxcon (Pty) Ltd – ref no :R2008-104
Golder and Associates South Africa (Pty) Ltd	Feb 17	Regional Tailings Storage Facility (RTSF) review report	Golder Associates (Pty) Ltd
Keith Kenyon Consulting	Feb 2009	Gold Fields Dump Project. A report on the analytical and assay laboratories and sample preparation procedures	AKK2009002
Keith Kenyon Consulting	2009	Geochemical and quality management protocols and procedures employed in Gold Fields tailings project	AKK2009003
Keith Kenyon Consulting	2009	Criteria for selection of Laboratories	Akk2009001
King,H	Apr 08	Technical Report for the Mineral Resource Estimation of the Driefontein Tailings Dams 3 and 5, Driefontein Gold Mine, Gauteng Province, South Africa	Minxcon (Pty) Ltd – ref no: R2008-14
King, H.; Van Heerden, D; Odendaal, j	2009	Technical Report on the surface Mineral Resource Estimation, Scheduling and Financial Valuation of the West Wits HTO Project, Gold Fields (Pty) Ltd, South Africa	Minxcon (Pty) Ltd – ref no :R2008-104
Malan Scholes (Pty) Ltd	29 Nov 17	Due Diligence Report for DRDGOLD Limited in respect of the West Rand Tailings Retreatment Project	Malan Scholes (Pty) Ltd
Mintek Analytical Services Division (ASD) (Pty) Ltd	Dec 08	Grind mill tests and ball milling circuit simulations on Driefontein dam 3 and dam 5 tailings material	Mintek Analytical Services Division (ASD) (Pty) Ltd

Author/company	Date	Title	Source
Mintek Analytical Services Division (ASD) (Pty) Ltd	Oct 09	Hydro cyclone and grind mill tests on Gold Fields tailings material	Mintek Analytical Services Division (ASD) (Pty) Ltd
Mintek Analytical Services Division (ASD) (Pty) Ltd	May 15	Flowsheet development for gold and vanadium recovery from Sibanye Driefontein Dams 3 and 5. Phase 1 Characterisation test work	Mintek Analytical Services Division (ASD) (Pty) Ltd
Molema, L.	Sep 17	Technical Note: Nexus material (Driefontein 3, 5 and Libanon) Treatment report.	DRDGOLD internal report
SGS South Africa (Pty) Ltd	Oct 08	Metallurgical test work on slimes dam 3 retreatment project	SGS South Africa Pty Ltd
SGS Bateman (Pty) Ltd	Dec 15	West Rand Tailings Retreatment Project DFS alignment phase POD report	SGS Bateman –. M8169A
SGS South Africa Pty Ltd	June 2009	Metallurgical test programme on gold, uranium and sulphur bearing tailings dam samples	SGS South Africa Pty Ltd
SLR Global Environmental Solutions (Pty) Ltd		Sibanye RTSF DFS design development up to the DFS revalidation phase	SLR Global Environmental Solutions (Pty) Ltd
Tenova Bateman (Pty) Ltd	2015	WRTRP DFS M8169A-E300-002. PoD Report	Tenova Bateman DFS -M8169A
The Mineral Corporation	31 Dec 16	Audit of the Mineral Reserve Estimates as at 31 December 2016	The Mineral Corporation – report no C-SGL-AUD-1714-1036
The RVN Group (Pty) Ltd	Dec 2017	Mine planning and scheduling for the Nexus Project, West Rand Area, South Africa	The RVN Group report to DRDGOLD
WERKSMANS Attorneys	08 Nov 17	Use and Access Agreement between K2017449061 (Pty) Limited, Sibanye Gold Limited and DRDGOLD Limited	WERKSMANS Attorneys

42. Glossary

Term	Explanation
Anomaly	A departure from the expected or normal; a geological feature which is different from the general surroundings and which may be of potential economic value. Is different from the general surroundings and which may be of potential economic value.
Anticline	A fold with strata sloping downward on both sides from a common crest.
Archaean	Geological eon from 2,500Ma - 4,000Ma.
Arenaceous	Sandy or consisting largely of sand; of the nature of sand; easily disintegrating into sand; friable.
Arenite	A general name for sedimentary rocks composed of sand-sized fragments irrespective of composition; e.g., sandstone, graywacke, arkose, and calcarenite.
Argillaceous	A group of detrital sedimentary rocks, commonly clays, shales, mudstones, siltstones and marls.
Argillite	A rock whose degree of induration (process of hardening) is higher than mudstone, but less than shale.
Arkose(ic)	A detrital sedimentary rock containing <25% feldspar.
Arsenopyrite	An arsenic mineral, FeAsS, found in hydrothermal veins.
Assay	The chemical analysis of ore samples to determine their metal content.
Auriferous	Containing, or producing, gold.
Azimuth	Direction of a horizontal line, measured clockwise from north.
Basin	A geological basin is a large low-lying area, often below sea level.
Bedrock	A mining term for the unweathered rock below soil and drift cover.
Biogenic	A substance produced by life processes which may be either constituents, or secretions, of plants or animals. Biogenic gas is typically created by methanogenic organisms in marshes, bogs, landfills or shallow sediments.
Biotite	A phyllosilicate mineral within the mica group.
Block width	The average width at which an estimated block of ore will be mined
Breccia	A generally coarse-grained rock, composed of angular broken rock fragments held together by a finer-grained matrix. Cataclastic Rock deformation accomplished by fracture and rotation
Clastic	A rock or sediment composed principally of transported broken fragments derived from pre-existing rocks or minerals
Conformable	A sequence of beds are said to be conformable when they represent an unbroken period of deposition.
Conglomerate	A coarse-grained clastic sedimentary rock composed of rounded to subangular fragments (>2 mm) set in a fine-grained, commonly cemented, sandy matrix
Craton	An old and stable section of the continental lithosphere which has survived cycles of merging and rifting continents. Cratons are today generally found in the interior of tectonic plates.
Cut-off-grade	The lowest grade of mineralised rock that determines as to whether or not it is economic to recover its gold content by further concentration
Density	Measure of the relative “heaviness” of objects with a constant volume, density = mass/volume
Deposit	Any sort of earth material that has accumulated through the action of wind, water, ice or other agents
De-survey	Mathematical reconstruction in 3D space of a borehole trace using azimuth and dip survey data.
Detrital	Formed from eroded loose rock and mineral material
Dilution	Waste or material below the cut-off grade that contaminates the ore during the course of mining operations and thereby reduces the average grade mined.
Dip	The angle that a structural surface, i.e. a bedding or fault plane, makes with the horizontal measured perpendicular to the strike of the structure.
Distal	Distant
Dolomite	Carbonate mineral, $CaMg(CO_3)_2$. The word dolomite is also used to describe the sedimentary carbonate rock, which is composed predominantly of the mineral dolomite.
Dolerite	A mafic subvolcanic intrusive rock.
Dore	An unrefined, therefore impure, alloy of gold with variable quantities of silver and smaller quantities of base metals, which is produced at a mine before passing on to a refinery for upgrading to London Good Delivery standard, which usually consists of 85% gold on average
Drillhole	Hard rock exploration hole drilled for the purposes of exploring for and evaluating sub-surface mineral deposits, in this instance gold or uranium.
Dyke	A tabular vertical or near-vertical body of igneous rock formed by magmatic injection into planar zones of weakness such as faults or fractures that is discordant to the bedding or foliation of the country rock.
Estimation	The quantitative judgement of a variable.
Exploration	Prospecting, sampling, mapping, diamond drilling and other work involved in the search for mineralization.
Exploration Property	A Mineral Asset which is being actively explored for Mineral deposits or petroleum fields, but for which economic viability has not been demonstrated
Facies	The sum total of sedimentary features that characterize a sediment as having been deposited in a given environment; an assemblage of metamorphic rocks which are considered to have formed under similar conditions of temperature and pressure.
Fault	A fracture in earth materials, along which the opposite sides have been displaced parallel to then plane of the movement
Feasibility study	A definitive engineering estimate of all costs, revenues, equipment requirements and production levels likely to be achieved if a mine is developed. The study is used to define the economic viability of a project and to support the search for project financing.
Felsic	An acronym derived from feldspar and silica, used to describe light-colored silicate minerals such as quartz, feldspar and feldspathoids.
Fire Assay	The assaying of metallic ores by methods requiring the use of furnace heat

Term	Explanation
Fluvial	Produced by the action of a stream or river
Footwall	The underlying side of a stope or ore body.
Fracture	Local separation or discontinuity plane in a geological formation such as a joint or a fault which divides the rock into two or more pieces.
Gold equivalent ounces	Quantity of metal (such as copper) converted to an amount of gold in ounces, based on accepted gold and other metal prices i.e. The accepted total value of the metal based on its weight and value thereof divided by the accepted value of one troy ounce of gold.
Gold Fields	Goldfields Group Limited
Gold One	Gold One International Limited
Graben	A depressed block of land bordered by parallel faults.
Granite	An intrusive felsic rock which is granular in texture.
Hydrothermal	The circulation of hot water. Hydrothermal circulation occurs most often in the vicinity of sources of heat within the Earth's crust. In general this occurs near volcanic activity
Indicated Mineral Resource	That part of a resource for which tonnage, densities, shape, physical characteristics and grade can be estimated with a moderate level of confidence. It is based on exploration sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are appropriate to confirm physical continuity, while the locations are too widely or inappropriately spaced to confirm grade. However, such locations are spaced closely enough for grade continuity to be assumed.
Inferred Mineral Resource	That part of a resource for which tonnage and grade can be estimated with a low level of confidence. It is inferred from geological evidence and assumed, but not verified physical continuity, with or without grade continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which is limited or of uncertain quality or reliability.
Karoo	A large semi-desert natural region of South Africa which lends its name to the geological Karoo Supergroup which is often used as an age description for the eon from 145Ma - 360Ma.
Kriging	An interpolation method that minimizes the estimation error in the determination of a mineral resource
Licence, Permit, Lease or other similar entitlement	Any form of license, permit, lease or other entitlement granted by the relevant Government department in accordance with its mining legislation that confers on the holder certain rights to explore for and/or extract minerals that might be contained in the land, or ownership title that may prove ownership of the minerals
Life-of-mine	Number of years in the current mine plan that an operation will extract and treat ore
Mine-call-factor	The ratio expressed as a percentage which the specific product accounted for in “recovery plus residue” bears to the corresponding product “called for” by the mine’s measuring and evaluation methods
Measured Mineral Resource	That portion of a Mineral Resource for which the tonnage or volume is calculated from dimensions revealed in outcrops, pits, trenches, drill-holes, or mine workings, supported where appropriate by other exploration techniques. The sites used for inspection, sampling and measurement are so spaced that the geological character, continuity, grades and nature of the material are so well defines that the physical character, size, shape, quality and mineral content are established with a high degree of certainty.
Mineable	That portion of a resource for which extraction is technically and economically feasible.
Mineral Asset(s)	Any right to explore and / or mine which has been granted (“property”), or entity holding such property or the securities of such an entity, including but not limited to all corporeal and incorporeal property, mineral rights, mining titles, mining leases, intellectual property, personal property (including plant equipment and infrastructure), mining and exploration tenures and titles or any other right held or acquired in connection with the finding and removing of minerals and petroleum located in, on or near the earth’s crust. Mineral Assets can be classified as Dormant Properties, Exploration Properties, Development Properties, Mining Properties or Defunct Properties.
Mineral Resource	A concentration of material of economic interest in or on Earth’s crust in such form, quality and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated from specific geological evidence and knowledge, or interpreted from a well constrained and portrayed geological model. Mineral Resources are subdivided, in order of increasing confidence in respect of geoscientific evidence, into Inferred, Indicated and Measured categories. A deposit is a concentration of material of possible economic interest in, on or near the Earth’s crust. Portions of a deposit that do not have reasonable and realistic prospects for eventual economic extraction must not be included in a Mineral Resource.
Ore Reserve (JORC)	Is the economically mineable material derived from a Measured and /or Indicated Mineral Resource. It is inclusive of diluting materials and allows for losses that may occur when the material is mined or extracted and is defined by studies at Pre-feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could be reasonably justified. The reference point at which Reserves are defined, usually the point where the ore is delivered to the plant, must be stated. Reserves to denote progressively increasing uncertainty in their recoverability. Proved Reserve can be categorised as Developed or Undeveloped.
Orogeny	Process by which structures within fold-belt mountainous area were formed, including thrusting, folding and faulting.
Palaeo-proterozoic	Geologic eon from 2,500Ma - 1,600Ma.
Palaeozoic	That part of geological time between the Precambrian and Mesozoic, comprising the Cambrian, Ordovician, Silurian, Devonian, Carboniferous and Permian Systems, between 570 and 230 million years ago.
Phanerozoic	Geologic eon from 542Ma to 1Ma.
Pliocene	A geologic eon from 5.3Ma - 2.6Ma
Precambrian	A large geologic eon from 4,540Ma - 541Ma which is subdivided into numerous sub-eons.
Proterozoic	Of or relating to the most recent of the three divisions of Precambrian time, from approximately 2,5 billion to 570 million years ago, marked by the buildup of oxygen and the appearance of the first multicellular eukaryotic life forms.

Term	Explanation
Rand Uranium	Rand Uranium Limited
Reef	A precious metal bearing stratiform tabular ore body
Resource	A tonnage or volume of rock or mineralization or other material of intrinsic economic interest, the grades, limits and other appropriate characteristics of which are known with a specified degree of knowledge.
Run-of-mine	
Shale	A fine-grained detrital sedimentary rock formed from clay, mud or silt.
Strike	Refers to the orientation of a geologic feature which is a line representing the intersection of that feature with a horizontal plane. This is represented as a compass bearing of the strike line.
Syncline	A fold with strata sloping upward on both sides from a common valley/base.
Tailings	Refuse remaining after ore has been processed
Tectonic	Relating to large scale geological forces and structural deformation.
Unconformity	A surface between successive strata representing a missing interval in the geologic record of time and produced either by an interruption in deposition or by the erosion of depositionally continuous strata followed by renewed deposition.
Uraninite	A black, brown or gray uranium ore mineral, UO_2
Variogram	A measure of the average variance between sample locations as a function of sample separation.
Wireframe	A surface constructed from vertices with connecting straight lines or curves

Term	Explanation
AA	Atomic Absorption
AARL	Anglo American Research Laboratory
AMD	Acid Mine Drainage
AMIS	African Mineral Standards
ASG	Advanced Strike Gully
ASX	Australian Securities Exchange
A-TSF	Active tailings disposal facility
AusIMM	Australian Institute of Mining and Metallurgy
BBBEE	Broad Based Black Economic Empowerment
BCX	BCX Gold Investment Holdings
BEE	Black Economic Empowerment
bn	billion
BPLZ	Buckshot Pyrite Leader Zone
BPM	Big Pebble Marker
BQ	36.5mm diamond drillcore diameter
capex	capital expenses
CARA	Conservation of Agriculture Act
cm	centimetre
cmg/t	centimetre grams per tonne
CIL	Carbon in Leach
CIP	Carbon in Pulp
CoR	Certificate of Registration
COR	Cooke optimisation Project
CPR	Competent Persons Report
CRM	Certified Reference Material
CTSF	Central tailings storage facility
CUP	Cooke Uranium Project
DEA	Department of Environmental Affairs
DEADP	Department of Environmental Affairs and Development Planning
DFS	Definitive Feasibility Study
DMR	Department of Mineral Resources
DMA	demarcated mining areas
DMU	Dry Mining Unit
DTM	Digital Terrain Model
DWA	Department of Water Affairs (or DWS)
DWS	Department of Water Affairs and Sanitation (or DWA)
EA	Environmental Authorisation under NEMA
ExA	Explosive Act
ECL	Environmental Critical Level
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme Report
ERMO	East Rand Mining Operations
EOH	End of Hole
EPA	Environmental Performance Assessments
FEED	Front End Engineering Design

Term	Explanation
FEG	Far East Gold
FEG SPV	Far East Gold Special Purpose Vehicle
FEL	Front End Loaders
g	gram
Ga	Giga annum (a period of 1 billion years)
GIS	Geographic Information System
GDO	Gold One Ticker Code on the ASX
GPS	Global Positioning System
g/t	grams per tonne
ha	hectare
HARD	Half Absolute Relative Difference
HKEx	Hong Kong Securities Exchange
HMS	Heavy Mineral Sands
H-TSF	Historical tailings storage facility
hr	hour
HSA	Hazardous Substances Act
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ICP-OES	Inductively Coupled Plasma Atomic Emission Spectroscopy
IDr³	Inverse Distanced cubed
IRR	Internal Rate of Return
ISO	International Organization for Standardization
IWUL	Integrated Water Use Licence
JORC Code	Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
JSE	Johannesburg Securities Exchange
JV	Joint Venture
kg	kilogram
km	kilometre
kV	Kilovolt
LAM	Linhas Aéreas de Moçambique
LHD	load-haul-dump trucks
LK	Lower Kimberley
LoM	Life-of-Mine
LUC	Localised Uniform Conditioning
m	metres
m³/s	cubic metres per second
Ma	Mega annum (a period of 1 million years)
mamsl	metres above mean sea level
MAP	mean annual precipitation
mbs	metres below surface
MCF	Mine Call Factor
MIREM	Ministry of Mineral Resources
MK	Middle Kimberley
Ml	million litres
Mℓ/d	mega litres per day
mm	milimetres
Moz	Millions of ounces
MPa	Megapascal
MPA	Megamine Project Area
MPRDA	Mineral and Petroleum Resources Development Act
MR	Main Reef
MRL	Main Reef Leader
Mt	million tonnes
Mtpa	million tonnes per annum
MVA	Mega Volt Ampere
NEA	Nuclear Energy Act
NEMA	National Environmental Management Act
NEMAQA	National Environmental Management Air Quality Act
NEMBA	National Environmental Management Biodiversity Act
NEM:PPA	National environmental Management: Protected Areas Act
NEMWA	National Environmental Management Waste
NFA	National Forests Act
NGMC	Nigel Gold Mining Company (Pty) Ltd
NHRA	National Heritage Resources Act
NKGM	New Kleinfontein Goldmine (Pty) Ltd

Term	Explanation
NKMC	New Kleinfontein Mining Company Ltd
NNR	National Nuclear Regulator
NPR	Nigel Prospecting Right
NPV	Net Present Value
NQ	47.6mm diamond drillcore diameter
NTC	Noble Trading and Commerce
NWA	National Water Act
NYSE	New York Stock Exchange
OFS	orange feldspathic sand
opex	operating expenses
oz	troy ounce
PEA	Preliminary Economic Assessment
PFS	Preliminary Feasibility Study
Ptn	Portion of an original farm
PTO	planned task observation
QA/QC	Quality Assurance and Quality Control
RAS	red aeolian sand
RC	Reverse Circulation
RE	Remainder of a portion of an original farm
RMSI	RMSI Private Limited
RoM	Run-of-Mine
RQD	Rock Quality Designation
SAG	semi autogenous grind
SAMREC	South African Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves
SANAS	South African National Accreditation System
SARM	South African Reference Material
SCC	Species of Conservation Concern
SG	Specific Gravity
SGS	Société Générale de Surveillance
SLP	Social and Labour Plan
SMU	Selective Mining Unit
SNGM	Sub Nigel Gold Mines (Pty) Ltd
SNMC	Sub Nigel Gold Mining Company Limited
SOP	Standard Operating Procedures
SPV	Special Purpose Vehicle
SRK	SRK Consulting (Pty) Ltd
t	tonne
TCTA	Trans Caledon Tunnel Authority
t/d	tonnes per day
TSF	Tailings Disposal Facility
THM	total heavy minerals
TM	Trademark
tpa	tonnes per annum
tpm	tonnes per month
RoM	Run-of-Mine
RoMt	Run-of-Mine tonnes
t/d	tonnes per day
UCS	unconfined compressive strength
USD	United States Dollars
USDm	Millions of United States Dollars
USD/t	United States Dollars per tonne
UTM	Universal Transverse Mercator
UK	Upper Kimberley
VALMIN Code	Code for the Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Expert Reports
WRTRP	West Rand Tailings Retreatment Project
WAD	weakly acid dissociable
WAS	Water Services Act
WGS	World Geodetic System
WWT	West Wits Tailings project
WRTRP	West Rand Tailings Retreatment Project
WWTTP	West Wits Tailings Treatment Project
XLPE	Cross-linked polyethylene
XRF	X-ray fluorescence

Term	Explanation
ZAR	South Africa Rands
ZAR/kg	South African Rands per kilogram
ZARm	Millions of South African Rands
ZAR/oz	South African Rands per ounce
ZAR/t	South African Rands per tonne

43. Competent Persons Certificates

Competent Person's Certificate – Fiona Harper

As a contributing author to the report titled, "Competent Persons' Report on the West Rand Tailings Retreatment Project for DRDGOLD Limited" (the Report), I hereby state:-

1. My name is Fiona Harper and I am a Managing Director of Sound Mining UK (Pty) Ltd at Norwich United Kingdom.
2. I am registered as a Professional Natural Scientist (Geological Science) with the South African Council for Natural Scientific Professions (SACNASP), registration No.40017/082. I am a Member of the Geological Society of South Africa (GSSA.
3. I am a graduate of the University of the Witwatersrand, Johannesburg, with a B.Sc. Degree in Geology (1976), a B.Sc. Honours Degree in Geology (1977) and that I have practiced my profession for 6 years after graduation and over the last ten years.
4. I have been actively involved in the mining industry for 16 years. I have worked on numerous exploration, technical due diligences, Competent Persons Reports and resource estimation and verification projects covering a wide range of commodities, including but not limited to gold, diamonds, platinum, chrome, rare earth elements, iron ore, chromite, nickel, manganese, phosphate. I have written and contributed to numerous compliant documents applicable to the Australian, South African, London and Canadian stock exchanges.
5. I am a Competent Person as defined in the SAMREC Code.
6. I have co-authored all the sections of the Report based on technical input from the other Competent Persons on the Sound Mining team, and compiled and managed the complete Competent Persons Report documentation.
7. I have not conducted site visits to the WRTRP H-TSFs and processing plants but members of the Sound Mining team have done so.
8. I am responsible for the transparent and material reporting of the assets in this report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the mission of which would make the Report misleading.
10. I am independent of DRDGOLD Limited and Sibanye Gold Ltd (trading as Sibanye -Stillwater).
11. As of the date of this certificate, to the best of my knowledge, information and belief, this report contains sufficient technical information that is required to be disclosed to ensure that this report is not misleading.
12. I have read the SAMREC Code (2016), the SAMVAL Code (2016) and the SAMESG guidelines and the Report has been prepared in accordance with the guidelines of these codes and guidelines.
13. I do not have nor do I expect to receive a direct or indirect interest in any of DRDGOLD Limited or Sibanye Gold Limited's assets contained in the Report or in the companies holding the assets.
14. At the effective date of the Report, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make the report not misleading.
15. I hereby provide written approval for my contribution to this report to be issued into Public Report in the form, content and context in which it appears herein.

Dated this 31 December 2017.
Ms F Harper

Managing Director Sound Mining UK (Pty) Ltd
Sound Mining House; 2 5th Ave, Edenburg, Johannesburg, 2128

Competent Person's and Competent Valuator's Certificate – Vaughn Duke

As a contributing author to the report titled, "Competent Persons' Report on the West Rand Tailings Retreatment Project for DRDGOLD Limited" (the Report), I hereby state:-

1. My name is Vaughn Glenn Duke and I am a Principle Consultant with Sound Mining Solution (Pty) Ltd at Sound Mining House, 2A fifth Avenue, Rivonia, South Africa.
2. I am registered both as a Professional Engineer (Pr.Eng. with the Engineering Council of South Africa (ECSA), registration No.940314, and as a Project Management Professional (PMP) with the Project Management Institute (PMI), registration No.320890. I am a member of the Mine Managers Associateion of South Africa and a Fellow of the Southern African Institute of mining and Metallurgy (SAIMM).
3. I am a graduate of the University of the Witwatersrand, Johannesburg, with a B.Sc. Mining Engineering Degree (1986) and have completed a Masters of Business Administration degree at the University of Pretoria on it's Gordon Institute of Business campus (2003).
4. I have practiced my profession continuously since 1986. I have completed numerous, technical due diligences, Competent Persons Reports, Mineral Reserve estimations and valuations for mining projects covering a wide range of commodities, including but not limited to coal, platinum, chrome, rare earth elements, gold, iron ore, chromite, nickel, manganese and copper.
5. I am a Competent Person as defined in the SAMREC Code and I have contributed to numerous compliant documents applicable to the international reporting codes.
6. I am responsible for section 24, section 28, 29, 30, 31, 35 and 37 of the Competent Persons Report.
7. I have conducted a site visit to the WRTRP H-TSFs and processing plants.
8. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the mission of which would make the Report misleading.
9. I am independent of DRDGOLD Limited and Sibanye Gold Ltd (trading as Sibanye-Stillwater).
10. I have read the SAMREC Code (2016), the SAMVAL Code (2016) and the SAMESG guidelines and the Report has been prepared in accordance with the guidelines of these codes and guidelines.
11. I do not have nor do I expect to receive a direct or indirect interest in any of DRDGOLD Limited or Sibanye Gold Limited's assets contained in the Report or in the companies holding the assets.
12. At the effective date of the Report, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make the report not misleading.
13. I hereby provide written approval for my contribution to this report to be issued into Public Report in the form, content and context in which it appears herein.

Dated this 31st day December 2017.

Mr Vaughn Duke PrEng. PMP.
Sound Mining Houses; 2 5th Ave,
Edenburg,
Johannesburg, 2128

Competent Person's Certificate – Dr J.J.P. Vivier

As a contributing author to the report titled, "Competent Persons' Report on the West Rand Tailings Retreatment Project for DRDGOLD Limited" (the Report), I hereby state:-

1. My name is Jacobus Johannes Petrus Vivier and I am a Senior Consulting Hydrogeologist and Director with Exigo Sustainability (Pty) Ltd at Eulophia Corner Building 1, 38 General van Reyneveld Street, Persequor Park, Pretoria, South Africa.
2. I am registered as a Professional Natural Scientist (Earth Science) with the South African Council for Natural Scientific Professions (SACNASP), registration No. 400177/05. I am a Member of the Groundwater Division of the Geological Society of South Africa.
3. I am a graduate of the University of the Free State with a B.Sc Degree in Geology, Geochemistry and Geography (1992), a B.Sc. Honours Degree in Geohydrology (1993) and a M.Sc. Degree in Geohydrology (1995). I also hold a Ph.D. in Environmental Management (2011) from the University of North-West and I have practiced my profession continuously since 1996.
4. I have been actively involved in the mining industry since 1996. I specialize in environmental decision-making with integration of water specialist aspects and environmental management that includes mine water management and development of regional water resources management strategies. My experience includes geohydrological assessments, numerical and statistical groundwater flow and mass transport modelling, resource quantification, surface water – groundwater interaction, mine dewatering, mine water management and the development of water management strategies and the application to performance assessments of radioactive waste disposal facilities, water supply and the mining industry.
5. I am a Competent Person as defined in the SAMREC Code.
6. I have co-authored the Legal tenure and permitting and Environmental, social and governance (SAMESG) compliance status sections of the Report.
7. I have not conducted site visits of to the WRTRP H-TSFs and processing plants but Competent Person from the Exigo team ensured attendance at the site visit.
8. I am responsible for the transparent and material reporting of the assets in this report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the mission of which would make the Report misleading.
10. I am independent of DRDGold Limited and Sibanye Gold Ltd (trading as Sibanye -Stillwater).
11. As of the date of this certificate, to the best of my knowledge, information and belief, this report contains sufficient technical information that is required to be disclosed to ensure that this report is not misleading.
12. I have read the SAMREC Code (2016), the SAMVAL Code (2016) and the SAMESG guidelines and the Report has been prepared in accordance with the guidelines of these codes and guidelines.
13. I do not have nor do I expect to receive a direct or indirect interest in any of DRDGOLD Limited or Sibanye Gold Limited's assets contained in the Report or in the companies holding the assets.
14. At the effective date of the Report, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make the report not misleading.
15. I hereby provide written approval for my contribution to this report to be issued into Public Report in the form, content and context in which it appears herein.

Dated this 31st day of December 2017

Dr J.J.P. Vivier
Senior Consulting Hydrogeologist and Director at Exigo Sustainability (Pty) Ltd

Competent Person's Certificate – Herman Gildenhuys

As a contributing author to the report titled, "Competent Persons' Report on the West Rand Tailings Retreatment Project for DRDGOLD Limited" (the Report), I hereby state:-

1. My name is Hermanus Daniel Gildenhuys and I am an Environmental Assessment Practitioner and Manager with Exigo Sustainability (Pty) Ltd at Eulophia Corner Building 1, 38 General van Reyneveld Street, Persequor Park, Pretoria, South Africa.
2. I am registered as a Professional Natural Scientist (Ecological and Environmental Science) with the South African Council for Natural Scientific Professions (SACNASP), registration No. 400179/13. I am a Member of the International Association for Impact Assessment South Africa (IAIAsa) (Membership Number 4094).
3. I am a graduate of the University of Stellenbosch with a B.Sc.Agric Degree in Animal Production Science (2001), and a B.Sc. Honours Degree in Wildlife Management (2002) from the University of Pretoria, and I have practiced my profession continuously since 2006.
4. I have been actively involved in the mining industry since 2006. I have worked on numerous Environmental Assessment and Environmental Legal Compliance Assessment projects covering a wide range of commodities, including but not limited to coal, diamonds, platinum, rare earth elements, gold, iron ore, and copper. My experience includes Environmental Reviews, Environmental Legal Compliance Audits, Environmental Management Plan Performance Assessments and Due Diligence Assessments, as well as Water Use, Waste Management and Atmospheric Emission License Applications.
5. I am a Competent Person as defined in the SAMREC Code.
6. I have co-authored the Legal tenure and permitting and Environmental, social and governance (SAMESG) compliance status sections of the Report, and compiled.
7. I have not conducted site visits of to the WRTRP H-TSFs and processing plants but Competent Person from the Exigo team ensured attendance at the site visit.
8. I am responsible for the transparent and material reporting of the assets in this report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the mission of which would make the Report misleading.
10. I am independent of DRDGOLD Limited and Sibanye Gold Ltd (trading as Sibanye-Stillwater).
11. As of the date of this certificate, to the best of my knowledge, information and belief, this report contains sufficient technical information that is required to be disclosed to ensure that this report is not misleading.
12. I have read the SAMREC Code (2016), the SAMVAL Code (2016) and the SAMESG guidelines and the Report has been prepared in accordance with the guidelines of these codes and guidelines.
13. I do not have nor do I expect to receive a direct or indirect interest in any of DRDGOLD Limited or Sibanye Gold Limited's assets contained in the Report or in the companies holding the assets.
14. At the effective date of the Report, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make the report not misleading.
15. I hereby provide written approval for my contribution to this report to be issued into Public Report in the form, content and context in which it appears herein.

Dated this 31st day of December 2017.

Mr Herman Gildenhuys
Environmental Assessment Practitioner and Manager at Exigo Sustainability (Pty) Ltd
Eulophia Corner Building 1, 38 General van Reyneveld Street, Persequor Park, Pretoria

Competent Person's Certificate – Eugene Nel

As a contributing author to the report titled, "Competent Persons' Report on the West Rand Tailings Retreatment Project for DRDGOLD Limited" (the Report), I hereby state:-

1. My name is Eugene Nel and I am a Managing Director at ENC Minerals (Pty) Ltd, 108 Waterfront street Schoemansville, South Africa.
2. I am registered as a Professional Engineering Technologist (Pr. Tech Eng) with the Engineering Council of South Africa (ECSA), registration No.200570019. I am an Associate of the South African Institute of Mining and Metallurgy (SAIMM) as well as the Mine Metallurgical Managers Association (MMMA).
3. I am a graduate of the Tshwane University of Technology, Pretoria, with a B.Tech. Degree in Extractive Metallurgy (1997), as well as an MBA degree from the north West University, Potchefstroom (2005) and that I have practiced my profession continuously since 1997.
4. I have been actively involved in the mining industry since 1997. I have been Operational Manager, Project Manager and Process Engineer for crushing, milling, flotation, leaching and gravity separation circuits. I also have metallurgical optimisation, troubleshooting and design experience on coal, gold, base metals, chromite, mineral sand and PGM concentrators. I have extensive experience in Gold, PGM and chrome tailings reprocessing and have been the competent person sign off on numerous projects including due diligence studies completed.
5. I am a Competent Person as defined in the SAMREC Code.
6. I have co-authored Sections 25, 26, 27 and 28 of the Report,
7. I have conducted site visits of to the WRTRP H-TSFs and processing plants.
8. I am responsible for Section 25, 26, 27, 28 of the CPR.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the mission of which would make the Report misleading.
10. I am independent of DRDGOLD Limited and Sibanye Gold Ltd (trading as Sibanye-Stillwater).
11. As of the date of this certificate, to the best of my knowledge, information and belief, this report contains sufficient technical information that is required to be disclosed to ensure that this report is not misleading.
12. I have read the SAMREC Code (2016), the SAMVAL Code (2016) and the SAMESG guidelines and the Report has been prepared in accordance with the guidelines of these codes and guidelines.
13. I do not have nor do I expect to receive a direct or indirect interest in any of DRDGOLD Limited or Sibanye Gold Limited's assets contained in the Report or in the companies holding the assets.
14. At the effective date of the Report, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make the report not misleading.
15. I hereby provide written approval for my contribution to this report to be issued into Public Report in the form, content and context in which it appears herein.

Dated this 31st day of December 2017

Mr E Nel
Managing Director – ENC Minerals (Pty) Ltd
108 Waterfront Street, Schoemansville, Hartbeespoort

Competent Person's Certificate – Diana van Buren

As a contributing author to the report titled, "Competent Persons' Report on the West Rand Tailings Retreatment Project for DRDGOLD Limited" (the Report), I hereby state:-

1. My name is Diana van Buren and I am a Director of Sound Mining Solution (Pty) Ltd at Sound Mining House, 2A Fifth Avenue, Rivonia, South Africa.
2. I am registered as a Professional Natural Scientist (Geological Science) with the South African Council for Natural Scientific Professions (SACNASP), registration No.400107/14. I am a Member of the Geological Society of South Africa (GSSA).
3. I am a graduate of the University of the Witwatersrand, Johannesburg, with a B.Sc. Degree in Geology (2003), a B.Sc. Honours Degree in Geology (2005) and that I have practiced my profession continuously since 2006.
4. I have worked as a Geoscientist for a total of 12 years since my graduation from university. Upon graduation I worked for ISS International undertaking seismic monitoring of mines. I joined Sound Mining Solution (Pty) Ltd in 2008 and have since been involved in numerous projects involving exploration management, due diligence, geological modelling and mineral resource estimation.
5. I am a Competent Person as defined in the SAMREC Code.
6. I have co-authored the Section 23 of the Report and am responsible for the verification of the Mineral Resources.
7. I have not conducted site visits of to the WRTRP H-TSFs and processing plants but members of the Sound Mining team have done so.
8. I am responsible for the transparent and material reporting of the assets in this report.
9. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the mission of which would make the Report misleading.
10. I am independent of DRDGOLD Limited and Sibanye Gold Ltd (trading as Sibanye-Stillwater).
11. As of the date of this certificate, to the best of my knowledge, information and belief, this report contains sufficient technical information that is required to be disclosed to ensure that this report is not misleading.
12. I have read the SAMREC Code (2016), the SAMVAL Code (2016) and the SAMESG guidelines and the Report has been prepared in accordance with the guidelines of these codes and guidelines.
13. I do not have nor do I expect to receive a direct or indirect interest in any of DRDGOLD Limited or Sibanye Gold Limited's assets contained in the Report or in the companies holding the assets.
14. At the effective date of the Report, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make the report not misleading.
15. I hereby provide written approval for my contribution to this report to be issued into Public Report in the form, content and context in which it appears herein.

Dated this 31st t day of December 2017

Ms Diana van Buren
Director of Sound Mining Solution (Pty) Ltd
Sound Mining House;
2 5th Ave, Edenburg,
Johannesburg, 2128

44. Competent Persons CVs

Name of Staff: Fiona Harper
Position: Associate
Name of Firm: Sound Mining Solution (Pty) Ltd
Address: 2 5th Ave, Edenburg, Johannesburg, 2128
Profession: Geologist
Nationality: British

Membership in Professional Societies:

CLASS	PROFESSIONAL SOCIETY	YEAR OF REGISTRATION
Member	Geological Society of South Africa	2007
Member	Professional Natural Scientist – South African Council for Natural Scientific Professions – (SACNASP - Management Enterprise Building; Mark Shuttleworth Street; Innovation Hub; Pretoria; Gauteng 0087)	2008

Detailed Tasks Assigned:

YEAR	CLIENT	COMMODITY	TYPE OF STUDY	PROJECT DESCRIPTION
2017	Resource Generation	Coal	Update CPR	Technical review and CPR update
2017	Chrometco	Chromite and PGE	Compliance review	Review for two CPRs submitted to the JSE
2017	Mbuyelo Coal	Coal	Valuation	Technical review
2016	Asanko Gold	Gold	Economic analysis	Update economic assessment for TRX
2016	SigmaRock	Aggregate	CPR	Technical report for AIM listing
2016	Centaur	Coal	Valuation	Valuation of coal assets for transaction
2016	Xtract Resources	Gold	CPR for transaction on AIM	Techno-economic report for AIM
2016	Gold One	Gold	CPR for listing	Documentation for listing on the Hong Kong exchange
2015	Asanko	Gold	Techno-economic evaluation	Technical report and valuation
2015	Kimberley Diamonds	Diamonds	Techno-economic review and valuation	Analysis of technical work with a view to providing assurance on the project valuation
2015	Manhattan Corporation	Gold	Design of exploration programme and CPR for funding	Analysis of technical data and advise on how to upgrade the Mineral Resource
2015	Samancor	Ferro-chrome	Update CPR for public domain	Full techno-economic reporting for all of the Eastern and Western BC chromite operations and smelters
2015	Gold One	Gold	CPR for Hong Kong listing	Full techno-economic report for a gold mine, 14 exploration projects and interests in six gold operations
2015	Xtract Resources	Gold	CPR for funding	Full techno-economic report for a gold mine
2015	ENRC	Copper	Due Diligence	Technical and economic review and gap analysis for a retreatment plant
2015	CoAl of Africa	Coal	CPR for AIM	Technical report and valuation
2015	Molopo Farms	Oil and Gas	Technical report and valuation	Technical report and valuation
2015	Frontier Rare Earths Ltd	REE	Technical Report and valuation	NI43-101 for TSX
2015	Imerys	Andalusite	Audit support	Audit support
2014	Kombat Copper Limited	Copper	PEA	PEA and economic analysis for shareholders
2014	Toyota Japan	Phosphate	Techno-economic Due Diligence	Selection of suitable projects for acquisition and techno-economic due diligence
2014	Frontier Rare Earths Ltd	REE	PFS	NI43-101 PFS for public domain and TSX
2014	Premier African Minerals	Tungsten	Valuation	PEA valuation for shareholders
2013-2104	Great Western Mineral Group	REE	PFS	Project management and NI43-101
2013	Premier Minerals	Potash	Technical Review	Technical Due Diligence and NI 43-11
2013	Giyani Gold	Gold	Technical due Diligence and NI43-101	Technical Due Diligence and NI 43-11 for a potential transaction on an operating gold mine
2013	Deloitte Vancouver	Phosphate	Technical review	Technical reviews of five African phosphate projects

YEAR	CLIENT	COMMODITY	TYPE OF STUDY	PROJECT DESCRIPTION
2013	Sephaku Fluoride	Fluoride	CPR and valuation	New Financial Model and Exec Summary Update on the Nokeng Fluorspar Project
2013	Wesizwe Platinum Limited	Platinum	Due Diligence	Due Diligence and economic analysis
2013	Tanzanian Royalty Exploration Corporation	Gold	PEA	Full PEA on the Itetemia Project and NI43-101
2013	Tanzanian Royalty Exploration Corporation	Gold	Mineral Resource Estimation	Mineral Resource Estimation
2013	Asanko Gold	Gold	PFS	Full PFS and NI43-101
2012	Sephaku Fluoride	Fluoride	Update CPR	New Financial Model and Exec Summary Update on the Nokeng Fluorspar Project
2012	Wesizwe Platinum Limited	Platinum	Due Diligence of the Maseve Project for investment decision	Due Diligence, techno-economic review of geology, Mineral Resources, mine plan, process design, valuation
2012	Wesizwe Platinum Limited	Platinum	Strategic Review of the Platinum Industry	Review of the platinum industry in global and local context. Advice for Wesizwe in terms of entering the smelting and refining industry and acquisitions going forward
2012	Pan African Resources	Gold	CPR and valuation for JSE	SAMREC CPR for transaction on the JSE
2012	G&B Resources	Au, Ni, U, Zn, Li, REE	CPR for AIM Listing	SAMREC CPR for AIM
2012	Boynton	Platinum	PFS in the form of a CPR	NI43-101 report on the PFS of the Magazynskraal Project
2012	Tanzanian Royalty	Gold	PFS	PFS on the Buckreef Project in Tanzania
2012	Ferrum/West African Minerals	Iron Ore	CPR for Aim Listing	NI43-101 on the CAR Topa Iron Ore project
2012	Frontier Rare Earths Limited	REE	NI43-101 for TSX	NI43-101 on the Zandkopsdrift REE project
2011	Platmin Pty Limited	Platinum	CPR and Valuation for TSX	NI and SAMREC Compliant CPR on Mphahlei
2011	Platmin Pty Limited	Platinum	CPR and Valuation for TSX	NI and SAMREC Compliant CPR on Grootboom
2011	Platmin Pty Limited	Platinum	CPR and Valuation for TXS	NI and SAMREC Compliant CPR for Loskop for JSE and TSX Listing
2011	Platmin Pty Limited	Platinum	CPR and Valuation for TSX	NI and SAMREC Compliant CPR on numerous platinum projects for JSE and TSX Listing
2011	Tanzanian Royalty	Gold	PFS	PFS on the Buckreef Project in Tanzania
2011	Platmin Pty Limited	Platinum	CPR and Valuation	NI and SAMREC Compliant CPR on PPM
2011	Pan African Resources Limited	Gold	Fatal Flaw Review	Fatal Flaw Review of the Bramber Gold Dump in Barberton
2011	Sephaku Holdings	Fluorspar	CPR and Valuation	SAMREC compliant CPR on Dinokeng Fluorspar project for JSE Listing
2010	Pan African Resources Limited	Platinum	DFS on re-treatment plant	DFS on re-treatment plant
2010	Obtala Resources	Diamonds	NI43-101 for AIM	NI43-101 on Sierra Leone diamond deposit
2010	Duration Gold Limited	Gold	Due Diligence and valuation	Due Diligence for a transaction
2010	Taung Gold Limited	Gold	NI43-101	NI43-101 on Evander and Jeanette
2010	G and B Resources Limited	Potash	NI43-101	NI43-101 on the Danakil Potash Deposit
2010	Tanzanian Royalty	Gold	NI43-101 for TSX	NI43-101 on Buckreef for TSC
2010	Axmin Inc	Gold	Exploration Programme	Passendro Gold Mine CAR
2010	Maghreb Mineral Limited	Fluorspar, lead and zinc	CPR for AIM listing	CPR on Tunsian deposits for AIM listing
2010	RioZim	Gold	Due Diligence and valuation	Due Diligence for a transaction
2010	Taung Gold	Gold	NI 43-101 and Valuation	NI43-101 for Hong Kong listing
2009	G and B Metals and Energy	Uranium, nickel, zinc	CPR	SAMREC compliant CPR on Togo, Zambia and Mozambique assets for AIM listing
2009	Taung Gold	Gold	CPR and Valuation	Taung Greenfield projects CPR for JSE Listing
2009	Taung Gold	Gold	CPR and Valuation	Evander Gold Mine for JSE Listing
2009	Taung Gold	Gold	CPR and Valuation	Jeanette Gold Mine CPR for JSE listing
2009	G and B Metals and Energy	Uranium, nickel, zinc	Technical and Prospectivity Review	Independent review of assets in Togo, Zambia , Mozambique and South Africa
2009	G and B Resources	Potash, Phosphate, Uranium, nickel, zinc, coal	Technical and Prospectivity Review	Independent review of assets in Togo, Zambia , Mozambique and South Africa
2009	Sephaku Holdings	Fluorspar	CPR and Valuation	SAMREC compliant CPR on Dinokeng Fluorspar project for JSE Listing

YEAR	CLIENT	COMMODITY	TYPE OF STUDY	PROJECT DESCRIPTION
2009	Platmin Pty Limited	Platinum	CPR and Valuation	NI and SAMREC Compliant CPR on Mphahlele for JSE and TSX Listing
2009	Platmin Pty Limited	Platinum	CPR and Valuation	NI and SAMREC Compliant CPR on PPM for JSE and TSX Listing
2009	Platmin Pty Limited	Platinum	CPR and Valuation	NI and SAMREC Compliant CPR on Grootboom for JSE and TSX Listing
2009	Platmin Pty Limited	Platinum	CPR and Valuation	NI and SAMREC Compliant CPR for Loskop for JSE and TSX Listing
2009	Platmin Pty Limited	Platinum	CPR and Valuation	NI and SAMREC Compliant CPR on numerous platinum projects for JSE and TSX Listing
2009	African Precious Minerals	Gold	Technical Statement	Summary Technical Statement for Monarch Gold Mine Mozambique
2008	Abalengani	Platinum	CPR and Valuation	CPR for listing of tailings re-treatment project
2008	Taung Gold Limited	Gold	CPR and Valuation	Consolidated CPR of six mineral assets for JSE Listing
2008	African Minerals	Diamonds	Prospectivity review and valuation	Prospectivity Review and valuation of exploration licences
2008	African Minerals	Diamonds	CPR and Valuation	CPR and valuation of operating alluvial mine
2008	Quinsele Resources	Lead Zinc	Due Diligence	Due Diligence of a mine in Zambia
2008	African Mineral Trading and Exploration (Pty) Limited	Tanalite	Competent Persons Report	Preparation of CPR on mineral resources and refinery for proposed 2008 listing
2008	African Mineral Trading and Exploration (Pty) Limited	Tantalite	Sample Trail Audit	Current- design of sample trail audit and exploration protocols for Mozambique tantalite operation
2008	Kimberley Consolidated Mining Limited	Diamonds	Sample Trail Audit	Current- design of an internationally compliant sample trail audit and exploration programme protocol for KCM's mining operations and resource defining exploration
2008	Kimberley Consolidated Mining Limited	Diamonds	Presentation for JSE and Investor Panels	Preparation and presentation of technical and economic parameters of the KCM operation
2008	Ukuvula	Diamonds	Prospectivity Review	Prospectivity of alluvial and primary kimberlite deposits in the Christiana and Warrenton area of South Africa
2008	Kimberley Consolidated Mining limited	Diamonds	Prospectivity Review	Alluvial diamond deposits on the Harts River South Africa
2008	CVS Management	Copper and gold	Prospectivity Review	Copper and gold prospects in the Middle Atlas, Morocco
2008	Signature Brands Limited	Gold, uranium and base metals	Prospectivity Review	Prospectivity Report on six gold, uranium and base metals prospects in greenstone belts, Uganda
2007	The Rohatyn Group	Platinum	Due Diligence	High level Due Diligence of the Wesizwe Platinum Project in the Bushveld Igneous Complex, South Africa. Examination of legal, technical, processing and economic studies to give comfort for proposed Rohatyn investment
2007	Lindhurst Mining	Iron ore	Prospectivity Review	Prospectivity review of iron ore deposits in near Honde Mozambique
2007	Lindhurst Mining	Iron ore	Prospectivity Review	Prospectivity review of iron ore prospects in Brazil
2007	Matterhorn Investments	Uranium and base metals	Prospectivity Review	Prospectivity Report on four uranium and base metals prospects in Zambia
2007	Caledonia Mining Corporation	Gold	Information Memorandum	Information Memorandum for the Proposed Disposal by Caledonia Mining Corporation of the Barbrook Gold Mine
2007	Caledonia Mining Corporation	Gold	Information Memorandum	Information Memorandum for the Proposed Disposal by Caledonia Mining Corporation of the Eersteling Gold Mine
2007	Uramin	Gold and Base Metals	Prospectivity Review	Prospectivity Report on the Adjaria Gold and Base Metals Prospect, Adjaria, Georgia
2007	Rockwell Diamonds Inc	Alluvial Diamonds	NI43-101	Compilation and Conversion to NI41-101 of the Technical Advisors Report Trans Hex Group Limited's Middle Orange River Operations South Africa.
2007	Energem	Diamonds	Competent Persons Report for AIM	Compilation of the Competent Persons Report on the Diamond and Oil and Gas Assets of Energem in CAR and Chad for listing on AIM
2007	Kimberley Consolidated Mining	Diamonds	Sampling protocols and Exploration Programme	Sampling Protocols and Proposed Drilling Programme for The Shone Kimberlite in Cater Block for Kimberley Consolidated Mining
2007	Kimberley Consolidated Mining	Diamonds	Competent Persons Report (SAMREC) for JSE	Compilation of Independent Techno-Economic Valuation Report in the Form of a Competent Person's Report Prepared for the Mineral Assets of Kimberley Consolidated Mining Limited for listing on the JSE
1980 1984	De Beers	Diamonds	Research Report	Four year comprehensive research project on De Beers kimberlite pipes in Botswana including

YEAR	CLIENT	COMMODITY	TYPE OF STUDY	PROJECT DESCRIPTION
				petrographic, mineralogical, mineral chemistry and whole rock geochemistry.
1982	De Beers	Diamonds	Research study	Research project as part of a post graduate study on carbonatites in Namibia and their genetic relationship to kimberlites

Key Qualifications:

Fiona Harper studied at the University of the Witwatersrand and her major subjects were geology and geography. As part of her studies she undertook geochemical studies of chromitites in the Bushveld Igneous Complex. She worked for Anglo American Research Laboratories where she was responsible for all the geochemical and mineral chemistry analysis for the exploration teams and mine operations of De Beers in Botswana, as well as the forward looking research on the genesis and economic potential of all the kimberlites in Botswana. She undertook a three year research project on the geochemistry of carbonatites in Namibia. She joined Venmyn in 2007 as an Advisor and has specialised in creating compliant CPRs for listings on the JSE and international stock exchanges. Fiona is a Member of the SAMREC Working Group and chaired the working group on the international CRIRSCO Definitions. Fiona was appointed to the Readers Panel of the JSE Limited in 2013.

Education:

DEGREE/DIPLOMA	FIELD	INSTITUTION	YEAR
B.Sc	Geology and Geography	University of the Witwatersrand	1977
B.Sc (Hons)	Geology	University of the Witwatersrand	1977

Languages:

English: Excellent (written and verbal)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

This day 31st of December 2017
Fiona Harper

Name of Staff: Vaughn Duke
Position: Executive Management, Mining Engineering, Technical Evaluation, Financial Evaluation, Due Diligence and Project Management
Name of Firm: Sound Mining (Pty) Ltd
Address: 2 5th Ave, Edenburg, Johannesburg, 2128
Profession: Mining engineer
Nationality: South African

Membership in Professional Societies:

Class	Professional Society	Year of Registration
Member (PMP)	Project Management Institute, Inc.	2005
Member	Institute of Directors of South Africa	2013
Associate	Mine Manager's Association of South Africa	1995
Member (Pr. Eng.)	Engineering Council of South Africa	1994
Fellow	South African Institution of Mining and Metallurgy	1994

Education:

Degree/ Diploma	Field	Institution	Year
Certificate	Project Management Professional	PMI	2006
Certificate	Multiple Project Management	(GIBS)/University of Pretoria	2004
M.B.A.	Business Management (Distinction)	(GIBS)/ University of Pretoria	2003
Certificate	Corporate Finance	(GIBS)/University of Pretoria	2003
Certificate	General Management	(GIBS)/University of Pretoria	2001
Certificate	Finance	Edinburgh Business School	1996
Certificate	Mine Manager's Certificate	Dept of Minerals & Energy	1990
B.Sc. Hons	Mining Engineering	University of the Witwatersrand	1986

Previous Employment Record:

Position	Company	Job Description
Managing Director 2014 - Current	Project Managers and Design Engineers Limited	Managing a Project Management business focused on the development of small to medium sized mines
Director and Consulting Mining Engineer 2004 – 2015	Sound Mining Solution Pty Ltd	Direct and manage the activities of Sound Mining which have included: • Feasibility Studies. • Mineral Reserve Estimates. • Due Diligence Reports. • Competent Persons Reports. • Mineral Asset Valuations. • Mining engineering services operating mines.
General Manager: Technical Services 1999 - 2004	Avgold Ltd	The position reported to the Managing Director: • To package the assets of the Northern Free State Division for best value. • To oversee all safety health and environmental reporting and control systems of Avgold and any other issues of a corporate nature. • To provide a technical service on Avgold's executive and to check the integrity of planning. • Prefeasibility study for the NFS Expansion Project. • Bankable Feasibility study on Expanding Target.
Group Mining Engineer 1997 - 1999	Anglovaal Pty Ltd	The position covered the following responsibilities: • Corporate safety, health and environmental issues. • Group mining engineering services. • Project Management services to Target before the project's relocation to site. • Subsequent auditing and assisting in the management of the Target project. • Feasibility studies and due diligence exercises. • The preparation and submission of EMPR's.
Manager: Technical Services 1996 - 1997	Hartebeestfontein Gold and Uranium Mine	The position was responsible for the following departments on the mine: • Mine planning. • Mine surveying. • Geology and grade control. • Industrial engineering. • Safety and health and mine hospital. • Rock mechanics. • Waste / Tailings Management. • Environmental control/radiation.
Sect. Manager 1993 - 1996	Loraine Gold Mine	• Underground gold mining operations. • Target exploration project site management.
Mine Overseer	Hartebeestfontein Mine	Underground production.

Position	Company	Job Description
1992 - 1993		
Graduate 1991 - 1992	Anglovaal Ltd	Technical mining engineering.
Project.Manager 1988 – 1991	Cementation Zimbabwe	Civil tunnelling contract – Darwendale.

Selected Tasks/Projects Assigned:

Year	Client	Commodity	Project Description
Post 2004	Project Managers and Design Engineers Limited and Sound Mining Solution Pty Ltd	All commodities	Managing and directing consulting business and overseeing or participating in various Feasibility Studies, Competent Persons Reports, Due Diligence Reports, Reviews and Risk Assessments. Recent Clients/Projects: • East Plats Tailings (ITR) • Endeavour Mining (DD) • Alufer Mining Limited (DFS) • Marampa Iron Ore (Design Optimisation) • Delta Gold (PFS) • Zankopsdrift Rare Earths (DFS) • Groothoek Coal (open pits) • Kokoya Gold (open pit) • Steenkampskraal Rare Earths (DFS) • Mowana Copper (Mine Design) • ETA Star (Mine Works Program) • Ansan Wikfs (ITR) • Ruashi Copper (Design Optimisation) • Timis Mining Corporation Ltd Iron Ore (ITR) • Kokoya Gold (DFS) • Mowana Copper (Mine Design) • Sibanye Gold (Mine Design) • Canyon Resources (ITR) • Phokathaba Platinum Australia (PFS) • Anglogold Ashanti (Mine Design / ITR) • Johannesburg Stock Exchange (JSE)
2004	Harmony Gold Mine – RSA	Gold	Feasibility Study: Target Mine Expansion Project Manager
2003	Avgold Ltd – RSA	Gold	Pre-Feasibility Study: Target Mine Expansion - Project Manager
2002	Avmin Ltd – RSA	Platinum	Audit of Two Rivers Access and Mining Plan - Consulting Mining Engineer
2001	Avgold Ltd – RSA	Gold	Target Exploration Drilling - Project Manager
1998	Eastern Transvaal Cons Mine – RSA	Gold	Due Diligence Report - Group Mining Engineer
1998	Eastern Transvaal Cons Mine – RSA	Gold	Due Diligence Report - Group Mining Engineer
1998	Eastern Transvaal Cons Mine – RSA	Gold	Due Diligence Report - Group Mining Engineer
1991	Hartebeestfontein Gold Mine – RSA	Gold	Underground Access Study - Mine Planning Engineer
1988	Cementation Ltd – Zimbabwe	N/A	Civil Tunnelling for military installation - Project Manager
1987	Dalny Gold Mine – Zimbabwe	Gold	Shaft Sinking Contract (900m Deep) - Site Manager

Languages:

Afrikaans: Excellent (written and verbal)
English: Excellent (written and verbal)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

Date: 31 December 2017
Vaughn Duke

Name of Staff: Dr Jacobus Johannes Petrus Vivier
Position: Director and Senior Consulting Hydrogeologist
Name of Firm: Exigo Sustainability (Pty) Ltd - EOH
Address: Eulophia Corner Building 1, 38 General van Reyneveld Street, Persequor Park, Pretoria
Profession: Hydrogeologist
Nationality: South African

Membership in Professional Societies:

CLASS	PROFESSIONAL SOCIETY	YEAR OF REGISTRATION
Member (400177/05)	The South Africa Council for Natural Scientific Professions	2005
Member	Groundwater Division of the Geological Society of South Africa	2013

Detailed Tasks Assigned whilst at Exigo Sustainability:

YEAR	CLIENT	COMMODITY	PROJECT DESCRIPTION
2017	Mototolo Joint Venture	Platinum	Evaluation of soil material to detect any seepage that may arise from the Tailings Storage Facility (TSF) for Anglo American
	Battery Minerals	Graphite	Installation of loggers
	Coastal Environmental Services (Pty) Ltd	Graphite	Hydrogeological & Geochemical Specialist Investigation for CES Triton Ancuabe
	Coastal Environmental Services (Pty) Ltd	Titanium Zircon	Waste Classification and Risk Assessment Report to support the Integrated Water Use License Application (IWULA) for the Zirco Mine
	Kansanshi Mining PLC	Copper	Water tracing study to determine source(s) of water reporting to decline / open cast pit and possible tailings dam seepage pathways and its receptor(s) for FQM Kansanshi Mine
	Headwaters	Coal	Hydrogeological Specialist Investigation for Headwater Middelbult. Geohydrological Specialist Review of the groundwater study performed for the Integrated Waste Water Management Plan (IWWMA) of the proposed Middelbult Mine
	Khoemacau Copper Mining	Copper	Review of all existing water resource/demand information as well a water reconciliation study for the mine. The water resources, water demand, hydrogeological review and water reconciliation study includes development of a water demand curve as well as review and updating of the static mine water balance
	E-TEK Consulting (Pty) Ltd	Coal	Environmental Legal Review and Gap Analyses write-up as well as an Environmental Risk Assessment for Malachite Coal
	The MSA Group (Pty) Ltd	Gold	Kalongwe DRC Pumptest Supervision and Analyses
	Platmin Limited	Platinum	Hydrogeological and hydrochemical specialist investigation for PPM Kruidfontein. Update regional hydrocensus and conduct geographical survey
	Sakal and Tebo (Pty) Ltd	Gold	Hydrology study with flood line determination and including a storm water assessment with reporting. The investigation included a review of existing information, statistical and spatio-temporal analysis of

YEAR	CLIENT	COMMODITY	PROJECT DESCRIPTION
			rainfall data and distribution, processing of digital terrain model as well as 2D hydrological modelling for flood line determination. Geochemical specialist investigation
	Sakal and Tebo (Pty) Ltd	Gold	Evaluation of different areas for infrastructure by assessing the heritage, groundwater, surface water and ecology for Sakal Madonsi. Conduct a hydrogeological baseline assessment to evaluate the impacts on the surrounding environment and propose mitigation measures to reduce the impact on potential receiving environments
	Design Point Consulting Engineers (Pty) Ltd	Iron	Geochemical Assessment and waste classification of concrete waste at the Sishen mining operation and possible impact on the local groundwater and surface water environments
	Shangoni Management Services (Pty) Ltd	Iron	Integrate the groundwater specialist study findings from the Sishen Far South Pit study with the Ultimate Pit scenario
	South32 SA Coal Holdings (Pty) Ltd	Coal	Hydrogeological specialist investigation for the placement of the proposed stockpiles at the Vandyksdrift North (VDDN) facility that forms part of the Douglas Colliery that is due to be mined. Verify the source of water ingress into the mine workings at Wolwekrans Colliery and propose water management mitigation measures to be implemented for successful continuation of mining
2016	Aquarius Platinum South Africa (Pty) Ltd	Platinum	Hydrogeological Specialist Investigation
	Alta van Dyk Environmental Consultants CC	Diamond	Hydrogeological impact assessment to serve as supporting study for the Environmental Authorisation of a proposed construction camp for the De Beers Venetia mining operations
	Debswana Diamond Company (Pty) Ltd	Diamond	Packer (Lugeon) testing on one core drill hole at the Jwaneng diamond mine in the Southern province of Botswana
	Coastal Environmental Services (Pty) Ltd	Graphite	Hydrogeological and geochemical specialist investigation. Water supply exploration phase from groundwater as part of the feasibility studies for the proposed Montepeuz Project Graphite Mines in the province of Cabo Delgado, Mozambique. And aquifer testing of the water supply phase
	SA Fluorite (Pty) Ltd	Fluorspar	Hydrogeological specialist investigation to update the site baseline conditions as well as evaluating potential environmental impacts associated with the new proposed Doornhoek Fluorspar Mine
	Environmental Impact Management Services (Pty) Ltd	Gas	Hydrogeological baseline assessment for natural gas exploration

YEAR	CLIENT	COMMODITY	PROJECT DESCRIPTION
	SLR Environmental Consulting (Namibia) (Pty) Ltd	Gold	Update of the detailed numerical groundwater flow model for the existing Otjikoto Gold Mine located in Central Namibia.
2013	MSA Nimini Gold	Gold	Packer Testing to determine mine inflows and falling head tests as part of the geohydrological assessment for the MSA Nimini Gold.
2012	Quion Consulting Africa (Pty) Ltd	Gold	Geohydrological PFS specialist investigation for Delta Gold Zimbabwe
	Auryx Gold	Gold	Environmental Geohydrological Specialist Study with Groundwater Model Update

Key Qualifications:

Dr Vivier has 20 years' experience in geohydrological assessments, numerical modelling (finite element and finite difference techniques) of groundwater flow and transport processes and its application to performance assessments of radioactive waste disposal facilities, water supply and the mining industry. He is experienced in different levels of modelling, which includes development of analytical water flow and mass balance and transport modelling of porous and fractured media, model verification and validation as well as the treatment of uncertainties through sensitivity analysis and stochastic (Monte Carlo) modelling. He is presently active in environmental decision-making with integration of water specialist aspects and environmental management that includes mine water management and development of regional water resources management strategies.

Education:

DEGREE/DIPLOMA	FIELD	INSTITUTION	YEAR
B.Sc	Geology, Geochemistry and Geography	University of the Free State	1992
B.Sc (Hons)	Geology	University of the Free State	1993
MSc	Exploration Geology	University of the Free State	1995
P.hD.	Environmental Management	University of North-West	2011

Employment Record:

POSITION	COMPANY	JOB DESCRIPTION	DURATION
Director and Senior Consulting Hydrogeologist	Exigo Sustainability (Pty) Ltd	Environmental geohydrological impact and risk assessments	1999 - present
		Integration of groundwater flow models with environmental assessments and financial models for the purposes of project feasibility studies and sustainability assessments	
		Environmental decision-making and sustainability assessments	
		Mine water and regional water resources management. Development of systems models for management and decision-making purposes	
		Evaluation of groundwater specialist studies in the mining industry, which includes water supply, mine dewatering design and groundwater pollution. Experience in pre-feasibility studies (PFS) and Definitive Feasibility Studies	
		Characterization of aquifers with a focus on management of regional groundwater systems	
		Development of conceptual and analytical groundwater models	
		Groundwater flow and contaminant transport modelling	
		Groundwater flow, and radionuclide transport (pollution) modelling at nuclear waste facilities. Statistical modelling for water supply assurance levels and risk assessments	
		Groundwater management for water supply and environmental management programmes (EMP's)	
		Quantification of groundwater flow volumes and reserve determinations	
Manager	Iscor (now Kumba) Mining Company	Manager Geohydrology Division	1996 – September 1997
Specialist Scientist	Atomic Energy Corporation of S.A Ltd	Specialist Scientist at the Nuclear Waste Safety Division	1997

Languages:

English: Excellent (written and verbal)
Afrikaans: Excellent (written and verbal)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

This 31st day of December 2017
Full name of staff member: Dr Jacobus Johannes Petrus Vivier

Name of Staff: Hermanus Daniel Gildenhuys
Position: Environmental Assessment Practitioner and Environmental Manager
Name of Firm: Exigo Sustainability (Pty) Ltd - EOH
Address: Eulophia Corner Building 1, 38 General van Reyneveld Street, Persequor Park, Pretoria
Profession: Environmental Assessment Practitioner
Nationality: South African

Membership in Professional Societies:

CLASS	PROFESSIONAL SOCIETY	YEAR OF REGISTRATION
Member (400179/13)	The South Africa Council for Natural Scientific Professions	2013
Member (4094)	Groundwater Division of the Geological Society of South Africa	2015

Detailed Tasks Assigned whilst at Exigo Sustainability:

YEAR	CLIENT	COMMODITY	PROJECT DESCRIPTION
2017	Glencore Alloys	Chrome	Environmental Impact Assessment for the proposed underground mine extension on the farms Richmond and St George and additional infrastructure on the farm Thorncliffe, Glencore Eastern Mines, Limpopo Province
	Glencore Alloys	Chrome	Rustenburg and Wonderkop Smelter Audits
	Glencore Eastern Mines	Chrome	Closure update for Helena, Magareng and Thorncliffe Mines
	Glencore Eastern Mines	Chrome	Water Use Licence Amendments for Helena, Thorncliffe Magareng Mines
	Glencore Eastern Mines	Chrome	Integrated Water and Waste Management Plan for Magareng Mine
	Glencore Mototolo	Platinum	EMPR Audit for Glencore Mototolo Mine
	Glencore Mototolo	Platinum	Water Use Licence Amendment and Integrated Water and Waste Management Plan update for Glencore Mototolo Mine
2015	Frontier Separation (Pty) Ltd	Rare Earths	Environmental Authorization Processes (EIA, WULA and AEL) for the proposed construction of a rare earth element mineral separation plant on Portion 6 of the farm Langeberg No. 188, Saldanha Bay
	Anglo Coal	Coal	Environmental Legal Compliance Audit for Mafube Coal Mine, Middelburg, Mpumalanga
	Sound Mining Solution (Pty) Ltd	Copper	Baseline and conceptual study for Nababeep Copper Mine, Northern Cape
2014	Anglo Coal	Coal	Environmental Legal Compliance Audit for New Denmark Coal Mine, Standerton, Mpumalanga
	Anglo Coal	Coal	Environmental Legal Compliance Audit for New Vaal Mine, Vereeniging, Mpumalanga
	Anglo Coal	Coal	Environmental Legal Compliance Audit for Greenside Coal Mine, Emalahleni, Mpumalanga
	Anglo Coal	Coal	EMPR Performance Assessment for Greenside Coal Mine, Emalahleni, Mpumalanga
2013	Sekoko Resources	Coal	Preliminary Environmental Assessment: Tuli Block Coal Mine, Mapungubwe, Limpopo
	Kumba Iron Ore	Iron	Environmental Authorization Processes (EMPR, EIA, WULA) for the proposed Sishen Lylyveld Iron Ore Open Cast Mine (southern expansion of the mine) and Haul Road Expansions in Khathu, Northern Cape Province
	Anglo Coal	Coal	EMPR Performance Assessment for Zibulo Coal Mine, Ogies, Mpumalanga
2012	Sephaku	Alluminium Fluoride	Environmental Impact Assessment for the Aluminium Fluoride Production Facility in Ekandustria, Mpumalanga Province
	Bofule Platinum	Platinum	Environmental Impact Assessment for the Rooderand platinum mining activities on portion 2 of the farm Rooderand 46 JQ, North West Province
	Eskom	Coal	New Largo Mine Due Diligence, Kusile, Mpumalanga
2010	Xstrata Magareng	Platinum	Environmental Impact Assessment for the construction and operation of an underground mining development and extension of an opencast pit as well as associated infrastructure on the remaining extent of the farm Thorncliffe 374 KT, Limpopo Province

Key Qualifications:

Mr Gildenhuys has been involved with Environmental Assessments since 2006. He has experience in project management, Geographic Information Systems (GIS), Environmental Assessments and Environmental Legal Compliance Assessments. He also has experience in wetland delineation studies and has completed several courses in the fields of wetland ecology, classification, delineation, functioning and soils.

Education:

DEGREE/DIPLOMA	FIELD	INSTITUTION	YEAR
B.Sc.Agric	Animal Production Science	University of Stellenbosch	2001
B.Sc (Hons)	Wildlife Management	University of Pretoria	2002

Employment Record:

POSITION	COMPANY	JOB DESCRIPTION	DURATION
Environmental Manager and Environmental Assessment Practitioner	Exigo Sustainability (Pty) Ltd	Geographic Information Systems (GIS) - Database management, GIS Mapping, Map compilation, georeferencing of data. ArcGIS 10 (ESRI suite)	2006 - present
		Environmental Project Management – Management of all specialists within the field of Environmental Management, compilation of project plans and tenders for environmental work, day-to-day project management of resources (personnel, equipment etc.)	
		Environmental Assessments – Conducting and Implementing the Environmental Impact Assessment Process throughout all phases (Fatal Flaw, Concept, PFS and DFS). He also has experience in Environmental Management Programmes for mines, Environmental Reviews and Due Diligence Assessments, as well as Water Use Licence, Waste Management Licence and Atmospheric Emission Licence Applications	
		Environmental Legal Compliance and Environmental Management Plan Performance Assessments	
		Public Participation in environmental governance	
		Wetland delineation studies	
Research Assistant	University of Stellenbosch	Research Assistant in the Botany Department	2004
Assistant Farm Manager	Goedemanskraal Farm	Assistant Farm Manager	2003-2004
Trainee Game Ranger	Mala Mala Game Reserve	Trainee Game Ranger	2003

Languages:

English: Excellent (written and verbal)
Afrikaans: Excellent (written and verbal)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

This 31st day December 2017
Full name of staff member: Hermanus Daniel Gildenhuys

Name of Staff: Eugene Nel
Position: Managing Director
Name of Firm: ENC Minerals (Pty) Ltd
Address: 108 Waterfront Street, Schoemansville, Hartbeespoort
Profession: Metallurgist
Nationality: South African

Membership in Professional Societies:

CLASS	PROFESSIONAL SOCIETY	YEAR OF REGISTRATION
Professional Engineering Technologist (200570019)	The Engineering Council of South Africa	2005
Associate (700867)	South African Institute of Mining and Metallurgy	2004
Associate (1217)	Mine Metallurgical Managers Association	2005

Detailed Tasks Assigned whilst at ENC Minerals:

YEAR	CLIENT	COMMODITY	PROJECT DESCRIPTION
2017	Pan African Resources	Gold	/due Diligence study on Afrigold Kolya (Senegal) project
	Pan African Resources	Gold	Design review on Mali gold plant opportunity
	Triangle City Mining	Gold	Client representative for Madonsi Gold Pre-feasibility study design of 40ktpm gold tailings reprocessing project.
	Venmyn Deloitte	PGM/Chrome	Metal accounting review of Tharisa Minerals Kroondal operations
	Venmyn Deloitte	Gold	Review and optimisation study for Avocet Inata Gold mine project (Burkina Faso)
	Venmyn Deloitte	Gold	Gold in circuit review and professional commentary for Petropavlosk Gold Mine (Russia)
	Venmyn Deloitte	Copper	Review and optimisation study on Vallex Teghout operations (Armenia)
	Orion Gold	Copper/Zinc	Managing metallurgical test work campaign for Prieska Copper Mine project
	Xtract Resources	Gold	Engineering options study for Manica gold project (Mozambique)
	RHGV Royal Haskoning	Gold	Independent review of Primrose Gold Tailings reprocessing project
	Venmyn Deloitte	Copper	Independent review of Business Interruption Claim.
2016	Orion Gold	Copper	Concept design and costing for 100ktpm Copper processing circuit
	African Chrome Fields	Chromite	Circuit evaluation and optimisation study (Zimbabwe)
	Xtract Resources	Gold	Circuit review and optimisation study for Chepica gold mine (Chile)
	Pan African Resources	Gold	Pre-feasibility study and costing for Elikhulu Tailings Retreatment project
	QKR Namibia	Gold	Review and options study for fine carbon removal at Navachab Gold mine
	Jubilee	PGM	Due Diligence on PGM recovery from chromite tailings project
	METS Projects	Various	Processing design assistance on various EPCM projects and tenders.
	Pan African Resources	PGM	Process consulting services to the Phoenix CTRP operations

Key Qualifications:

Eugene Nel has been actively involved in the mining industry since 1997, having graduated from Tshwane University of Technology in 1997 with a B. Tech (extractive metallurgy) degree. He has been involved in mining operations and management as plant metallurgist and later operations manager on a range of commodities including Coal, Gold, Chrome and PGM's. He started consulting during 2005 and has been extensively involved in process design, project management, due diligence studies, professional reviews and optimisation campaigns on commodities including Gold, Coal, PGM's and Base Metals. He has written and contributed to numerous conferences and plenaries. His area of expertise are total project development (including Reserve estimations), metallurgical test work management, process optimisation and process design. In addition, Eugene has knowledge and experience in project valuation and Due Diligence studies.

Education:

DEGREE/DIPLOMA	FIELD	INSTITUTION	YEAR
N. Dip (extr met)	Extractive Metallurgy	Tshwane University of Technology	1996
B. Tech	Extractive Metallurgy	Tshwane University of Technology	1997
MBA	Business Management	University of North West	200

Employment Record:

POSITION	COMPANY	JOB DESCRIPTION	DURATION
Managing Director	ENC Minerals (Pty) Ltd	Reserve estimations and sign off Due Diligence studies Project Management, Process Design and optimisation assistance Managing metallurgical test work campaigns Client representative on project Technical Expert witness for clients	Oct 2008 - present
Technical Director	Metallicon Process Consulting (Pty) Ltd	Reserve estimations and sign off Due Diligence studies Project Management, Process Design and optimisation assistance Managing metallurgical test work campaigns Client representative on project Technical Expert witness for clients	Jan 2005 - Oct 2008
Senior Metallurgical Engineer and Operations Manager	Impala Platinum (Pty) Ltd	Managing process optimisation test work campaigns Technical metallurgical assistance to impala operations Operations manager for MF2, UG2 and Crocodile River Mines processing plants Project management for process optimisation projects	March 2001 – Jan 2005
Plant manager	Samancor Western Chrome Mines	Production management of 100ktpm chromite concentrator Managing engineering function and maintenance for chromite processing plant Optimisation studies and test work campaigns Client liaison Budgeting and financial planning for operations	June 1998 – March 2001
Junior Metallurgist	BHP Billiton Met Services	Metallurgical test work campaigns and optimisation studies on range of operations including Coal, Gold and chromite Technical assistance to operational personnel Acting production management functions.	Oct 1996 – June 1998

Languages:

Afrikaans: Excellent (written and verbal)
English: Excellent (written and verbal)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

Date: 31 December 2017
Eugene Nel

Name of Staff: Diana van Buren
Position: Director
Name of Firm: Sound Mining Solution (Pty) Ltd
Address: Sound Mining House, 2A Fifth Avenue, Rivonia, 2128
Profession: Geologist
Nationality: South African

Membership in Professional Societies:

Class	Professional Society	Year of Registration
Member (400107/14)	The South African Council for Natural Scientific Professions	2014
Member (966938)	Geological Society of South Africa	2009
Member (23220)	Fossil Fuel Foundation	2016

Detailed Tasks Assigned whilst at Sound Mining:

Year	Client	Commodity	Project Description
2008	Keaton Energy Holdings	Coal	Geological modelling and resource estimation.
2009	Letsogoane Coal Services	Coal	Geological modelling, resource estimation – African Exploration T-Project.
2009, 2010, 2011	Sekoko Resources	Coal	Geological modelling and resource estimation with updates.
2009	Venmyn – Worldwide Coal Carolina (Pty) Ltd	Coal	Geological modelling and resource estimation.
2009	RSV	Coal	Geological modelling and model verification – Resolute Mining.
2009	Sephaku Holdings Ltd	Fluorspar	Geological modelling, secondary mineralisation modelling.
2009-2010	Ncondezi Coal Holdings Limited	Coal	Geological modelling and resource estimation.
2010	South African Tantalum Mining (Pty) Ltd	Copper	Geological Modelling.
2010	TEAL	Copper	Geological modelling.
2010	PC Meyer Consulting - Beacon Hill Resources PLC	Coal	Geological modelling and resource estimation.
2010, 2011	PC Meyer Consulting - ETA-Star	Coal	Geological modelling and resource estimation, with update.
2010, 2011	Scinta Energy	Coal	Geological modelling and resource estimation.
2011, 2013	Shiva Uranium	Gold	Database compilation, geological modelling.
2011	Keldoron	Coal	Geological modelling and resource estimation with CPR.
2011	Makana Exploration and Mining	Coal	Geological modelling and resource estimation, various projects.
2011	NWR-Karbodia	Coal	Geological modelling for the Debiensko Project.
2011, 2012	Vanchem Vanadium Products	Vanadium	Exploration, geological modelling and resource estimation. Project Management.
2011	PC Meyer Consulting - Beacon Investment Group	Coal	Geological modelling and resource estimation.
2012	Eskom	Coal	Geological model and resource review.
2012 - 2013	Umbono Capital	Coal	Geological modelling for mine design purposes.
2013, 2015, 2016	Edenville Energy Ltd	Coal	Project management, geological modelling and resource estimation, scoping study. Update of geological model. Mining portion of DFS.

Year	Client	Commodity	Project Description
2013	Amlib Holdings Plc	Gold	Project management. Block model interrogation. Feasibility study compilation.
2013	Leseka Resource Management	Manganese	Geological review, geological modelling and mineral resource estimation.
2014	Dedicoal (Pty) Ltd	Coal	Geological modelling and resource estimation.
2013 - 2015	Village Main Reef Limited	Copper	Project management for exploration, water testing, geophysics. Engagement with landowners, affected parties and DMR for amendments to Prospecting Right. Preliminary geological modelling. Preliminary Economic Assessment.
2014	JHB Marketing	Manganese	Site visit with assessment of preliminary data.
2015 - 2017	Makole Property Development	Coal	Project Management, Scoping Study for mining options for the project. Geological review.
2015	Tenova	Coal	Due Dilligence of the Optimum Colliery.
2016	Shiva Uranium	Uranium/Gold	Geological model review and exploration programme compilation.
2017	Sentula Mining Limited	Coal	Competent Person review and sign-off for Nkomati Anthracite.
2017	Panda Hill Tanzania Limited	Niobium	Geological Review.

Education:

Degree/Diploma	Field	Institution	Year
Degree	BSc Honours (Geology)	University of Witwatersrand	2005
Degree	BSc (Geology)	University of Witwatersrand	2003

Employment Record:

Position	Company	Job Description
Geologist, Director 2012 - current	Sound Mining Solution (Pty) Ltd	3D Geological modelling and resource estimation. Project Management.
Geologist - 2010 Director - 2011	Sound Mining Solution Central Africa (Pty) Limited	3D Geological modelling and resource estimation.
Geologist 2008 - 2009	Nahana Technical Services (Pty) Limited	3D Geological modelling.
Mine Seismology Consultant 2005 - 2007	ISS International (Western Levels)	1. Seismic monitoring and analysis for Harmony Gold, AngloGold Ashanti and Anglo Platinum Mines. 2. Seismic hazard estimations for the mines. 3. Quality control of reporting. 4. Organisation and presenting of monthly meeting with the rock engineers on the respective mines. 5. Incident investigations and reporting.
Mine Seismology Consultant 2004 - 2005	GeoHydroSeis (Orkney, Carletonville, Welkom)	1. Seismic monitoring on Harmony Gold Mines. 2. Seismic hazard estimations on the monitored mines.
Field Work 2002 - 2003	Schonland Research Institute for Nuclear Sciences	1. Planning of magnetic survey within the Vredefort Impact Structure. 2. Organisation of instrumentation needed. 3. Collection of field data. 4. Processing and mapping of the data collected. 5. Supervision of a field assistant.
Field Assistant 2002 - 2003	Schonland Research Inst for Nuclear Sciences and Institut de Physique du Globe de Paris	1. Assistant to Dr Roger Hart and Professor Stuart Gilder. 2. Assisted in the field with drilling of core samples and locations with GPS. 3. Mapping of data points.

Languages:

English: Excellent (written and verbal)
Afrikaans

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe me, my qualifications, and my experience.

This day 31st of December 2017
Full name of staff member: Diana van Buren

45. Compliance checklists

Table 62 : SAMREC compliance checklist

SAMREC Table 1 SECTION	CRITERIA	PROJECT NAME
1	**Project Outline**	**WRTRP**
1.1	**Property Description**	
(i)	Brief description of the scope of project (i.e. whether in preliminary sampling, advanced exploration, Scoping, Pre-Feasibility or Feasibility phase, Life of Mine plan for an ongoing mining operation, or closure.	Synopsis, Section 1
(ii)	Describe (noting any conditions that may affect possible prospecting/mining activities) the topography, elevation drainage, fauna and flora, the means and ease of access to the property, the proximity of the property to a population centre, and the transport infrastructure, the climate, known associated climatic risks and the length of the operating season and to the extent these are relevant to the mineral project, the sufficiency of surface rights for mining operations including the availability and sources of power, water, mining personnel, potential tailings storage areas, potential waste disposal areas, heap leach pad areas, and potential processing plant sites.	Sections 8; 9, 10; Figure 1, 3, 4, 5, 6, 7, 8
(iii)	Specify the details of the personal inspection on the property of each CP or, if applicable, the reason why a personal inspection has not been completed.	Section 6
1.2	**Location**	
(i)	Description of location and map (Country, province, and closest town/city, coordinate systems and ranges, etc.)	Section 1, 8; Figure 1, 2
(ii)	Country profile: present information pertaining to the project host country that is pertinent to the project, including relevant applicable legislation, environmental and social context etc. Assess at a high level, relevant technical, environmental, social, economic, political and other key risks.	Section 9
(iii)	Provide a general topocadastral map.	Section 10, Figure 6 to 8
(iii)	Provide a topocadastral map in sufficient detail to support the assessment of eventual economics. State the known associated climatic risks.	Section 10
1.3	**Adjacent Properties**	
(i)	Discuss details of relevant adjacent properties. If adjacent or nearby properties have an important bearing on the report, then their location and common mineralised structures should be included on the maps. Reference all information used from other sources.	Section 12, Figure 1
1.4	**History**	
(i)	State historical background to the project and adjacent areas concerned, including know results of previous exploration and mining activities (type, amount, quantity and development work), previous ownership and changes thereto.	Section 13; Table 3
(ii)	Present details of previous successes or failures with reasons why the project may now be considered potentially economic.	Section 13
1.5	**Legal Aspects and Permitting**	
	Confirm the legal tenure to the satisfaction of the CP, including the following information:-	Section 14;
(i)	Discuss the nature of the issuer's rights (e.g. prospecting and/or mining) and the right to use the surface of the properties to which these rights relate. Disclose the date of expiry and other relevant details.	Section 14 4
(ii)	Present the principal terms and conditions of all existing agreements, and details of those still to be obtained, (such as, but not limited to, concessions, partnerships, joint ventures, access rights, leases, historical and cultural sites, wilderness or national park and environmental settings, royalties, consents, permission, permits or authorisations).	Section 14.1
(iii)	Present the security of the tenure held at the time of reporting or that is reasonably expected to be granted in the future along with any known impediments to obtaining the right to operate in the area. State details of applications that have been made.	Section 14
(iv)	Provide a statement of any legal proceedings, for example, land claims that may have an influence on the rights to prospect or mine for minerals, or an appropriate negative statement.	Section 14
(v)	Provide a statement relating to governmental/statutory requirements and permits as may be required, have been applied for, approved or can be reasonably expected to be obtained.	Section 14.2
1.6	**Royalties**	
(i)	Describe the royalties that are payable in respect of each property.	Section 14.5

SAMREC Table 1 SECTION	CRITERIA	PROJECT NAME
1.7	**Liabilities**	
(i)	Describe any liabilities, including rehabilitation guarantees that are pertinent to the project. Provide a description of the rehabilitation lability, including, but not limited to, legislative requirements, assumptions and limitations.	Section 14.6
2	**Geological Setting, Deposit, Mineralisation**	
2.1	**Geological Setting, Deposit, Mineralisation**	
(i)	Describe the regional geology.	Section 15; Figure 9
(ii)	Describe the project geology, including deposit type, geological setting and style of mineralisation.	Section 16 and 17; Figure 10 to 16
(iii)	Discuss the geological model or concepts being applied in the investigation and on the basis of which the exploration programme is planned. Describe the inferences made from this model.	Section 16 and 17
(iv)	Discuss data density, distribution and reliability and whether the quality and quantity of information are sufficient to support statements, made or inferred, concerning the Exploration Target or Deposit.	Section 16 and 17
(v)	Discuss the significant minerals present in the deposit, their frequency, size and other characteristics. Include minor and gangue minerals where these will have an effect on the processing steps. Indicate the variability of each important mineral within the deposit.	Section 16 and 17
(vi)	Describe the significant mineralised zones encountered on the property, including a summary of the surrounding rock types, relevant geological controls, and the length, width, depth, and continuity of the mineralisation, together with a description of the type, character, and distribution of the mineralisation.	Section 16 and 17
(vii)	Confirm that reliable geological models and/or maps and cross-sections that support interpretations exist.	Section 23
3	**Exploration and Drilling, Sampling Techniques and Data**	
(i)	Describe the data acquisition or exploration techniques and the nature, level of detail, and confidence in the geological data used (i.e. geological observations, remote sensing results, stratigraphy, lithology, structure, alteration, mineralisation, hydrology, geophysical, geochemical, petrography, mineralogy, geochronology, bulk density, potential deleterious or contaminating substances, geotechnical and rock characteristics, moisture content, bulk samples etc.) Confirm that data sets include all relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc.	Sections 18 to 22; Tables 6, 7; Figures 11 to 16
(ii)	Identify and comment on the primary data elements (observation and measurements) used for the project and describe the management and verification of these data or the database. This should describe the following relevant processes: acquisition (capture or transfer), validation, integration, control, storage, retrieval and backup processes. It is assumed that data ae stored digitally but hand-printed tables will well organised data and information may also constitute a database.	
(iii)	Acknowledge and appraise data from other parties and reference all data and information used from other sources.	
(iv)	Clearly distinguish between data / information from the property under discussion and that derived from surrounding properties.	
(v)	Describe the survey methods, techniques and expected accuracies of data. Specify the grid system used.	
(vi)	Discuss whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the estimation procedure(s) and classifications applied.	
(vii)	Present representative models and / or maps and cross sections or other or three dimensional illustrations of results, showing location of samples, accurate drill-hole collar positions, down-hole surveys, exploration pits, underground workings, relevant geological data, etc.	
(viii)	Report the relationships between mineralisation widths and intercept lengths. The geometry of the mineralisation with respect to the drillhole angle is particularly important. If it is not known and only the down-hole lengths are reported, confirm it with a clear statement to this effect (e.g. 'down-hole length, true width not known').	Sections 18 to 22; Tables 6, 7; Figures 11 to 16
3.2	**Drilling Techniques**	
(i)	Present the type of drilling undertaken (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Banka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	Section 21; Tables 6; Figures 11, 13, 14
(ii)	Describe whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, Technical Studies, mining studies and metallurgical studies.	
(iii)	Describe whether logging is qualitative or quantitative in nature; indicate if core photography (or costean, channel, etc.) was undertaken.	
(iv)	Present the total length and percentage of the relevant intersections logged.	
(v)	Discuss the results of any downhole surveys of the drill-holes.	

SAMREC Table 1 SECTION	CRITERIA	PROJECT NAME
3.3	**Sampling Method, Collection, Capture and Storage**	
(i)	Describe the nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry-standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or handheld XRF instruments, etc.). These examples should to be taken as limiting the broad meaning of sampling.	Section 22; Tables 7
(ii)	Describe the sampling processes, including sub-sampling stages to maximise representivity of samples. This should include whether sample sizes are appropriate to the grain of the material being sampled. Indicate whether sample compositing has been applied.	
(iii)	Appropriately describe each data set (e.g. geology, grade, density, quality, diamond breakage, geometallurgical characteristics etc.), sample type, sample-size selection and collection methods.	
(iv)	Report the geometry of the mineralisation with respect to the drill-hole angle. State whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. State if the intersection angle is not known and only the down-hole lengths are reported.	
(v)	Describe retention policy and storage of physical samples (e.g. core, sample reject, etc.).	
(vi)	Describe the method of recording and assessing core and chip sample recoveries and results assessed, measures taken to maximise sample recovery and ensure representative nature of the samples and whether a relationship exists between sample recovery and grade, and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	
(vii)	If a drill-core sample is taken, state whether it was split or sawn and whether quarter, half or full core was submitted for analysis. If non-core sample state whether the sample was riffled, tube sampled, rotary split, etc. and whether it was sampled wet or dry.	
3.4	**Sample Preparation and Analysis**	
(i)	Identify the laboratory/laboratories and state their accreditation status and Registration Number or provide a statement that the laboratories are not accredited.	Section 22.1; Table 7
(ii)	Identify the analytical method. Discuss the nature, quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.	
(iii)	Describe the process and method used for sample preparation, sub-sampling and size reduction, and likelihood of inadequate or non-representative samples (i.e. improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.).	
3.5	**Sampling Governance**	
(i)	Discuss the governance of the sampling campaign and process, to ensure quality and representivity of samples and data, such as sample recovery, high grading, selective losses or contamination, core/hole diameter, internal and external QA/QC, and any other factors that may have resulted in or identified samples bias.	Section 22; Table 7
(ii)	Describe the measures taken to ensure sample security and the chain of custody.	
(iii)	Describe the validation procedures used to ensure the integrity of the data, e.g. transcription, input or other errors, between its initial collection and its future use for modelling (e.g. geology, grade, density, etc.).	
(iv)	Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified	
3.6	**Quality Control/Quality Assurance**	
(i)	Demonstrate that adequate field sampling process verification techniques (QA/QC) have been applied, e.g. the level of duplicates, blanks, reference material standards, process audits, analysis, etc. If indirect methods of measurement were used (e.g. geophysical methods), these should be described, with attention given to the confidence of interpretation.	Section 22; Tables 7
3.7	**Bulk Density**	
(i)	Describe the method of bulk-density / specific-gravity determination with reference to the frequency of measurements, the size, nature and representativeness of the samples.	Section 22.2; Tables 8 and 9
(ii)	If target tonnage ranges are reported then the preliminary estimates or basis of assumptions made for bulk density or specific gravity(s) must be stated.	
(iii)	Discuss the representivity of bulk density samples of the material for which a grade range is reported.	
(iv)	Discuss the adequacy of the methods of bulk density determination for bulk material with special reference to accounting for void spaces (vugs, porosity etc.), moisture and differences between rock and alteration zones within the deposit.	
3.8	**Bulk Sampling and/or Trial Mining**	
(i)	Indicate the location of individual samples.	Section 22.3

SAMREC Table 1 SECTION	CRITERIA	PROJECT NAME
(ii)	Describe the size of samples, spacing/density of samples recovered and whether sample sizes and distribution are appropriate to the grain size of the material being sampled.	
(iii)	Describe the method of mining and treatment.	
(iv)	Indicate the degree to which the samples are representative of the various types and styles of mineralisation and the mineral deposit as a whole.	
4	**Estimation and Reporting of Exploration Results and Mineral Resources**	
4.1	**Geological Model and Interpretation**	
(i)	Describe the geological model, construction technique and assumptions that forms the basis for the Exploration Results of Mineral Resource estimate. Discuss the sufficiency of data density to assure continuity of mineralisation and geology and provide an adequate basis for the estimation and classification procedures applied.	Section 23; Tables 24, 25
(ii)	Describe the nature, detail and reliability of geological information with which lithological, structural, mineralogical, alteration or other geological, geotechnical and geometallurgical characteristics were recorded.	Section 23
(iii)	Describe any obvious geological, mining, metallurgical, legal and economic factors that could have a significant effect on the prospects of any possible exploration target or deposit.	Section 23.1
(iv)	Discuss all known geological data that could materially influence the estimated quantity and quality of the Mineral Resource.	Section 23.1
(v)	Discuss whether consideration was given to other alternative interpretations or models and their possible effect (or potential risk), if any, on the Mineral Resource estimate.	Section 23.1
(vi)	Discuss geological discounts (e.g. magnitude, per reef, domain, etc.) applied in the model, whether applied to mineralised and/or unmineralised material (e.g. potholes, faults, dykes etc.).	Section 23.1
4.2	**Estimation and Modelling Techniques**	
(i)	Describe in detail the estimation techniques and assumptions used to determine the grade and tonnage ranges.	Section 23.1, 23.2; Table 10; Figures 11 to 16; 33 to 38
(ii)	Discuss the nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values (cutting or capping), compositing (including by length and/or density), domaining, sample spacing, estimation unit size (block size) selective mining units, interpolation parameters and maximum distance of exploration points.	
(iii)	Describe assumptions and justification of correlations made between variables.	
(iv)	Provide details of any relevant specialised computer program (software) used with the version number, together with the estimation parameters used.	
(v)	State the processes of checking and validation, the comparison of model information to sample data and use reconciliation data, and whether the Mineral Resource estimate takes account of such information.	
(vi)	Describe the assumptions made regarding the estimation of a co-products, by-products or deleterious elements.	
4.3	**Reasonable and realistic prospects for eventual economic extraction**	
(i)	Disclose and discuss the geological parameters. These would include (but not be limited to) volume / tonnage, grade and value / quality estimates, cut-off grades, strip ratios upper and lower-screen sizes.	Section 23.6
(ii)	Disclose and discuss the engineering parameters. These would include mining method, dilution, processing, geotechnical, geohydraulic and metallurgical parameters.	
(iii)	Disclose and discuss the infrastructure, including, but not limited to, power, water, and site-access.	
(iv)	Disclose and discuss the legal, governmental, permitting, statutory parameters.	
(v)	Disclose and discuss the environmental and social (or community) parameters.	
(vi)	Disclose and discuss marketing parameters.	
(vii)	Disclose and discuss the economic assumptions and parameters. These factors will include, but not limited, community prices and potential capital and operating costs.	
(viii)	Discuss any material risks	
(ix)	Discuss the parameters used to support the concept of 'eventual'.	
4.4	**Classification Criteria**	
(i)	Describe criteria and methods used as the basis for the classification of the Mineral Resources into various confidence categories.	Section 23.3
4.5	**Reporting**	
(i)	Discuss the reported low and high grades and widths together with their spatial location to avoid misleading the reporting of Exploration Results, Mineral Resources or Mineral Reserves.	Table 12, Figures 11 to 16 and Section 23.2

SAMREC Table 1 SECTION	CRITERIA	PROJECT NAME
(ii)	Discuss whether the reported grades are regional averages or if they are selected individual samples taken from the property under discussion.	
(iii)	State assumptions regarding mining methods, infrastructure, metallurgy, environmental and social parameters. State and discuss where no mining-related assumptions have been made.	
(iv)	State the specific quantities and grades / qualities that are reported in ranges and/or widths, and explain the basis of the reporting.	
(viii)	If the CP is relying on a report, opinion, or statement of another expert who is not a CP, disclose the date, title, and author of the report, opinion, or statement, the qualifications of the other expert and why it is reasonable for the CP to rely on the other expert, any significant risks, and any steps the CP took to verify the information provided.	
(ix)	State the basis of equivalent metal formulae, if applied.	
(v)	Present the detail, for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in the Mineral Resource statement.	
(vi)	Present a reconciliation with any previous Mineral Resource estimates. Where appropriate, report and comment on any historical tends (e.g. global bias).	
(vii)	Present the defined reference point for the tonnages and grades reported as Mineral Resources. State the reference point if the point is where the run-of-mine material delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.	
5	**Technical Studies**	
5.1	**Introduction**	
(i)	State the level of study - whether Scoping, Pre-Feasibility, Feasibility or ongoing Life of Mine.	Section 24
(i)	State the level of study - whether Scoping, Pre-Feasibility, Feasibility or ongoing Life of Mine. The Code requires that a study to at least a Pre-Feasibility level has been undertaken to convert Mineral Resources to Mineral Reserves. Such studies will have been carried out and will include a mine plan or production schedule that is technically achievable and economically viable, and consider all Modifying Factors.	Section 24 and 37
(ii)	Provide a summary table of the Modifying Factors used to convert the Mineral Resource to Mineral Reserve for Pre-Feasibility, Feasibility or ongoing Life-of-Mine studies.	Section 37
5.2	**Mining Design**	
(i)	State assumptions regarding mining methods and parameters when estimating Mineral Resources, or explain where no mining assumptions have been made.	Section 24; Figures 17 to 25
5.3	**Metallurgical and Testwork**	
(iii)	Discuss the possible processing methods and any processing factors that could have a material effect on the likelihood of eventual economic extraction. Discuss the appropriateness of the processing methods to the style of mineralisation.	Section 25
5.4	**Infrastructure**	
(i)	Comment regarding the current state of infrastructure or the ease with which the infrastructure can be provided or accessed.	Section 28
5.5	**Environmental and Social**	
(i)	Confirm that the company holding the tenement has addressed the host country's environmental legal compliance requirements and any mandatory and/or voluntary standards or guidelines to which it subscribes.	Section 32
(ii)	Identify the necessary permits that will be required and their status. Where not yet obtained, confirm that there is a reasonable basis to believe that all permits required for the project will be obtained.	Section 14.2 and 32.2
(iii)	Identify and discuss any sensitive areas that may affect the project as well as any other environmental factors, including interested and affected parties I&AP and/or studies that could have a material effect on the likelihood of eventual economic extraction. Discuss possible means of mitigation.	Section 32.4, 32.5, 32.6, 32.7; Table 32, 33, 34 ,35 36
(iv)	Identify any legislated social management programmes that may be required and discuss the content and status of these.	
(v)	Outline and quantify the material socio-economic and cultural impacts that need to be mitigated, and their mitigation measures and, where appropriate, the associated costs.	
5.6	**Market Studies and Economic Criteria**	
(i)	Describe the valuable and potentially valuable product(s). Including suitability of products, co-products and by-products for marketing.	Section 34
(ii)	Describe product(s) to be sold, customer specifications, testing, and acceptance requirements. Discuss whether there exist a ready market for the product(s) and whether contracts for the sale of the product(s) are in place or expected to be readily obtained. Present price and volume forecasts and the basis for the forecast.	Section 34.3

SAMREC Table 1 SECTION	CRITERIA	PROJECT NAME
(iii)	State and describe all economic criteria that have been used for the study, such as capital and operating costs, exchange rates, revenue / price curves, royalties, cut-off grades, reserve pay limits.	Section 35.1, Table 41
(iv)	Provide a summary description, source and confidence in method used to estimate the commodity price/value profiles used for cut-off grade calculation, economic analysis and project valuation, including applicable taxes, inflation indices, discount and exchanges rates.	Section 35.4
(v)	Present the details of the point of reference for the tonnages and grades reported as Mineral Reserves, e.g. material delivered to the processing facility or saleable product(s). It is important that, in any situation where the reference point is different, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.	Table 52 and 53
(vi)	Justify assumptions made concerning production cost including transportation, treatment, penalties, exchange rates, marketing and other costs. Provide details of allowances that are made for the content of deleterious elements and the cost of penalties.	Throughout Section 34
(vii)	Provide details for allowances made for royalties payable, both to government and private concerns.	Section 34; Table42, 43, 44
(viii)	State type, extent and condition of plant and equipment that is significant to the existing operation(s).	NA
(ix)	Provide details for all environmental, social and labour costs considered.	Sections 35.2.1; 35.2.2; 35.2.3; 35.2.4
5.7	**Risk Analysis**	
(i)	Report an assessment of technical, environmental, social, economic, political and other key risks to the project. Describe actions that will be taken to mitigate and/or manage the identified risks.	Section 33
5.8	**Economic Analysis**	
(i)	All the relevant level (Scoping, Pre-Feasibility, Feasibility, or ongoing Life of Mine), provide an economic analysis of the project that includes:- - Cash flow forecast on an annual basis using Mineral Reserves or an annual production schedule for the life of the project; - A discussion of net present value (NPV), internal rate of return (IRR) and payback period capital; - Sensitivity or other analysis using variants in commodity price, grade, capital and operating costs, or other significant parameters, as appropriate, and discuss the impact of the results.	Section 35; Tables 41 to 51
(ii)		
(iii)		
(iv)		
6	**Estimation and Reporting of Mineral Reserves**	
6.1	**Estimation and Modelling Techniques**	
(i)	Describe the Mineral Resource estimate used as a basis for the conversion to a Mineral Reserve.	Section 37
	Mineral Reserves	
(ii)	Report the Mineral Reserve statements with sufficient detail indicating if the mining is open pit or underground plus the source and type of mineralisation, domain or orebody, surface dumps, stockpiles and all other sources.	
(iii)	Provide a reconciliation reporting historical reliability of the performance parameters, assumptions and Modifying Factors, including a comparison with the previous Reserve quantity and qualities, if available. Where appropriate, report and comment on any historical trends (e.g. global bias).	
6.2	**Classification Criteria**	
(i)	Describe and justify criteria and methods used as the basis for the classification of the Mineral Reserves into various confidence categories, based on the Mineral Resource category, and including consideration of the confidence in all the Modifying Factors.	Section 37; table 52
6.3	**Reporting**	
(i)	Discuss the proportion of Probable Mineral Reserves that have been derived from Measured Mineral Resources (if any), including the reason(s) therefore.	Section 37 ; Table 52
(ii)	Present details of for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in respect of the Mineral Reserve statement.	
(iii)	Present the details of the defined reference point of the Mineral Reserves. State whether the reference point is the point where the run-of-mine material is delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. State clearly whether the tonnages and grades reported for Mineral Reserves are in respect of material delivered to the plant or after recovery.	
(iv)	Present a reconciliation with the previous Mineral Reserve estimates. Where appropriate, report and comment on any historical tends (e.g. global bias).	
(v)	Only Measured and Indicated Mineral Resources can be considered for inclusion in the Mineral Reserve.	

SAMREC Table 1 SECTION	CRITERIA	PROJECT NAME
(vi)	State whether the Mineral Resources are inclusive of Mineral Reserves.	
7	**Audits and Reviews**	
7.1	**Audits and Reviews**	
(i)	State type of review/audit (e.g. independent, external), area (e.g. laboratory, drilling, data, environmental compliance etc.), date and name of the reviewer(s) together with their recognized professional qualifications.	Section 21 and 22
(ii)	Disclose the conclusions of relevant audits or reviews. Note where significant deficiencies exist and remedial actions are required.	
8	**Other Relevant Information**	
8.1	**Other Relevant Information**	
(i)	Discuss all other relevant and material information not discussed elsewhere.	NA
9	**Qualification of Competent Person(s) and other Key Technical Staff, Date and Signature Page**	
9.1	**Qualification of Competent Person(s) and other Key Technical Staff, Date and Signature Page**	
(i)	State the full name, registration number and name of the professional body or Recognised Professional Organisation (RPO) for all the CPs. State the relevant experience of the CP(s) and other key technical staff who prepared and are responsible for the Public Report.	Section 43 and 44
(ii)	State the CP's relationship to the issuer of the report.	Section 2
(iii)	Provide the Certificate of the CP (Appendix 2), including the date of sign-off and the effective date, in the Public Report.	Sections 43 and signature page

Table 63 : SAMVAL compliance checklist

SAMVAL SECTION	CRITERIA	WRTRP Project
T1.0	**General**	
	The Valuation Report shall contain:-	
	The signature of the CV.	Signature page
	The CV's qualifications and experience in valuing mineral properties, or relevant valuation experience.	Section 35 and Section 44
	A statement that all facts presented in the report are correct to the best of the CV's knowledge.	Section 35.1
	A statement that the analyses and conclusions are limited only by the reported forecasts and conditions.	
	A statement of the CV's present or prospective interest in the subject property or asset.	
	A statement that the CV's compensation, employment, or contractual relationship with the Commissioning Entity is not contingent on any aspect of the Report.	
	A statement that the CV has no bias with respect to the assets that are the subject of the Report, or to the parties involved with the assignment.	
	A statement that the CV has (or has not) made a personal inspection of the property.	
	A record of the CP's and experts who have contributed to the valuation. Written consent to use and rely on such Reports shall be obtained. Significant contributions made by such experts shall be highlighted individually.	
T1.1	**Illustrations**	
	There are numerous instances (especially in the non-listed environment) when a valuation is not accompanied by the CPR on which it is based. In these cases, especially, diagrams/illustrations are required and shall be in the required format.	Figures 1 , 3 to16, 17 to 25
	Diagrams, maps, plans, sections, and illustrations shall be legible and prepared at an appropriate scale to distinguish important features.	
	Maps shall be dated and include a legend, author or information source, coordinate system and datum, a scale in bar or grid form, and an arrow indicating north.	
	A location or index map and more detailed maps showing all important features described in the text, including all relevant cadastral and other infrastructure features, shall be included.	
T1.2	**Synopsis**	
	Provide the salient features of the report:-	Executive summary
	Brief description of the terms of reference, scope of work, the Valuation Date, the mineral property; its location, ownership, geology, and mineralization; history of exploration and production, current status, Exploration Targets, mineralization and/or production forecast, Mineral Resources and Mineral Reserves, production facilities (if any); environmental, social, legal, and permitting considerations; valuation approaches and methods, valuation, and conclusions.	Section 1
T1.3	**Introduction and Scope**	
	Introduction and scope, specifying commissioning instructions including reference to the valuation, engagement letter, date, purpose and intended use of the valuation.	Section 1, Section 35
	The CV shall fully disclose any interests in the Mineral Asset or Commissioning Entity.	Section 35.1
	Any restrictions on scope and special instructions followed by the CV, and how these affect the reliability of the valuation, shall be disclosed.	NA
T1.4	**Compliance**	
	A statement that the report complies with SAMVAL shall be included.	Section 35.2
	Any variations shall be described and discussed.	NA
T1.5	**Identity, Tenure and Infrastructure**	
	The identity, tenure, associated infrastructure and locations of the property interests, rights or securities to be valued (i.e. the physical, legal, and economic characteristics of the property) shall be disclosed.	Section 14, Figure 3 and 4
T1.6	**History**	
	History of activities, results, and operations to date shall be included.	Section 13; Table 3
T1.7	**Geological Setting**	
	Geological setting, models, and mineralization shall be described.	Section 15, 16 and 17; Figures 9 to 16
T1.8	**Exploration Results and Exploration Targets**	
	Exploration programmes, their location, results, interpretation, and significance shall be described.	Sections 18 to 22; Figures 11 to 16 Tables 5 to 7

SAMVAL SECTION	CRITERIA	WRTRP Project
	Exploration Targets shall be discussed.	NA
T1.9	**Mineral Resources and Mineral Reserves**	
	Mineral Resource and Mineral Reserve statements shall be provided. They shall be signed off by a Competent Person in compliance with the SAMREC Code or another CRIRSCO code.	Section 23 and 37; Tables 11, 12 and 52;
	The CV shall set out the manner in which he has satisfied himself that he can rely upon the information in the CPR.	Section 35
T1.10	**Modifying Factors and Key Assumptions**	
	A statement of Modifying Factors shall be included, separately summarizing material issues relating to each applicable Modifying Factor.	Section 37
	The CV shall set out the manner in which he has satisfied himself that he can rely upon the technical information provided.	
	All the Modifying Factors shall be listed, or references provided to relevant definitions). This shall include an explanation of all material assumptions and limiting factors.	
	When reporting on environmental, social and governance modifying factors, reference should be made to the ESG reporting parameters as required by the Southern African Minerals Environmental, Social and Governance Guideline (SAMESG) or other recognised code, e.g. Equator Principles.	Section 32
T1.11	**Previous Valuations**	
	The valuation shall refer to all available and relevant previous valuations of the Mineral Asset that have been performed in at least the previous two years, and explain any material differences between these and the present valuation.	Section 35
T1.12	**Valuation Approaches and Methods**	
	The valuation approaches and methods used in the valuation shall be described and justified in full.	Section 35.1
T1.13	**Valuation Date**	
	A statement detailing the Report Date and the Valuation Date, as defined in this Code, and whether any material changes have occurred between the Valuation Date and the Report Date.	Section 35.4
T1.14	**Valuation Results**	
	For the Income Approach, the valuation cash flow shall be disclosed.	Section 35.2; Figure 31
	For the Market Approach, the market comparable information shall be disclosed.	Section 35.3; Figure 32
	For the Cost Approach, the relevant and applicable cost shall be disclosed.	NA
T1.15	**Valuation Summary and Conclusions**	
	A summary of the valuation details, consolidated into single material line items, shall be provided.	Section 35.4
	The Mineral Asset Valuation shall specify the key risks and forecasts used in the valuation.	
	A cautionary statement concerning all forward-looking or forecast statements shall be included.	Section 35.4
	The valuation's conclusions, illustrating a range of values, the best estimate value for each valuation, and whether the conclusions are qualified or subject to any restrictions imposed on the CV, shall be included.	Section 35.4
T1.16	**Identifiable Component Asset (ICA) Values**	
	Component Asset Values (an ICA valuation) equalling the Mineral Asset Value. This could be, for example, due to the requirements of other valuation rules and legislative practices including taxation (i.e. fixed property, plant, and equipment relative to Mineral Asset Value allocations such as in recoupment or capital gains tax calculations or where a commissioned Mineral Asset Valuation specifies a need for a breakdown of the Mineral Asset Valuation).	NA
	In such cases, the separate allocations of value shall be made by taking account of the value of every separately identifiable component asset. Allocation of value to only some, and not all, identifiable component assets is not allowed. This requires a specialist appraisal of each identifiable component asset of property, plant and equipment, with the 'remaining' value of the Mineral Asset being attributed to the Mineral Resources and Reserves. Such valuations shall be performed by suitably qualified experts, who may include the CV.	NA
	If the Mineral Asset Valuation includes an ICA Valuation, the CV shall satisfy himself or herself that the ICA Valuation is reasonable before signing off the Mineral Asset Valuation.	NA
T1.17	**Historic Verification**	
	A historic verification of the performance parameters on which the Mineral Asset Valuation is based shall be presented.	Sections 24 to 31
T1.18	**Market Assessment**	
	A comprehensive market assessment should be presented.	Section 34
T1.19	**Sources of Information**	

SAMVAL SECTION	CRITERIA	WRTRP Project
	The sources of all material information and data used in the report shall be disclosed, as well as references to any published or unpublished technical papers used in the valuation, subject to confidentiality.	Section 5 and Section 35
	A reference shall be made to any other report that has been compiled, for the purpose of providing information for the valuation, including SAMREC-compliant reports and any other contributions or reports from experts.	Section 41 and throughout the CPR

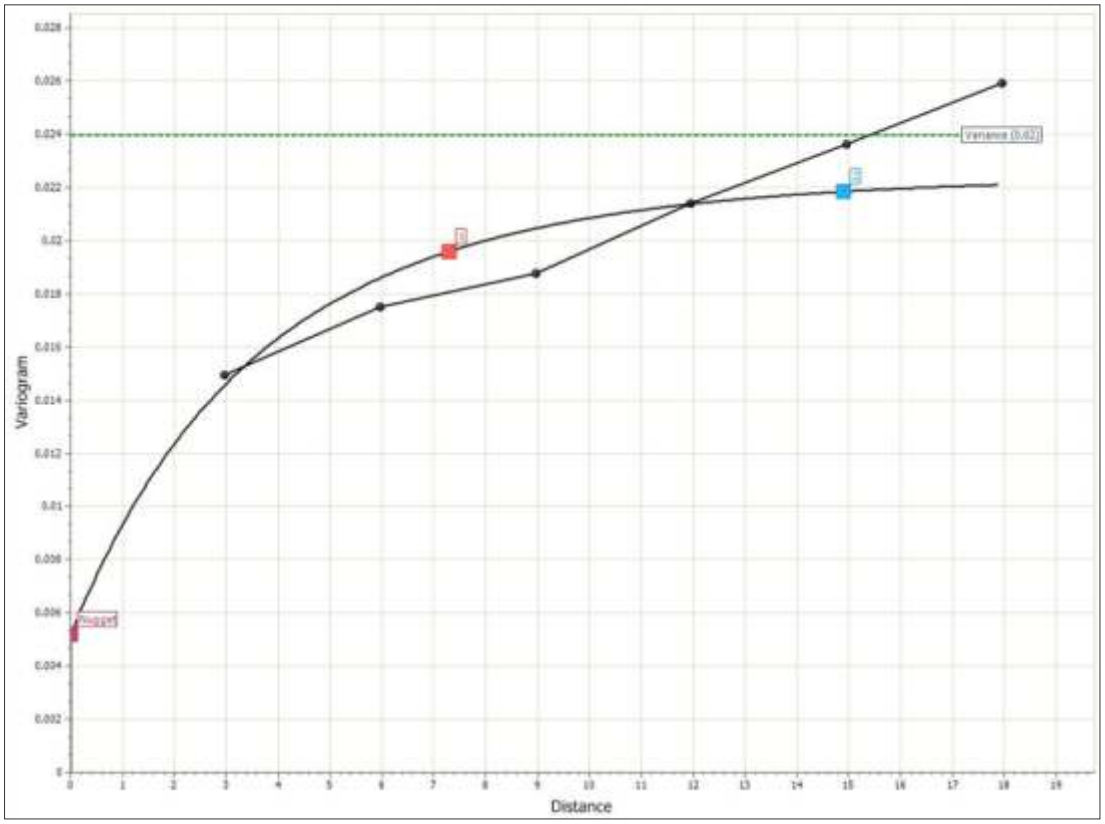
Table 64 : JSE Section 12.9 Checklist

SECTION	CRITERIA	PROJECT NAME
12.9	**A Competent Person's Report must comply with the SAMREC and SAMVAL Codes and must:**	**WRTRP Project**
(a)	have an effective date (being the date at which the contents of the Competent Person's Report are valid) less than six months prior to the date of publication of the pre-listing statement, listing particulars, prospectus or Category 1 circular;	Title page; Signature page; Section 1.2
(b)	be updated prior to publication of the pre-listing statement, listing particulars, prospectus or Category 1 circular if further material data becomes available after the effective date;	NA
(c)	if the Competent Person is not independent of the issuer, clearly disclose the nature of the relationship or interest;	Sections 2 and 35.1
(d)	show the particular paragraph of this section, the SAMREC Code (including Table 1) and SAMVAL Code (including Appendices and Tables) complied with in the margin of Competent Person's Report;	SAMREC and SAMVAL compliance references supplied for each section of the CPR
(e)	contain a paragraph stating that all requirements of this section, the SAMREC Code (including Table 1) and SAMVAL Code (including Appendices and Tables) have been complied with, or state that certain clauses in the SAMVAL Code were not applicable and provide a list of such clauses; and include a statement detailing:	Section 1.2
(i)	exploration expenditure incurred to date by the applicant issuer and by other parties, where available;	Executive Summary "Exploration Programmes"
(ii)	planned exploration expenditure that has been committed, but not yet incurred, by the applicant issuer concerned; and	Executive summary "Exploration Budget" and Section 36
(iii)	planned exploration expenditure that has not been committed to by the applicant issuer but which is expected to be incurred sometime in the future, in sufficient detail to fairly present future expectations;	Executive summary "Exploration Budget" and Section 36,
(f)	contain a valuation section which must be completed and signed off by a Competent Valuator in terms of and in compliance with the SAMVAL Code (including Appendices and Tables);	Section 35
(g)	be published in full on the applicant issuer's website;	DRD's responsibility
(h)	be included in the relevant JSE document either in full (which includes Incorporation by reference pursuant to paragraph 11.61) or as an executive summary. The executive summary must be approved by the JSE (after approval by the Readers Panel) at the same time as the Competent Person's Report is approved by the JSE and the Readers Panel. The executive summary should be a concise summary of the Competent Person's Report and must cover, at a minimum, where applicable:	Full CPR submitted and Executive Summary to be published in the circular
(i)	purpose;	Executive summary
(ii)	project outline;	Executive summary
(iii)	location map indicating area of interest;	Executive Summary diagrams 1 and 2
(iv)	legal aspects and tenure, including any disputes, risks or impediments;	Executive summary
(v)	geological setting description;	Executive summary
(vi)	exploration programme and budget;	Executive summary
(vii)	brief description of individual key modifying factors;	Executive summary
(viii)	brief description of key environmental issues;	Executive summary
(ix)	Mineral Resource and Mineral Reserve Statement;	Executive summary
(x)	reference to risk paragraph in the full Competent Person's Report;	Executive summary
(xi)	statement by the Competent Person that the summary is a true reflection of the full Competent Person's Report; and	Executive summary
(xii)	Summary valuation table. Where the cash flow approach has been employed, the valuation summary must include the discount rate(s) applied to calculate the NPV(s) (net present value(s)) per share with reference to the specific paragraph in the Competent Person's Report. If inferred resources are used, show the summary valuation with and without inclusion of such inferred resources.	Executive summary

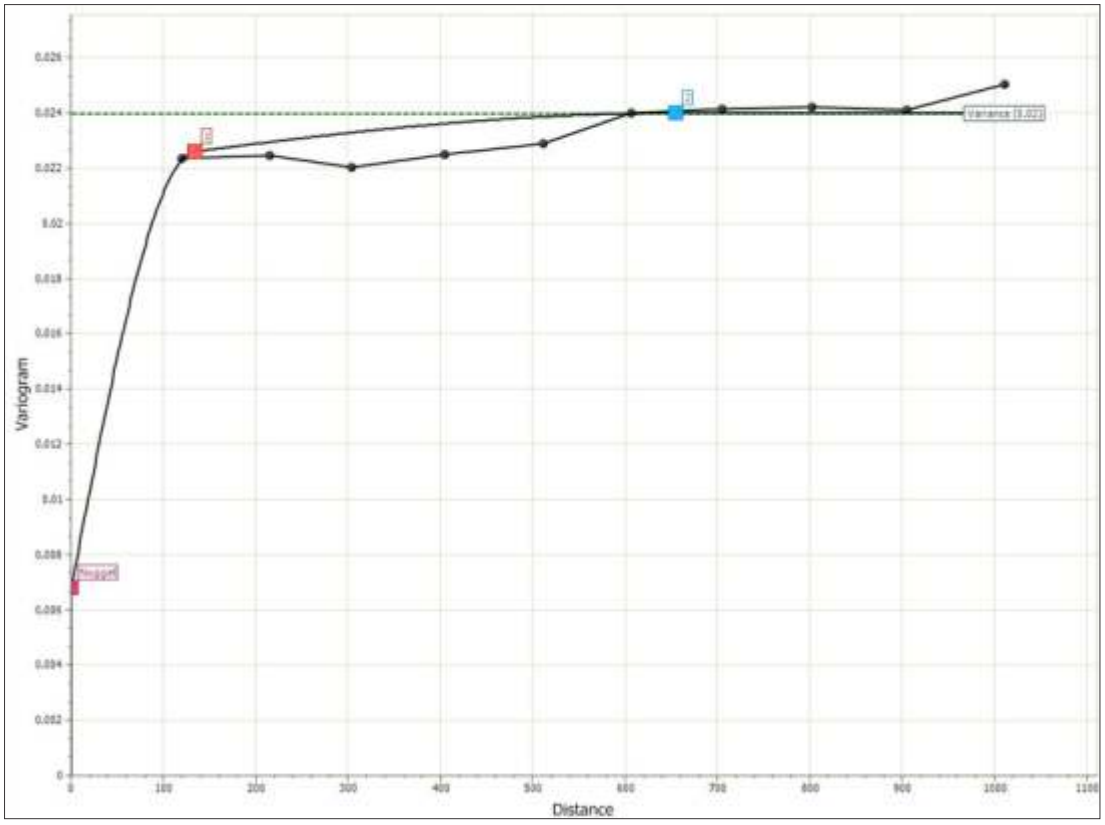
46. Appendix 1 : Variography verification

Figure 34: Driefontein 3H-TSF downhole and omni-directional variograms

Driefontein 3H-TSF downhole variogram



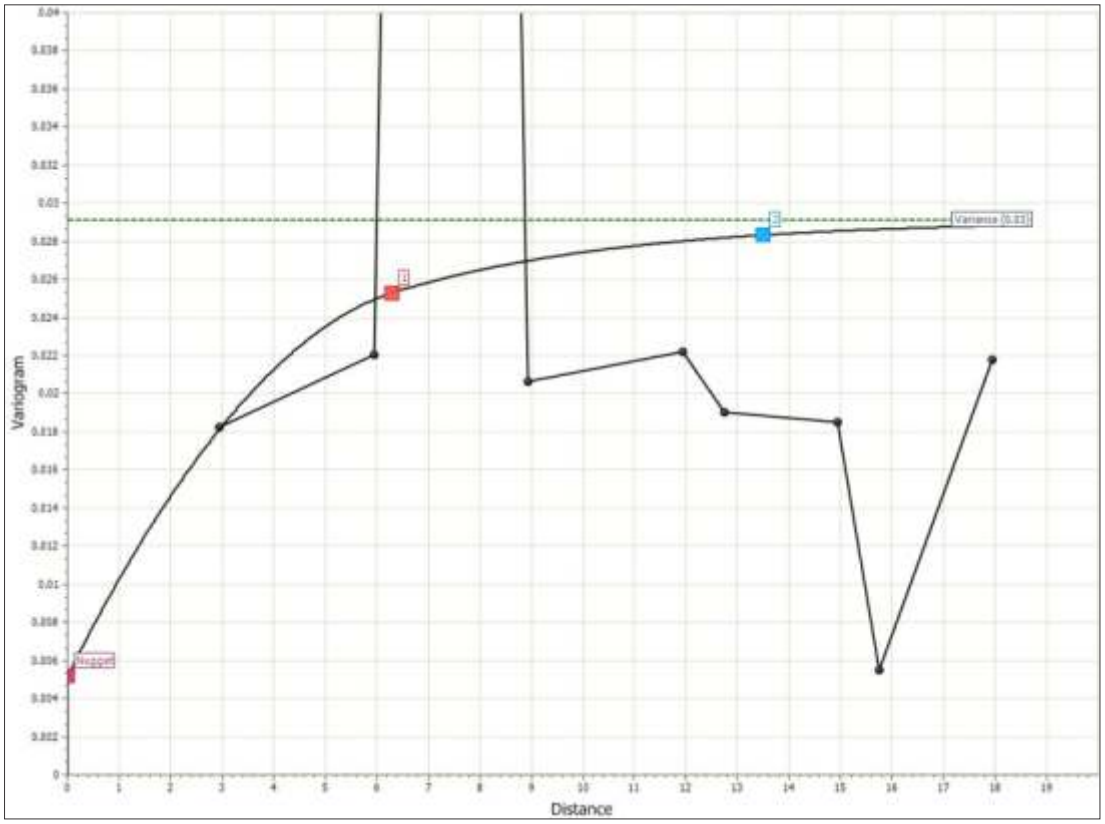
Driefontein 3H-TSF omni-directional variogram



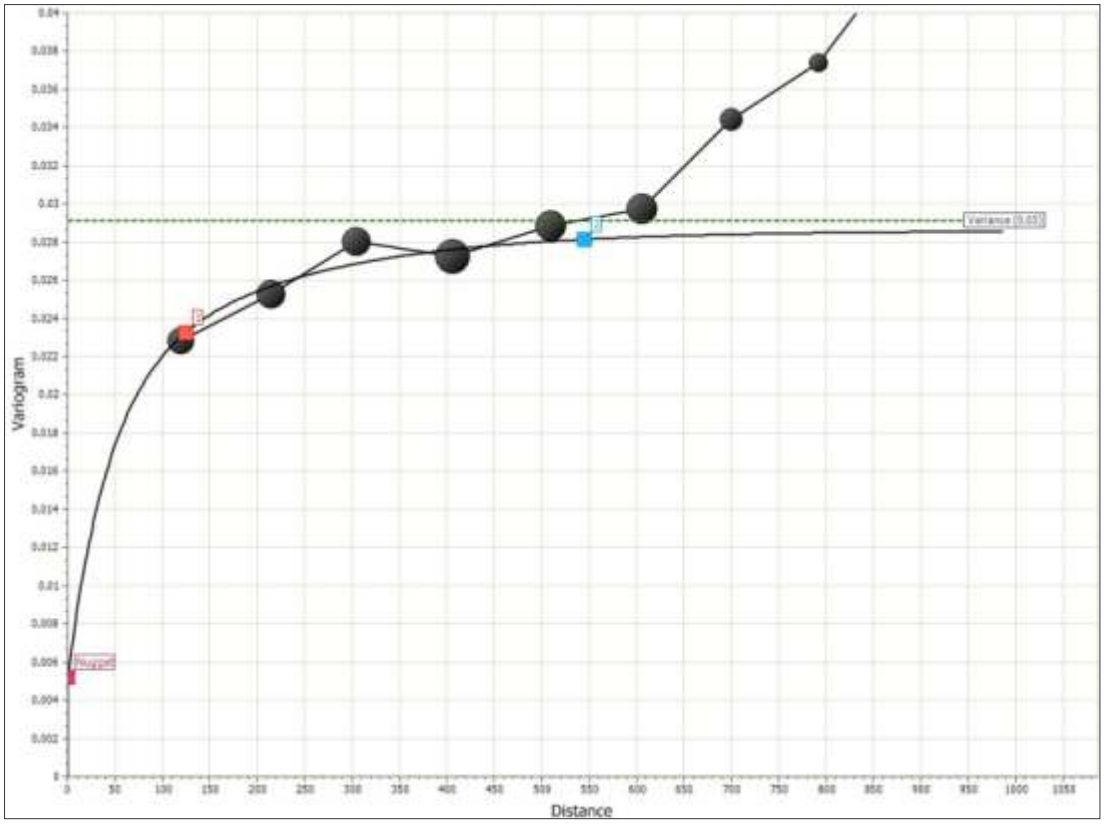
Source: Sound Mining 2017

Figure 35: Driefontein 5H-TSF downhole and omni-directional variograms

Driefontein 5H-TSF downhole variogram



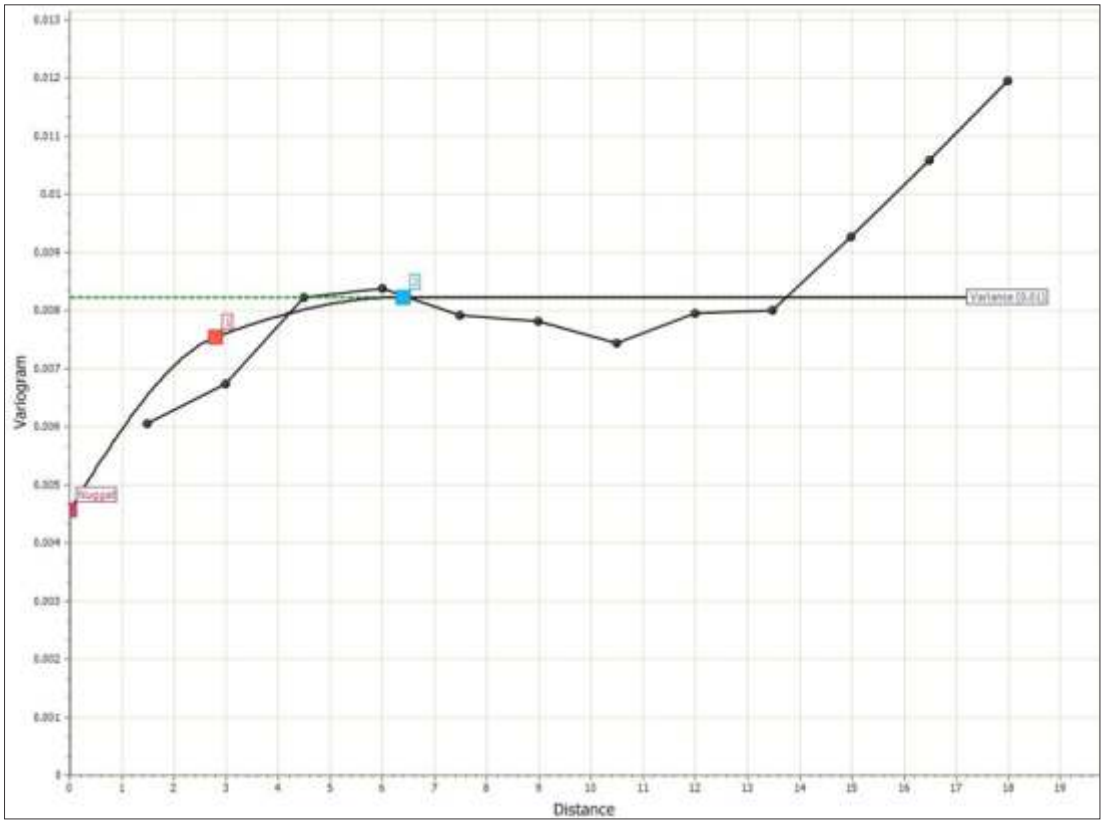
Driefontein 5H-TSF omni-directional variogram



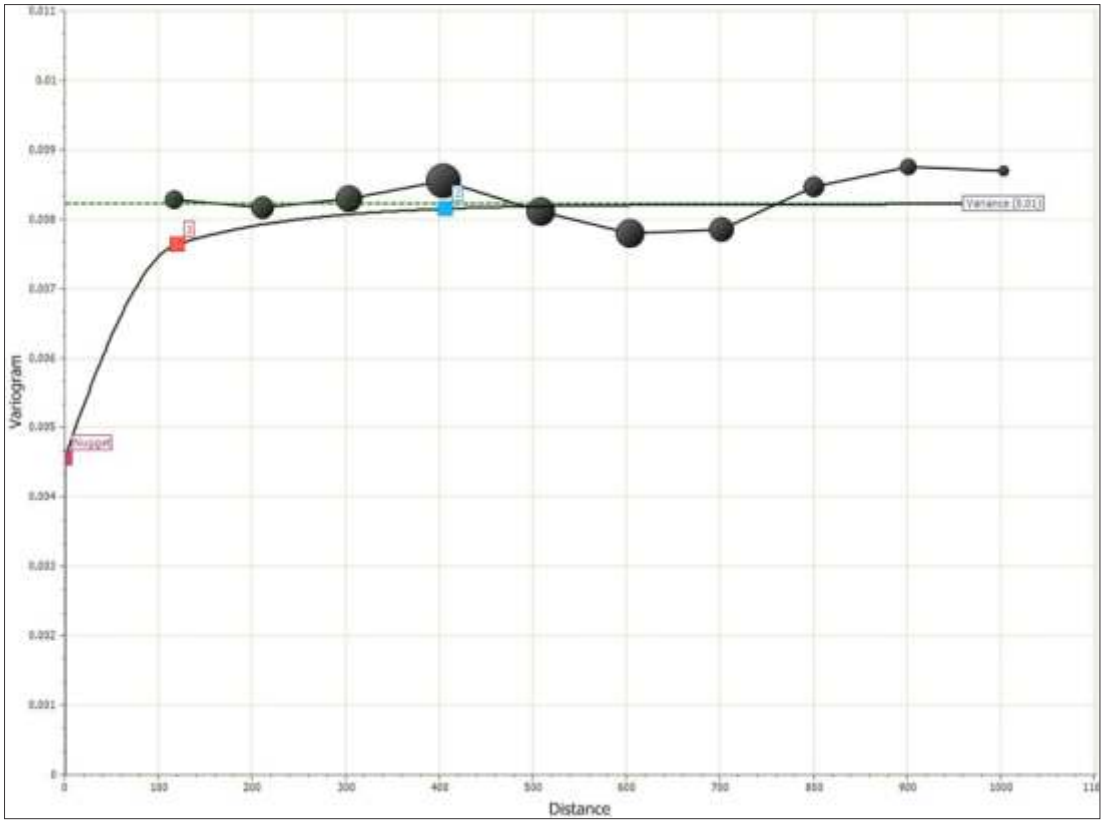
Source: Sound Mining 2017

Figure 36: Kloof 1H-TSF downhole and omni-directional variograms

Kloof 1H-TSF downhole variogram



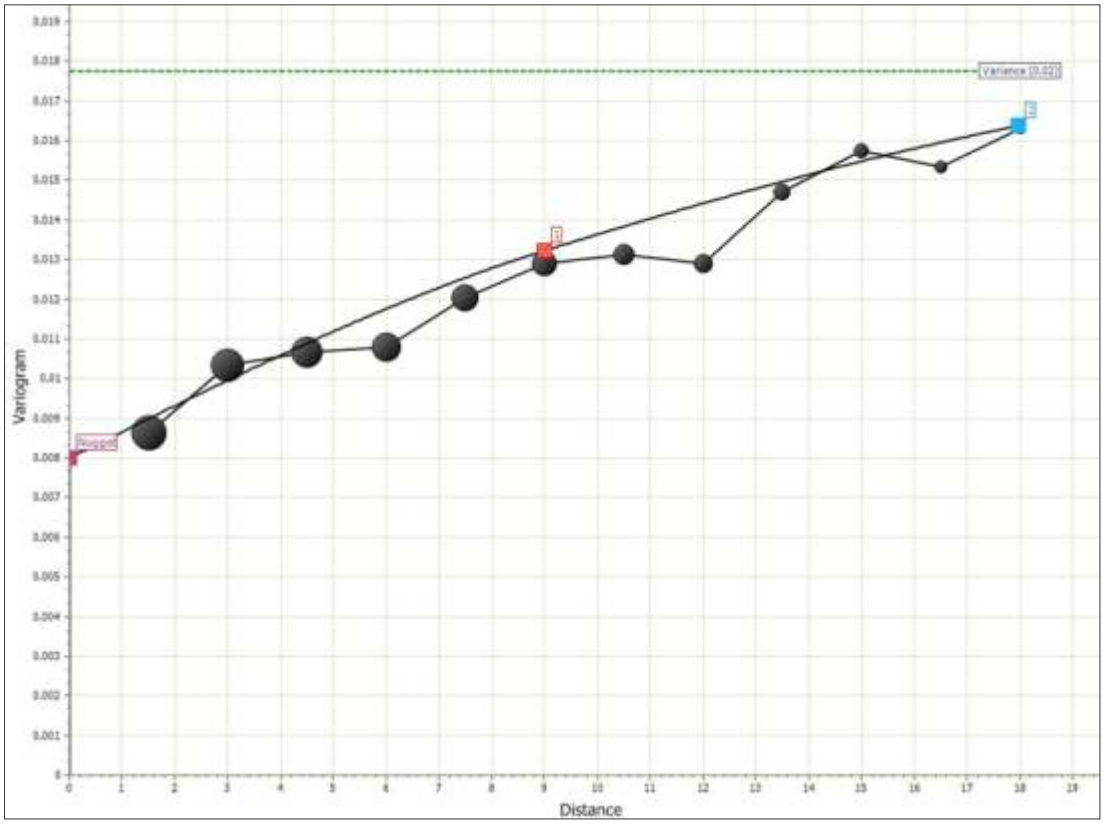
Kloof 1H-TSF omni-directional variogram



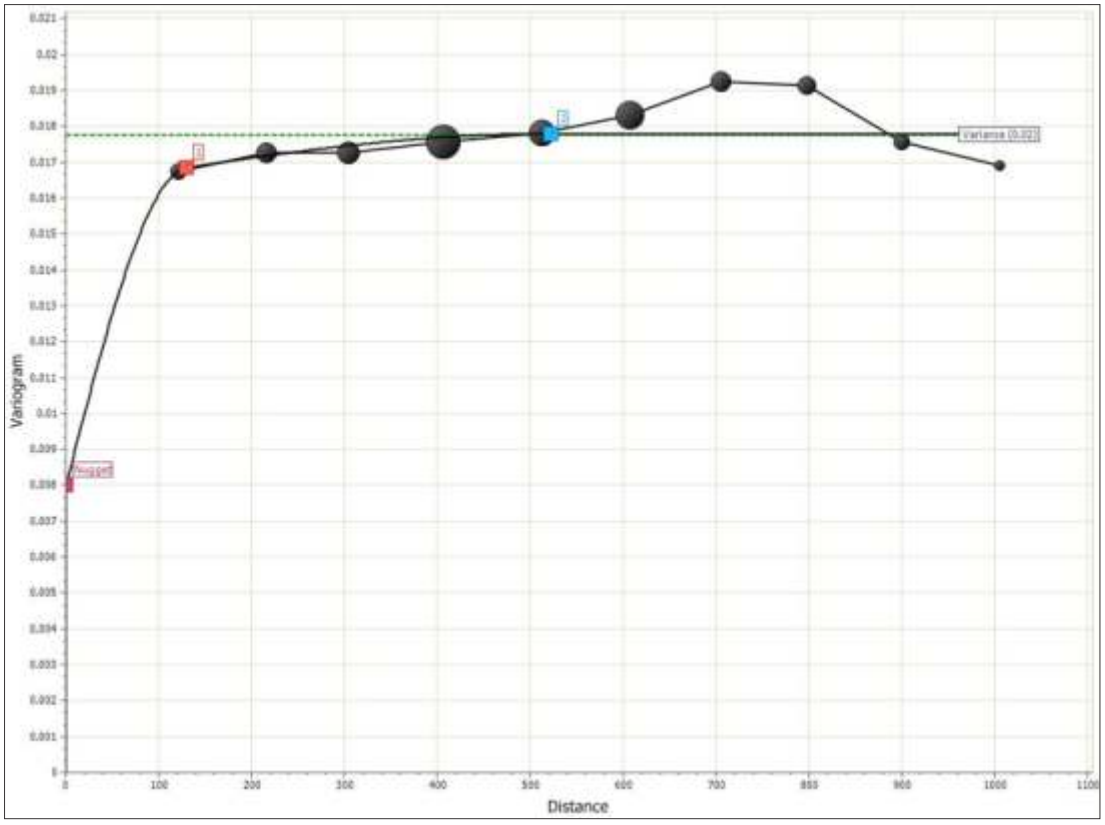
Source: Sound Mining 2017

Figure 37: Libanon H-TSF downhole and omni-directional variograms

Libanon H-TSF downhole variogram



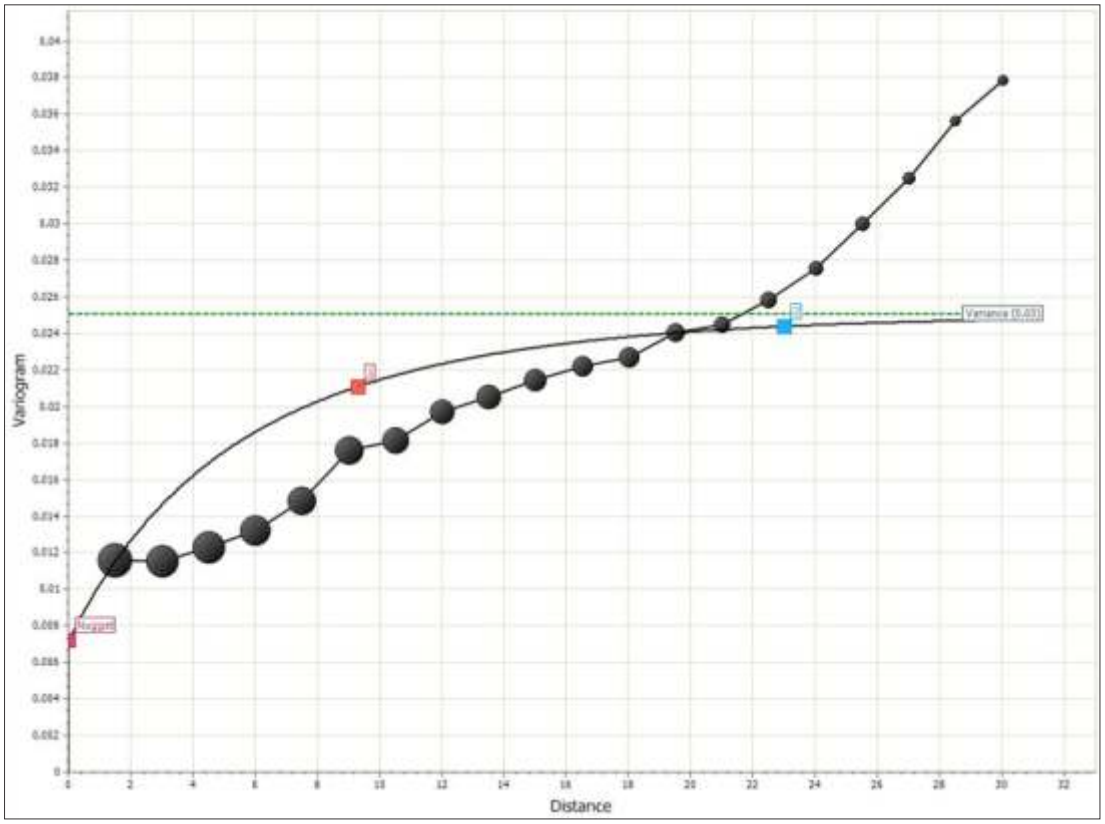
Libanon H-TSF omni-directional variogram



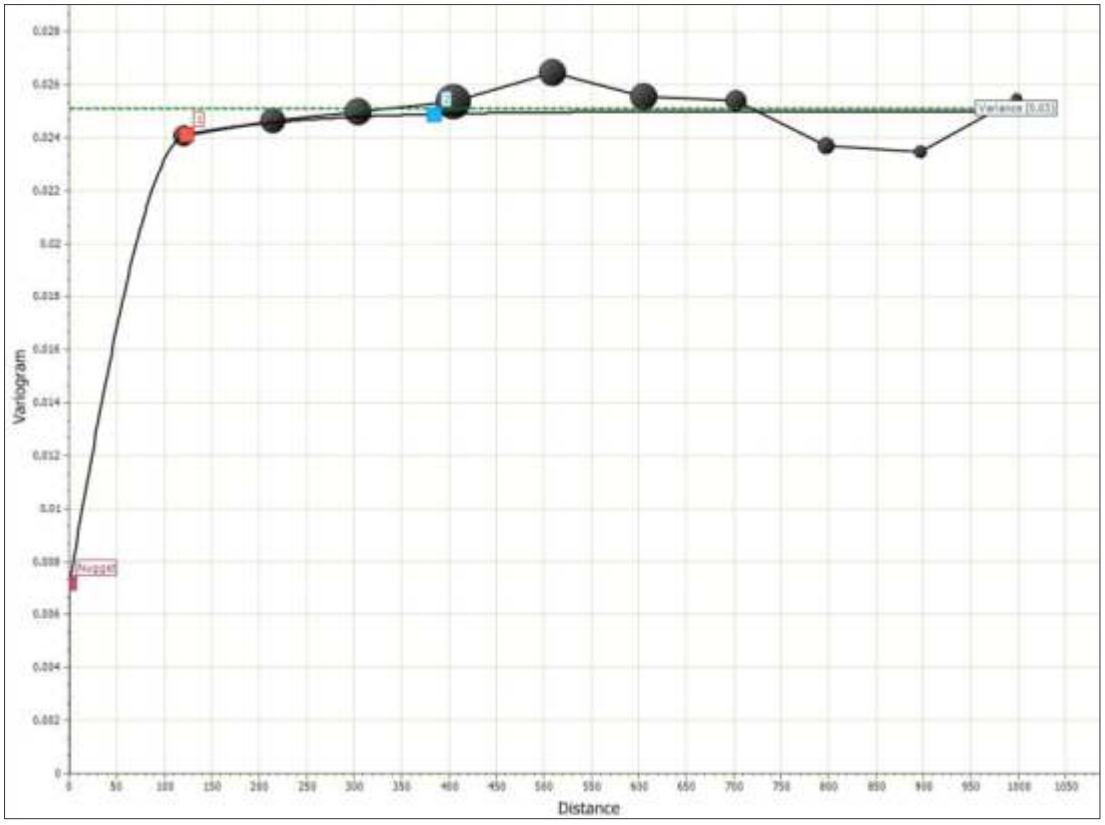
Source: Sound Mining 2017

Figure 38: Venterspost North H-TSF downhole and omni-directional variograms

Venterspost North H-TSF downhole variogram



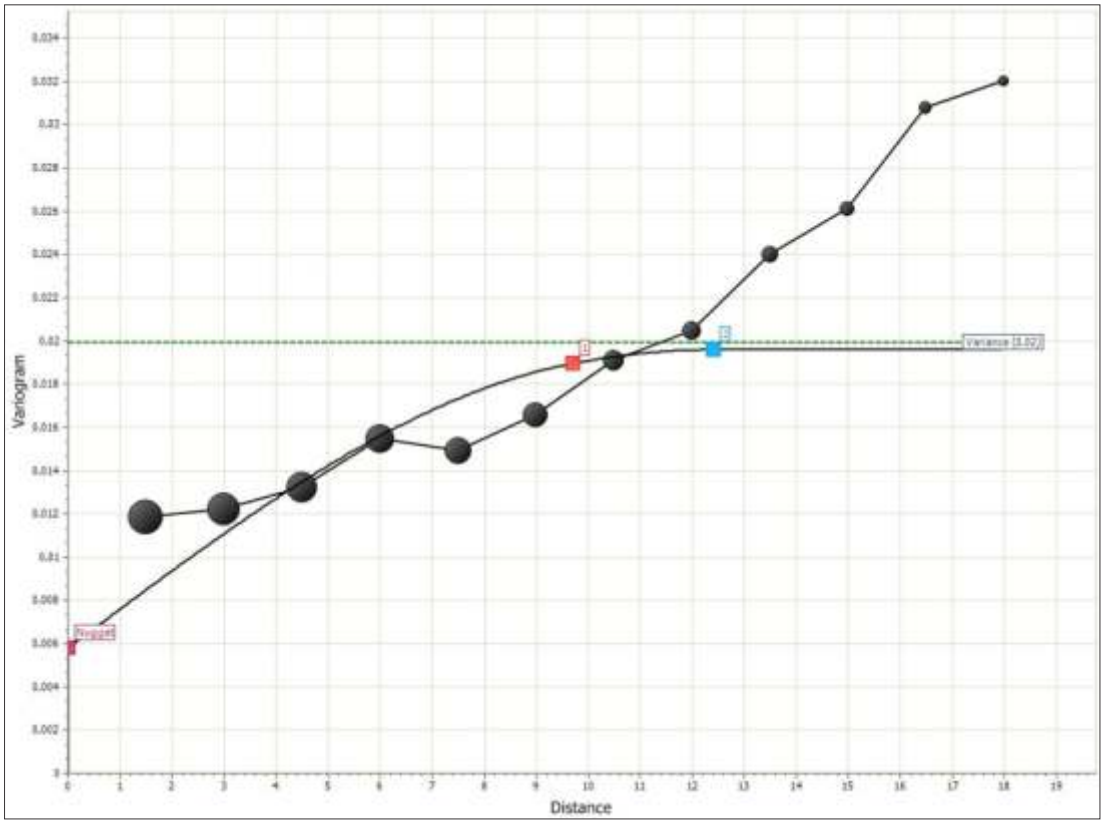
Venterspost North H-TSF omni-directional variogram



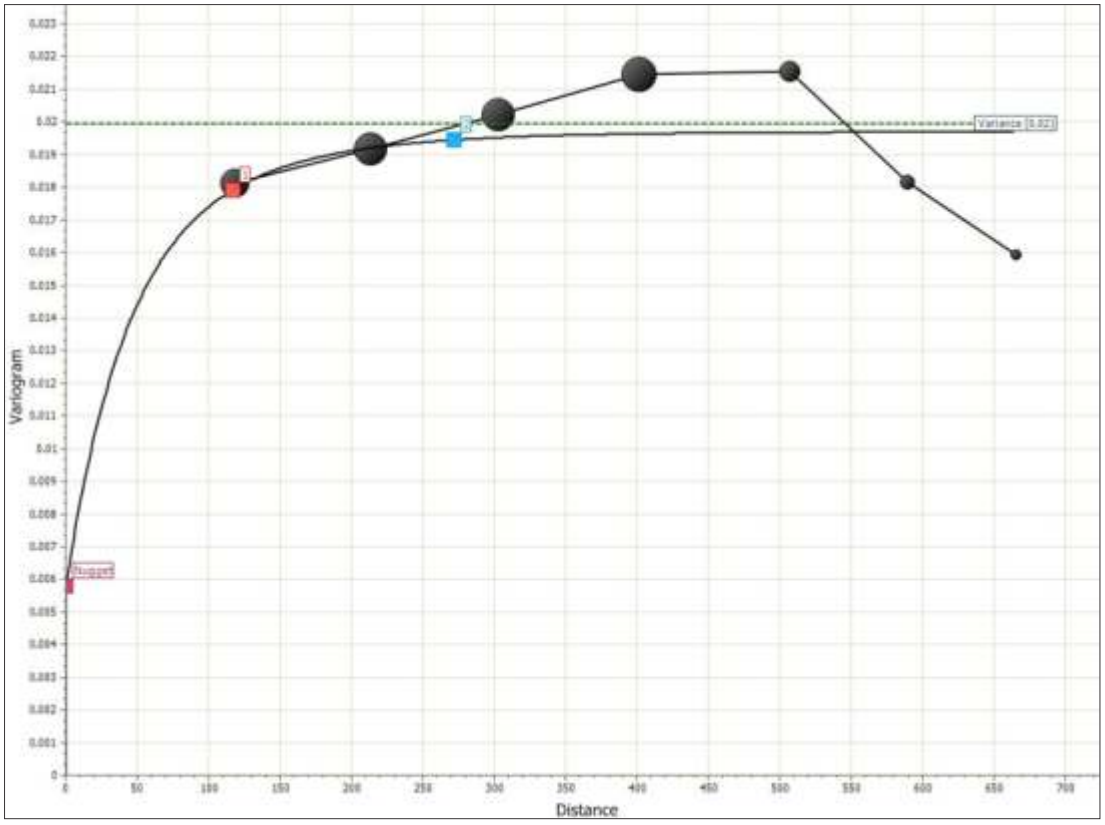
Source: Sound Mining 2017

Figure 39: Venterspost South H-TSF downhole and omni-directional variograms

Venterspost South H-TSF downhole variogram



Venterspost South H-TSF omni-directional variogram



Source: Sound Mining 2017

47. Appendix 2 : mass balance for the CPP

Table 65 : Mass balance for the CPP

Process stream	Solids (t per hr)	Water (Ml per hr)	Tonnes(Mt per hr)	Mass (%s)	Volume (%s)
Screen house -reclamation					
Feed from Libanon	909	1039	1948	47	24
Feed from Kloof 1	303	346	649	47	24
Feed from Driefontein 3	606	692	1298	47	24
Total Reclamation	1818	2077	3895	47	24
Reception distribution box					
Total Reclamation	1,818	2,077	3,895	47	24
Linear Screen 1	909	1,039	1,948	47	24
Linear Screen 2	909	1,039	1,948	47	24
Reception tank					
Linear Screen 1 Underflow	909	1,039	1,948	47	24
Linear Screen 2 Underflow	909	1,039	1,948	47	24
Dilution Water		0	0		
Cyclone Feed	1,818	2,077	3,895	47	24
No 1 Cyclone Module Feed	1,091	1,246	2,337	47	24
No 2 Cyclone Module Feed	727	831	1,558	47	24
Residue distribuiotn box					
Plant Residue	1,818	1,859	3,677	49	26
Residue Linear Screen 4	909	929	1,838	49	26
Residue Linear Screen 5	909	929	1,838	49	26
Residue to Tailings Dam	1,818	1,859	3,677	49	26
Tailings dam					
Slimes Dam Feed	1,818	1,859	3,677	49	26
Return Water		1,208	1,208		
Deposited on Dam	1,818	651	2,469	74	51
Feed from Libanon	909	1,039	1,948	47	24
Feed from Kloof 1	303	346	649	47	24
Feed from Driefontein 3	606	692	1,298	47	24
Dilution Water		0	0		
Plant Residue	1,818	1,859	3,677	49	26
Total	3,636	3,936	7,572	48	25
No 1 Cyclone Module Feed	1,091	1,246	2,337	47	24
No 2 Cyclone Module Feed	727	831	1,558	47	24
Residue to Tailings Dam	1,818	1,859	3,677	49	26
Total	3,636	3,936	7,572	48	25
Classification and milling					
Primary cyclone					
Cyclone Feed	1,091	1,246	2,337	47	24
Cyclone Overflow	783	1,124	1,907	41	20
Cyclone Underflow	308	122	430	72	48
Secondary cyclone feed sump					
Primary Cyclone Underflow	308	122	430	72	48
Tertiary Cyclone Underflow	137	69	206	67	42
Dilution Water		388	388		
Secondary Cyclone Feed	445	579	1,024	43	22
Seconadry cyclone					
Cyclone Feed	445	579	1,024	43	22
Cyclone Overflow	202	493	695	29	13
Cyclone Underflow	243	86	329	74	51
Tertiary cyclone feed sump					
Primary Cyclone Overflow	783	1,124	1,907	41	20
Secondary Cyclone Overflow Bleed	20	49	70	29	13
Tertiary Cyclone Feed	803	1,173	1,977	41	20
Tertiary cyclone					
Cyclone Feed	803	1,173	1,977	41	20
Cyclone Overflow	666	1,105	1,771	38	18

Process stream	Solids (t per hr)	Water (Ml per hr)	Tonnes(Mt per hr)	Mass (%s)	Volume (%s)
Cyclone Underflow	137	69	206	67	42
Thickener feed sump					
Secondary Cyclone Overflow	182	444	626	29	13
Tertiary Cyclone Overflow	250	415	665	38	18
Thickener Feed	432	859	1,291	33	16
Balance to Mill Discharge	416	690	1,106	38	18
Mill 1					
Secondary Cyclone Underflow	243	86	329	74	51
Mill Discharge	243	86	329	74	51
Tertiary Overflow to Mill Discharge	416	690	1,106	38	18
Leach Feed	659	776	1,435	46	24
Mill 2					
Primary cyclone					
Cyclone Feed	727	831	1,558	47	24
Cyclone Overflow	522	749	1,272	41	20
Cyclone Underflow	205	81	287	72	48
Secondary cyclone feed sump					
Primary Cyclone Underflow	205	81	287	72	48
Tertiary Cyclone Underflow	92	46	138	67	42
Dilution Water		259	259		
Secondary Cyclone Feed	297	386	683	43	22
Secondary cyclone					
Cyclone Feed	297	386	683	43	22
Cyclone Overflow	135	329	463	29	13
Cyclone Underflow	162	57	219	74	51
Tertiary cyclone feed sump					
Primary Cyclone Overflow	522	749	1,272	41	20
Secondary Cyclone Overflow Bleed	13	33	46	29	13
Tertiary Cyclone Feed	536	782	1,318	41	20
Tertiary cyclone					
Cyclone Feed	536	782	1,318	41	20
Cyclone Overflow	444	736	1,180	38	18
Cyclone Underflow	92	46	138	67	42
Thickener feed sump					
Secondary Cyclone Overflow	121	296	417	29	13
Tertiary Cyclone Overflow	167	277	443	38	18
Thickener Feed	288	572	860	33	16
Balance to Mill Discharge	277	460	737	38	18
Thickener 2					
Thickener Feed	288	572	860	33	16
Thickener Underflow	288	226	514	56	32
Thickener Overflow		346	346		
Mill 2					
Secondary Cyclone Underflow	162	57	219	74	51
Mill Discharge	162	57	219	74	51
Tertiary Overflow to Mill Discharge	277	460	737	38	18
Leach Feed	439	517	956	46	24
Water storage					
Thickener 1 Overflow		519	519		
Thickener 2 Overflow		346	346		
Cyclone Circuit 1 Dilution		388	388		
Cyclone Circuit 2 Dilution		259	259		
Return Water		1,208	1,208		
Kloof 1 Reclamation Water		303	303		
Return Water to K10		1,124	1,124		
Mass balance					
Return Water		1,208	1,208		
Cyclone Feed	1,091	1,246	2,337	47	24
Cyclone Feed	727	831	1,558	47	24
Total	1,818	3,285	5,104	36	17
Kloof 1 Reclamation Water		303	346		
Return Water to K10		1,124	1,124		
Leach Feed	659	776	1,435	46	24

Process stream	Solids (t per hr)	Water (Ml per hr)	Tonnes(Mt per hr)	Mass (%s)	Volume (%s)
Thickener Underflow	288	226	514	56	32
Leach Feed	439	517	956	46	24
Total	1,818	3,285	5,104	36	17
Leaching					
Pre-con tank					
Thickener No 1 Underflow	432	340	772	56	32
Thickener No 2 Underflow	288	226	514	56	32
Mill No 1 Product	659	776	1,435	46	24
Mill No 2 Product	439	517	956	46	24
Leach Feed	1,818	1,859	3,677	49	26
Carbon recovery screen					
Screen Feed	121	95	215	56	32
Loaded Carbon					
Carbon movement					
Interstage Transfer	121	95	215	56	32
Screen Flow During Transfer	1,939	1,953	3,892	50	27
Mass balance					
Thickener No 1 Underflow	432	340	772	56	32
Thickener No 2 Underflow	288	226	514	56	32
Mill No 1 Product	659	776	1,435	46	24
Mill No 2 Product	439	517	956	46	24
Total	1,818	1,859	3,677	49	26
Plant Residue	1,818	1,859	3,677	49	26
Total	1,818	1,859	3,677	49	26

Source : DRDGOLD 2017