Orion Minerals

ASX/JSE RELEASE: 29 May 2018

Field work commences on regional exploration in the Areachap Belt, Northern Cape, South Africa.

- **19 SkyTEM™ anomalies selected for initial follow-up.**
- **17 anomalies coinciding with a paleo-seafloor setting selected to be tested as volcanogenic massive sulphide targets.**
- **2 anomalies are associated with known Ni-Cu sulphide mineralisation. Regional target generation is ongoing, evaluating the remaining SkyTEM™ data over the Jacomynspan Complex.**
- **Geological mapping and ground EM surveys to refine drill targets on the SkyTEM™ anomalies commenced mid-May 2018.**

Orion Minerals Limited (**ASX/JSE: ORN**) (**Orion** or the **Company**) is pleased to provide an update on its regional exploration activities in the Areachap Belt, South Africa, where Orion holds prospecting rights over 196,760Ha (Figure 1). Ground Electro Magnetic (**EM**) surveys and geological mapping over anomalies resulting from helicopter-borne Electro Magnetic (**AEM** or **SkyTEM™**) surveys on the Masiqhame and Disawell prospecting rights commenced in May 2018 (refer ASX release 1 February 2018). Orion is targeting both volcanogenic massive sulphide (**VMS**) Zn-Cu and magmatic sulphide Ni-Cu-Co-PGE style mineralisation.

Seventeen SkyTEM™ anomalies are prioritised as VMS targets. The anomalies are spatially associated with a paleo-seafloor setting as determined from field work and the newly acquired airborne magnetic data (Figure 2) (refer ASX release 8 March 2018). VMS-style Zn-Cu deposits occur on the Masiqhame Prospecting Right at Kantienpan and Boksputs in the Areachap Group, which hosts Orion's Prieska Zinc-Copper Deposit.

Ground EM surveying began on 15 May 2018 on the Disawell prospecting rights with the first survey, over the 2.6km-long SkyTEM™ anomaly at HP3, currently underway. Two conductive plates, 1.2 and 1.6km long respectively, were modelled from SkyTEM™ data at this anomaly (Figure 3). The follow-up work at HP3 is targeting VMS-style mineralisation, with mapping over the area confirming favourable volcanic-related lithologies, including metamorphosed felsic tuffs which form the bulk of outcrops over the anomaly. In addition, dark, poorly-magnetic chert with traces of pyrite found on the target, are interpreted as a distal exhalative phase of the VMS deposit. Ground EM anomalies will be ranked on geology and conductivity before drilling starts.

Two anomalies (Rok Optel and Area 4) have been selected for priority ground EM follow-up as Ni-Cu-Co-PGE sulphide targets. Both are associated with known nickel-copper sulphide mineralisation discovered by previous explorers. Preliminary conductors modelled from the SkyTEM™ data suggest that the targets were not adequately tested by previous diamond drilling. Figure 4 shows the modelled SkyTEM™ conductor plates at the Rok Optel prospect (not intersected by previous drilling), which illustrate the advantages of using the modern technology applied by Orion. Further target generation for magmatic

sulphide Ni-Cu-Co-PGE mineralisation is in progress, Figures 4 and 5, focus on new intrusions and extensions to the Jacomynspan Intrusive Complex, where a Mineral Resource of 6.8Mt at 0.57% Ni, 0.33% Cu and 0.03% Co at a 0.4% Ni cut-off grade (refer ASX release 8 March 2018) was reported and classified in accordance with the JORC Code (2012)[1].

The recognition of EM anomalies, which may be indicative of massive sulphide Ni – Cu mineralisation in a setting where reinterpretation of historic exploration data has highlighted the high potential for this style of mineralisation is very encouraging.

This intrusion has not been definitively tested for localised bodies of massive sulphide mineralisation and no new exploration has been undertaken since 1985.

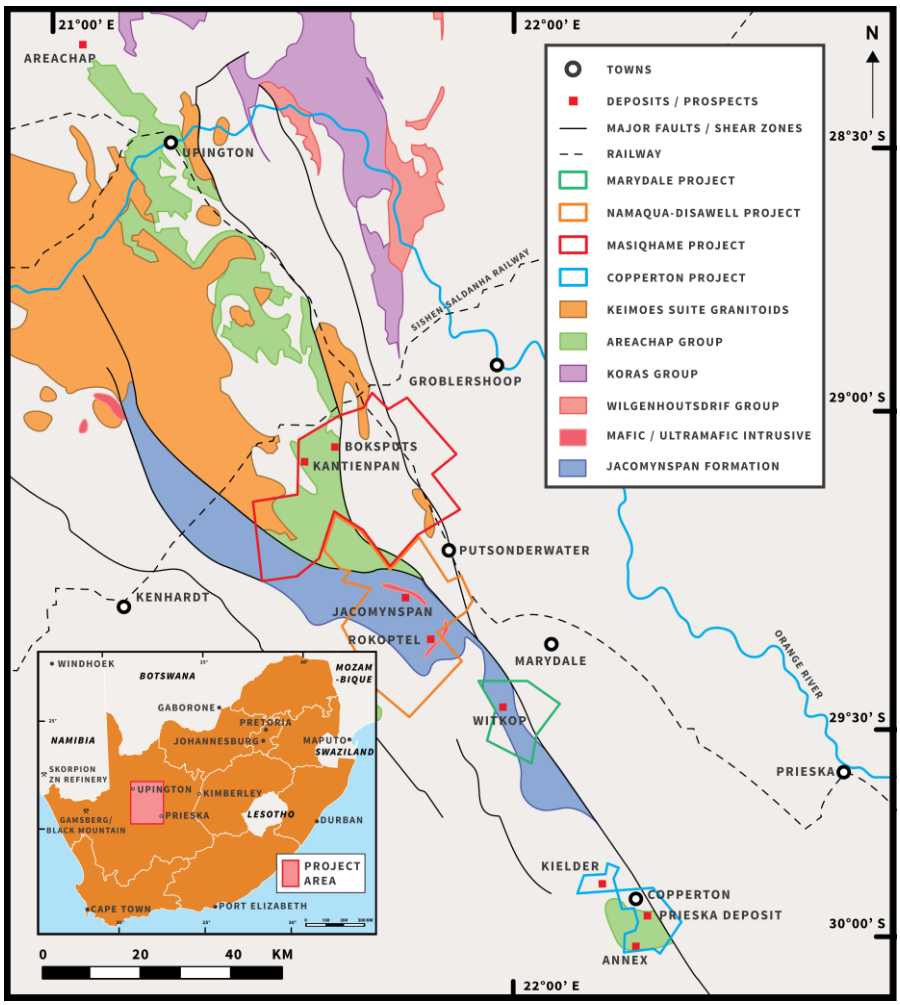


Figure1: Simplified geological map of the Areachap Project area showing the Masiqhame (red outline) and Disawell (orange outline) prospecting rights.

[1] Mineral Resource reported in ASX release of 8 March 2018: "Geological Modelling Confirms Compelling Targets Surrounding the Jacomynspan Ni-Cu-Co-PGE Intrusive" available to the public on www.orionminerals.com.au/investors/market-news. Competent Person Orion's exploration: Mr. Errol Smart. Competent Person: Orion's Mineral Resource: Mr. Jeremy Witley. Orion is not aware of any new information or data that materially affects the information included above. For the Mineral Resource, the Company confirms that all material assumptions and technical parameters underpinning the estimates in the ASX release of 8 March 2018 continue to apply and have not materially changed. Orion confirms that the form and context in which the Competent Person's findings are presented here have not materially changed.

Previous Nickel Sulphide Exploration

Previous Exploration was undertaken at Area 4 by Anglo American during the latter phase of exploration that spanned from 1970 to 1985. Initial work in the area was undertaken at Anglo American's Jacomynspan, as Hartebeestpan was then held by the Anglovaal Group. During the 1980s, Anglo-American secured an option over Hartebeestpan, and undertook geological mapping, soil sampling, wagon-drilling, and ground geophysics. The targets identified were tested by a short campaign of seven diamond drill holes (JAC001 – 007) of which JAC005 and 007 were drilled at Area 4. Both holes intersected ultramafic rocks, although sulphide mineralisation was only intersected in JAC007. While the original drill hole logs are not available, the summary, with composite intersection data, has been recovered. The summary data for the holes, previously not publicly reported, are tabulated in Tables 1 and 2 below. The data indicate that Ni-Cu mineralisation of similar characteristics, grade and tenor to that intersected at Jacomynspan is present at Area 4. Drill hole collars have been located and verified in the field with the use of GPS.

At Rok Optel, exploration was undertaken during the early 1970s by Hochmetals SWA, who drilled six drill holes. The only available information from this period is recorded in summary logs that have lithology depths and composite analytical data. From 1975 to 1978, Newmont carried out mapping, geochemical sampling, IP geophysical surveys and drilling at Rok Optel. The data from this campaign have been digitally captured by Orion from copies of the original drill sections, including lithology and sample information. The summary data for the holes, previously not publicly reported, are tabulated in Tables 1 and 2 below. The data again indicate that an intrusion of similar characteristics to Jacomynspan is present, within which the mineralisation plunges at a shallow angle to the south. The Ni-Cu grades are similar to those intersected at Jacomynspan. During 2013, African Nickel undertook an AMT geophysical survey over the Rok Optel anomaly and confirmed that it strikes north-south. No follow-up drilling was undertaken to test the anomaly further.

Mineralisation intersections from all the historic drill holes at Hartebeestpan (Area 4) and Rok Optel are presented in Table 2. The grade averages are calculated at between 0.2% and 0.5% Ni cut-off (as individually specified in Table 2) and do not allow for any external dilution intervals below this cut-off grade. No grade capping has been applied to calculate the averages.

Drill Hole ID	**Original Drill Hole ID** (where renamed)	**X UTM34S**	**Y UTM34S**	**Elevation (mamsl)**	**Dip**	**Azimuth**	**Initial Depth** (prior to deepening of the drill hole) **(metres)**	**Final Depth (metres)**
JAC005	---	581552.37	6754771.61	1,078.11	-60°	82°	---	377.60
JAC007	---	582084.15	6754733.63	1,080.00	-51°	354°	---	382.44
PUD001	DDH001	580533.77	6745751.22	1,067.90	-50°	-50°	318.59	387.64
PUD002	DDH002	580630.74	6746045.10	1,069.01	-49°	-49°	---	451.77
PUD003	DDH003	580607.74	6745954.14	1,068.68	-52°	-52°	---	436.40
PUD004	DDH004	580524.78	6745672.25	1,067.88	-52°	-52°	---	386.79
PUD005	DDH005	580318.86	6745809.20	1,063.48	-50°	-50°	---	205.43
PUD006	DDH006	580268.88	6745820.19	1,062.56	-45°	-45°	---	318.30
PUD007	---	579990.94	6745573.69	1,059.06	-60°	-60°	---	522.90

Table 1: Historic drill hole Information for Hartebeestpan (Area 4) and Rok Optel.

Company	Drill Hole	Cut Off Grade (% Nickel)	Depth From (metres)	Depth To (metres)	Intersection Width (metres)	Au (ppm)	Ag (ppm)	Co (ppm)	Cu (%)	Ni (%)	Comments
Anglo-American	JAC005	---	---	---	---	Not analysed	Not analysed	Not analysed	Not analysed	Not analysed	No mineralisation intersected. No analyses undertaken.
	JAC007	0.2%	304.16	366.66	62.50	Not analysed	Not analysed	Not analysed	0.17	0.26	Composite data captured from the summary log.
Hochmetals SWA	DDH004	0.2%	270.30	278.67	8.37	Not analysed	Not analysed	Not analysed	0.12	0.27	The composite data are captured from the summary log.
	DDH005	0.2%	---	---	---	Not analysed	Not analysed	Not analysed	Not analysed	---	No assay values above 0.2% Ni.
	DDH006	0.2%	---	---	---	Not analysed	Not analysed	Not analysed	Not analysed	---	No assay values above 0.2% Ni.
Newmont SA	PUD001	0.2%	254.60	258.00	3.40	Not analysed	Not analysed	Not analysed	0.10	0.36	Data are captured from the Gresse (1977) report drill sections. The original sample depths, numbers, and assay results are included. The composites are calculated in an MS Excel spreadsheet using width-weighting and are constrained to the last sample above cut-off grade. Internal lower grade zones are included in the composite.
		0.2%	284.10	289.55	5.45	Not analysed	Not analysed	Not analysed	0.12	0.28	
		0.3%	286.60	289.55	2.95	Not analysed	Not analysed	Not analysed	0.11	0.34	
	PUD002	0.2%	271.71	276.08	4.37	Not analysed	1.00	Not analysed	0.08	0.28	
		0.2%	346.50	353.55	7.05	Not analysed	6.55	Not analysed	0.32	0.30	
		0.2%	424.90	432.00	7.10	Not analysed	5.00	Not analysed	0.17	0.37	
		0.3%	235.90	239.40	3.50	Not analysed	5.00	Not analysed	0.18	0.31	
		0.3%	350.10	353.55	3.45	Not analysed	8.17	Not analysed	0.33	0.38	
		0.3%	424.90	427.50	2.60	Not analysed	5.00	Not analysed	0.24	0.56	
		0.5%	244.20	244.80	0.60	Not analysed	10.00	Not analysed	0.22	0.67	
		0.5%	263.50	265.05	1.55	Not analysed	10.00	Not analysed	0.11	0.54	
		0.5%	380.00	384.10	4.10	Not analysed	10.00	Not analysed	0.30	0.56	
		0.5%	426.30	427.50	1.20	Not analysed	5.00	Not analysed	0.16	0.71	
	PUD003	0.2%	294.00	317.12	23.12	Not analysed	Not analysed	Not analysed	0.28	0.32	
		0.2%	321.75	328.57	6.82	Not analysed	Not analysed	Not analysed	0.19	0.31	
		0.2%	418.60	425.00	6.40	Not analysed	Not analysed	Not analysed	0.15	0.28	
		0.3%	294.00	317.12	23.12	Not analysed	Not analysed	Not analysed	0.28	0.32	
		0.3%	321.75	328.57	6.82	Not analysed	Not analysed	Not analysed	0.19	0.31	
		0.5%	306.00	307.80	1.80	Not analysed	Not analysed	Not analysed	0.60	0.58	
	PUD007	0.2%	446.40	452.31	5.91	0.05	0.30	Not analysed	0.15	0.23	
		0.2%	483.17	485.17	2.00	0.19	0.10	Not analysed	0.08	0.26	

Table 2: Mineralisation Intersections from all historic drilling at Hartebeestpan (Area 4) and Rok Optel. The grade averages are calculated at 0.2%, 0.3% or 0.5%Ni cut-off; not allowing any external dilution intervals below this cut-off grade. No grade capping has been applied to calculate the averages. True widths not known.

About the Areachap Belt

The Areachap Belt was the focus of two short-lived exploration booms in the 1970s and early 1980s following the discovery of the Prieska VMS deposit by Anglovaal in 1968; during this period several VMS and Ni-Cu-sulphide occurrences were discovered.

In recent decades, the geological understanding of volcanogenic zinc-copper mineralisation has led to numerous discoveries worldwide of clusters of massive sulphides in "camps" surrounding known major deposits, yet the Areachap Belt has not had the benefit of modern exploration. Orion now has the advantage of applying the improved geological understanding of VMS deposits combined with modern geophysical exploration tools to target similar discoveries.

The Areachap Belt formed in a complex, long-lived multi-phase orogenic assembly zone, related to the amalgamation of the Rodinia Supercontinent. Worldwide, super-continent amalgamation episodes are associated with the emplacement of potentially Ni-Cu sulphide-bearing intrusions and are therefore of high exploration importance. The event that resulted in the emplacement of the (Ni-Co-Co-PGE sulphide mineralised) Jacomynspan Complex is part of a global event that hosts several world-class nickel-sulphide deposits such as Voisey's Bay, Kabanga and Nova-Bollinger. The geophysical exploration tools being used by Orion in the Areachap Belt are applicable to both VMS Zn-Cu massive sulphide and Ni-Cu massive sulphide exploration.

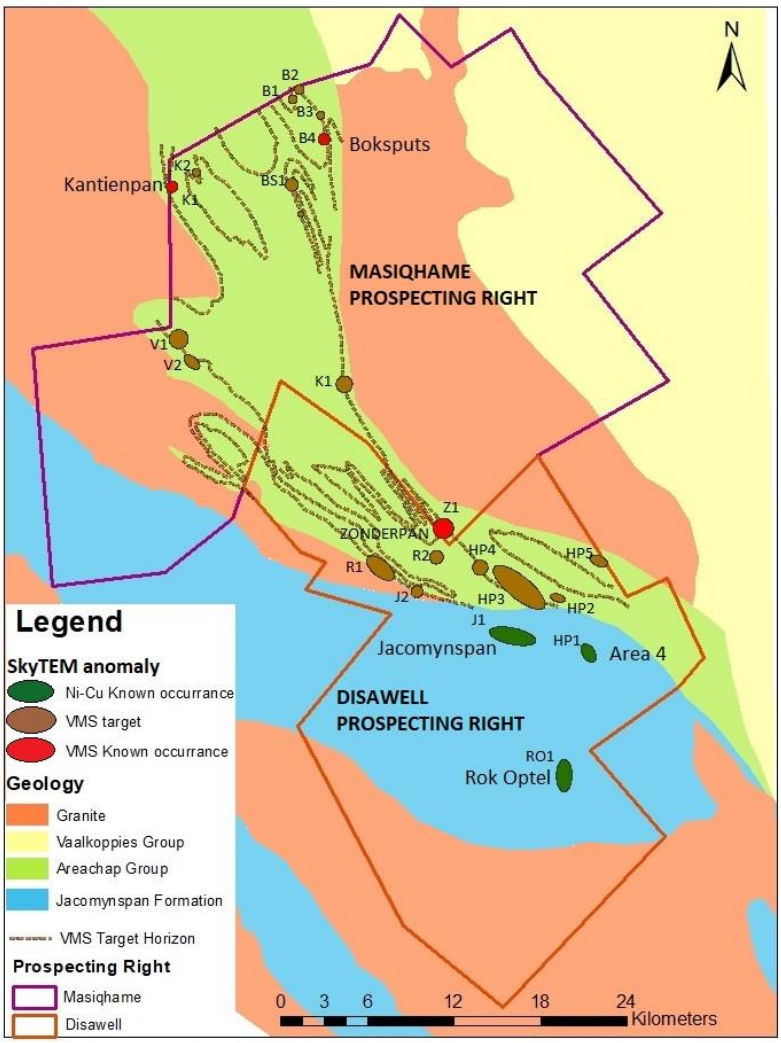


Figure 2: Map showing the SkyTEM™ anomalies currently selected for follow-up exploration work.

Details of TEM system in use

The AEM survey targets are followed up with a best-in-class EM receiver manufactured in Perth, Western Australia, by Electromagnetic Technologies. The current source is a custom-built Time Domain Electromagnetic (**TDEM**) transmitter, capable of transmitting 140 Amps into a 1km-by-1km aluminium wire loop. This current source is coupled with military-grade fluxgate sensors for shallow exploration and super sensitive, high-temperature Super Conducting Quantum Interference Devices (**SQUIDs**) sourced from Germany, which are state-of-the-art sensors for deep exploration. The system being employed is the best technology available. The SQUID system, together with the high-powered TDEM transmitter, can detect moderate to super-conductors to depths of approximately 1,000m. Readings are taken every 50m on grid-lines spaced 200m apart.

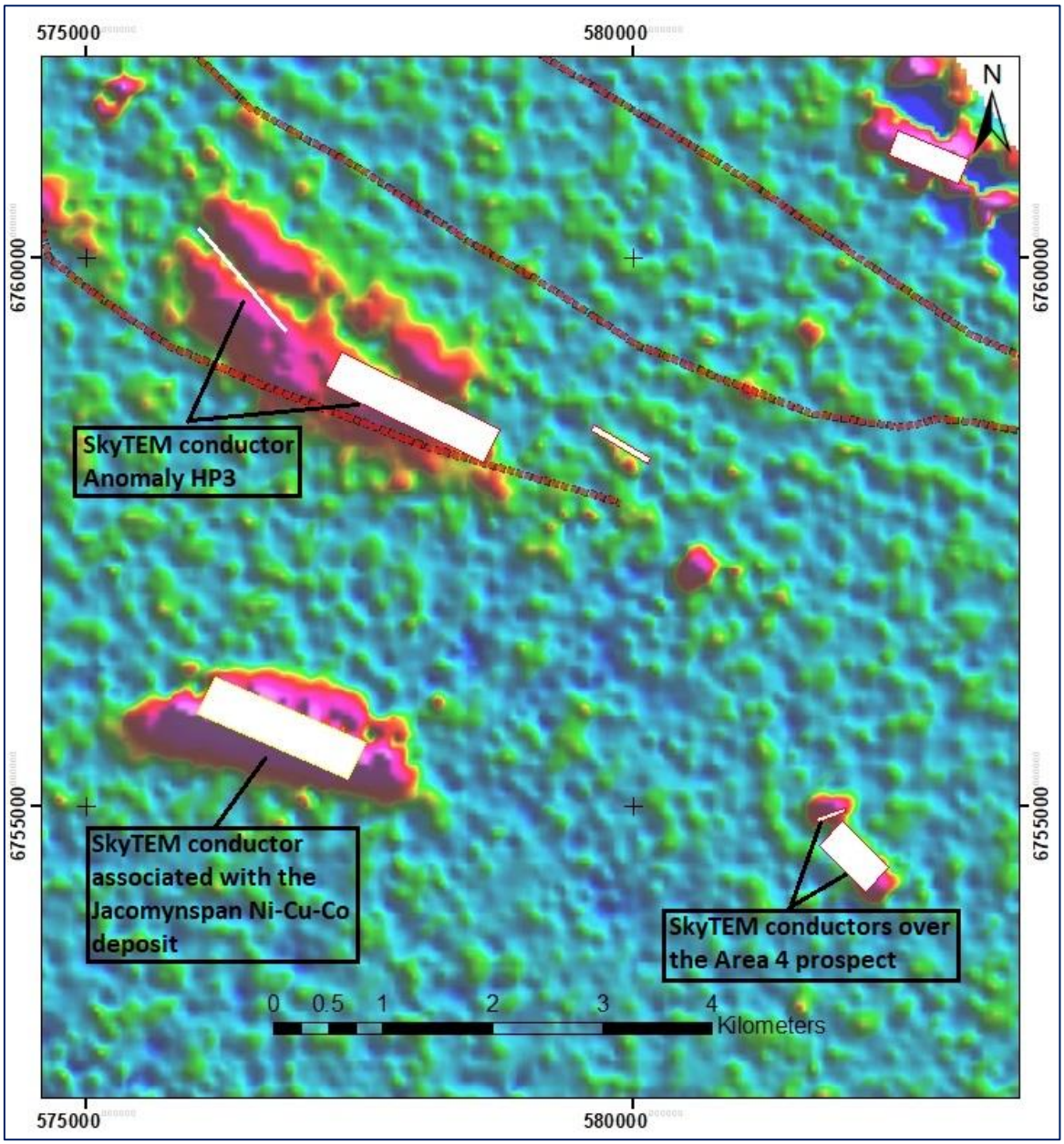


Figure 3: Warm-colour conductivity map of the SkyTEM™ channel 35 data and modelled conductors near the Jacomynspan Ni-Cu-Co-PGE deposit on the Disawell prospecting rights. Red colours show high conductivity.

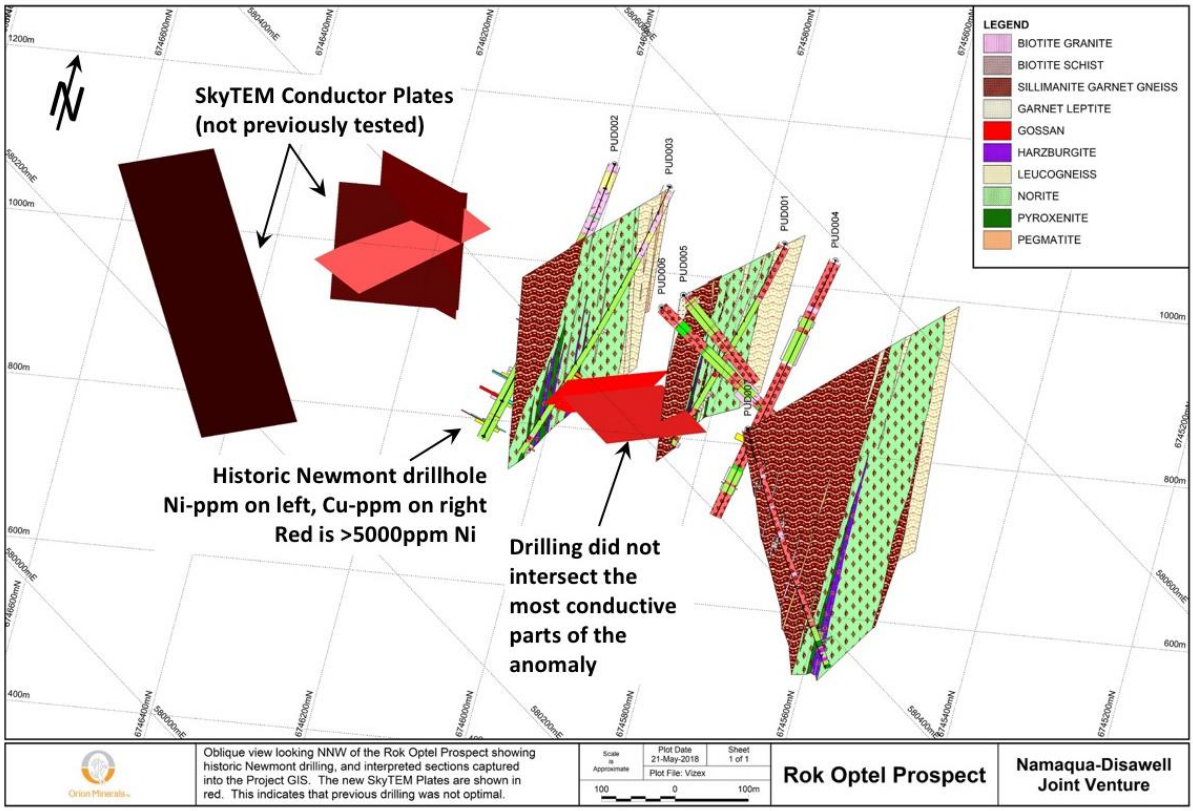


Figure 4: 3-Dimensional view of the Rok Optel Prospect showing SkyTEM™ conductors relative to historic drill data.

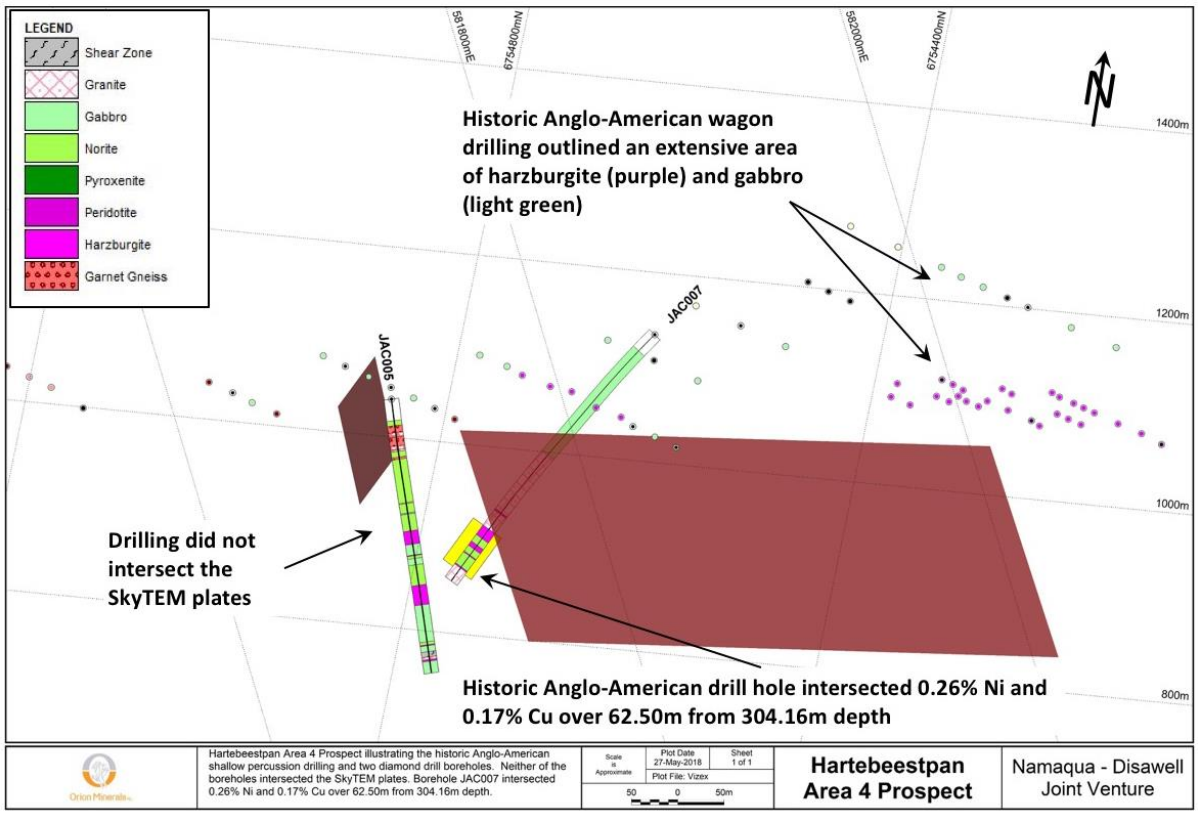
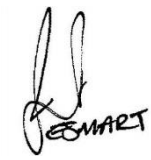


Figure 5: 3-Dimensional view of the Area 4 Prospect showing SkyTEM™ conductors relative to historic drill data.

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

"Given the significant number of new anomalies generated by Orion's initial helicopter-borne Electro Magnetic (SkyTEM™) survey over our regional landholdings in the highly-prospective yet underexplored Areachap Belt, in our view, the use of modern exploration tools has significantly enhanced the probability of exploration success. We look forward to drill testing multiple targets in coming months with the first drill holes scheduled to commence during June 2018."



Errol Smart
Managing Director and CEO

ENQUIRIES

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Competent Person Statement

The information in this report that relates to Exploration Results is based on information compiled by Mr Richard Hornsey (Pr.Sci.Nat.) Registration No: 400071/96, a Competent Person who is a member of the South African Council for Natural Scientific Professionals, a Recognised Overseas Professional Organisation (**ROPO**). Mr Hornsey is a Consultant to Orion. Mr Hornsey 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 Hornsey consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

Disclaimer

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- disclaim all responsibility and liability for these forward-looking statements (including, without limitation, liability for negligence).

Appendix 1: The following tables are provided as a requirement under the JORC Code (2012) requirements for the reporting of Exploration Results for the Namaqua-Disawell Project: Hartebeestpan (Area 4) and Rok Optel Prospects.

Introductory Remarks

HARTEBEESTPAN (AREA 4)

- This information is derived from information supplied to African Nickel Ltd. under an Alliance Agreement with Anglo-American that concluded during 2011. The information included data pertaining to Anglo-American's exploration program for Jacomynspan and Hartebeestpan that started during 1970 and concluded during 1985. The Area 4 Prospect was drilled during 1984, and the available information includes plans with geology mapping, geochemistry and shallow wagon drill traverses, summary logs with lithology and composite assay data. The remaining original core was warehoused at the Anglo-American Kimberley core shed and was viewed and photographed during 2011. It has subsequently been relocated to Johannesburg.
- The data have been captured from the original documents.
- No details of the sampling or analytical methodologies are available. It is assumed that the work was undertaken according to the standards of the period.
- The drill holes were drilled during the final phase of work during 1984.

ROK OPTEL

- This information is mainly derived from a summary report (Gresse 1977/12; Report on the farm Rok Optel near Marydale, N. W. Cape; 16 pages, 5 Maps, 4 Figures, 4 drill hole log sections with assay data, 6 IP pseudo sections employed by Newmont South Africa Limited, and the project was part of the Unimont Joint Venture with Phelps Dodge. The drill holes were drilled during 1971 by Hochmetals SWA. Newmont subsequently entered into a JV with Phelps Dodge.
- The data have been captured from the original documents.
- No details are supplied of the sampling or analytical methodologies. It is assumed that the work was undertaken according to the standards of the period.
- The drill holes were drilled in two phases. The first was undertaken by Hochmetals SWA (6 holes). In 1977, Drill hole PUD001 was subsequently deepened and PUD007 drilled by Newmont/Phelps Dodge.

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)	**HARTEBEESTPAN (AREA 4)** • Diamond core was continuously sampled in approximately 1 – 1.5m intervals • No additional details are supplied of the sampling techniques of the historical drilling presented in the figures and tables in this report and publicly reported here for the first time. It is assumed that the work was undertaken according to the 'industry standards' of the period. **ROK OPTEL** • The core was sampled in lengths varying from 0.60 to 5.57m, with a mean of 2.60m. This is appropriate for a reconnaissance-level assessment of disseminated magmatic sulphide mineralisation. • No additional details are supplied of the sampling techniques of the historical drilling presented in the figures and tables in this report and publicly reported here for this first time. It is assumed that the work was undertaken according to the 'industry standards' of the period.

Criteria	JORC Code explanation	Commentary
	may warrant disclosure of detailed information.	
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.).*	**HARTEBEESTPAN (AREA 4)** • The historical drilling is presented in the figures and tables in this report and publicly reported here for this first time. • Diamond core drilling was undertaken. • No details of the drilling companies used are available. • B-size core was drilled. • Drill holes JAC005 and JAC007 were drilled at -60° to 082 and -51° to 354 respectively. • Drill core was not oriented. **ROK OPTEL** • The historical drilling is presented in the figures in this report and publicly reported here for this first time. • Diamond core drilling was undertaken. • No details of the drilling companies used, or the core diameter are available. The core has been lost or discarded. • Drill holes were drilled at -45° to -52° (PUD001to 006) and -60° (PUD007) • Drill core was not oriented.
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.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • No details are available of the core recovery or possible sample bias.

Criteria	JORC Code explanation	Commentary
Logging	• *Whether core and chip samples have been geologically and geo-technically 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.*	**HARTEBEESTPAN (AREA 4)** • The drill hole core has been geologically logged to a high standard consistent with the terminology developed for the project by Anglo-American. • The remaining drill hole core was photographed and appended to the drill hole database. **ROK OPTEL** • The drill hole core has been geologically logged to a high standard, the rock terminology is consistent with all other datasets. • Mineralogical studies were undertaken to confirm the rock characterisation and sulphide speciation. • No geotechnical information is available. • No core photography is available.
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.*	**HARTEBEESTPAN (AREA 4)** • The diamond core was split longitudinally in half using a diamond saw. The original detailed sub-sample information is not available. The summarised data have been captured from the drill logs submitted to the Government Council for Geoscience. **ROK OPTEL** • No details are available with respect to sub-sampling techniques and sample preparation.
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.*	**HARTEBEESTPAN (AREA 4)** • The samples were analysed at the Anglo-American Research Laboratories, Booysens, Johannesburg. • No details of the quality control procedures are available. **ROK OPTEL** • No details are available with respect to laboratory, or quality control.
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*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • No data are available.

Criteria	JORC Code explanation	Commentary
	verification, data storage (physical and electronic) protocols. • *Discuss any adjustment to 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.*	**HARTEBEESTPAN (AREA 4)** • The drill holes are indicated on the geological maps in the historic report. • The collars have been located in the field and surveyed using a handheld Garmin GPS. • The data are recorded using the WGS84 datum, UTM Zone 36S. **ROK OPTEL** • The drill holes are indicated on the geological maps in the historic report. • The collars have been located in the field and surveyed using a handheld Garmin GPS. • The data are recorded using the WGS84 datum, UTM Zone 36S.
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.*	**HARTEBEESTPAN (AREA 4)** • The drill holes are scout holes that were sited to test an IP anomaly supported by geological mapping and surface geochemistry. The spacing is not sufficient to establish a degree of grade and geological continuity appropriate for Mineral Resource estimation. **ROK OPTEL** • The drill holes are oriented to drill a NNE-striking zone at spacing of 75-300m over a strike extent of 670m. The spacing is not sufficient to establish a degree of grade and geological continuity appropriate for Mineral Resource estimation.
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.*	**HARTEBEESTPAN (AREA 4)** • The stratigraphy dips steeply to the west. Drilling was undertaken from the south to intersect at a reasonable angle to dip. **ROK OPTEL** • The stratigraphy dips steeply to the WNW. Drilling was undertaken from the ESE and WNW to intersect at a reasonable angle to dip.
Sample security	• *The measures taken to ensure sample security.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • No information is available.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • No information is available.

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.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • The farms Hartebeestpan 175 and Optel 261 have overlapping rights (in respect of differing minerals) held by two companies. • Namaqua Nickel Mining (Pty) Ltd (**Namaqua**) holds mining right **NC 30/5/1/2/2/10032MR** over Farm No. 387, the farm Hartebeest Pan 175 (Portion RE5), Jacomyns Pan 176 (Portion RE1), Rok Optel 261 (Portion RE1, Portion RE2, Portion RE3) for the mining of Nickel, Copper, Cobalt, PGM and Gold. This right was granted on 19 September 2016 subject to certain conditions, which include local community participation and environmental financial guarantees, but is not yet executed. • Disawell (Pty) Ltd (**Disawell**) holds two prospecting rights namely **NC 30/5/1/1/2/11010 PR** over Jacomyns Pan 176 (Portion RE, Portion 1, Portion 2); Rok Optel 261 (RE, Portion 1, Portion 2, Portion 3); Rooi Puts 172 (Portion 2, Portion 3, Portion 4) and **NC 30/5/1/1/2/10938 PR** over Hartebeest Pan 175 (RE, Portion 3, Portion 4, Portion 5) and Farm 387, each for the prospecting of Zinc, Lead and Sulphur. • Disawell and Namaqua entered into an earn-in agreement with Orion Minerals, in terms of which Orion (through its subsidiary, Area Metals Holdings No. 3 (Pty) Ltd) is granted the right to invest in these companies. • No historical or environmental impediments to obtaining an operating licence are known.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	**HARTEBEESTPAN (AREA 4)** • On Hartebeest Pan 175, exploration has been undertaken by several parties, although only limited data are available. Mercury Mining (Pty) Ltd, an Anglovaal subsidiary, undertook exploration during the early 1970s, including mapping, soil sampling, and geophysics, before drilling several drill holes adjacent to this area. Limited information is available from this campaign. **ROK OPTEL** • On Rok Optel 261, exploration has been undertaken by several parties, although only limited data are available. Hochmetals SWA explored during the early 1970s and drilled 6 drill holes. Poor quality standardised and summarised geological drill logs, submitted to the government Council for Geoscience, are the only information remaining from this period. The Newmont/Phelps Dodge JV exploration program is reported by Gresse (1977) which includes geological maps, drill sections and plans of the geophysical grids for IP survey. Drill hole DDH001 was deepened, and a new hole PUD007 drilled. The previous drill holes were all renamed

Criteria	JORC Code explanation	Commentary
		from "DDH" to "PUD" by Newmont.
Geology	• *Deposit type, geological setting and style of mineralisation.*	**HARTEBEESTPAN (AREA 4)** • The Hartebeestpan mineralisation is contained within portions of a steeply dipping metamorphosed mafic to ultramafic intrusion several tens of metres thick containing nickel-copper sulphides. The intrusion is predominantly harzburgite and pyroxenite, with surrounding norite and gabbro. The intrusion is enclosed within quartz-feldspar-biotite-garnet gneiss country rocks and is locally interfingered with late-orogenic granite. **ROK OPTEL** • The Rok Optel mineralisation is contained within portions of a steeply dipping metamorphosed mafic to ultramafic intrusion. several tens of metres thick. containing nickel-copper sulphides. The intrusion is predominantly norite, with lenticular bodies of pyroxenite to harzburgite. The intrusion is enclosed within quartz-feldspar-biotite-garnet gneiss country rocks.

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*
	  ○ *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.*
		HARTEBEESTPAN (AREA 4) & ROK OPTEL
		• See Tables 1 and 2 for historic drill hole information.

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.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • The historic drill data have been captured into a standard MS Excel spreadsheet within which assays are colour coded according to grade. The cut-off grade is defined based upon the Ni analyses only, and no metal equivalents are applied. No top-cutting is applied. Samples below detection limit are assigned a dummy value of 50% of detection limit, but these are generally not included in the composites. The composite intervals are then calculated by selecting the samples within a zone defined by the cut-off grade being applied. No external marginal grade samples are included within the composite, but internal low-grade zones may be included if they do not dilute the entire interval to below the cut-off grade being applied. If density data are available, the assay grades

Criteria	JORC Code explanation	Commentary
		are weighted by width and density. If no density data are available, width weighting is applied.
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').*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • Drilling was undertaken from the south to intersect at a reasonable angle to dip; however, the geometry of the mineralisation with respect to the drill hole angles are not known in enough detail to state the true widths of the interceptions. All mineralised intervals reported here are down-hole lengths.
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.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • The drill holes are indicated by Figures 4 and 5, which are 3-dimensional views with the coordinates and elevation (amsl) included. The drill holes include lithology and graphed Ni and Cu analyses.
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.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • In the Competent Person's view, the historic drill results and the geophysical targets are presented in a balanced manner in this Public Report.
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.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • Extensive geology mapping, geochemical sampling, and airborne and ground geophysical programmes were undertaken by previous explorers, using the equipment and methods available at that time. These geophysical data are not all available, and mainly comprises plans without the back-up information to verify the data validity. The new geophysical exploration, using modern technology, supersedes all previous geophysics. The geology mapping remains valid and has been digitally captured. The geochemical data have been captured from the original plans and used where appropriate. • In 2017 and 2018 Orion undertook a regional SkyTEM™ geophysical survey. The results are reported in ASX releases 1 February 2018 and 8 March 2018. Interpretation of the results is ongoing. • Ground EM surveys are underway.
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.*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • Ground-based Fixed Loop Electromagnetic surveys will be undertaken to cover the extent of airborne conductors identified from the recent SkyTEM™ airborne survey. The detailed location and extent of this work is yet to be finalised.