Orion Minerals

ASX/JSE RELEASE: 18 December 2018

Landmark Resource Upgrade Sets Strong Foundation for Development of Prieska Zinc-Copper Project

- **Updated Mineral Resource completed on schedule following ~85,000m infill drilling program.**
- **Indicated Mineral Resource: 18.51Mt at 3.60% Zn and 1.17% Cu, available for inclusion in Ore Reserves estimation.**
- **Inferred Mineral Resource: 10.22Mt at 4.08% Zn and 1.14%Cu.**
- **Total Deep Sulphide Mineral Resource: 28.73Mt at 3.77% Zn and 1.16% Cu.**
- **Outstanding conversion rate demonstrates quality and consistency of the Prieska VMS deposit.**
- **Mineralisation remains open beyond the boundaries of the current Mineral Resource envelope, presenting high-priority extensional drilling targets.**
- **Upgraded Resource to underpin Bankable Feasibility Study, on track for completion in Q2 2019.**

Orion's Managing Director and CEO, Errol Smart, commented:

"This pivotal Resource upgrade provides a strong foundation for our strategy to fast-track the development of a state-of-the-art base metals operation at Prieska next year. This is an outstanding result for our shareholders, which demonstrates the success of the 85,000m infill drilling program completed over the past 18 months.

The higher-confidence Indicated component of the Resource has increased from zero to 18.5 million tonnes, a result which has exceeded our expectations for the area where we completed infill drilling. This very high conversion rate is testament to the exceptional quality and consistency of this deposit, and the Indicated Resource will now form the cornerstone of our Bankable Feasibility Study due for completion in Q2 next year.

However, it is also important to note that the thick, high-grade intersections on the margins of the resource area present compelling expansion targets. This near-mine exploration upside, when combined with the opportunity to upgrade additional Inferred Resources with future underground drilling and the broader potential of the emerging VMS field, puts Orion in an outstanding position to realise its objective of becoming a significant new player in the global base metals industry, with the development of the Prieska Deposit and exploration of the Areachap Belt."

Orion Minerals Limited (**ASX/JSE: ORN**) (**Orion** or **Company**) is pleased to announce an update to the Deep Sulphide Mineral Resource estimate at its Prieska Zinc-Copper Project (**Prieska Project**) in the Northern Cape, South Africa, providing a strong foundation to its ongoing Bankable Feasibility Study (**BFS**) and fast-tracked development strategy.

An additional 60,391m of drilling resulting in 50 new intersections and validation of 105 historical drill holes since the last Resource announcement in April 2018 (refer ASX release 9 April 2018), has successfully increased the total Deep Sulphide Resource to **28.73Mt grading 3.77% Zn and 1.16% Cu**, with **18.51Mt grading 3.60% Zn and**

1.17% Cu upgraded to the higher-confidence Indicated category, available for inclusion in estimation of Ore Reserves by the BFS currently underway.

The Mineral Resources stated in Tables 1 and 2 are for drilling data available on the Repli and Vardocube Prospecting Rights. The Mineral Resources are quoted in accordance with the 2012 Edition othe Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**) with supporting information in Appendix 1.

License	Classification	Volume (m^3)	Density (tonnes/m^3)	Tonnes	Zn (tonnes)	Zn (%)	Cu (tonnes)	Cu (%)
Repli	Indicated	4,414,000	3.41	15,052,000	510,000	3.38	170,000	1.15
	Inferred	2,044,000	3.42	6,998,000	270,000	3.86	80,000	1.09
	Total	**6,458,000**	**3.41**	**22,050,000**	**779,000**	**3.53**	**249,000**	**1.13**
Vardocube	Indicated	1,018,000	3.39	3,455,000	158,000	4.57	44,000	1.27
	Inferred	933,000	3.45	3,221,000	147,000	4.56	41,000	1.27
	Total	**1,951,000**	**3.42**	**6,676,000**	**305,000**	**4.57**	**85,000**	**1.27**
Deep Sulphide Total	Indicated	5,432,000	3.41	18,507,000	667,000	3.60	217,000	1.17
	Inferred	2,977,000	3.43	10,219,000	417,000	4.08	117,000	1.14
	Total	**8,409,000**	**3.42**	**28,726,000**	**1,084,000**	**3.77**	**334,000**	**1.16**

Table 1: Global Indicated and Inferred Mineral Resource Statement for the Prieska Project.

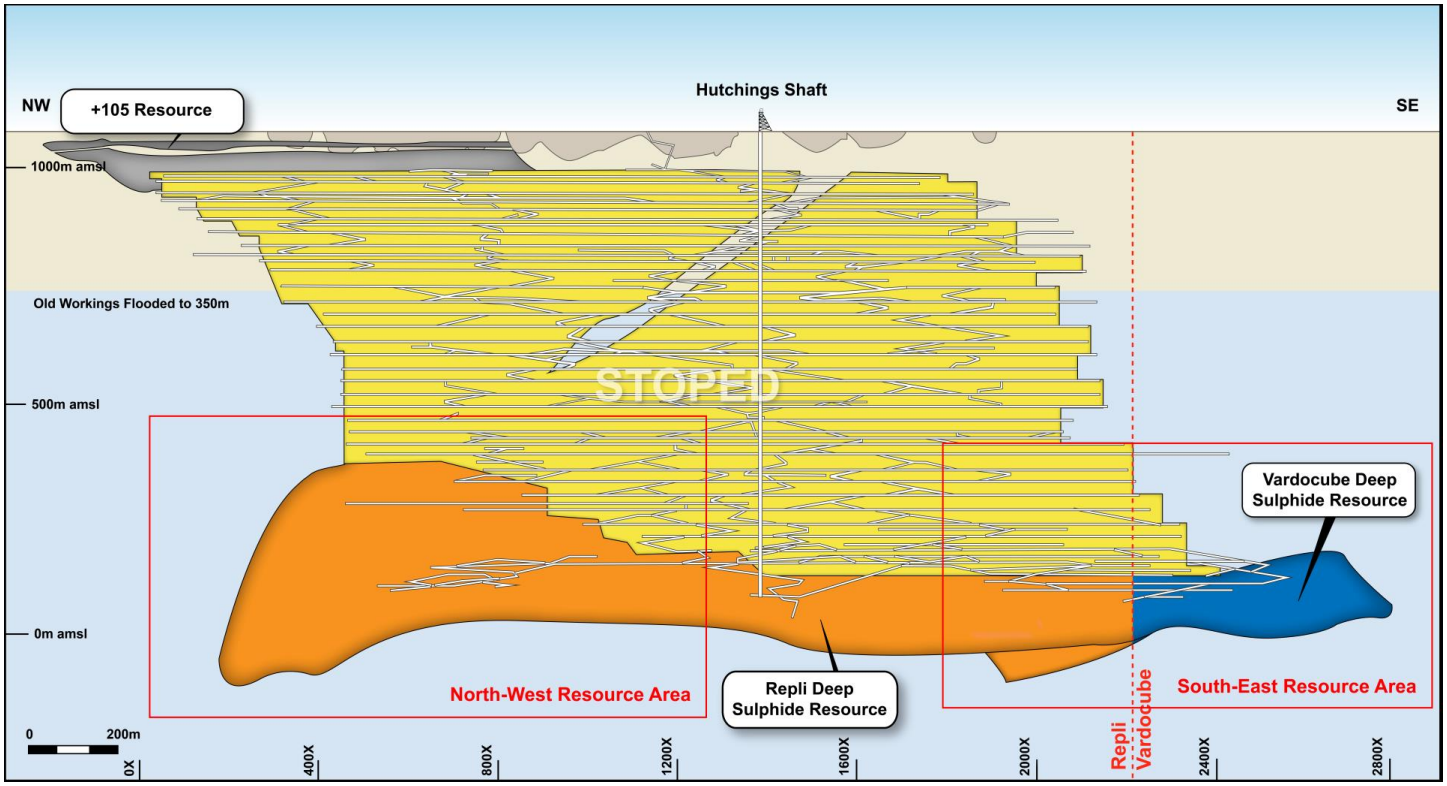


Figure 1: Longitudinal schematic section showing the historically mined area and the Deep Sulphide Mineral Resource at the Prieska Project, with the Deep Sulphide Resource subdivided into the Repli and Vardocube Mineral Resource areas.

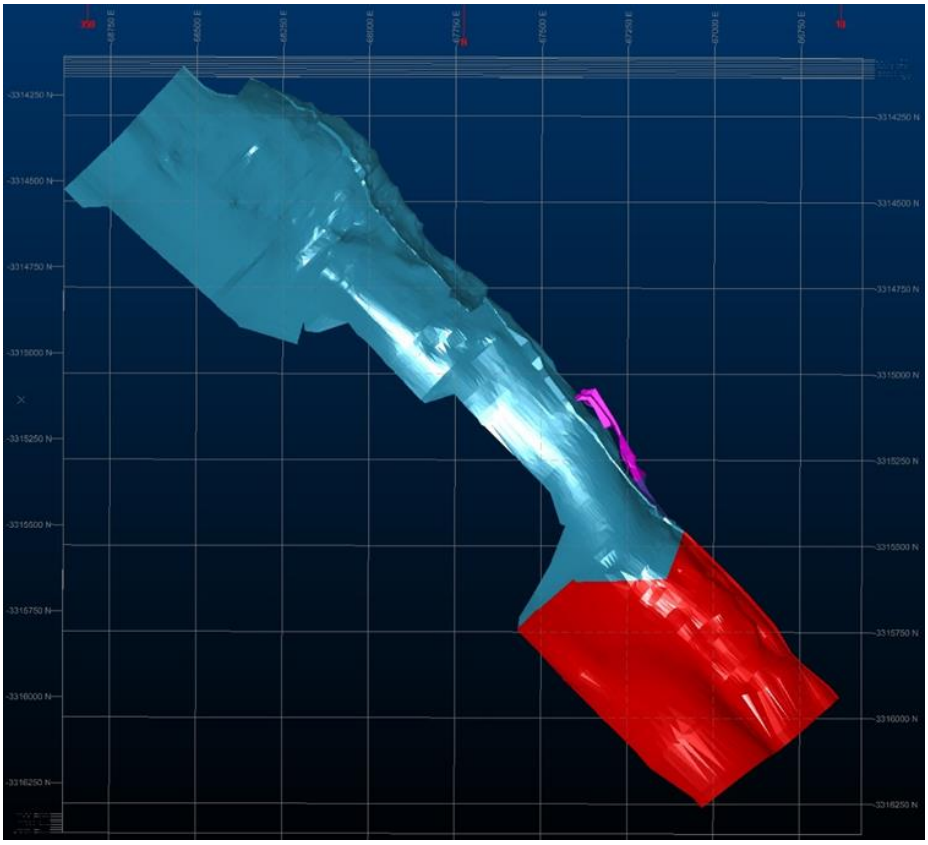


Figure 2: Isometric view showing the Deep Sulphide Resource with the area in cyan and purple being the portion on the Repli Prospecting Right infill and the red indicates the Vardocube Area.

Cut-off Zn Eq %$_{calc}$	Classification Category	Volume(m³)	Tonnes	Zn Tonnes	Zn Grade (%)	Cu Tonnes	Cu Grade (%)
0	Indicated	5,432,000	18,507,000	667,000	3.60%	217,000	1.18%
	Inferred	2,977,000	10,219,000	417,000	4.08%	117,000	1.14%
4	Indicated	5,055,000	17,305,000	646,000	3.73%	207,000	1.20%
	Inferred	2,678,000	9,270,000	398,000	4.29%	110,000	1.24%
6	Indicated	2,411,000	8,449,000	379,000	4.49%	113,000	1.34%
	Inferred	1,681,000	5,923,000	292,000	4.92%	77,000	1.29%

Note: Volumes and masses rounded to thousands, which may result in rounding errors.

Table 2: Mineral Resource for the Deep Sulphide Target at various higher cut-offs.

Summary Table for Zinc Equivalent Calculations

Parameter	Units	Zinc	Copper	Comments
Metal selling price	USD/t	3,549	7,011	Kitco.com 31 Jan 2018 NYSE 20h00
Exchange rate USD:ZAR	USD:ZAR	11.9	11.9	exchange rate obtained from XE.com 31 Jan 2018
Metal selling price	ZAR/t	42,225	83,400	Calculated
Metal recovery - Hypogene material	%	85%	85%	Historical performance and recent testwork
Metal in conc sales costs	%	18%	8%	Concentrate traders' estimate
State Royalty	%	0.50%	0.50%	Calculated
Effective Revenue per t of metal	**ZAR/t**	**29,108**	**64,881**	**Calculated**
Copper Equivalent	%	1.00%	**0.45%**	
Zinc Equivalent	%	**2.23%**	1.00%	

Notes

* Copper and Zinc Sales Costs include all concentrate transport, metal treatment and refining charges, and the benchmark discount to spot prices paid by smelters, all expressed as an aggregate percentage of the contained metal value at prevailing spot prices.

Possible by-product credits for Au, Ag and Pb are uncertain, subject to negotiation and are excluded from this metal equivalent estimate.

Resource infill drilling was completed in Q4 2018 and the current Mineral Resource incorporates the results of 85,424m of drilling from 41 mother holes with 61 deflections, resulting in 87 intersections (15 intersections for metallurgical sampling). In addition, 452 validated historical drill holes were incorporated into the Resource database.

The primary focus of the drilling was to undertake infill sampling within the Deep Sulphide Inferred Resource area, and to focus on converting as much as possible of the Inferred to Indicated Resource within the given time frame. As a result, mineralisation was not closed off and potential exists to increase the Resource with more drilling at the Prieska Zinc-Copper Deposit. In addition, Orion also believes that excellent opportunity exists for new discoveries within the Prieska Volcanogenic Massive Sulphide (**VMS**) Camp and is currently fast-tracking its near-mine exploration program.

As part of the BFS, Orion now looks forward to the completion of detailed scheduling and the mine design for the Deep Sulphide Resource. With engineering studies progressing well (refer ASX release 2 February 2018) and metallurgical optimisation completed (refer ASX release 22 Ocotber 2018), Orion is confident of a positive outcome for the BFS.

The updated Mineral Resource for the Deep Sulphide Target was estimated utilising the following parameters:

- The Mineral Resource incorporates mineralisation within the Repli and Vardocube Prospecting Right areas corresponding to a strike length of 2,600m. It has a horizontal width of between 6m and 140m, with a down-dip extent of 1,230m below the shaft collar. The true thickness of the mineralisation varies from 1m to 30m with an average of 7m.
- The Deep Sulphide mineralisation is the depth extension of the historically mined strata-bound, stratiform VMS Prieska Zn-Cu deposit. The mined section of the deposit is confined to a tabular, stratabound horizon in the northern limb of a refolded recumbent synform, the axis of which plunges at approximately 5° to the south-east. The Deep Sulphide Target area is located below the historical mined area, comprises the steep down-dip continuity ("steep limb and hinge zone") and from where it upturns to its subsequent synformal structure ("trough zone").
- The stated Mineral Resource is based on drilling data available as at 30 November 2018 corresponding to 41 mother holes and 61 deflections for 85,424m (75,962m diamond core and 9,462m pre-collar percussion) (Figure 3A). Additional intersection data was obtained by digital capturing and validation of 620 historical underground drill holes of which 452 intersections were incorporated in the Mineral Resource estimate.
- Diamond core samples were taken by splitting NQ or BQ core in half (Orion drilling). Core size for the historical drilling is unknown.
- Orion samples were analysed at ALS Chemex (Pty) Ltd (**ALS**). Samples from historical surface drilling samples were analysed at Anglovaal Research Laboratory at Rand Leases Mine and samples from underground drilling at the Prieska Mine laboratory.
- Certified Reference Material (**CRM**), blanks and duplicates were inserted and analysed with each batch of Orion drilling. Insertion rates for the current reporting is: CRMs = 10%, blanks = 5% and field duplicates = 2% and pulp duplicates = 4%. A total of 4% of the samples were checked at an external laboratory. ALS has their own internal QA/QC protocols which include CRMs (5%), blanks (2.5%) and duplicates (2.5%). Historical laboratory QA/QC is undocumented and was controlled by the laboratory.
- All Orion collars were surveyed by a qualified surveyor using a Trimble R8 differential GPS. All historical surface and underground hole collars were surveyed by qualified surveyors using a theodolite.
- Down-hole surveys for Orion holes were completed using a north-seeking Gyro instrument. Down-hole surveys were carried out for most of the V holes and all of the D and F hole s drilled by Anglovaal. Both Eastman and Sperry Sun instruments were used in historical down-hole surveys.
- Mineralised zones were delineated for resource estimation using a Zinc Equivalent (Zn_Eq) calculation as a guide (Zn% + (2 x Cu%) > 4%) cut off value.
- Samples were composited to 1m, with four Cu value outliers value capped to 13.35%. No Zn outliers were capped and a single density value was capped to 4.83t/m^3
- Interpolation of the composite data was used to estimate the block grades using the Ordinary kriging for local block estimation.
- A block model with cells of 30m x 30m x 5m was used with a sub-cell size of 0.5m x 0.5m x 0.5m.

- Bulk Densities (**BD,** t/m^3) were determined using the water displacement method. The entire sample (normally 1m length) was measured. Local block estimates of BD t/m^3 were produced using Ordinary kriging in areas of close spaced sampling. A second pass with longer search radii was utilised to populate the remaining blocks.
- The Deep Sulphide Resource is classified at Inferred and Indicated levels of confidence. The classification of the Deep Sulphide Resource takes cognisance of uncertainty associated with the definition of the mineralised domain and therefore the volume estimate. The classification also takes cognisance of the fact that there is more than one drilling and sampling program, and the historical Anglovaal data has limited supporting documentation on procedures and assay methods. The estimated Mineral Resource is constrained between a historical stoped area and a densely drilled area without extrapolation.

Project Background

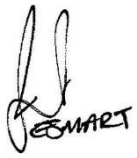
The Prieska Project is located in the Northern Cape Province of South Africa, approximately 290km southwest of the city of Kimberley. The project area encompasses the historical Prieska Copper Mine (**PCM**). PCM was profitably operated by Anglovaal as an underground zinc and copper mine, exploiting the Copperton deposit between 1971 and 1991, processing on average three million ROM tonnes per year to produce a life of mine total of 1.01 million tonnes of zinc and 430,000 tonnes of copper in concentrates (refer ASX release 15 November 2017). Run-of-mine ore was treated by froth flotation to produce separate concentrates of copper and zinc.

Orion is now investigating the establishment of new mining operations targeting the extraction of the remaining zinc-copper mineralisation at the Prieska VMS deposit.

Orion has delineated a global Mineral Resource for the Deep Sulphide, classified by a Competent Person and reported in accordance with the JORC Code, amounting to 28.73 million tonnes grading 3.77% zinc and 1.16% Cu of which, 18.51 million tonnes is in the Indicated Catogory grading at 3.60% zinc and 1.17% copper.

Mine-development studies are scheduled for completion in the first half of 2019. DRA Projects South Africa Pty Ltd (**DRA**) is the lead consultant appointed to consolidate the BFS, part of which includes the design of the mineral processing plant. Metallurgical test work was conducted at the Mintek laboratories in Johannesburg, South Africa. ABS Africa Pty Ltd is supervising the environmental permitting.

An application for a Mining Permit was submitted in April 2018 and granting of the permit is expected in Q2 2019, with project construction planned to start in Q4 2019.



Errol Smart
Managing Director and CEO

ENQUIRIES

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Competent Person's Statement

The information in this report that relates to Exploration Results is not in contravention of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**) and has been compiled and assessed under the supervision of Mr Errol Smart, Orion's Managing Director. Mr Smart (PrSciNat) is registered with the South African Council for Natural Scientific Professionals, a Recognised Overseas Professional Organisation (**ROPO**) for JORC purposes and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Smart consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Exploration Results is not in contravention of the JORC Code and has been compiled and assessed under the supervision of Mr Sean Duggan, a Director and Principal Analyst at Z Star Mineral Resource Consultants (Pty) Ltd. Mr Duggan (PrSciNat) is registered with the South African Council for Natural Scientific Professionals (Registration No. 400035/01), an ROPO for JORC purposes and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Duggan consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears and detailed in Appendix 1.

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Appendix 1: The following tables are provided in accordance with the JORC Code (2012) requirements for the reporting of Exploration Results and Mineral Resources for the Prieska Deep Sulphide Target.

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• 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 down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling. • Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report. • In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	• Drilling and sampling by Anglovaal Ltd (also known as the Anglovaal Group, (Anglovaal) has been undertaken during two distinct periods since the discovery of mineralisation. These are pre-mine exploration (1968 -1971) and during mine operations (1972-1984) drill holes ("V", "D", and "F" prefixed holes). • Since 2017 diamond drilling and sampling at the Deep Sulphide Target was done on two adjacent prospecting rights held by Repli Trading No. 27 (Pty) Ltd (**Repli)** and Vardocube (Pty) Ltd (**Vardocube**), both subsidiary companies of Orion Minerals Ltd (**Orion**). Anglovaal: • For diamond drilling carried out by Anglovaal between 1968 and 1984, there is limited information available on sampling techniques for core. However, with exploration and resource management being carried out under the supervision of Anglovaal, it is considered by the Competent Person that there would be procedures in place to the industry best practice standard at that time. This is based on the Competent Persons knowledge of exploration carried out by Anglovaal and discussions with personnel employed by Anglovaal. • The mineral resource management were under the professional supervision of Dr Danie Krige an internationally recognised expert of the time who published peer reviewed papers based on the sampling data. The sampling was successful in defining a resource estimate which was used as the basis of successful mine development and operation over a 20-year period. • Drilling of the original surface exploration holes was carried out 200 – 250m line spacing. Underground exploration holes were not drilled on a regular spacing. • Surface drill exploration samples were all sent to Anglovaal Research Laboratory at Rand Leases Mine, and underground drill samples to the mine laboratory for analyses. • No records on the sampling methodology. • Although no formal QA/QC samples were inserted at the time by the geologists on the exploration site or the mine the Anglovaal Research

Criteria	JORC Code explanation	Commentary
		Laboratory developed their own standards, certified by other commercial laboratories and those were used internally in the laboratory. Duplicate samples were also inserted to check for repeatability. Orion: • Diamond drill core was geologically logged, and zones of mineralisation are identified and marked on the core. The core was marked for cutting using the "low point" of the stratigraphy, marking the downhole direction on each core piece to ensure that the cut core was returned to the tray correctly. Half core was sampled. Following cutting, the core was returned to the core tray. The sampling process was undertaken by a qualified geologist, who checked that all core was returned in the correct order by turning the core to face upward, fitting the core together and marking the metre intervals on the cut face. • The core sample intervals were marked with due consideration of the percentage of sulphide mineralisation, lithological contacts, and minimum and maximum sample intervals (nominally 50cm to 1.0m). The sampling details were captured onto a paper log sheet that records sample depths, sample number (derived from a standardised sample register) recoveries, mineralisation percentage, sulphide minerals and mineralisation style. A comments field is used to capture ancillary observations or associations. • Drilling at the Deep Sulphide Target was initially carried out aiming to define an approximate 100m x 100m pattern by use of "mother" holes and deflections from these holes. In specific areas the drill density was increased to improve the level of confidence of the resource. • Percussion / reverse circulation pre-collars (where used) were sampled on a composite basis. • Sampling carried out under supervision of a qualified geologist using procedures outlined below including industry standard QA/QC. • Samples submitted for analysis to ALS Chemex (Pty) Ltd (**ALS**) were pulverised in its entirety at ALS and split to obtain a 0.2g sample for digestion and analysis. • Downhole electromagnetic (**EM**) survey were carried out in selected drill holes using standard techniques.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, 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.).*	Anglovaal: • Records for core size are not available. • No record on core orientation

Criteria	JORC Code explanation	Commentary
		Orion: • Diamond core drilling using single tube NQ and BQ sized core. BQ core was only drilled where problems were encountered in the original NQ drilled drill hole and the drilling could not continue with NQ size. • In the near surface weathered zone HQ core was drilled. • Pre-collar drilled using percussion drilling on certain holes (above mineralisation). • Core was orientated in holes selected for geotechnical studies.
Drill sample recovery	• *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.* • *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.*	Anglovaal: • All mineralised intersections were done with core drilling. • Core recoveries were measured for each drill "run" and recorded on assay sheets. • In most V holes and all D and F holes, intersections were in hard rock and recoveries were generally good through the mineralisation. Orion: • All mineralised intersections were done with core drilling. • Core stick-ups reflecting the depth of the drill hole were recorded at the rig at the end of each core run. • A block with the depth of the hole written on it was placed in the core box at the end of each run. • At the core yard, the length of core in the core box was measured for each run. The measured length of core was subtracted from the length of the run as recorded from the stick-up measured at the rig to determine the core lost. • Core recovery in all the mineralised intersections are good. • No grade variation with recovery noted.

Criteria	JORC Code explanation	Commentary
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.* • *The total length and percentage of the relevant intersections logged.*	Anglovaal: • All relevant intersections for V surface holes have been logged and all of this information is available. It is understood from historical reports that all intersections for D and F holes were logged but not all information is currently available. • Downhole geotechnical information is available for some of the D and F holes only. Downhole mineralogical logs are available for some D and F holes. Orion: • Pre-collar percussion holes were logged on 1m intervals using visual inspection of washed drill chips. A hand held XRF instrument was used to determine the presence of any metals. • Core of the entire hole length was geologically logged and recorded on standardised log sheets by a qualified geologist. • Qualitative logging of colour, grain size, weathering, structural fabric, lithology, alteration type and sulphide mineralogy was carried out. • Quantitative estimate of sulphide mineralogy. • Logs were recorded at the core yard and entered into digital templates at the project office.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	Anglovaal: • Details of sub-sampling techniques not available. Orion: • Samples from percussion pre-collars were collected by spear sampling. • Sampling on site aimed to generate a < 2kg sub sample to enable the entire sample to be pulverised without further splitting. • Water was used in the dust depression proses during percussion drilling, resulting in wet chip samples. • BQ and NQ core cut at core yard and half core taken as sample. with maximum of 1m sample length • With core samples, the entire sample length was cut and sampled. • Sample preparation was undertaken at ALS an ISO accredited laboratory. ALS utilises industry best practise for sample preparation for analysis, involving drying of samples, crushing to <5mm if required and then pulverising so that +85% of the sample passes 75 microns.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Anglovaal: • Surface drill exploration samples were all sent to Anglovaal Research

Criteria	JORC Code explanation	Commentary
	• *For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	Laboratory at Rand Leases Mine. • Atomic Adsorption method was used with a Nitric-bromide digest. Underground drill hole samples were sent to the mine laboratory, where the same analytical method was used. • Underground drill hole samples were sent to the mine laboratory, where the same analytical method was used. • Although no formal QC samples were inserted with the drill samples of the exploration holes the Anglovaal Research Laboratory developed their own standards, certified by other commercial laboratories and those were used internally in the laboratory. Duplicate samples were also inserted to check for repeatability. Orion: • Samples were submitted to ALS and analysed for base metals, Au and Ag. Analysis was by the Inductively Coupled Plasma and Optical Emission Spectroscopy ("ICP-OES") methodology. Initially a three-acid digest was used but since November 2018 an Aqua-regia digest was used. • Certified Reference Material (CRM), blanks and duplicates were inserted and analysed with each batch. Insertion rates for the current reporting was: CRM = 10%, blanks = 5%, field duplicates = 2% and pulp repeat duplicates = 3.9% • ALS has their own internal QA/QC protocols which include CRM's (5%), blanks (2.5%) and duplicates (2.5%). • CRM samples showed high accuracy and tight precision with no consistent bias. • Blank samples indicated no contamination, within the pre-determined thresholds, during the sample preparation process. • Field duplicate samples showed acceptable precision with no obvious bias. • Laboratory samples showed excellent accuracy and precision. • External laboratory checks by Genalyses showed excellent repeatability with the primary laboratory. • Down hole EM surveys were carried out in selected holes, using a 3 component Digi-Atlantis probe and ultra high power transmitter. • Loop size of 1800m x 600m were used with continuous measurements taken as the probe travels into the hole and out again. • Surface TDEM surveys were carried out using a Supracon Jesse Beep squid sensor and ultra-high-power transmitter with a Smartem 24 receiver.

Criteria	JORC Code explanation	Commentary
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	Anglovaal: • No records available Orion: • Orion's Executive: Exploration personally supervised the drilling and sampling along with a team of experienced geologists. • The Executive: Exploration reviewed the raw laboratory data and confirmed the calculation of the significant intersections. • Twin holes were drilled to verify historical drill intersections from Anglovaal. • Data entry from the primary hard copies was done on Excel spreadsheets by the geologists logging the core. The data was then imported in to an Access database by the geologist responsible for the database. Validation of the data is done during importing into the Access database by running queries, and when the resource geologist imports the data into to the modelling software. • All drilling data has been transferred to a secure Geobank database. • For the EM survey, data was collected on site and validated by a geophysical technician daily. Data (raw and processed) was sent to a consultant geophysicist for review, quality control and processing. • No adjustments have been made to the assay data.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	Anglovaal: • All surface and underground hole collars were surveyed by qualified surveyors using a theodolite. • The historic mine survey data is in the old national Lo 23 Clarke 1880 coordinate system. • Downhole surveys were carried out for most of the V holes and all of the D and F holes. Methodology of the downhole surveys is not recorded on the available hardcopy information but plans and sections are meticulously plotted and signed off by a certified surveyor. • Both Eastman and Sperry Sun instruments were used in the downhole surveys. • Significant deflections in the dips of the holes have been noted, especially for the deeper holes. V holes with no downhole surveys are shallower holes drilled earlier on in the initial exploration phase. These holes intersected areas where the mineralisation is now largely mined out. • All hole positions have been converted to Lo23 WGS84 coordinates. • Underground D and F holes are recorded in local "V" line and "O"

Criteria	JORC Code explanation	Commentary
		distance coordinates with local mine datum elevations. Level plans have both the local V/O grid and Lo23 Clark 1880 grids plotted and this has been used to define transformation parameters from local grid to geographical coordinates. All hole positions have been converted to Lo23 WGS84 coordinates. Orion: • Drill hole collar positions were laid out using a handheld GPS. • After completion of the Orion drilling all collars were surveyed by a qualified surveyor using a Trimble R8 differential GPS. • Downhole surveys were completed in all drill holesusing a North-Seeking Gyro instrument. • All survey data is in the WGS84 ellipsoid in the WG23 Zone with the Hartebeeshoek 1994 Datum. The coordinates are also supplied in Clarke 1880 and in UTM WGS84 Zone 34 (Southern Hemisphere).
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	Anglovaal: • Original exploration holes (V) were drilled on 200 - 250 m spacing. • Underground drilled holes (D, F and R) were not drilled on a regular spaced grid. Orion: • At the Deep Sulphide Target drill holes were initially aimed to intersect mineralisation on approximately 100m x 100m spacing with infill drilling to be carried out in areas of interest as determined by results. In specific areas the drill density was increased to improve the level of confidence of the resource. • Variography studies were carried out toguide the drill spacing for Mineral Resource estimates. • No sample compositing has been applied before assaying.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• Most of the historical drilling and all current drilling was oriented perpendicular, or at a maximum achievable angle to, the attitude of the mineralisation. • As a result, most holes intersect the mineralisation at an acceptable angle. • No sampling bias is anticipated as a result of hole orientations. • EM surveys by Orion were completed in an orientation perpendicular to the interpreted or intersected mineralisation.
Sample security	• *The measures taken to ensure sample security.*	Anglovaal:

Criteria	JORC Code explanation	Commentary
		• No details of sample security available. However, during the mining operations the site was fenced and gated with security personnel employed as part of the staff. Orion: • Chain of custody was managed throughout. Samples were stored on site in a secure locked building and then freighted directly to the laboratory. • All coarse and pulp rejects returned from the laboratory are stored within secured locked buildings.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	Anglovaal: • No records of audits or reviews are available. Orion: • SRK has reviewed the sampling techniques being practiced. • The sampling process is governed by well-established industry and company procedures and protocols.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The Deep Sulphide Target is located on two Prospecting Rights held by Repli and Vardocube, which are subsidiaries of Orion (Figure 1A). • The Prospecting Right areas covers a strike of 2,460m for the Deep Sulphide mineralisation. • All of the required shaft infrastructure and lateral access underground development is available within the two Prospecting Rights.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Anglovaal exploration resulted in the delineation and development of a large mine.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Copperton deposit is a Volcanogenic Massive Sulphide (**VMS**) deposit which is situated in the southernmost exposures of the north-northwest trending Kakamas Terrain, which forms part of the Mid-Proterozoic Namaqualand Metamorphic Complex. • The deposit is hosted by the Copperton Formation of the Areachap Group. The Areachap Group, also hosts several other but smaller VMS deposits such as the Areachap, Boks Puts, Kantien Pan, Kielder, and

Criteria	JORC Code explanation	Commentary
		Annex Vogelstruisbult deposits. • The structural sequence at the mine consists of a footwall Smouspan Gneiss Member, Prieska Copper Mines Assemblage (PCMA), which hosts the sulphide mineralisation, and the hangingwall Vogelstruisbult Gneiss Member. • The historically mined section of the deposit is confined to a tabular, stratabound horizon in the northern limb of a refolded recumbent synform, the axis of which plunges at approximately 5° to the south-east. • The mineralised zone outcrop has a strike of 2,400m, is oxidised and / or affected by leached and supergene enrichment to a depth of approximately 100m and crops out as a well-developed gossan. It has a dip of between 55° and 80° to the northeast at surface and a strike of 130° to the north. Current drilling indicates that the Deep Sulphides has a strike length of at least 2860m in depth. • The thickness of the mineralised zone exceeds 30m in places but averages between 7m and 9m. The mineralised zone persists to a depth of 1,100m (as deep as 1,228m in one section) after which it is upturned due to the folding. • The Deep Sulphide Target area located below the historical mined area, comprises the steep down dip continuity ("steep limb and hinge zone") and from where it upturns to its subsequent synformal structure ("trough zone"). • The morphology of the mineralised horizon in the eastern limb is well mapped out by drilling and historic mining while the western limb up dip extent is poorly tested and mapped.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	Anglovaal: • Historical drilling results used in the Deeps Mineral Resource estimation were reported in the ASX releases of 16 July 2018 and 18 November 2015. Orion: • All drill hole intersections used in the the Deep Sulphide Mineral Resource estimation have been reported in the ASX releases of 5 November 2018, 15 October 2018, 18 September 2018, 16 July 2018, 19 February 2018, 1 February 2018, 12 December 2017, 8 November 2017, 9 October 2017, 5 October 2017, 17 September 2017, 6 September 2017, 27 July 2017, 17 July 2017. • Other relevant diagrams have been included in the abovementioned ASX releases relating to the drilling results at the Prieska Project.

Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	Anglovaal: • Individual intersections were weighted by sample width. • No truncations have been applied. • All grade and density information are incorporated in the Orion database, and due to the large number of intersections made it is in the Competent Person view that it should not be included in this reporting. Orion: • Significant intersections for the Deep Sulphide Target reported to the ASX are calculated by average of assays result > 0.3% copper or 0.5% zinc and weighted by the sample width and specific gravity of each sample. • In general, the significant intersections correspond strongly to geological boundaries (massive sulphides) and are clearly distinguishable from country rock / surrounding samples. • No truncations have been applied. • No metal equivalent values were considered. • Significant intersections made by Orion were reported in previous ASX releases relating to drilling of the Deep Sulphide Target.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	• All intersection widths quoted are down hole widths. • Most holes intersected the mineralisation perpendicular or at high angle to the attitude of the mineralisation. • The geometry of the Deep Sulphide mineralisation is complex and true widths can be obtained from the three-dimensional wireframe created of the mineralisation.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Appropriate diagrams (plans and long sections) are shown in Figures 1A to 6A. • All drill hole intersections used in the the Deep Sulphide Mineral Resource estimation have been reported the ASX releases of 5 November 2018, 15 October 2018, 18 September 2018, 16 July 2018, 19 February 2018, 1 February 2018, 12 December 2017, 8 November 2017, 9 October 2017, 5 October 2017, 17 September 2017, 6 September 2017, 27 July 2017, 17 July 2017. Historical drilling results were reported in the ASX releases of 16 July 2018 and 18 November 2015.Other relevant diagrams have been included in previous ASX releases relating to the drilling results at the Prieska Project.

Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All drilling information is available in a secure GeobankTM database and has been compiled digitally. • The Company has presented all available information in this report in a balanced manner and has provided appropriate context for the Exploration Results to allow a considered and balanced judgement of their significance.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Hardcopy plans are available for a range of other exploration data. This includes mine survey plans, geological maps, airborne magnetic, ground magnetic, electromagnetic, gravity and induced polarisation information. All available exploration data has been viewed by the Competent Person. • The Prieska Mine operated from 1972 to 1991 and is reported to have milled a total of 45.68 Mt of ore at a grade of 1.11% copper and 2.62% zinc, recovering 0.43 Mt of copper and 1.01 Mt of zinc. Detailed production and metallurgical results are available for the life of the mine (Figure 7A). • In addition, 1.76 Mt of pyrite concentrates and 8,403 t of lead concentrates as well as amounts of silver and gold were recovered. • Copper and zinc recoveries averaged 84.9% and 84.3% respectively during the life of the mine. • Comprehensive geotechnical work as part of a Bankable Feasibility Study (**BFS**) has been completed on the Deep and +105 Target areas and the data is available. • Metallurgical test work as part of a BFS is in progress. All data to date is available. • Relevant diagrams have been included in previous ASX releases relating to drilling at the Prieska Project.
Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Drilling is on-going to test extensions of the Deep Sulphide Target in areas where the mineralisation is not closed-off.

Section 2-1 Selected Images illustrating the Mineral Resource and sampling presented.

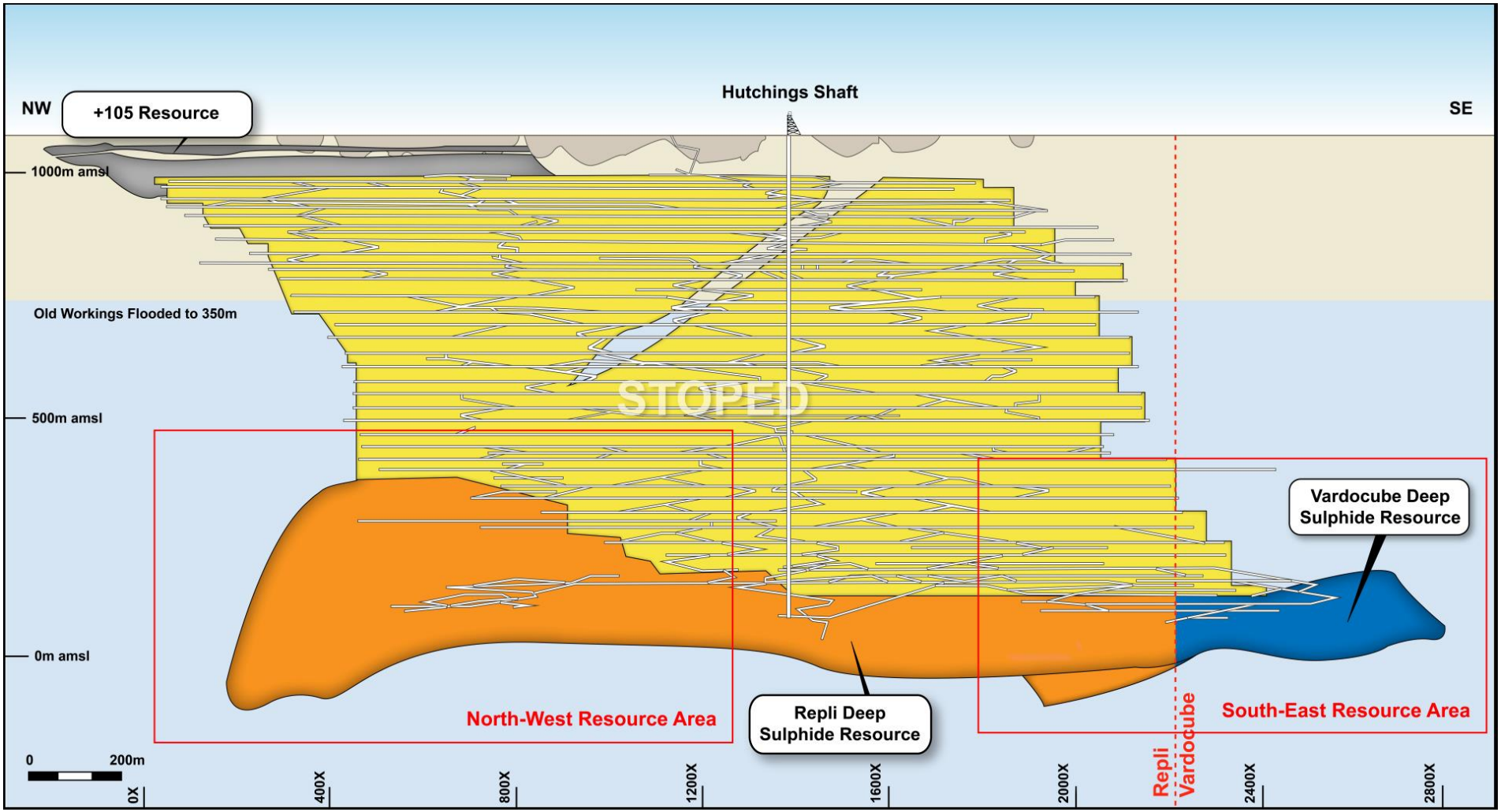

Figure 1A: Longitudinal section of showing the historically mind area and the Deep Sulphide Resource at the Prieska Project, with the Deep Sulphide Resource subdivided into the Repli and Vardocube Resource areas.

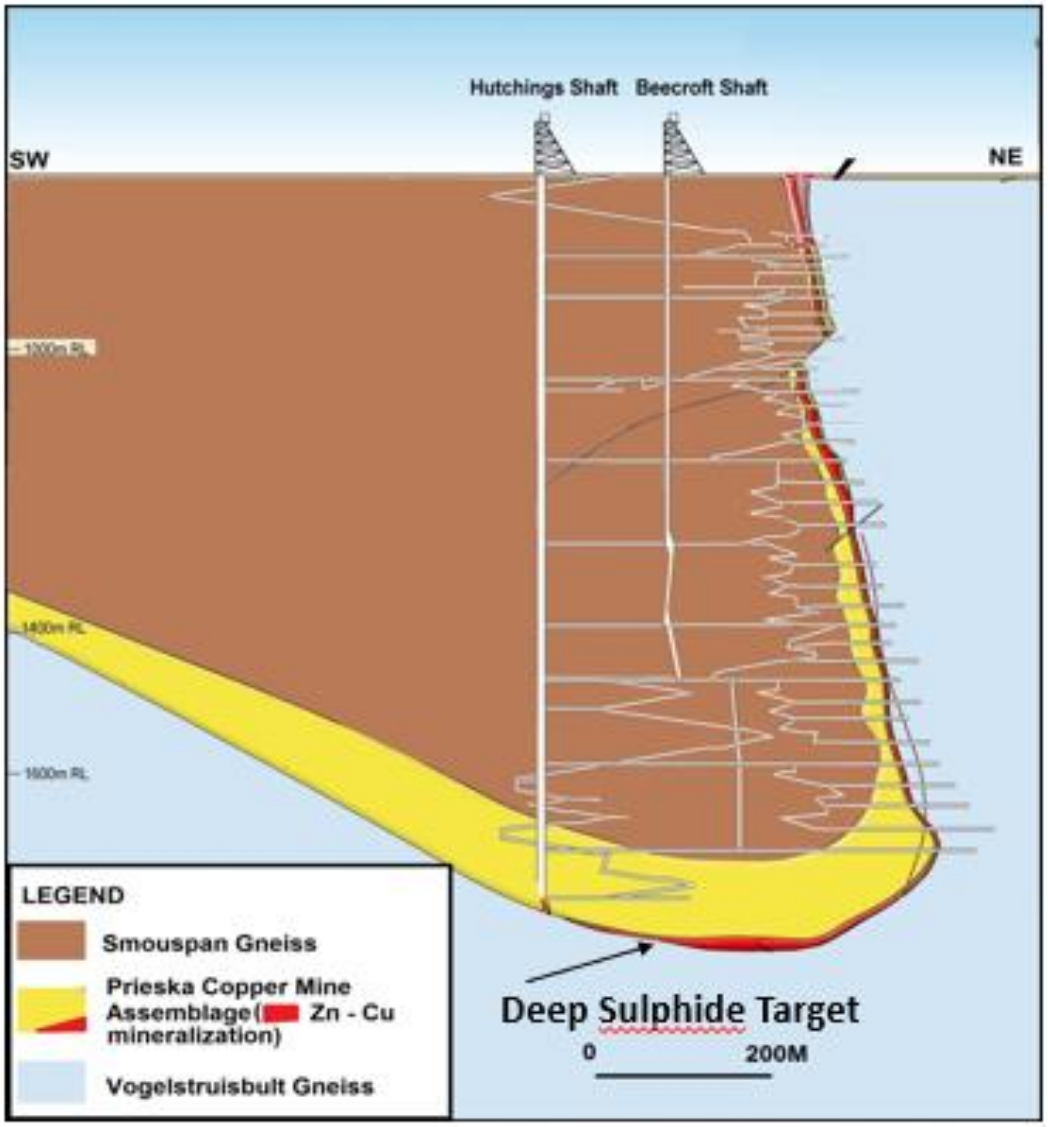

Figure 2A: Simplified geological section through Prieska Project showing structure and locality of the Deep Sulphide Target below the old workings.

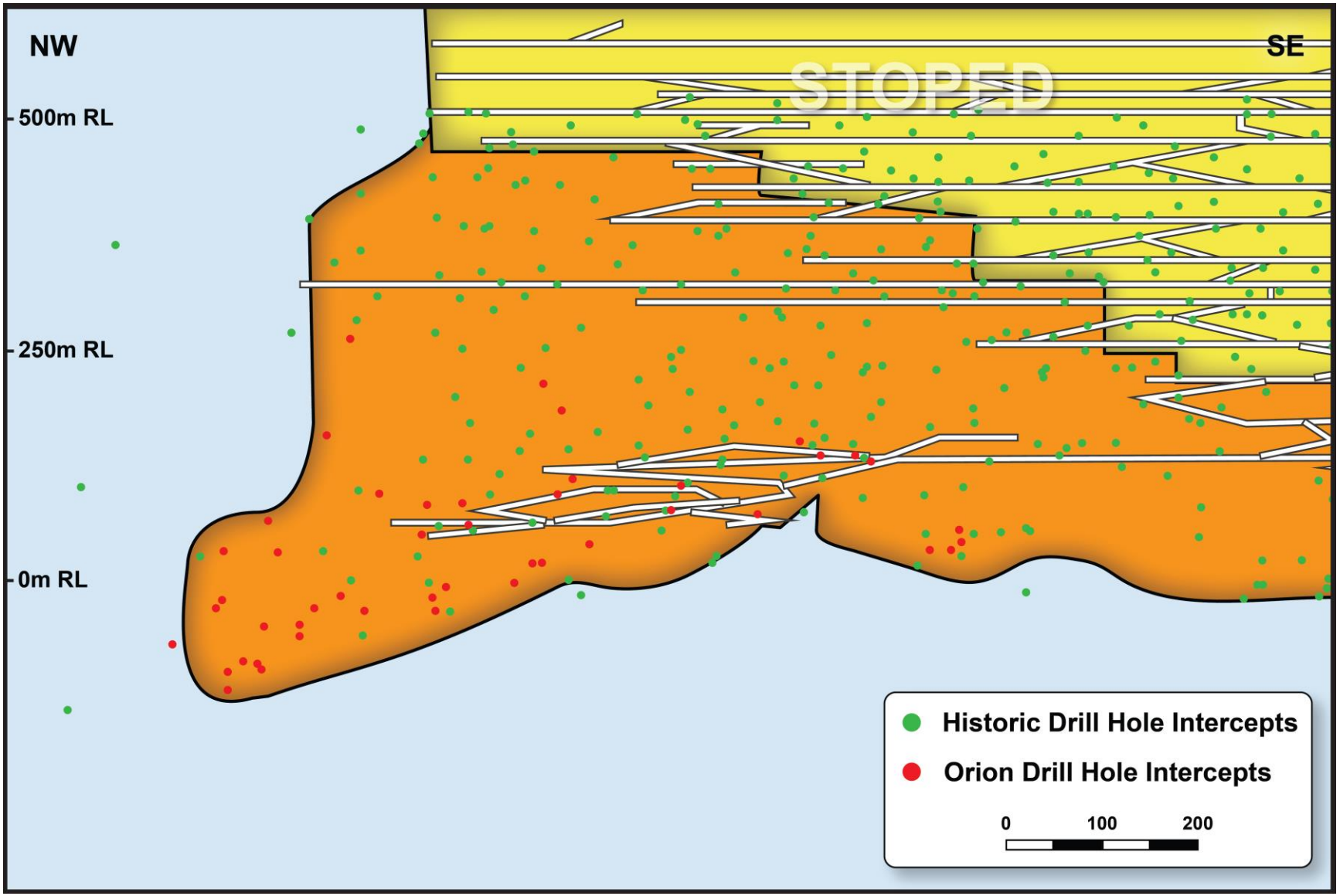

Figure 3A: Longitudinal projection of the North-West Resource area of the Prieska Project, showing the intersection points of the drill holes used in this Mineral Resource release.

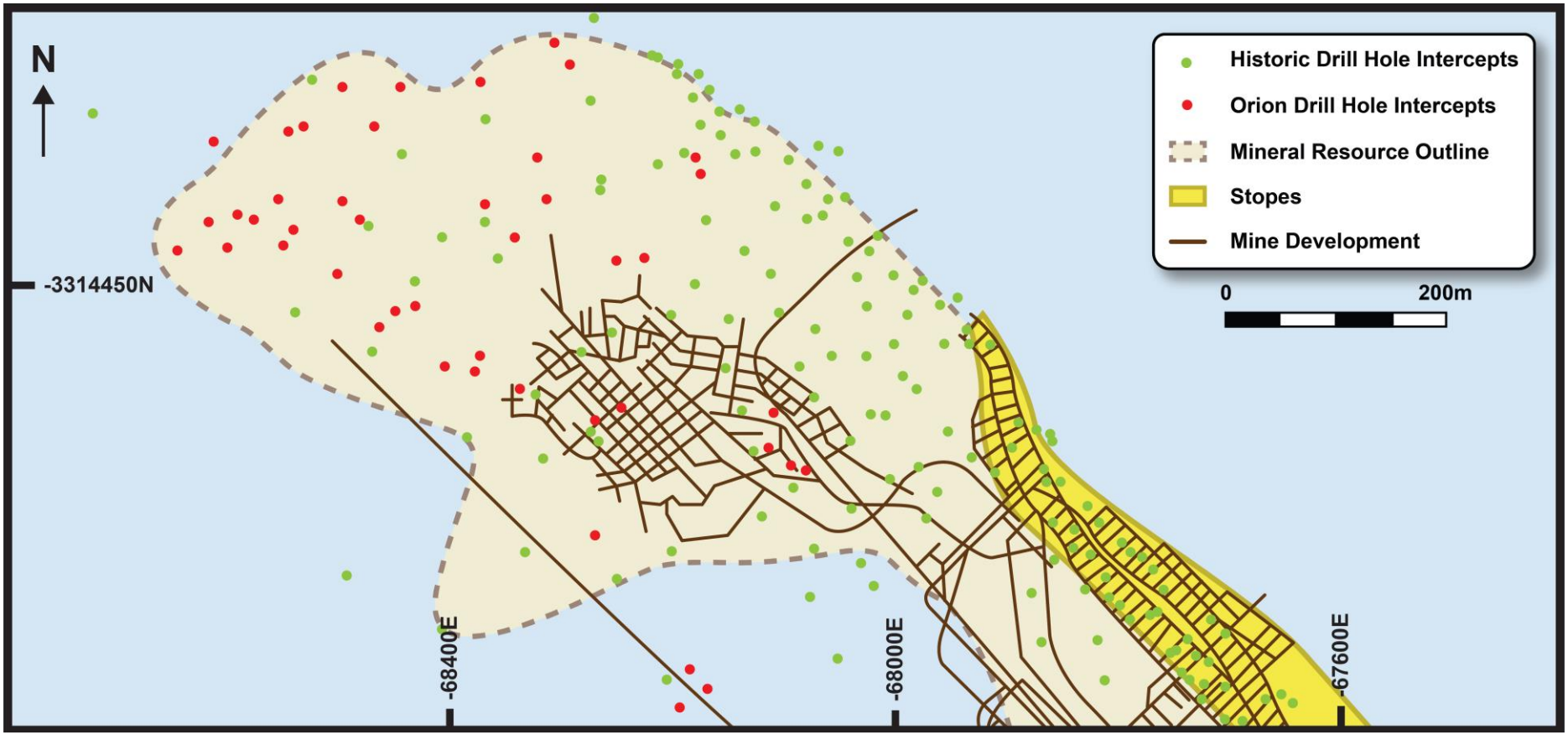

Figure 4A: Plan of the North-West Resource area of the Prieska Project, showing the intersection points of the drill holes used in this Mineral Resource release.

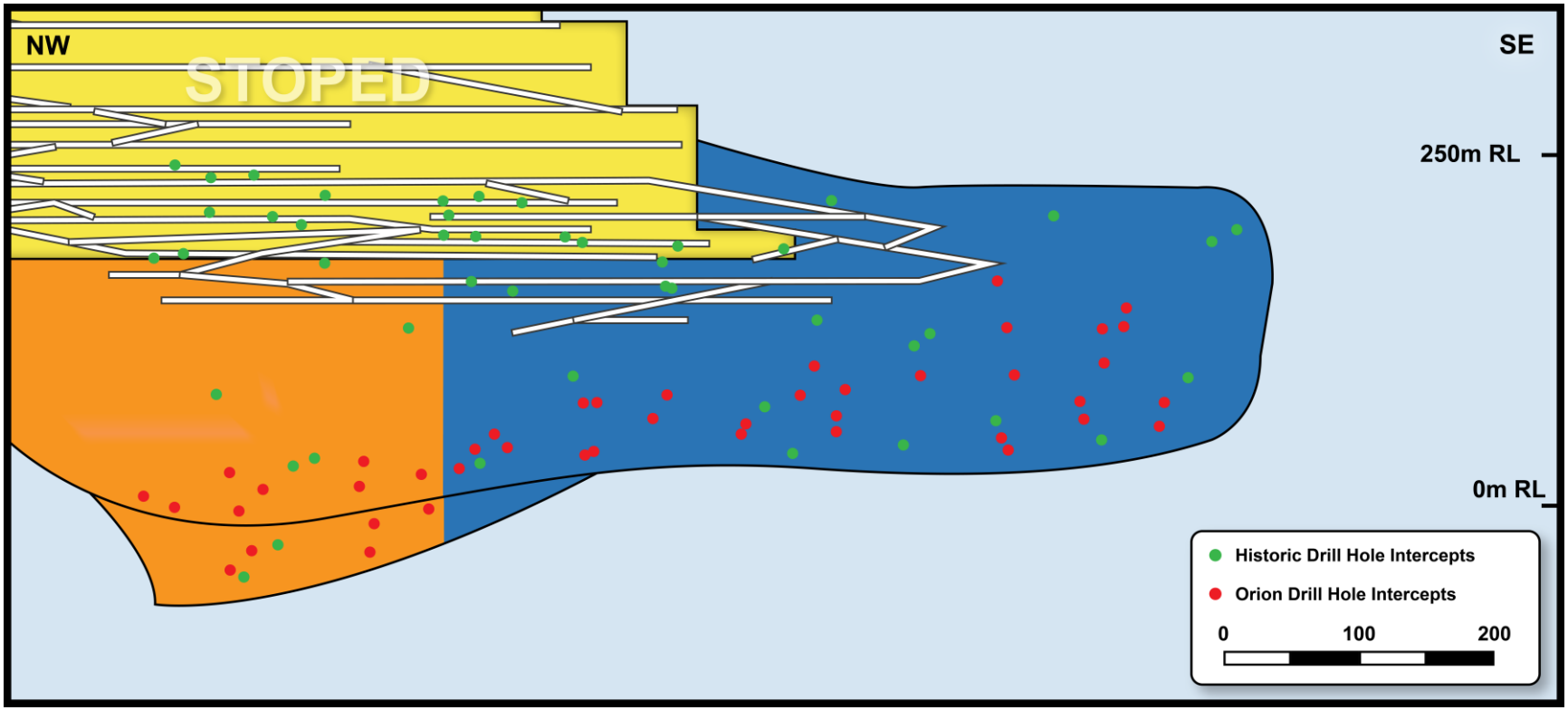

Figure 5A: Schematic longitudinal projection of the South-East Resource area of the Prieska Project, showing the intersection points of the drill holes used in this Mineral Resource release.

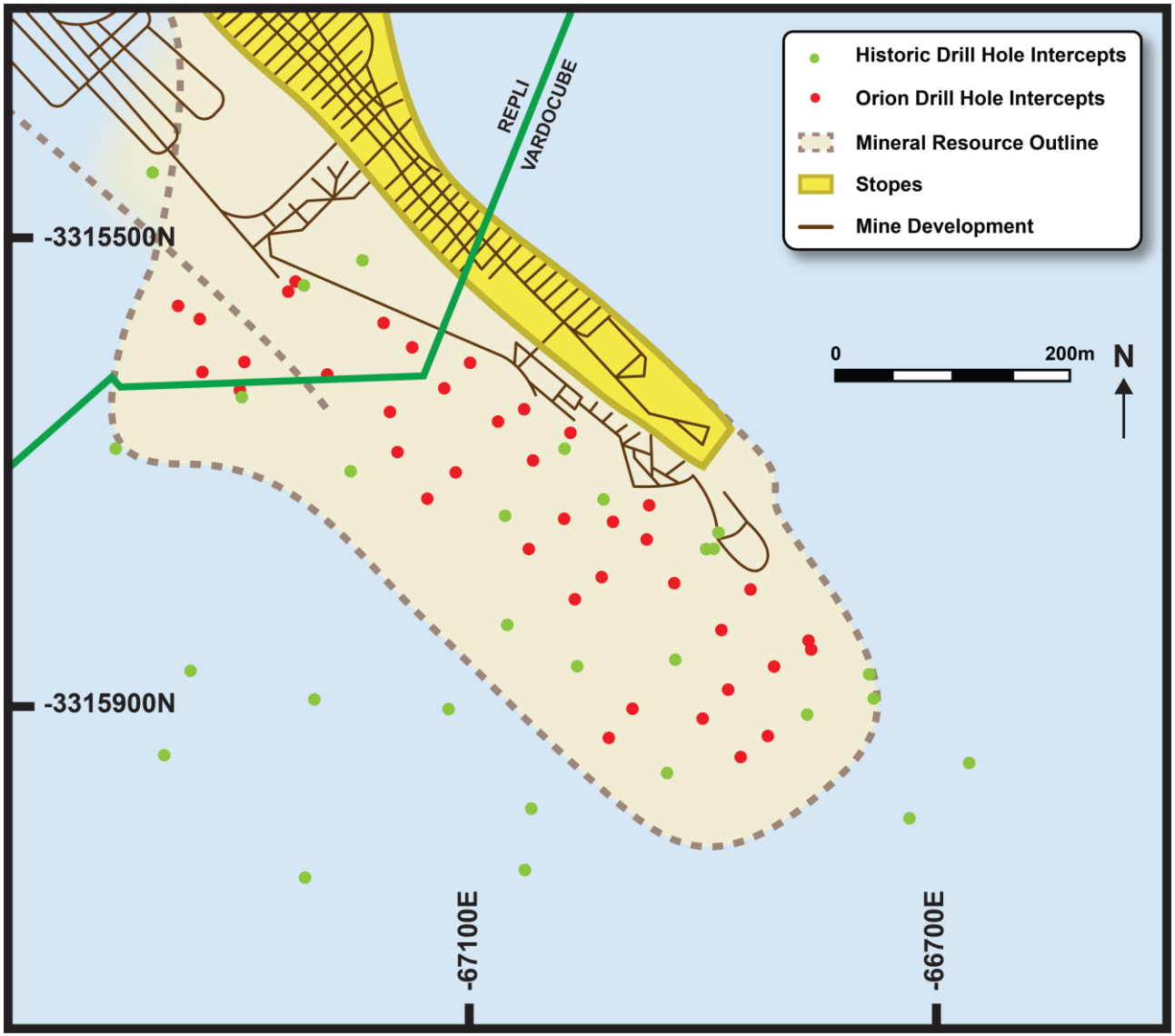

Figure 6A: Plan of the South-East Resource area of the Prieska Project, showing the intersection points of the drill holes used in this Mineral Resource release.

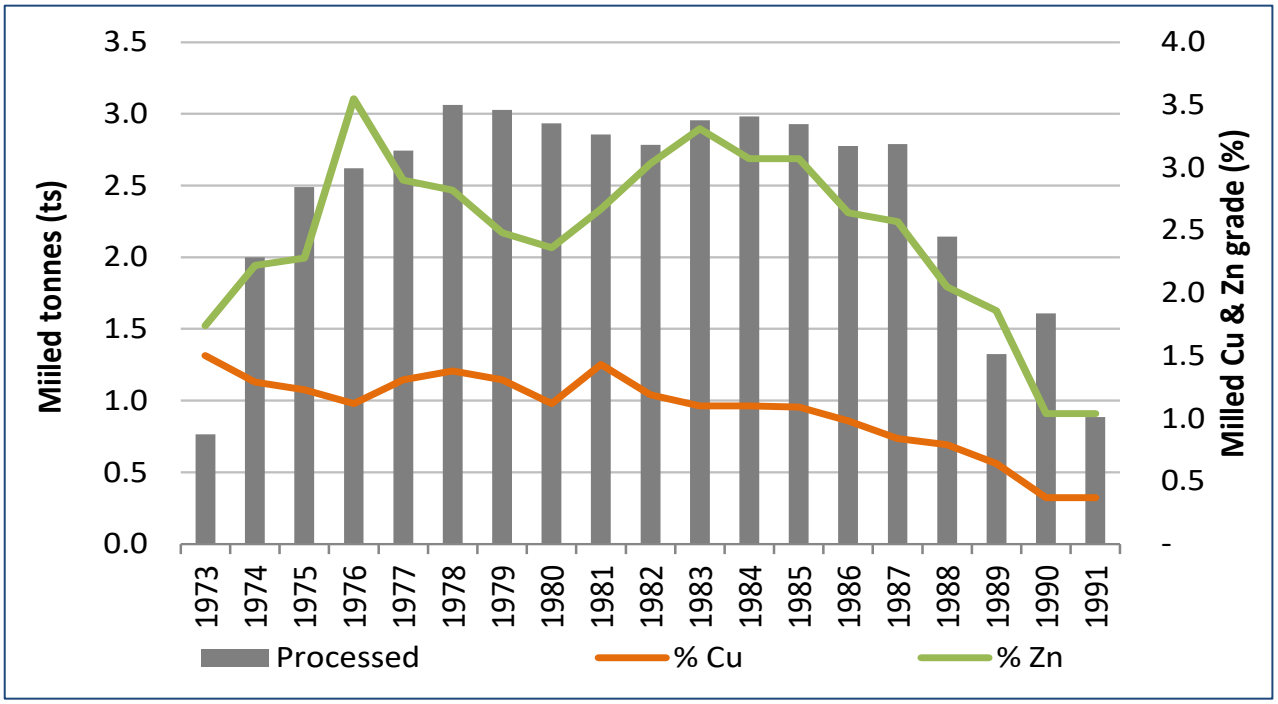

Figure 7A: Graphic presentation of the tonnes and grades milled at the Prieska Copper Mine from 1973 to 1991 (Source: Mine Records).

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in Section 1 and where relevant in Section 2. also apply to this section.)

Criteria	JORC Code explanation	Commentary

Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*
	• *Data validation procedures used.*
		• All drill hole and sample data are stored by Orion in a robust Geobank™ database.
		• Validation includes the following:
		  ○ Ensuring that all drill holes have appropriate XYZ coordinates.
		  ○ Comparing the maximum depth of the hole against the final depth indicated in the collar file.
		  ○ Comparing the final depth in the survey file against final depth in the collar file.
		  ○ Comparing the final depths of all geology, assay, core recovery against the final depth in the collar file.
		  ○ Checking for duplicate drill holes.
		  ○ Checking that each depth interval has a main lithology.
		  ○ Checking that all fields that were set up as mandatory fields contain entries.
		  ○ The core recoveries were checked for unrealistic percentages.
		  ○ Density results are checked for unrealistic values.
		• A further check was performed when the drill hole data was imported into the Geovia SurpacTM (Surpac) modelling software. The data was validated for duplicates, gaps, overlaps, impossible intervals in down-hole sequence for assay, collar coordinates, geology data and survey data. The drill holes were also visually checked in plan and section in Surpac.

Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• Z* Star Mineral Resource Consultants (Pty) Ltd (**Z***) were requested by Orion Services South Africa (Pty) Ltd (**Orion SA**) to estimate and classify a mineral resource for the Deep Sulphide deposit. Z* visited the Prieska Project from 17 to 19 October 2017. • The visit included a review of the drilling and sampling operations, discussion on the geology and associated mineralisation, review of the planned drill holes and examination of the assay data and a high level spatial analysis.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• The Deep Sulphide mineralisation is the depth extension of the strata-bound, stratiform VMS Prieska Cu-Zn deposit and is hosted by the 3km thick Copperton Formation of the Areachap Group. The massive sulphide mineralisation is characterised by abundant rounded fragments of gangue material of various sizes contained in a matrix of sulphide minerals. The gangue includes fragments of both hanging- and footwall

Criteria	JORC Code explanation	Commentary
		material. • No clear metal zonation is evident from the modelling. High Cu are generally not in the same place as the high Zn (with a few exceptions). • Geological data and conclusions reached were based on observations made in drill core from recent drilling and sampling program. • Like many other VMS deposits domaining for estimation is not possible using the geology, and the best method is therefore to utilise the assay data. • There is a sharp decrease in the Zn and Cu grades on the boundary of the massive sulphide unit. For the construction of the wireframes a Zn equivalent cut-off of 3.0% (Zn Eq = Zn% + (Cu%*2) for the mineralised zones was used. The Zn_Eq cut-off was used a guide for modelling rather than a strict threshold.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• Within the prospecting right areas, the strike length of the mineralisation is 2600m, horizontal width varies from 410m to 870m and the down dip extent is 1 228m below shaft collar. True thickness of the orebody varies between <1m to 30m with an average of 7m.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulfur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• The estimation of the Deep Sulphides included the following steps: o The creation of a wireframe model for the Deep Sulphide target using a 3.0% Zn equivalent cut-off as a guide. In addition, the lithology was utilised; o Data validation and selection of samples within the Deep Sulphide target and analysis of the variables to be estimated, i.e. Cu%, Zn%, and SG; o Exploratory Data Analysis (EDA) that included: o Compositing the data to 1m; o Capping four Cu% outliers and no capping of Zn% values; an o Exclusion of two samples with extreme lengths. o Creation of a suitable block model with estimation blocks (30m x 30m x 5m) and with sub-cells of 0.5m x 0.5m x 0.5m; o A spatial analysis of estimation variables followed by a neighbourhood analysis taking cognisance of the folding; o Estimation using an appropriate method and modelled parameters, i.e. Ordinary kriging for local block estimation supplemented by zonal estimation; o Validation of block estimates including statistical and visual methods as well as comparison with the results of a second method (moving average); o The software used for estimation was Isatis™. • Orion declared a Mineral Resource for the Deep Sulphide target on the

Criteria	JORC Code explanation	Commentary
		Repli and Vardocube Prospecting Rights on 8 February 2018 and 9 April 2018, respectively. • There are no previous mine production plans for the Deep Sulphide target. • No assumptions have been made regarding the recovery of by-products. • No deleterious elements or non-grade variables were estimated.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• No moisture content was calculated, and the core was naturally dried when logged and sampled. The estimated tonnages are therefore based on a natural basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• The Deep Sulfide Mineral Resource is declared at a zero cut-off but using a wireframe that mostly excludes sample values below a 3% Zn equivalent. • The cut-off was on the recommendation of Orion's Chief Operating Officer (**COO**) which is based on historical data from the Prieska Mine and a dataset of parameters from similar operations in the region.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• Minimum mining thickness of 2m and cut-off of 4% Zn equivalent were proposed by Orion's COO, as based on historical data from the Prieska Mine and a dataset of parameters from similar operations in the region. • The minimum thickness is based on long hole open stope and drift and fill mining methods. • A preliminary mine design which will form the basis of a Bankable Feasibility Study (**BFS**) is in progress.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• The mine operated from 1972 to 1991 and is reported to have milled a total of 45.68 Mt of ore at a grade of 1.11% copper and 2.62% zinc, recovering 0.43 Mt of copper and 1.01 Mt of zinc. • Detailed production and metallurgical results are available for the life of the mine. • In addition, 1.76 Mt of pyrite concentrates and 8,403 t of lead concentrates as well as amounts of silver and gold were recovered. • Copper and zinc recoveries averaged 84.9% and 84.3% respectively during the life of the mine. • Metallurgical test work on the Deep Sulphide mineralisation revealed good concentrate recoveries, similar to those reported for the historical Anglovaal operation. • Additional metallurgical test work as part of a BFS is in progress.

Criteria	JORC Code explanation	Commentary
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• The Deep Sulphide Resource is on the environmental footprint of the historic Prieska Copper Mine site. Environmental impact assessment studies form part of the on-going BFS.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• Bulk densities (**BD** t/m^3) were determined using the water displacement method. The entire sample (normally 1m length) was measured. Cognisance of the change in lithology was taken in the selection of samples for bulk density measurements. • No moisture content was determined. • Local block estimates of BD t/m^3 were produced using Ordinary kriging within the mineralised wireframe. A second pass with longer search radii was utilised to populate the remaining blocks. The tonnage per block was determined using the volume (as per the wireframe model) and the BD on a block by block basis.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors, i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data.* • *Whether the result appropriately reflects the Competent Person(s)' view of the deposit.*	• The classification of the Deep Sulphide Mineral Resource takes cognisance of the uncertainty associated with the geology with the focus being on the definition of the mineralised domain and therefore the volume estimate. The classification also takes cognisance of the fact that there is more than one drilling and sampling program, and the historical Anglovaal data has a lack of available supporting documentation. A further important consideration is the methodology used to estimate Cu%, Zn%, and BD t/m^3 and an assessment of the results (refer to discussion of relative accuracy and confidence below). In particular the Slope of Rgression (SOR), the Kriging Efficieny (KE) and the drilling density were utilised to identify blocks of lower levels of uncertainty • The Deep Sulphide Resource is classified at an Indciated and an Inferred level of confidence. • The results conform to the view of the Competent Persons.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• SRK carried out a review on the Deep Sulphide Mineral Resource Estimate.
Discussion of relative	• *Where appropriate a statement of the relative accuracy and*	• The Deep Sulphide target was originally modelled on the historic

Criteria	JORC Code explanation	Commentary
accuracy/confidence	*confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	Anglovaal drilling only. It is important to recognise that the Orion holes that targeted this Deep Sulphide deposit intersected the mineralised zone at the expected depths. The Orion holes have not altered the shape of the original Deep Sulphide deposit significantly. The compatibility of the two drilling campaigns thus adds considerable support in terms of including the Anglovaal drilling. • The results of a comparative analysis between Anglovaal and Orion drilling and sampling data do not justify exclusion of historical data. There is a reasonable compatibility between the histograms (despite a significant difference in the number of assays). • In general, the variogram models for Cu% and Zn% for both Anglovaal and Orion data compare very favourably. • Ordinary kriging was undertaken on Cu%, Zn%, and BD t/m^3) using a 30m x 30m x 5m blocks, utilising the capped 1m composite input datasets, the modelled variograms and the search neighbourhood parameters. The results from the first pass for Cu%, Zn% and BD t/m^3 populate between 68% and 86% of the blocks in the Deep Sulphide target. A second kriging pass was utilised for Cu%, Zn% and BD t/m^3, that resulted in 100% of the blocks being populated. • No production data is available.