Orion Minerals

ASX/JSE RELEASE: 18 September 2018

Prieska Project near-mine exploration commences as deep sulphide drill-out program approaches completion

- **Prieska Project drill-out program nearing completion, with continued high-grade results returned at the Deep Sulphide Target.**
- **94 intersections, including 15 intersections drilled for metallurgical test work, have been completed on the Deep Sulphide Target of the Prieska Zn-Cu Project since May 2017.**
- **Near-mine exploration commences with data assimilation and interpretation, mapping and ground EM surveys identifying an early priority target at the Annex Copper Deposit.**

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

"With us now nearing the completion of the Prieska Deeps drill-out, having drilled over 83,000m in 15 months, we are very pleased to move onto the exploration for satellite deposits to the exceptional Prieska VMS deposit. These large VMS bodies are known for their propensity of occurring in clusters. Prieska is one of the largest known VMS deposits and the surrounding area has not benefitted from any modern exploration for more than 35 years."

Orion Minerals Limited (**ASX/JSE: ORN**) (**Orion** or the **Company**) is pleased to announce initiation of near-mine exploration surrounding the Prieska Zinc-Copper Project (**Prieska Project**), in the Northern Cape, South Africa, and also to update on progress of the Mineral Resource drill-out at the Prieska Project, as the drill-out program nears completion. Eight diamond drill rigs remain deployed for infill drilling to increase sample density in the Deep Sulphide Mineral Resource, with the objective of achieving an updated Mineral Resource estimate, including upgrade in resource categories in Q4 2018.

Since drilling commenced in May 2017, Orion has completed 39 mother holes and 55 deflections (including 15 deflections for metallurgical test work) into the Deep Sulphide Target on the Vardocube Prospecting Right (**Vardocube**) and Repli Prospecting Right (**Repli**). Analytical values for eight mother hole intersections from Vardocube and ten deflected intersections (eight from Vardocube and two from Repli) are awaited. Drilling continues, with seven deflected holes currently in progress on Vardocube, while one mother hole continues to test the steep dipping hinge area in the north-west of the Deep Sulphide Target on Repli.

Ten new intersections, four from Repli and six from Vardocube, are reported (Figures 1 to 5 and Table 1). At Repli, the intersections are consistent with previously reported intersections. The intersections at Vardocube, where limited historic drilling was done, are also consistent in grade with historic data, intersection widths, confirming structure and width of the mineralised horizon (refer ASX release 9 April 2018).

To date, 9,462m of percussion pre-collar and 73,940m (49,666m at Repli and 24,274m at Vardocube) of diamond drilling have been completed on the Deep Sulphide Target. An estimated 2,498m of diamond drilling remains to be completed, before the Deep Sulphide Mineral Resource estimate (refer ASX release 9 April 2018) will be updated. Drilling is expected to be completed mid-October 2018.

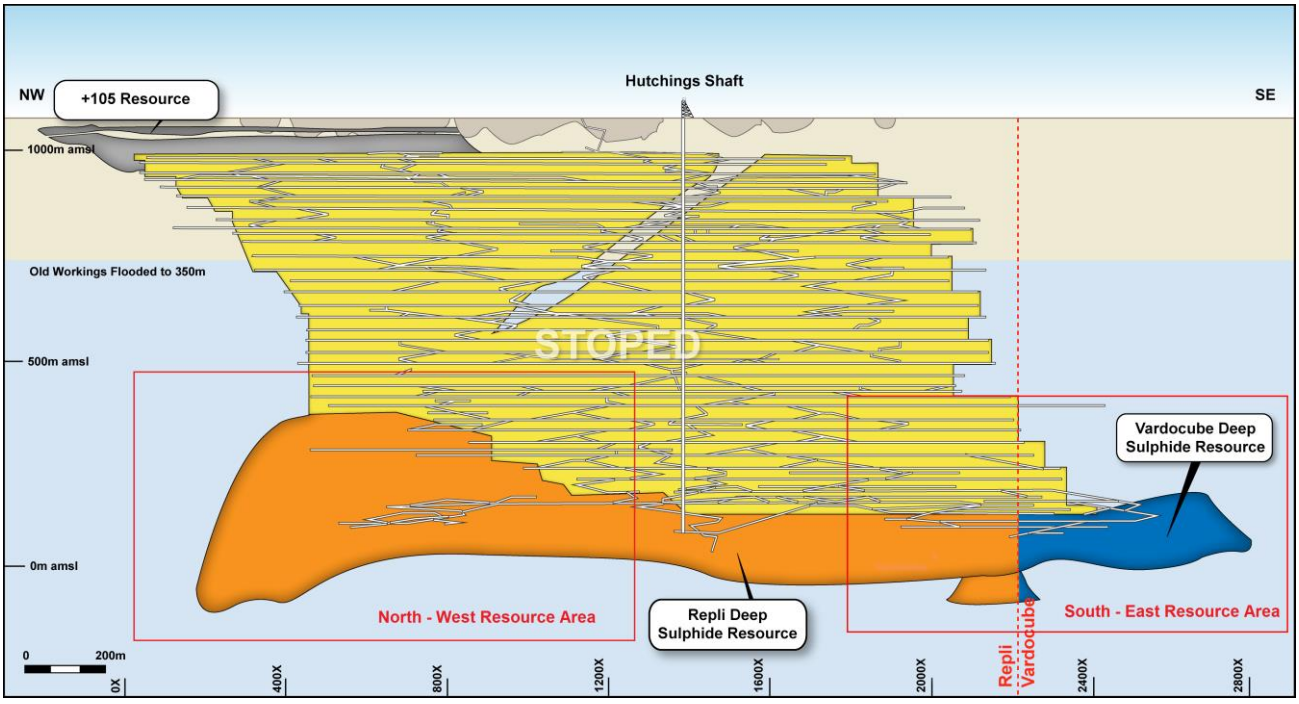


Figure 1: Longitudinal projection of the Prieska Project showing the Repli and Vardocube areas. The areas blocked in red are enlarged in Figures 2 and 4 and show the intersection points of the drill holes reported in this release.

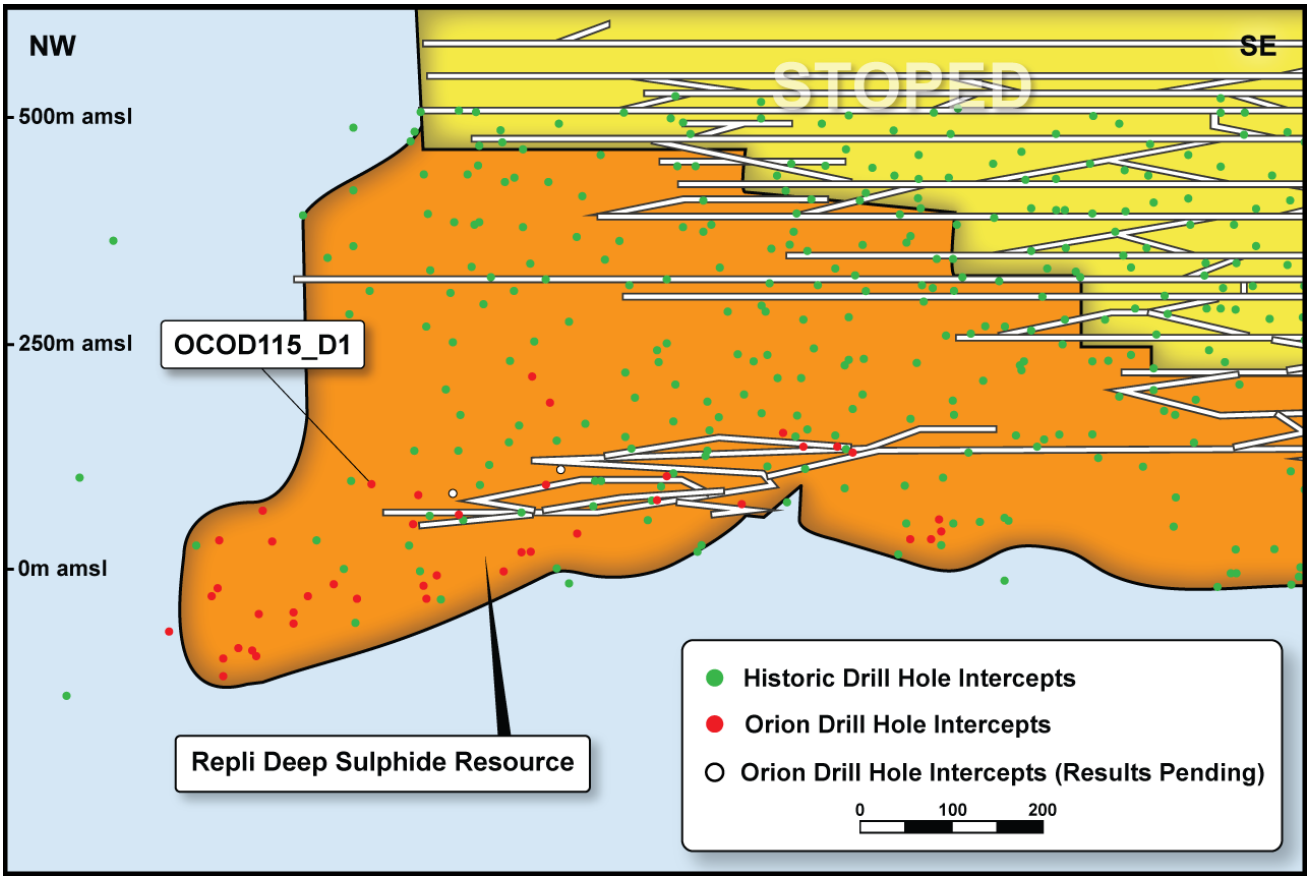


Figure 2: Longitudinal projection of the North-West Resource area of the Prieska Project, showing the Orion drill hole intersection points (refer to Table 1 for drill hole grades).

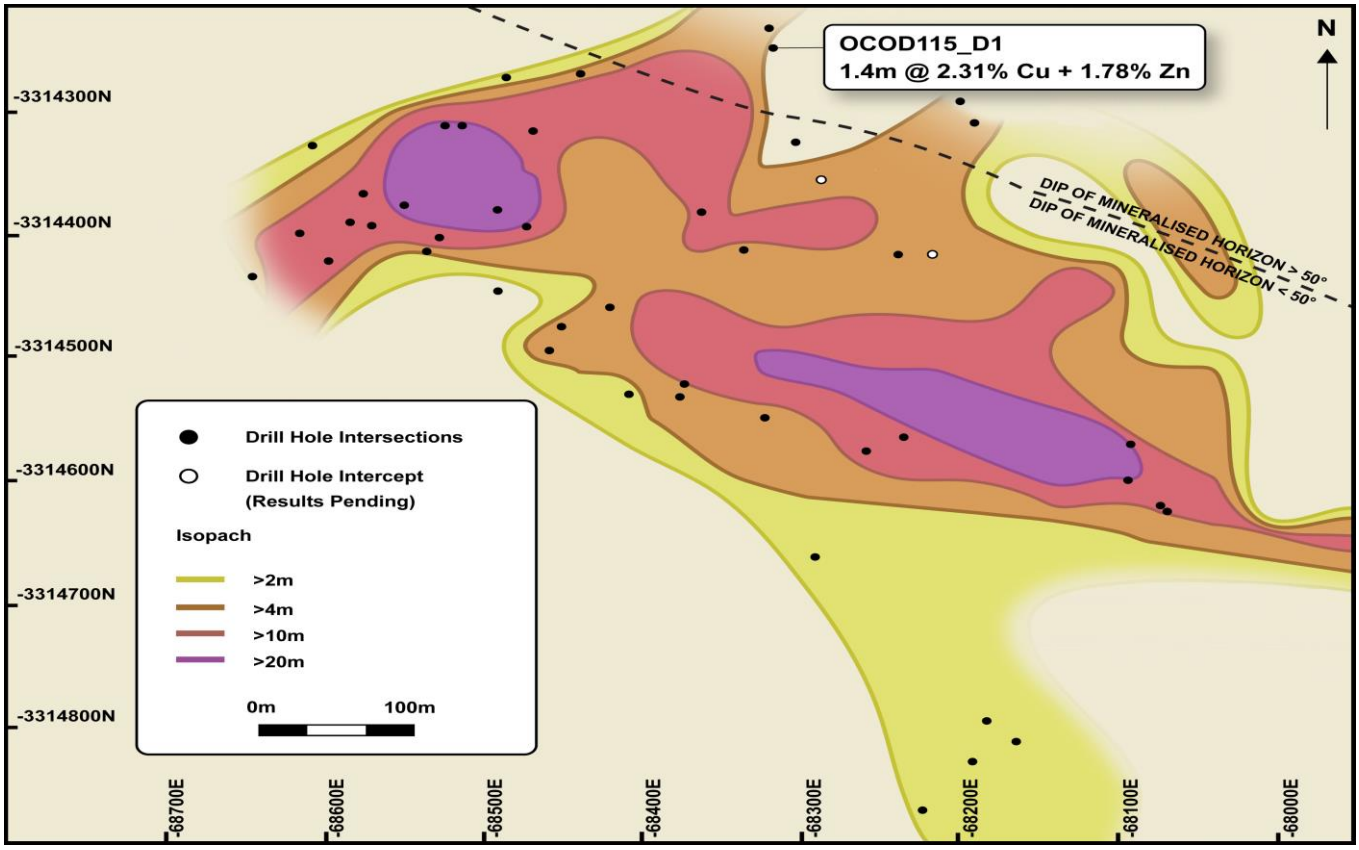


Figure 3: Plan of the North-West Resource area of the Prieska Project, showing drill hole intersection points and grades reported in this release.

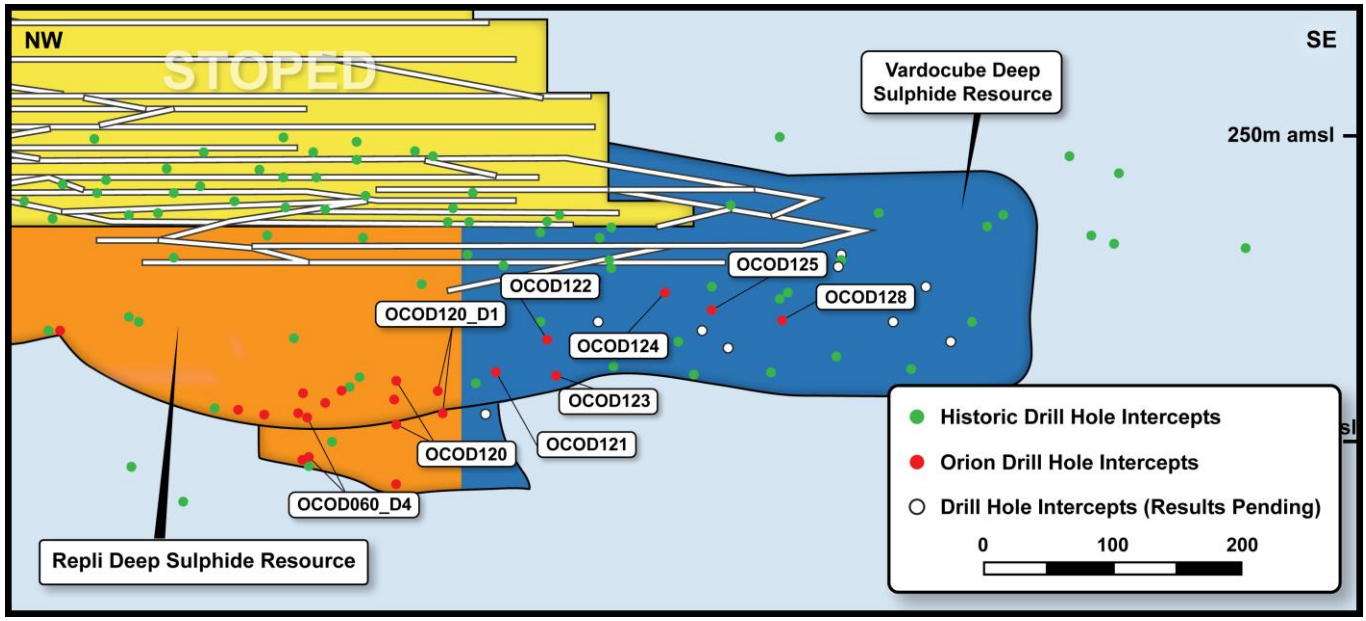


Figure 4: Longitudinal projection of the South-East Resource area of the Prieska Project, showing the Orion drill hole intersection points reported in this release.

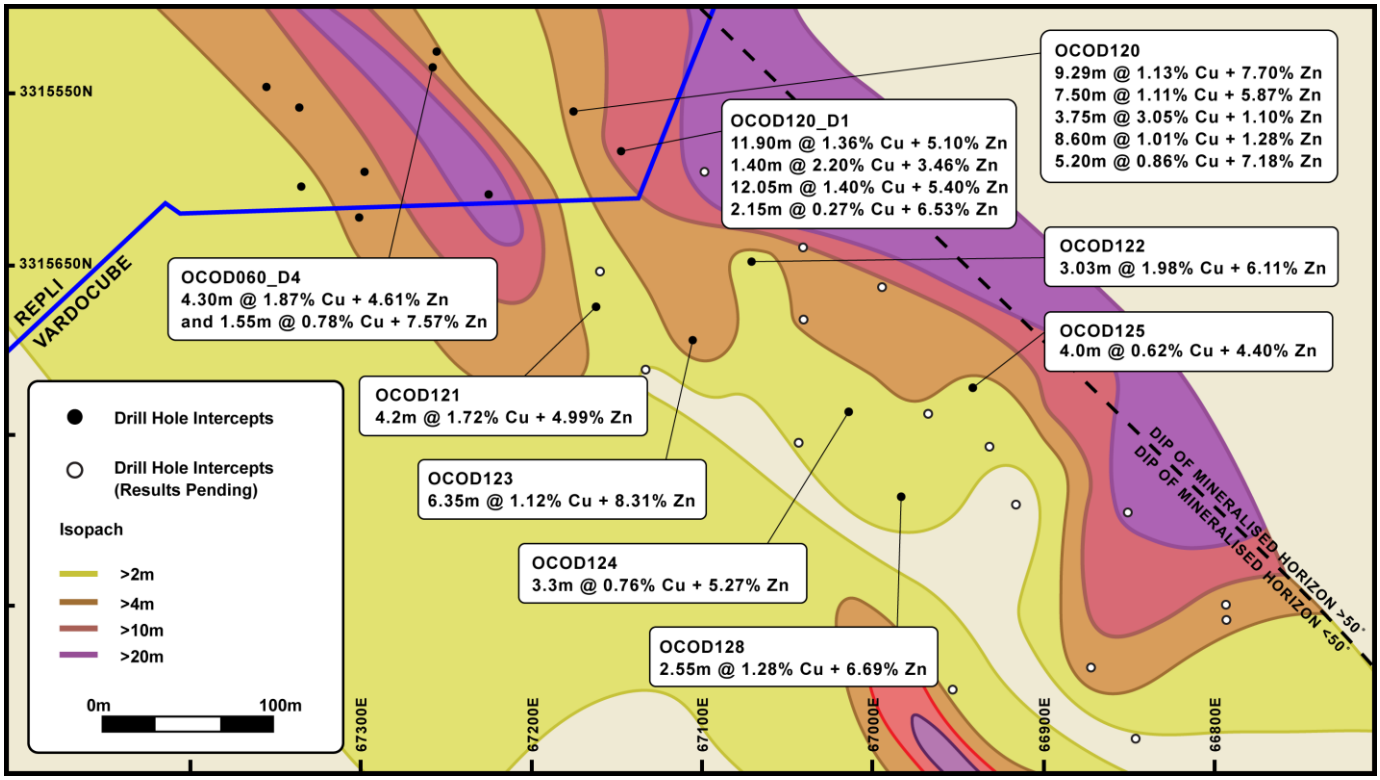


Figure 5: Plan of the South-East Resource area of the Prieska Project, showing drill hole intersection points and grades reported in this release.

Relevant details of intersections from surface drilling at the Deep Sulphide Target have been released in ASX releases of 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 and 17 July 2017, with historical drilling detailed in ASX release of 16 July 2018 and 18 November 2015. Newly drilled significant intersections are included in Table 1. All intersections quoted for the Deep Sulphide Target are length and relative density weighted, following the procedure detailed in Appendix 1.

Table 1: New intersections from Deep Sulphide Target drilling at the Prieska Project in this release.

Drill hole	East (WGS84 LO23)	North (WGS84 LO23)	From (m)	To (m)	Length (m)	Cu (%)	Zn (%)	Au (g/t)	Ag (g/t)
Repli									
OCOD060_D4	-67,254	-3,315,542	1128.45	1132.75	4.30	1.87	4.61	0.33	20
	-67,254	-3,315,542	1166.75	1168.30	1.55	0.78	7.57	0.21	8
OCOD115_D1	-68,303	-3,314,265	979.55	980.95	1.40	2.31	1.78	0.19	20
OCOD120	-67,171	-3,315,571	1087.26	1096.55	9.29	1.13	7.70	0.26	11
	-67,171	3,315,571	1099.65	1103.40	3.75	3.05	1.10	0.51	28
	-67,170	3,315,570	1105.40	1114.00	8.60	1.01	1.28	0.28	10
	-67,170	3,315,570	1131.50	1136.70	5.20	0.86	7.18	0.18	9
	-67,170	3,315,570	1137.70	1145.20	7.50	1.11	5.87	0.19	9
OCOD120_D1	-67,145	-3,315,591	1084.30	1096.20	11.90	1.36	5.10	0.26	13
	-67,144	-3,315,592	1099.00	1100.40	1.40	2.20	3.46	1.06	18
	-67,143	-3,315,593	1115.70	1127.75	12.05	1.40	5.40	0.32	13
	-67,143	-3,315,594	1128.75	1130.90	2.15	0.27	6.53	0.10	4
Vardocube									
OCOD121	-67,160	-3,315,681	1099.95	1104.15	4.20	1.72	4.99	0.37	22

Drill hole	East (WGS84 LO23)	North (WGS84 LO23)	From (m)	To (m)	Length (m)	Cu (%)	Zn (%)	Au (g/t)	Ag (g/t)
OCOD122	-67,068	-3,315,656	1075.01	1078.04	3.03	1.98	6.11	0.19	14
OCOD123	-67,110	-3,315,697	1089.00	1095.35	6.35	1.12	8.31	0.19	10
OCOD124	-67,015	-3,315,739	1080.20	1083.50	3.30	0.76	5.27	0.11	8
OCOD125	-66,943	-3,315,728	1061.00	1065.00	4.00	0.62	4.40	0.12	8
OCOD128	-66,984	-3,315,788	1081.50	1084.05	2.55	1.28	6.69	0.16	9

1. All drilling is with long holes (>1000m) and deflected long holes with both azimuth and dip changing materially from the collar to intersection. Coordinates of mid-point of intersection are presented in this table.
2. All intersections quoted are based on a minimum width of 1.0m and lower cut-off grades of 0.3% copper or 0.5% zinc. No top-cut has been applied to achieve the averages.
3. Quoted average grades are length and density weighted.
4. All intercept lengths are down-the-hole lengths and true widths are unknown.

Near-Mine Exploration – Annex Copper Deposit

The Bartotrax Prospecting Right (refer ASX release 4 April 2018, Figure 6) includes the Annex Volcanogenic Massive Sulphide (**VMS**) Copper Deposit (**Annex**), located about 6,000m south of Hutchings Shaft, and was discovered by Anglovaal in 1969.

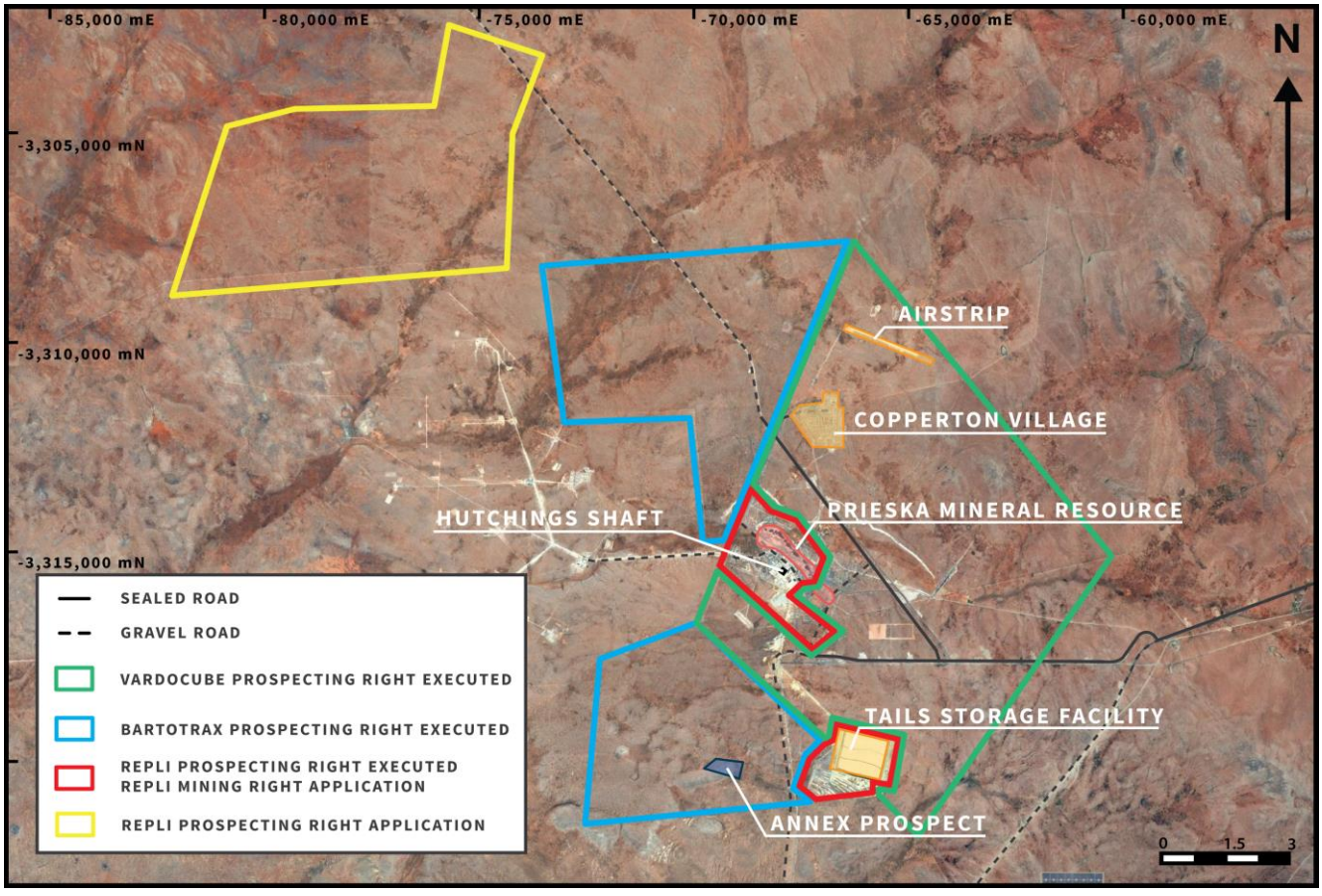


Figure 6: Surface plan showing the Prospecting Rights over and adjacent to the Prieska Project and the locality of the Annex Deposit.

Anglovaal diamond drilling at Annex in the 1970s and 1980s followed up on conductors detected by airborne Input Electromagnetic (**EM**) methods and succeeded in delineating semi-massive to massive sulphide mineralisation underneath a 35m-thick Dwyka tillite cap. Near-surface mineralisation was identified over a strike length of 1,000m and followed down to 550m below surface by 42 diamond drill holes. The deposit remains open at depth. Younger stratigraphic cover and general poor outcrop renders geological interpretation of Annex problematic, but the current understanding indicates repetition of the Prieska mineralised stratigraphy over a north-west – south-east trending set of folds (Figures 7 and 8).

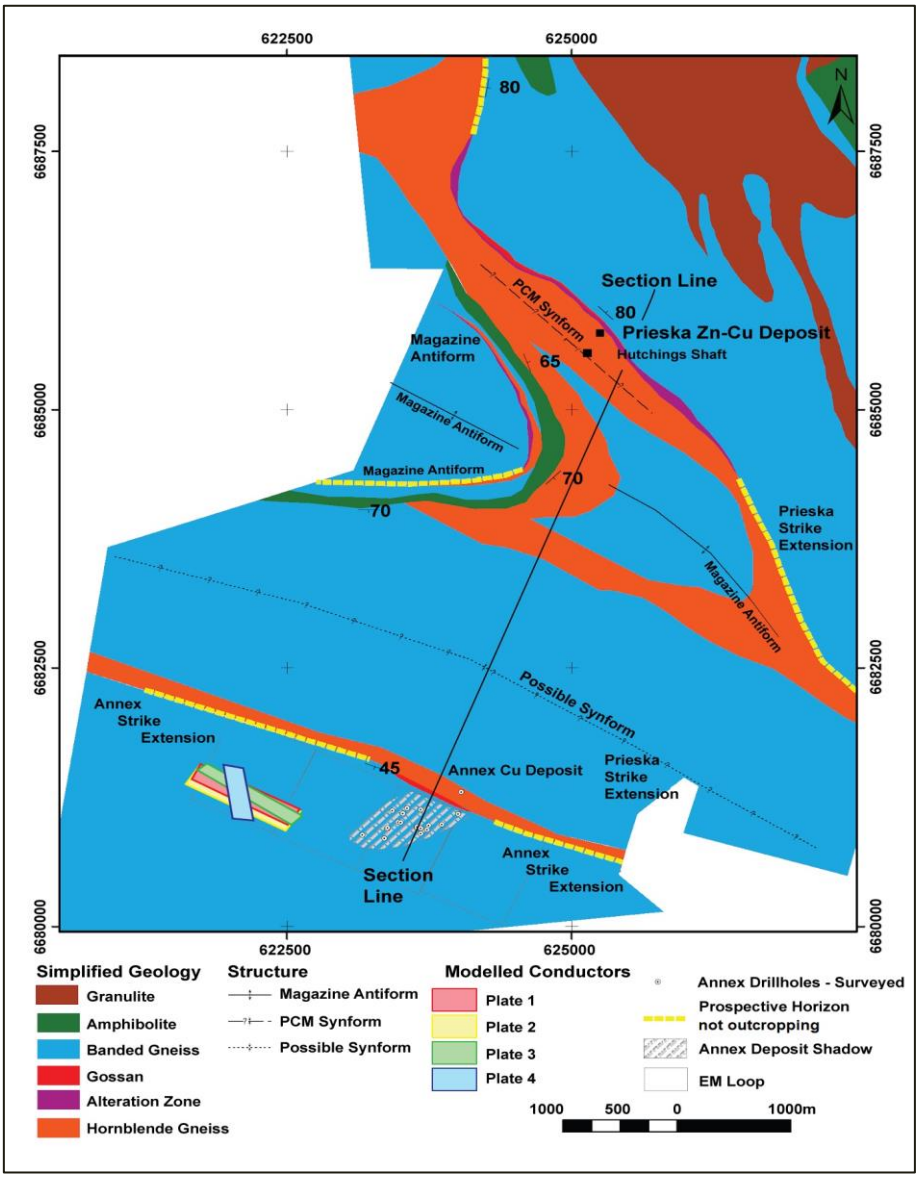


Figure 7: Geological plan showing Near-Mine prospective horizons and the location of an EM conductor to the west of the Annex Deposit.

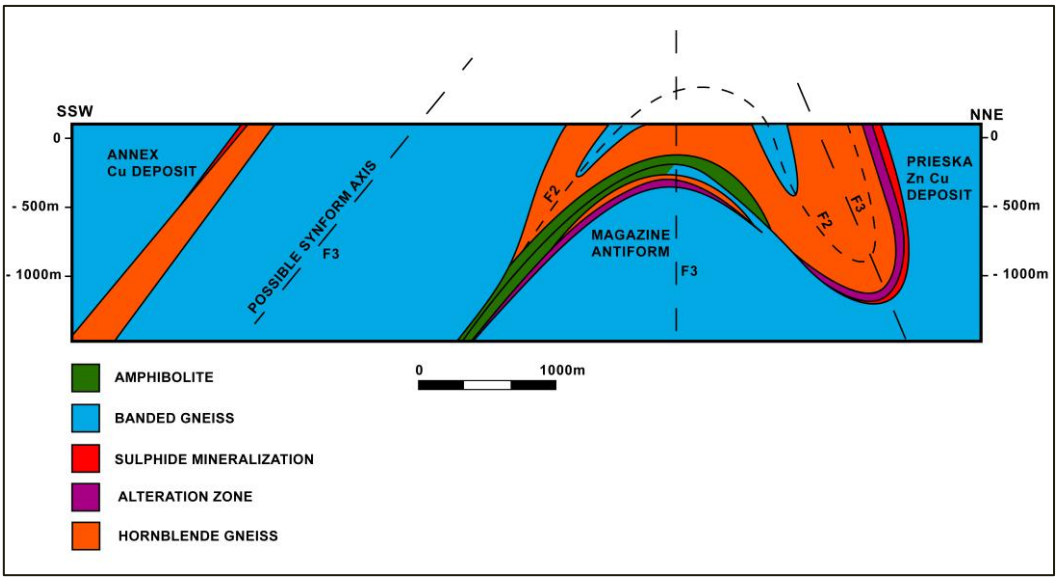


Figure 8: Geological section through the Annex and Prieska Deposits. Section line indicated on Figure 7.

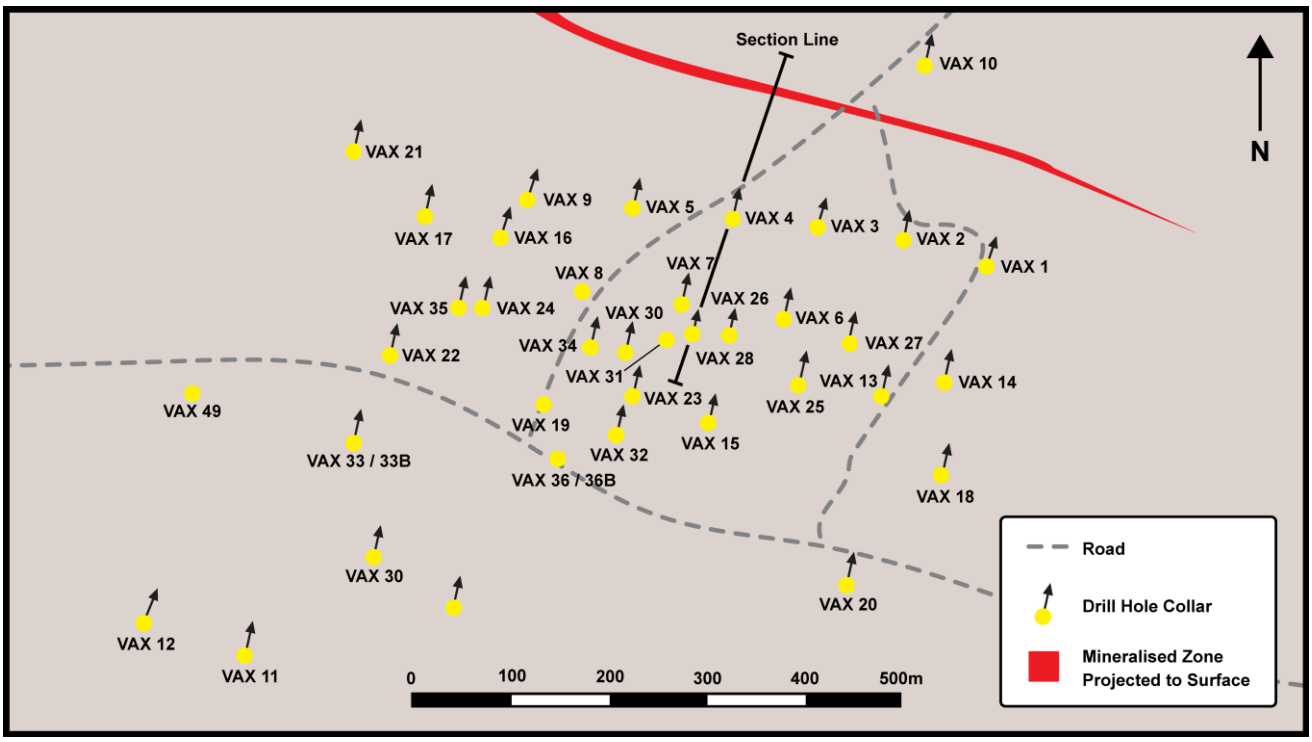


Figure 9: Anglovaal Drilling (1969-1982) and trace of subcrop of sulphide mineralisation at Annex.

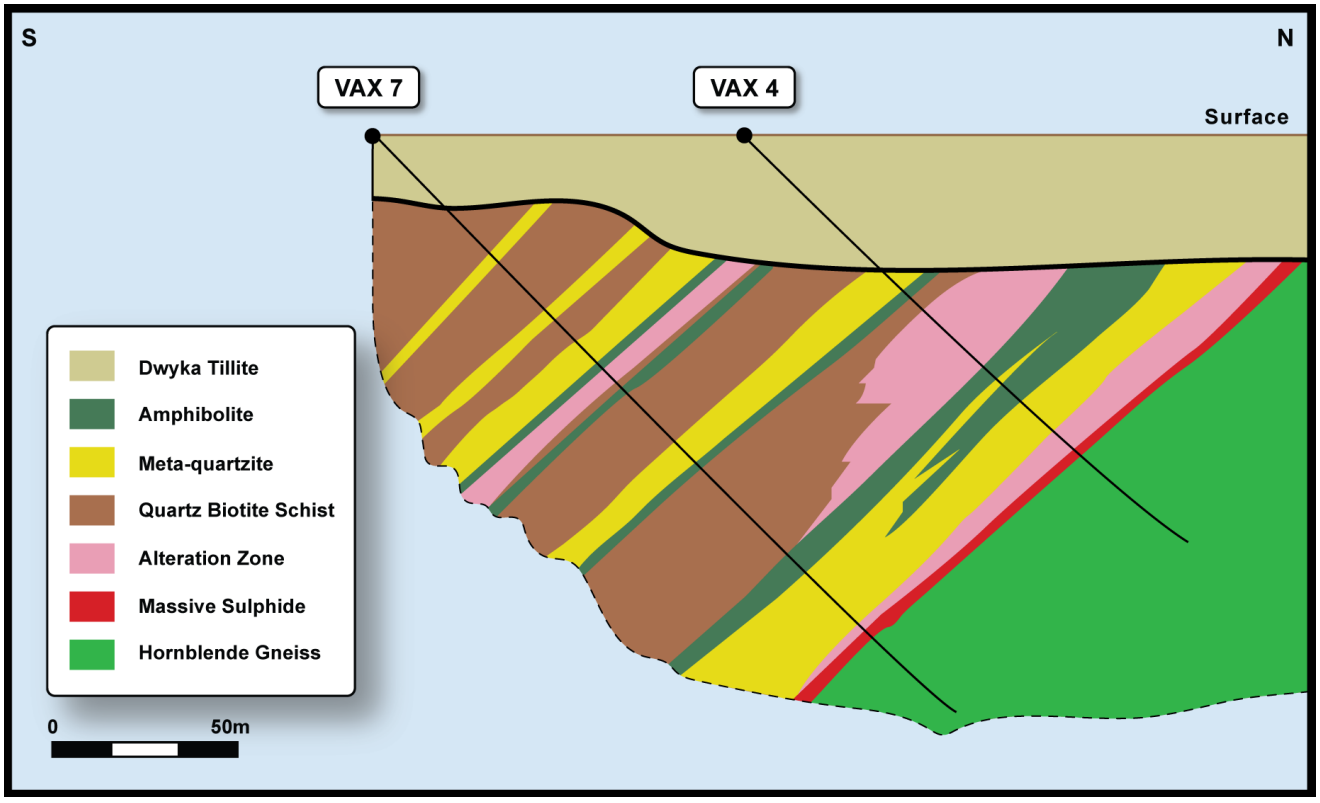


Figure 10: Cross Section through Annex (Source: Anglovaal Exploration report).

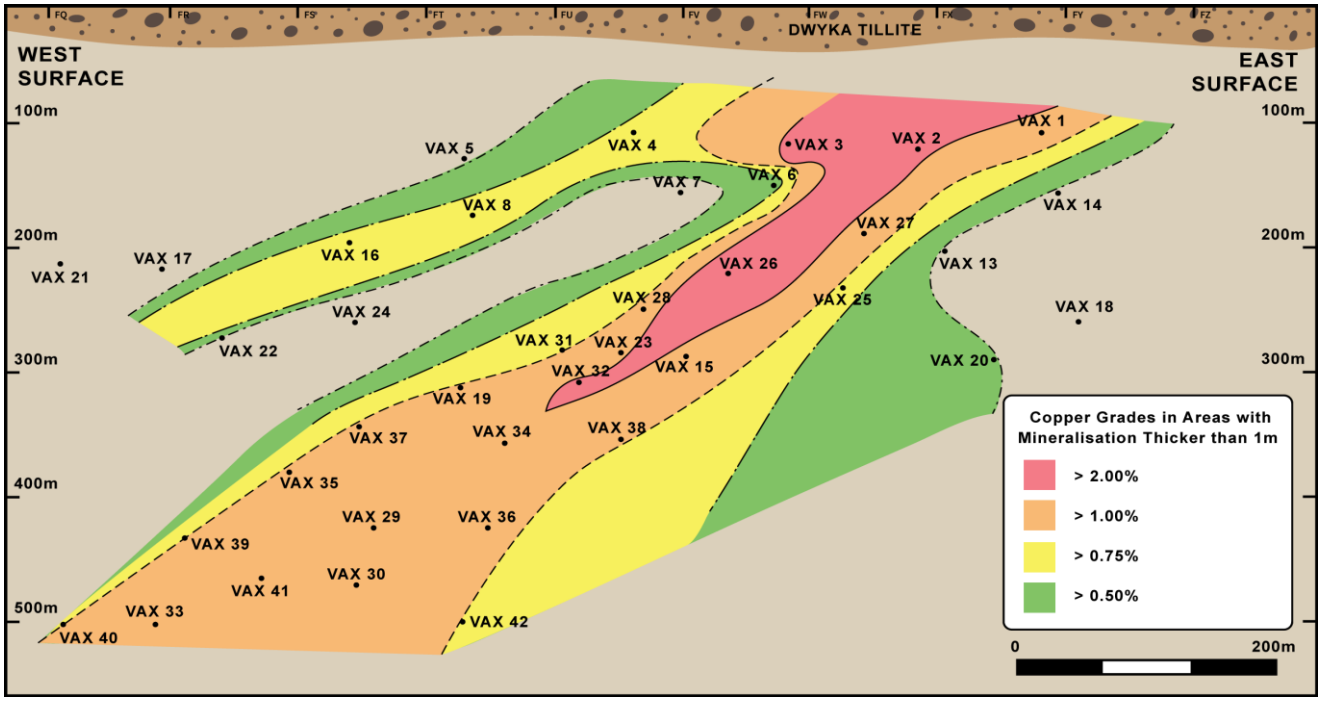


Figure 11: Long section and grade contoured drill intersections for Copper at Annex (Source: Anglovaal Exploration report).

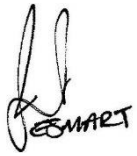
Anglovaal (historic drilling) significant intersections at Annex include:

- 3.87m at 1.91% Cu and 0.49% Zn in VAX 19;
- 4.28m at 2.88% Cu and 0.34% Zn in VAX 26;
- 2.65m at 1.44% Cu and 0.33% Zn in VAX 27;
- 4.08m at 1.14% Cu and 0.41% Zn in VAX 29;
- 4.11m at 2.17% Cu and 0.54% Zn in VAX 32; and
- 4.77m at 1.39% Cu and 0.68% Zn in VAX 35.

Further details of the drilling information are presented in Appendix 2. Figures 9, 10 and 11 provide exploration context, and allow a considered and balanced judgement of the significance of the results. Information on type and method of sampling, relevant sample intervals and locations, methods of analysis, data aggregation methods, land tenure status are listed in Appendix 2.

Orion commenced ground EM surveying to explore for possible strike and depth extensions of Annex in August 2018. Modern EM surveys have the benefit of far stronger transmitters and more sensitive detection systems allowing for detection of deeper seated, blind mineralisation. Three loops of Fixed Loop Transient Electromagnetic (**FLTEM**) surveys have now been completed by Orion using sensitive Super Conducting Quantum Interference Devices (**SQUID**) detection systems. The loops cover both the known mineralisation at Annex for orientation purposes and continue along strike to the west and east. An EM conductor has been detected approximately 1,000m west of the known mineralisation with the top of conductor at 200m to 250m below surface (Figure 7). Additional surveying to better define the extent of this conductor and an additional loop testing along strike and to the east of known mineralisation are currently in progress. Diamond drilling will commence on the EM target once the modelling is finalised.

The Magazine Antiform (Figures 7 and 8), and its down plunge extension, which presents a large, blind target area and where Anglovaal geologists reported an alteration zone similar to the alteration at the Prieska Zn-Cu deposit, is scheduled to be the next priority target for ground EM.



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Competent Person's Statement

The information in this report that relates to Exploration Results is based on information compiled by Mr JE Potgieter (Pr.Sci.Nat.), a Competent Person who is a member of the South African Council for Natural Scientific Professionals, a Recognised Professional Organisation (**RPO**). Mr Potgieter is a full-time employee of Orion. Mr Potgieter 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 Potgieter consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

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Appendix 1: The following tables are provided in accordance with the JORC Code (2012) for the reporting of Exploration Results for Prieska Deposit.

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 has been undertaken during three distinct periods since the discovery of mineralisation. These are pre-mine exploration (1968-1971) and during mine operations (1972-1984) holes ("V", "D", and "F" prefixed holes) by Anglovaal Ltd (also known as the Anglovaal Group, "Anglovaal"), and current drilling (2017 to present) by 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 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 exploration and 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 200m – 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. Orion: • Diamond core cut at core yard and half core taken as sample. • Diamond core sampled on 1m intervals where possible, sample lengths adjusted to ensure samples do not cross geological boundaries or other features.

Criteria	JORC Code explanation	Commentary
		• Drilling at the Deep Sulphide Target was carried out, aiming to define an approximate 100m x 100m pattern by use of "mother" holes and deflections from these holes. • Percussion / reverse circulation pre-collars (where used) sampled on a composite basis. • Mineralised zones are drilled using core drilling. • 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**) are pulverised in its entirety at ALS and split to obtain a 0.2g sample for digestion and analysis.
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. Orion: • Diamond core drilling using 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.

Criteria	JORC Code explanation	Commentary
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 are documented on the assay sheets. Core recoveries were measured for each "run". • 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 are done with core drilling. • Core stick-ups reflecting the depth of the drill hole are recorded at the rig at the end of each core run. • A block with the depth of the hole written on it is placed in the core box at the end of each run. • At the core yard, the length of core in the core box is measured for each run. The measured length of core is 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 geologically logged by qualified geologists and all of this information is available. It is understood from historical reports and discussions with Anglovaal geologists involved with the Prieska Mine that all intersections for D and F holes were logged by qualified geologists. The detail logs are currently not 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 are logged by qualified geologists on 1m intervals using visual inspection of washed drill chips. A hand held XRF instrument is used to determine the presence of any metals. • Core of the entire hole length was geologically logged band recorded on standardised log sheets by qualified geologists. • Qualitative logging of colour, grain size, weathering, structural fabric, lithology, alteration type and sulphide mineralogy carried out. • Quantitative estimate of sulphide mineralogy. • Logs are 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. • Although no formal QC samples were inserted by the geologists at the time of drilling. The Anglovaal Research Laboratory produced their own standards, certified by other commercial laboratories which were routinely inserted in batches at the laboratory. Duplicate samples were also inserted to check for repeatability. Orion: • Samples from percussion pre-collars are collected by spear sampling. • Sampling on site aims to generate a < 2kg sub sample to enable the entire sample to be pulverised without further splitting. • Water is 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 core samples, the entire sample length is cut and sampled. • Sample preparation is undertaken at ALS an ISO accredited laboratory.

Criteria	JORC Code explanation	Commentary
		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. • CRMs, blanks and duplicates are inserted and analysed with each batch. Insertion rates for the current reporting is: CRMs = 10%, blanks = 5% and field duplicates = 2%.
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.* • *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.*	Anglovaal: • Surface drill exploration samples were all sent to Anglovaal Research Laboratory at Rand Leases Mine. • Underground drill hole samples were sent to the mine laboratory, where the same analytical method was used. • 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. • 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 submitted to ALS were analysed for base metals, Au and Ag. Analysis was by the Inductively Coupled Plasma and Optical Emission Spectroscopy ("ICP-OES") methodology, using a four-acid digest. • External quality control of the laboratory assays is monitored by the insertion of blanks and CRMs. • CRM samples show high accuracy and tight precision with no consistent bias. • Blank samples indicate no contamination, within the pre-determined thresholds, during the sample preparation process. • Laboratory samples show excellent accuracy and precision. • ALS has their own internal QC protocols which include CRMs (5%), blanks (2.5%) and duplicates (2.5%). • External laboratory checks have been carried out.
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.*	Anglovaal: • No records available. Orion: • The Competent Person is personally supervising the drilling and sampling

Criteria	JORC Code explanation	Commentary
	• *Discuss any adjustment to assay data.*	along with a team of experienced geologists. • The Competent Person reviewed the calculation of the significant intersections. • Twin holes are drilled to verify historical drill intersections (Anglovaal). • For the EM survey, data are collected on site and validated by a geophysical technician daily. Data (raw and processed) is sent to a consultant geophysicist for review and quality control. • 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 Lo23 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" 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 are 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 are completed using 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

Criteria	JORC Code explanation	Commentary
		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 200m - 250m spacing. • Underground drilled holes (D, F and R) were not drilled on a regular spaced grid. Orion: • At the Deep Sulphide Target drill holes aim to intersect mineralisation on spacings sufficient to establish geological and grade continuity appropriate for Mineral Resource and Ore Reserve estimations. • Variography studies were carried out on both the historic and Orion data set to determine the drill spacing for Mineral Resource estimates. • No sample compositing was applied.
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.*	• Historical and current drilling is 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: • 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 is managed throughout, and the policy managed through an appropriate SOP. Samples are stored on site in a secure locked building and then freighted directly to the laboratory.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	Anglovaal: • No records available. Orion: • SRK Consulting has carried out a review on the sampling techniques and data.

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 Prospecting Rights are held by Repli Trading (Pty) Ltd and Vardocube (Pty) Ltd, which are subsidiaries of Orion. • The Prospecting Right areas covers a strike of 2460m 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.*	• All exploration and life of mine drilling (V, D and F holes) was done by Anglovaal, resulting in a substantial amount of hard copy data from which Orion has been able to assess the prospectivity of the remaining mineralisation. • 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 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 2400m, 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

Criteria	JORC Code explanation	Commentary
		of 1100m (as deep as 1228m 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.*	• Drill hole collar coordinates, elevation, inclination and azimuth, down hole length, interception depth and hole length are available in Orion's geological database and are not all included in this release. • Only the significant mineralised intersections and the easting and northing of these mineralised intercepts are presented in this release.
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.*	• Significant Intersections for the Deep Sulphide Target 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. • Significant Intersections for the +105 Level Target are calculated by average of assays result > 0.3% copper or 0.5% zinc and weighted by the sample width of each sample only. • 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 at this stage for either 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.

Criteria	JORC Code explanation	Commentary
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 (plan, cross section and long section) are shown in the release text.
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 drill hole results referred to in the release are listed in Table 1. All other drill holes have been detailed in previous releases as referred to in the text. • 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 maps are available for a range of other exploration data. This includes mine survey plans, geological maps, airborne magnetics, ground magnetics, electromagnetics, gravity and induced polarisation. All available exploration data has been viewed by the Competent Person. • 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.
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 the Deep Sulphide Target.

Appendix 2: The following table is provided as a requirement under the JORC Code (2012) requirements for the reporting of Exploration Results for the Annex Copper Deposit.

Section 2 Reporting of Exploration Results

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 Prospecting Right over the Annex Copper Deposit (**Annex**) is held by Bartotrax (Pty) Ltd, which is a subsidiary of Orion.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Previous exploration was carried out by Anglovaal Limited. • Exploration activities included geological mapping, surface geochemical sampling, geophysical surveying, and diamond core drilling.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Annex 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 VMS deposits of which the nearby Prieska deposit (**Prieska**) is the largest. • Poor outcrop renders geological interpretation of the geological setting of Annex problematic, but the current understanding of the geology indicates repetition of the stratigraphy at Prieska over a northwest – southeast trending set of folds. • The lithologies at Annex differ slightly from that of Prieska in that the host rock of the sulphide mineralisation is chlorite-biotite schist and the presence of meta-pelitic rocks which are not developed at Prieska. • The deposit is covered by younger Dwyka tillites, but drilling has delineated the mineralised zone over a strike of 1000m and to a depth of 550m. It has a dip of between 40° and 60° to the south and strike west-northwest. • The thickness of the mineralised zone varies up to 11m.

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:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
		• Summary reports including drilling information including a plan showing collars for 42 diamond drill holes and a longitudinal section showing reported intersections are available. Detailed drill hole information is only available for 10 diamond drill holes.
		• Drill collar localities for 31 holes have been confirmed using a differential GPS.

Criteria	JORC Code explanation	Commentary
	○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *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.*	
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.*	• Reported widths and grades are understood to be aggregated results • Data aggregation methods applied by Anglovaal geologists are uncertain.
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').*	• Drill widths are understood to be down hole widths. • Intersections are interpreted to be at high angle to 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.*	• Drill collar plan and sections are shown in Figures 9, 10 and 11.
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.*	• Contoured copper grades of intersections are shown in Figure 11. • 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.

Criteria	JORC Code explanation	Commentary
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.*	• Geological mapping, geochemical sampling, and airborne and ground geophysical programs were undertaken by Anglovaal, using the equipment and methods available at that time. These geophysical and geochemical data are not all available. • Ground-based Fixed Loop Electromagnetic (**EM**) surveying is currently underway and only preliminary results are available. • Hardcopy maps are available for the geology, airborne EM and magnetic data. • Hardcopies of a longitudinal projection and a few cross sections showing drill hole intersection widths and grades are available. • Where still recognisable in the field, drill hole collars were surveyed using a GPS.
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.*	• Further ground-based EM surveying will be undertaken to cover the area immediately along strike of the known mineralisation. • Diamond drilling is planned to follow-up any EM conductors. • A SkyTEM™ airborne survey is planned over the entire prospecting right area.