Orion Minerals

ASX/JSE RELEASE: 30 July 2018

Sulphides intersected at Rok Optel Ni-Cu Prospect, Areachap Belt, Northern Cape, South Africa.

- **Semi-massive and injected-stringer sulphide veins intersected in the first hole testing fixed-loop electro-magnetic surveys at Rok Optel.**
- **Intersection interpreted to be in a magma conduit intrusion with three horizons of Ni-Cu-bearing semi-massive and stringer-massive sulphide mineralisation.**

Orion Minerals Limited (**ASX/JSE: ORN**) (**Orion** or the **Company**) is pleased to provide an update on diamond drilling of the first Ni-Cu target on the Namaqua and Disawell mineral rights (**Disawell**) in the Areachap Belt, South Africa. Fixed-Loop Time Domain Electro Magnetic (**FLTDEM**) surveys and geological mapping over helicopter-borne electro-magnetic anomalies at the Disawell Prospects commenced in May 2018 (refer ASX release 1 February 2018). Diamond drilling commenced in July 2018, targeting high-grade, magmatic sulphide Ni-Cu-Co-PGE mineralisation.

Drill hole OROD001 (Figures 1, 2 and 3) has intersected a thick succession of sulphide-bearing mafic to ultramafic intrusive rocks. Importantly, injected veinlets of massive sulphide (locally >90% over 2-15cm pyrrhotite, chalcopyrite and pentlandite mineralogy) confirm the presence of magmatic Ni-Cu sulphide mineralisation.

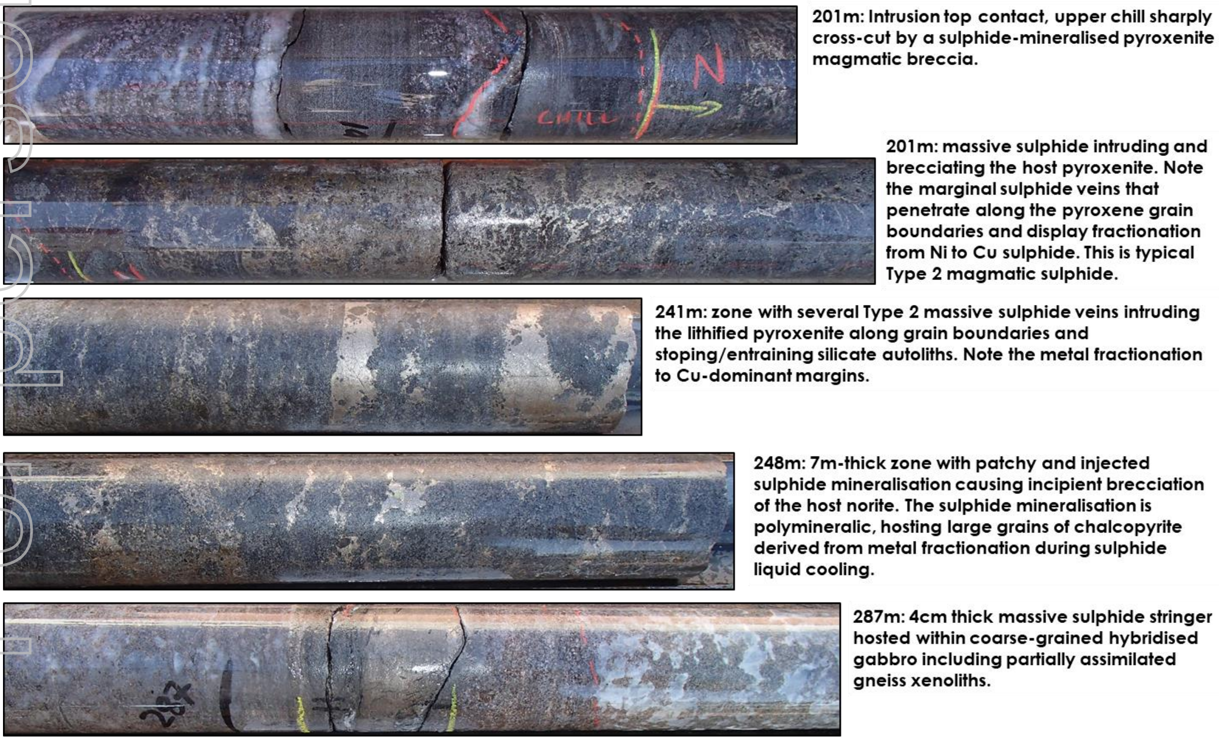

Figure 1: Drill hole OROD001 Ni-Cu sulphide intersections and brief descriptions. The mineralisation is typical primary immiscible magmatic sulphide derived under magma conduit conditions. No post-emplacement deformation is identified.

Orion notes that laboratory assays are yet to be completed for these intervals. It is not certain that the grades and widths of the intersections mentioned will be of economic significance until assay results are returned from the laboratory.

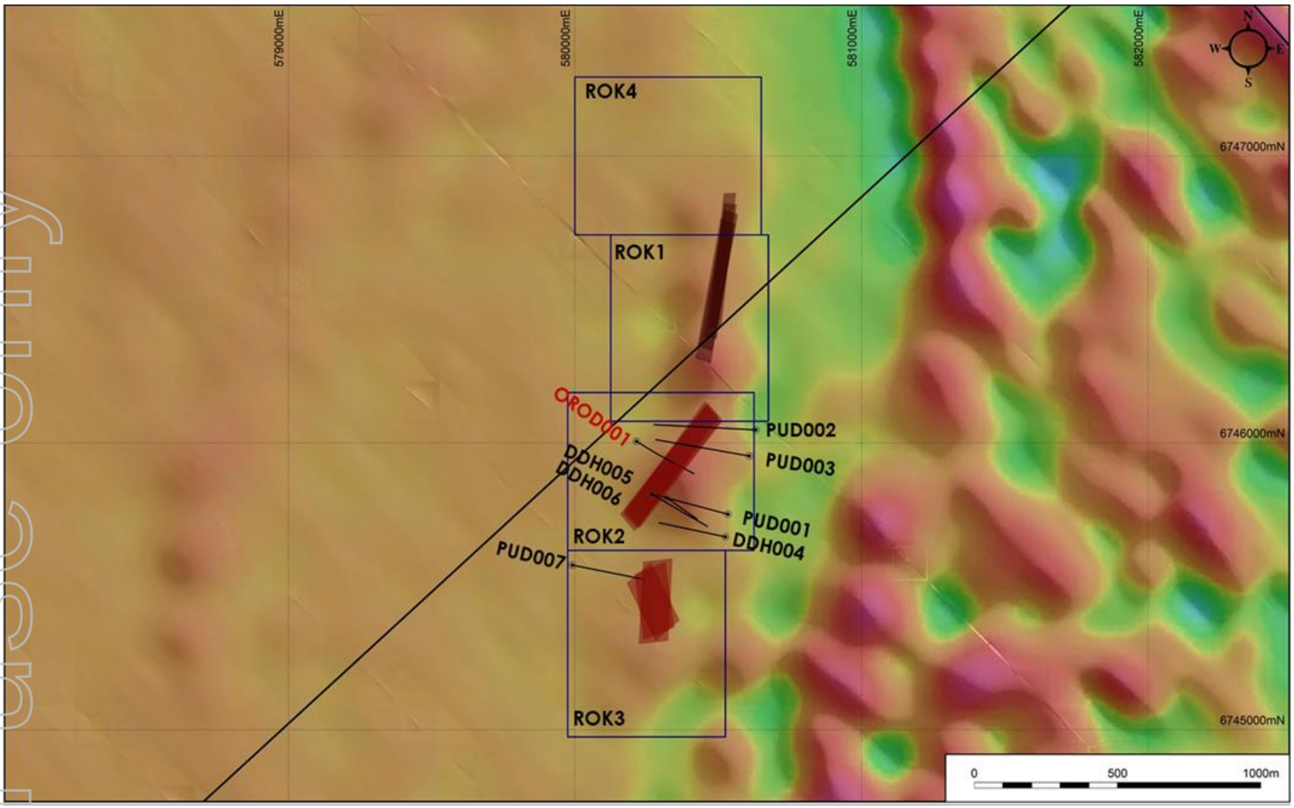

Figure 2: Plan showing FLTEM grids, conductors, historic drill holes and the new drill hole OROD001 on the Rok Optel prospect overlain on an airborne magnetic map (RTP 1VD).

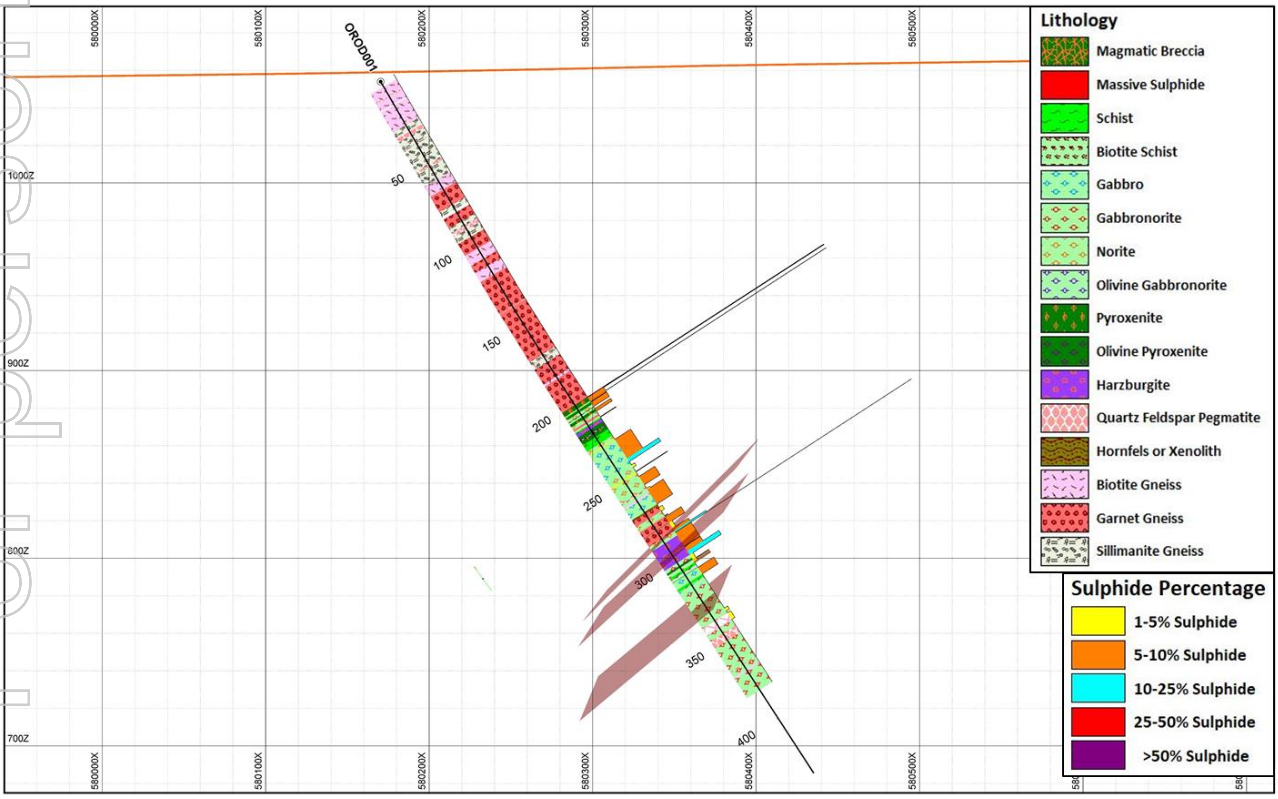

Figure 3: Section looking north of diamond drill hole OROD001.

The current OROD001 drill hole depth is at 390m. Drilling is continuing in ultramafic intrusion to test the footwall contact, before down-hole electromagnetic surveys will be used to identify possible off-hole conductors, that may be associated with larger massive-sulphide lenses.

Recent FLTDEM surveys have shown that historic drilling at Rok Optel (refer ASX release 3 July 2018) had failed to test areas of highest conductivity in close proximity to the conduit intrusions, which were shown to host disseminated Ni–Cu-Co–PGE mineralisation (Figure 4).

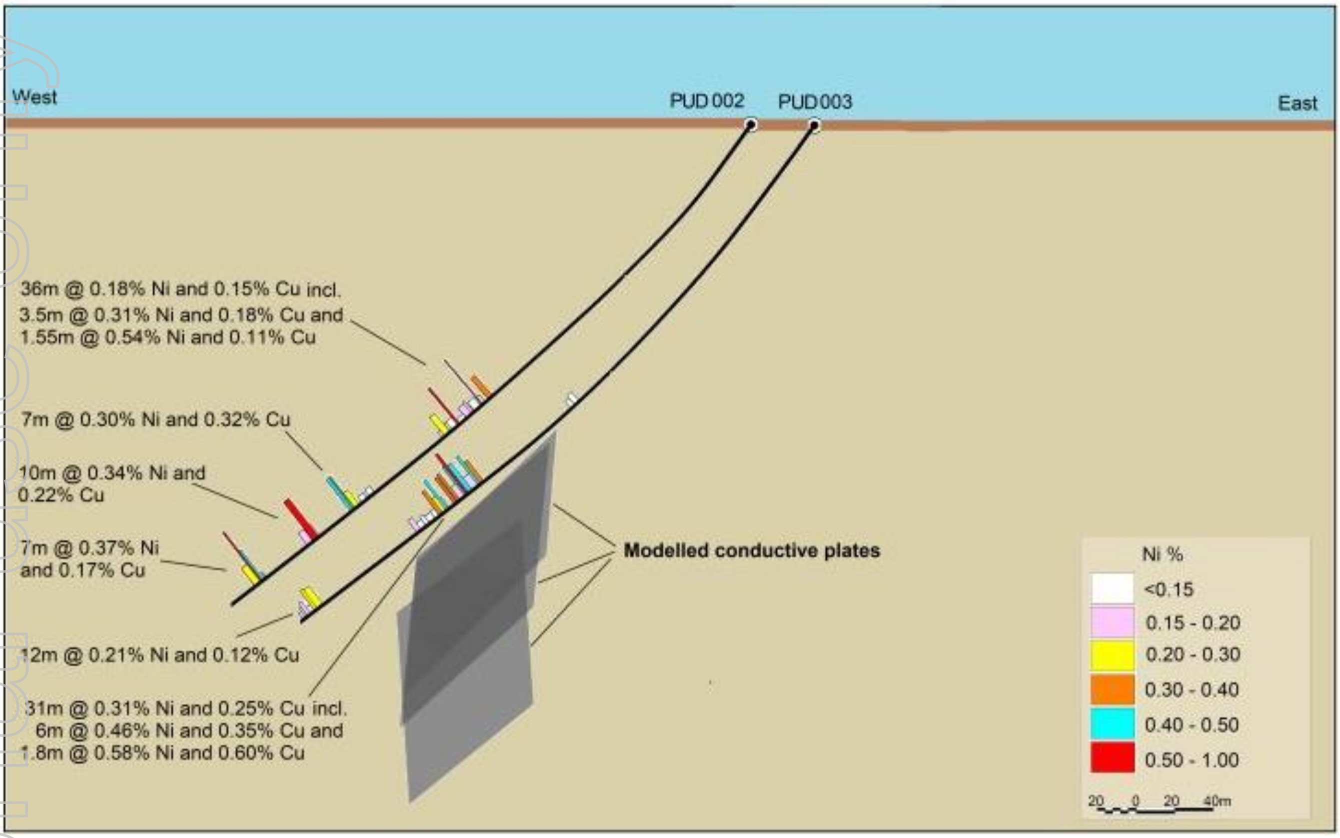

Figure 4: Cross section showing historic drill results and recently identified conductive plates on the northern side of the Rok Optel 2 grid.

The intersections achieved in OROD001 provide strong geological proof of concept for Orion's expectation that the Jacomynspan group of intrusions has good potential to host high-grade massive sulphide mineralisation similar to the Nova - Bollinger deposit in the Fraser Range, Western Australia.

At Rok Optel, a relatively (compared to Jacomynspan) sparse "base-load" of Type 1 disseminated mineralisation was encountered. The zones where mineralisation is present are characterised by forcible injection of sulphide liquid intruding the partly solidified host intrusion, forming magmatic breccias hosting Type 2-style, massive-to-semi-massive sulphide mineralisation (Figure 1). This indicates that during the conduit life, it accommodated through-flowing immiscible sulphide magma, which is a key characteristic for accumulation of large massive sulphide lenses in ultramafic intrusions.

Comparisons to the Fraser Range Intrusions

The geotectonic setting and age of the Namaqua-Natal intrusions which the Jacomynspan are part of, are directly comparable to those in the Fraser Range, Western Australia, where similar mafic to ultramafic intrusions host the Nova - Bollinger massive sulphide orebody (Mineral Resource of 13.1Mt at 2% Ni, 0.8% Cu) (refer Independence Group NL quarterly results presentation of 27 July 2018). Orion's team, which has extensive Fraser Range exploration experience, is able to draw meaningful comparisons between the two terranes, which have similar ages, tectonic settings and metamorphic overprints.

Within both terranes, the intrusions were emplaced at a late stage of orogenesis, and at intermediate to deep crustal level. Both terranes host morphologically complex, composite intrusions with stacked sill intrusions. At Nova-Bollinger, the best mineralisation is located within the lowermost sill. At Rok Optel, diamond drilling is now testing the full extent of the sill complex for the first time.

The rock types are similar within both terranes, being predominantly gabbro to norite, with localised layers of harzburgite and troctolite. The chemistry of the intrusive rocks indicates derivation from fertile mantle-derived magma that has undergone crustal contamination leading to sulphide liquid segregation.

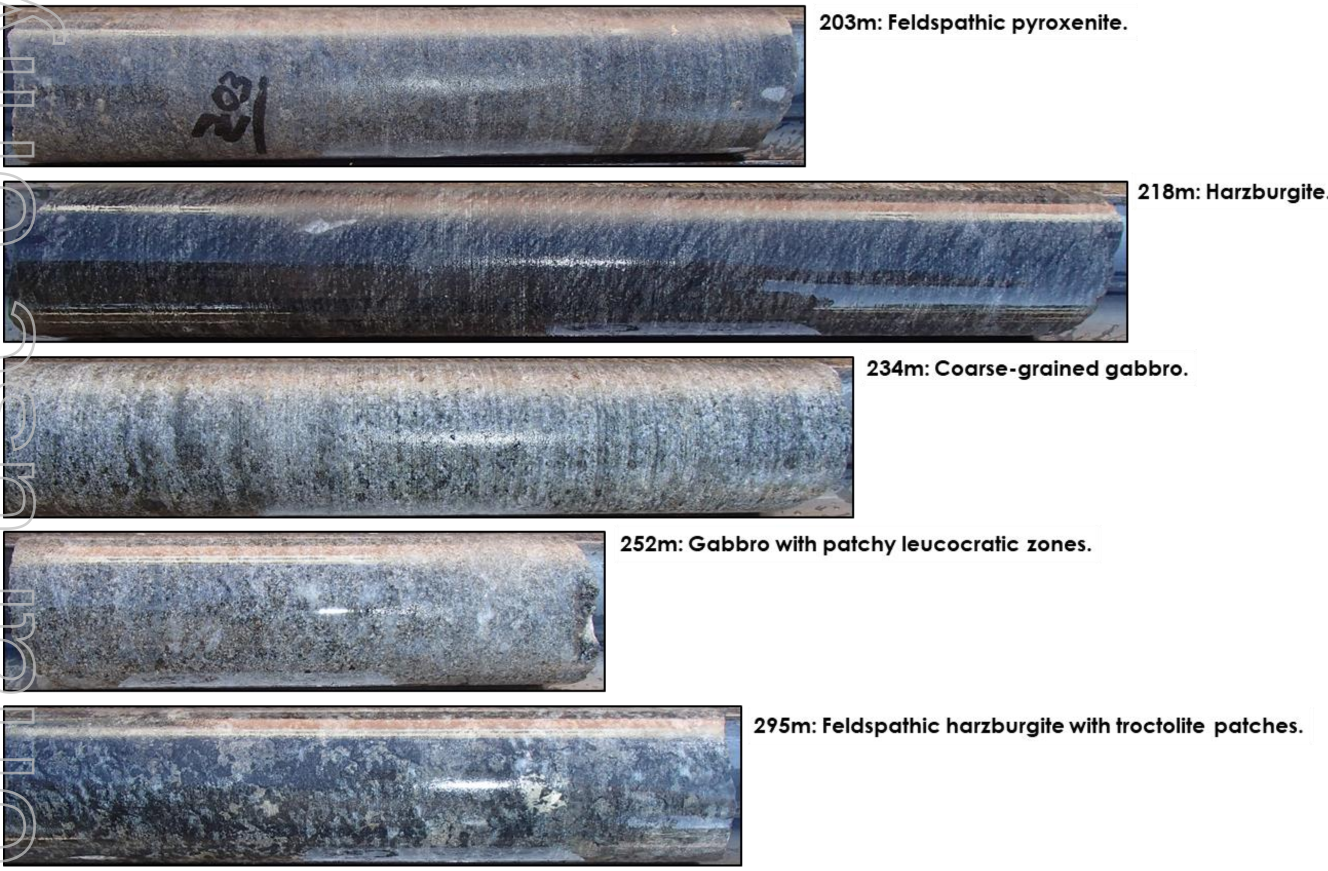

Figure 5: Drill hole OROD001 lithologies with strong similarities to those encountered in Fraser Range, Western Australia.

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

"The first intersection at Rok Optel 2 has confirmed our expectation that the Jacomynspan intrusive complex is fundamentally similar to what we saw in the Fraser Range. We have now demonstrated that geological conditions exist for accumulation of large intrusive massive sulphide bodies similar to Nova - Bollinger and that our modern exploration techniques will facilitate discovery of these massive sulphides. The similarity in geological terranes between Areachap and Fraser Range is further underscored by Independence Group's recent announcement of their discovery of what appears to be a Prieska style VMS at Andromeda in the Fraser Range."

Errol Smart
Managing Director and CEO

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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.

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Drill hole	X UTM34S	Y UTM34S	Elevation (m)	Initial Depth (m)	Final Depth (m)	Dip (degrees)	Azimuth (degrees)
OROD001	580215	6746005	1,054	0.00	435.00	-50.00	285.00

Table 1: Drill hole Information.

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

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.	• No drill hole core sampling has been undertaken at the date of reporting.
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.).*	• Diamond core drilling was undertaken using HQ core size to drill through the weathered zone (approximately 75m) reducing to NQ core in hard rock. • The OROD001core 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.*	• Core recoveries are assessed on a routine basis using drill rig and core yard standard procedures. • At the drill rig, core stick-ups are measured at the end of each run. The core is fitted together and placed into the core trays with a plastic block at the end of each run recording the hole depth and advance. • At the core yard, the length of core is measured for each run. The measured length of core is subtracted from the run length recorded from the driller's stick-up measurements and recorded as a core gain or loss. • During the logging process, core recoveries are considered, and the cause of loss is quantified and described. The locations of 'bottom breaks' relative to the core run markers are observed. • No information is available yet to determine whether a relationship exists between grade and core recovery.

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.*	• The drill hole core has been geologically logged by the Competent Person. This process utilises a standard-format logging template designed specifically for this style of mineralisation. • Both quantitative and qualitative logging is undertaken dependent upon the features being described. Qualitative parameters include lithology, colour, grain size, weathering, structural features, alteration, sulphide and oxide mineralisation, secondary mineralisation, and general contextual comments. Quantitative parameters include intensity of the qualitative parameters, mineralisation percentages, and magnetic properties. • The logs are recorded onto pre-designed templates and captured into digital format at the project office. • The drill hole core is photographed according to standard core yard procedure and the photographs are digitally archived.
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.*	• No sampling has been undertaken to date.
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.*	• No new analyses have been undertaken to date.
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.*	• No independent peer reviews have been undertaken.

Criteria	JORC Code explanation	Commentary
	• *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.*	• The drill hole collar was located using a handheld Garmin GPS. The drill hole azimuth and dip were surveyed using a Brunton compass. • Drill hole downhole surveys are undertaken using a North-seeking Gyro instrument. • The data are recorded using the WGS84 datum, UTM Zone 34S.
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.*	• This is the first drill hole into the Rok Optel prospect.
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.*	• No sampling has yet been undertaken.
Sample security	• *The measures taken to ensure sample security.*	• No sampling has yet been undertaken.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No sampling has yet been undertaken.

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 farm Rok Optel 261 has overlapping rights (in respect of differing minerals) held by two companies. • Namaqua Nickel Mining (Pty) Ltd holds a mining right NC 10032MR (over Die Plaas No. 387: Whole Farm Hartebeest Pan 175: RE, Portion 5 Jacomyns Pan 176: RE, Portion 1, Rok Optel 261: RE, Portion 1, Portion 2, Portion 3) for the mining of Nickel, Copper, Cobalt, PGM, Gold. This right was granted on 19 September 2016 subject to certain conditions, which include local community participation and financial guarantees, but is not yet executed. • Disawell (Pty) Ltd holds two prospecting rights, namely NC 30/5/1/1/2/11010 PR (over Jacomyns Pan 176: 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 Farm 387: RE), each for the exploration of Zinc, Lead and Sulphur.

Criteria	JORC Code explanation	Commentary
		• 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.*	• On Rok Optel 261, exploration has been undertaken by several parties, although only limited data are available. Hochmetals SWA undertook exploration during the early 1970's, and drilled the drill holes previously reported upon by Orion Minerals. Poor quality standardised and summarised geological logs submitted to government are the only information remaining from this period. • Newmont undertook exploration from 1975 to 1977. The Hochmetals core was re-analysed. The existing drill hole PUD001 was deepened by 70m and a new hole (PUD007) drilled to 522.90m. A report (Gresse 1977) with drill plans and sections is available, and has been captured into the database.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Rok Optel mineralisation is contained within portions of a metamorphosed mafic to ultramafic intrusion at least 150m thick containing magmatic nickel-copper sulphides. The intrusion is predominantly norite and gabbro, with lenticular bodies of pyroxenite to harzburgite. The intrusion is enclosed within quartz-feldspar-biotite-garnet (sillimanite) 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:* 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.*	• See table 1.
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*	• No assays are available.

Criteria	JORC Code explanation	Commentary
	such aggregations should be shown in detail. • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	
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').*	• No assays are available.
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 showing the intersections are reported in the main body of the 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.*	• The visible nature of the results has been put into appropriate context and it is noted that no conclusions can be drawn until results are returned from the laboratory.
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.*	• No other exploration data are reported.
Further work	1. *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* 2. *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• The drill hole will be continued to intersect the base of the Rok Optel intrusion; following which a down-hole electro-magnetic survey will be undertaken. Follow-up work will be dependent upon the survey results.