Orion Minerals

ASX/JSE RELEASE: 3 July 2018

Fixed Loop TDEM results confirm compelling intrusive Ni-Cu sulphide targets for immediate drill testing.

- **Five compelling Ni-Cu-Co sulphide targets identified from Fixed-Loop Electro Magnetic surveys.**
- **Targets all lie within the Jacomynspan Ni-Cu-Co ultramafic intrusive cluster.**
- **The modelled high-priority target EM plates have far higher conductance than an orientation survey conducted over the known Jacomynspan Sulphide Mineral Resource of 6.8Mt at 0.57% Ni, 0.33% Cu and 0.03% Co.**
- **Plates are interpreted to lie within, or in close proximity to, ultramafic bodies with significant drill-confirmed Ni-Cu sulphide mineralisation.**
- **Diamond drill rig mobilising to test the EM plates.**

Orion Minerals Limited (**ASX/JSE: ORN**) (**Orion** or **Company**) is pleased to report positive initial Fixed-Loop Electro-Magnetic (**FLEM**) survey results over Ni-Cu targets on the Disawell prospecting right (**Disawell**) in the Areachap Belt, South Africa (Figure 1). Fixed-Loop Time Domain Electro Magnetic (**FLTDEM**) surveys and geological mapping following up on helicopter-borne Electro Magnetic (**AEM** or **SkyTEM™**) anomalies on the Namaqua – Disawell mineral rights commenced in May 2018 (refer ASX release 1 February 2018). Orion is targeting high-grade, magmatic intrusive sulphide Ni-Cu-Co-PGE mineralisation with similar geology and age of mineralisation as the Nova-Bollinger Mine, Fraser Range, Western Australia.

Historic drilling and field mapping at Orion's Area 4 and Rok Optel prospects on Namaqua – Disawell mineral rights confirm the presence of Jacomynspan satellite intrusives with mafic and ultramafic rocks, also hosting sulphide Ni-Cu mineralisation. Jacomynspan contains a Mineral Resource of 6.8Mt at 0.57% Ni, 0.33% Cu and 0.03% Co above a 0.4% Ni cut-off (refer ASX release 8 March 2018)[1]. The Mineral Resource remains open down dip and along strike.

The Rok Optel and Area 4 conductors have conductance of 850-3150 Siemens (**S**) and 350-2000 S respectively, which are orders of magnitude higher than those measured by an orientation loop over the known Mineral Resource at Jacomynspan, which measured 250-575 S (Table 1) for the 70m-thick, disseminated to net-textured sulphide Mineral Resource (Figure 3). The higher conductance at Area 4 and Rok Optel are interpreted to be related to higher-grade base metal sulphide content. Historic

[1] Orion is not aware of any new information or data that materially affects the information included in the ASX release of 8 March 2018. 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.

drilling, which intersected Ni-Cu sulphide mineralisation less than 100m away and outside of the new conductive plates, provides strong support for the targets.

The five high-priority target FLTDEM plates are on five grids named A4 A & B at the Area 4 and grids ROK 1-3 at Rok Optel (Figure 2). The surveys have been undertaken using equipment, designed specifically to test for massive sulphide mineralisation at shallow to moderate depths. The data is quality-assessed by Spectral Geophysics in South Africa and then interpreted by Southern Geoscience Consultants (Perth, WA).

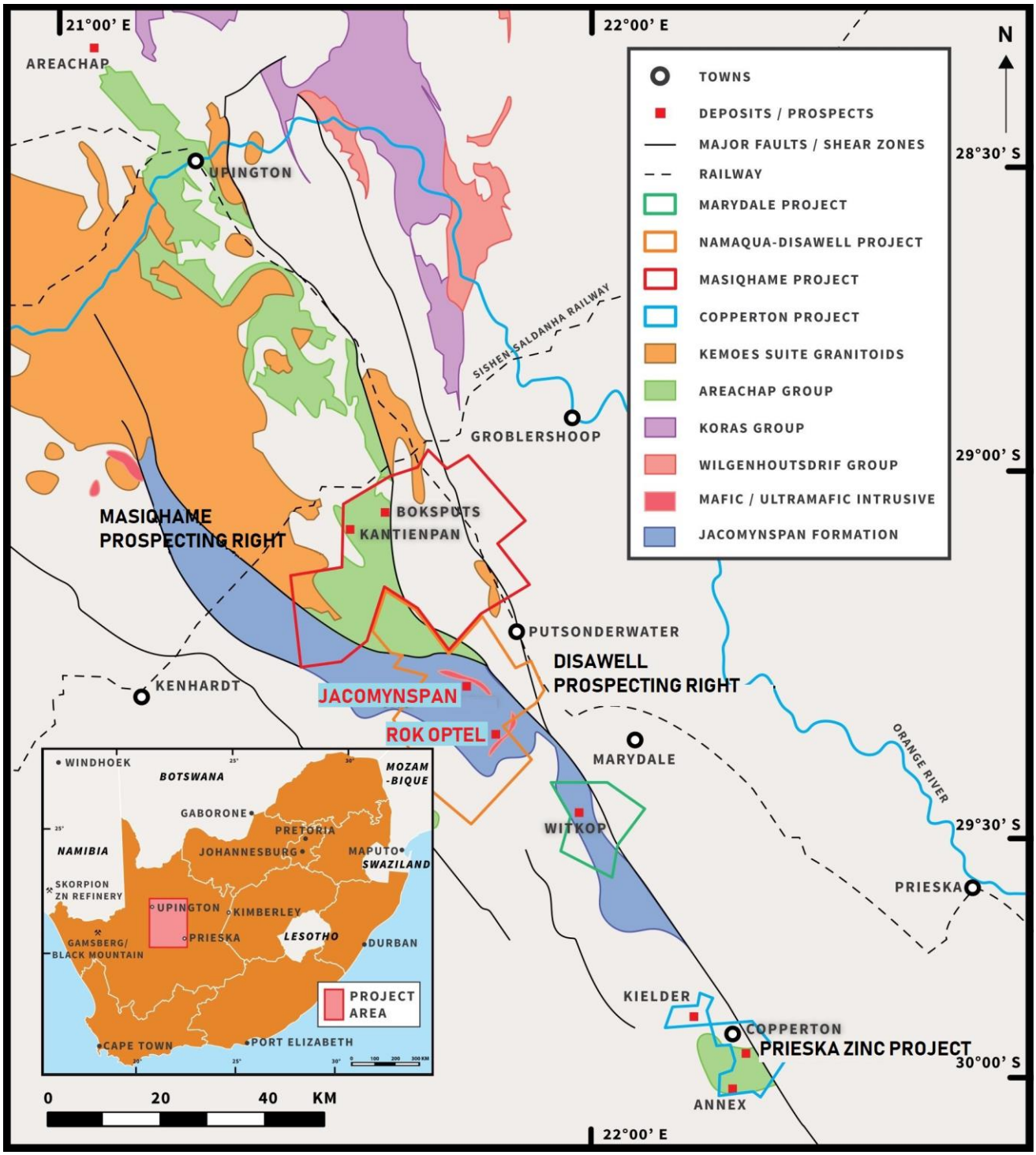


Figure 1: Areachap Project summary geology map showing the Masiqhame and Disawell prospecting rights.

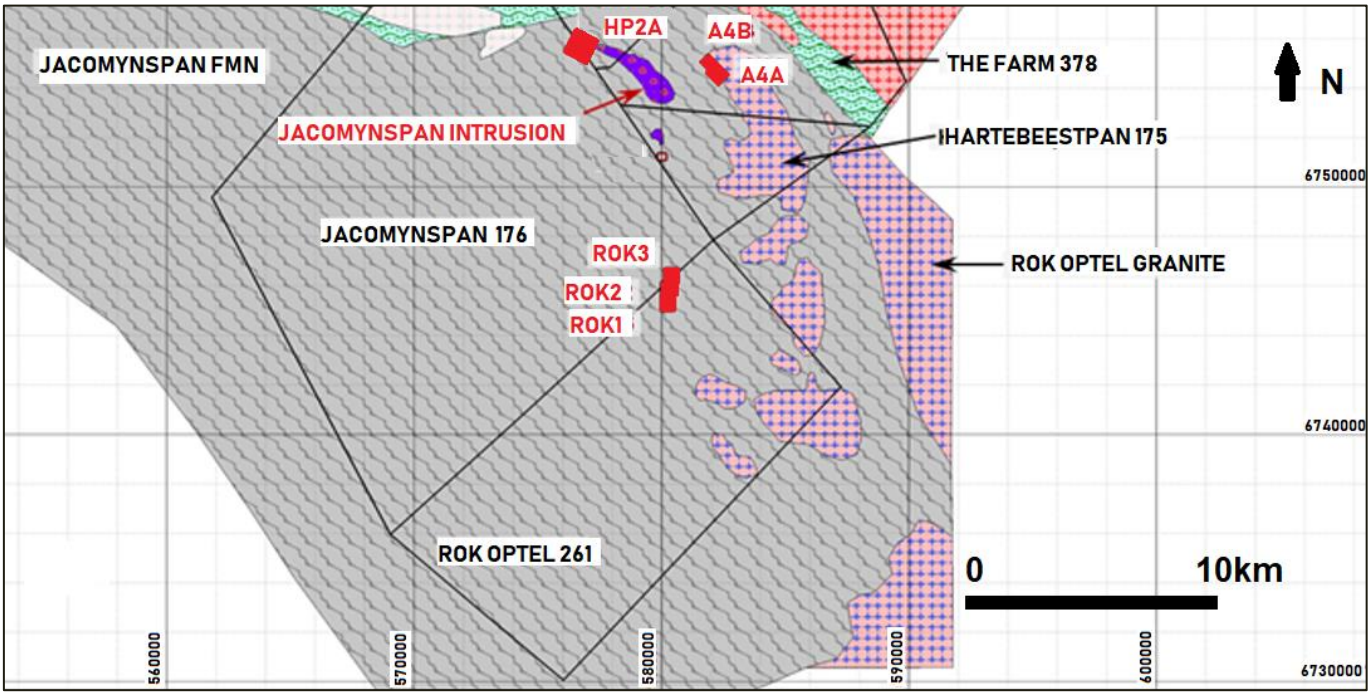


Figure 2: Namaqua - Disawell Project plan illustrating farms boundaries and FLTDEM grids overlain on the AEM geology interpretation.

Target	VMS/NiS	Loop	Conductor Model	Plate Dimensions (m)	Plate Conductance (Siemens)	Approximate Plate Depth (m)
Jacomynspan mineralisation	NiS	HP2A	HP2_2022	1000 x 1000	250	150
			HP2_2527	1100 x 1100	325	200
			HP2_3032	1000 x 1000	490	310
			HP2_3335	1000 x 1000	575	400
Area 4	NiS	A4A	A4A_1820	150 x 90	350	75
			A4A_2023	125 x 80	400	75
			A4A_2325	150 x 75	450-500	100
		A4B	A4B_1820	400 x 50	650	50
			A4B_2023	300 x 50	900	50
			A4B_2224	325 x 50	1100	50
			A4B_2527	325 x 40	1750-2000	50
Rok Optel	NiS	ROK1	ROK1_2528	475 x 95	1600	210
			ROK1_2729	475 x 85	2300	225
			ROK1_2932	475 x 80	3150	250
		ROK2	ROK2_2528	475 x 100	1250	200
			ROK2_2729	500 x 95	1700	225
			ROK2_2932	475 x 85	2900	275
		ROK3	ROK3_2325	130 x 300	850	275
			ROK3_2527	135 x 250	950	300
			ROK3_2729	120 x 275	1250	300

Table 1: Summary table of the FLTDEM grids and plate models including plate sizes, conductance and depth to the top of the plate.

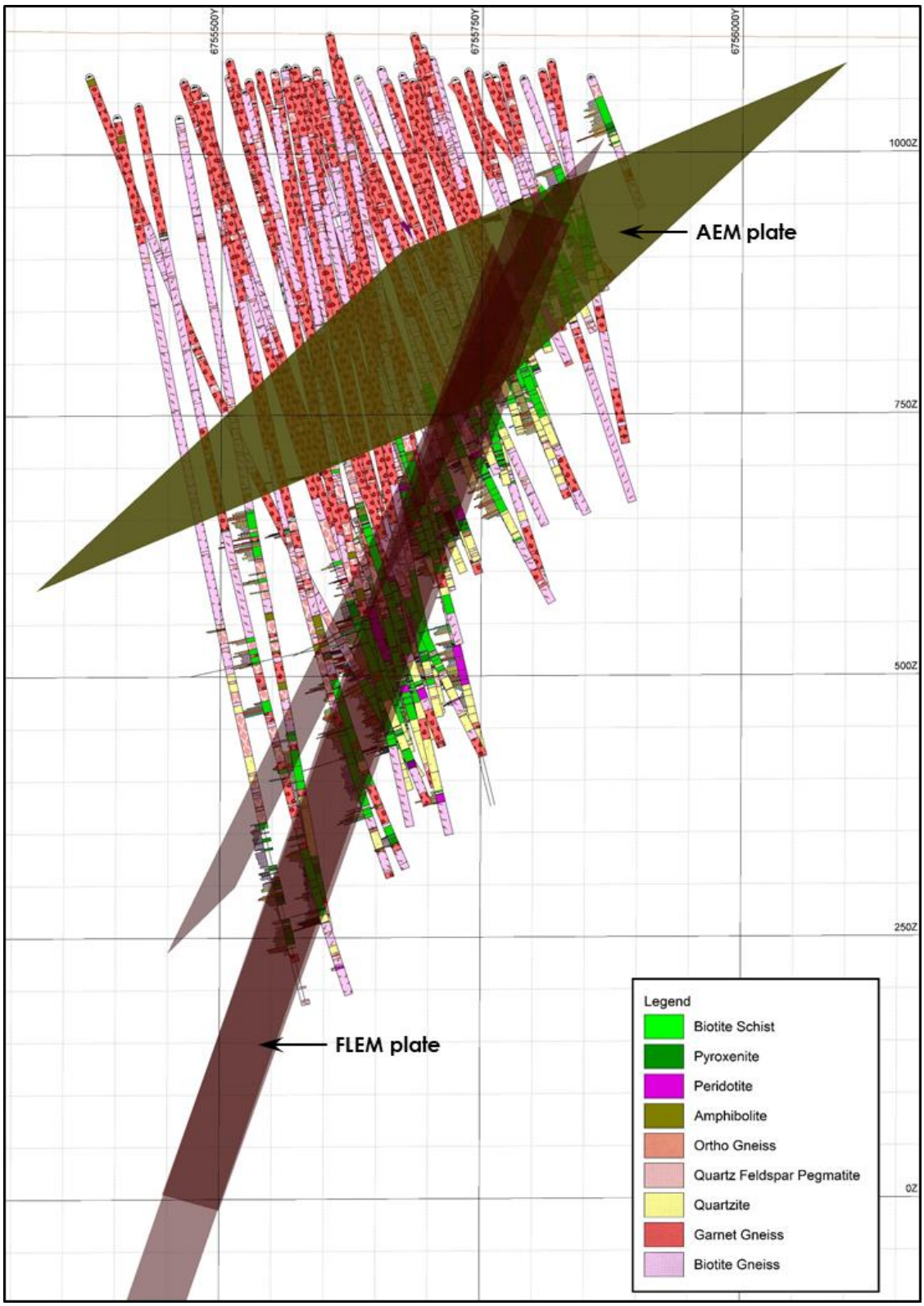


Figure 3: Oblique section looking west of the Jacomynspan Intrusion (Grid HP2A) indicating the excellent fit between the FLEM data and drilled mineralisation.

An orientation survey over the Jacomynspan deposit resulted in plate models that closely fit the 70m-thick mineralised zone, proving the suitability of the FLTDEM method to detect this style of mineralisation (Figure 3). Conductance over the Jacomynspan deposit is low to moderate at 250-575 S.

Conductors on Rok Optel have conductivities greater than 3000 S. The position of the Rok Optel conductors relative to historic drill holes are shown in Figure 4. Most historic drill holes which tested induced polarisation (**IP**) and magnetic targets did not intersect the zones of highest conductance now detected. The drilling intersected zones of lower conductance on the edges of the new modelled plates (Figure 5). Historic drill hole PUD003 intersected 23.12m at 0.32% Ni and 0.28% Cu from 294m including 5.92m at 0.46%Ni and 0.35% Cu from 303m and 1.8m at 0.58% Ni and 0.60% Cu from 306m (refer Appendix 1).

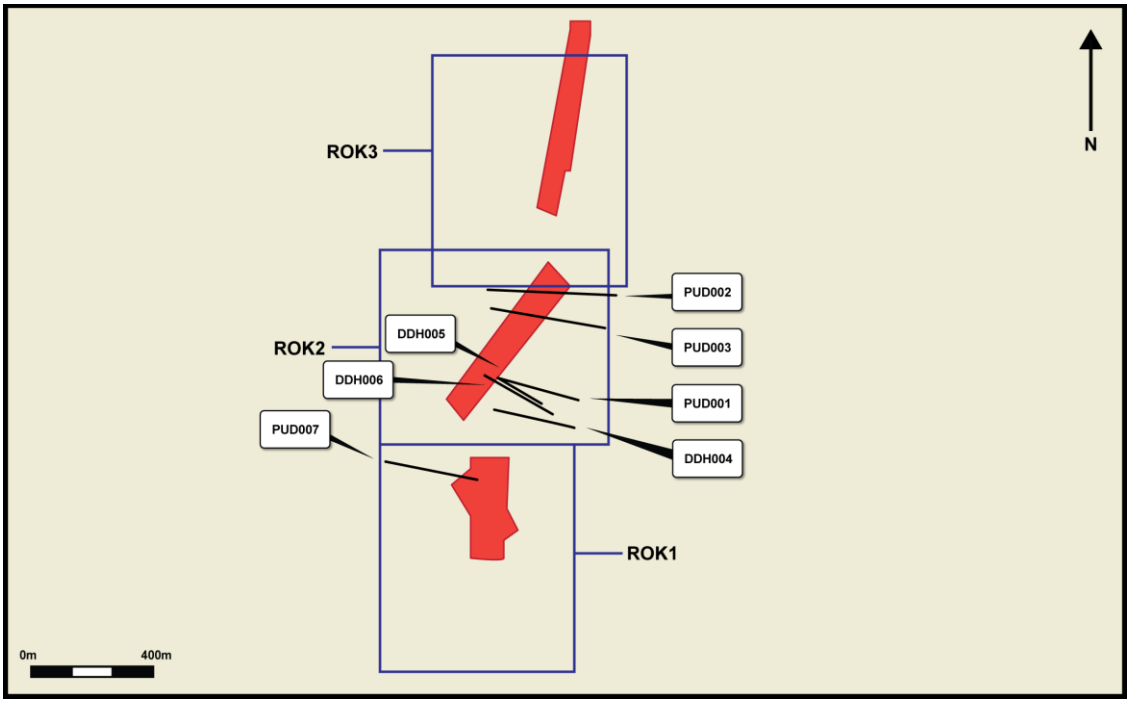


Figure 4: Plan showing grids, EM conductors and historic drill holes on the Rok Optel prospect.

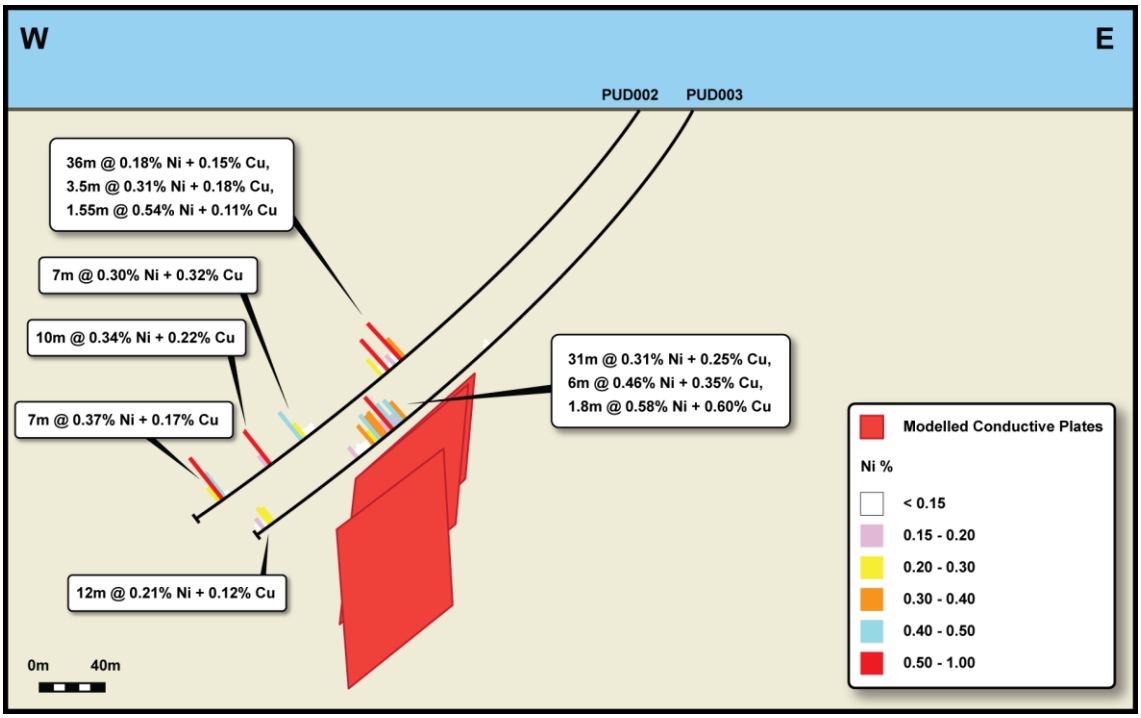


Figure 5: Cross section showing historic drill results and conductive plates on the northern side of the Rok Optel 2 grid.

Area 4 was surveyed using two grids, A4A and A4B. Seven plate models of conductance ranging from 350 – 2000 S, with smaller dimensions characteristic of semi-massive to massive sulphide mineralisation within or on margins of disseminated sulphide mineralisation have been modelled (Figure 6). Drilling by previous companies targeting geochemical, magnetic and IP targets and did not test the highly-conductive bodies now detected using FLTDEM (Figure 7). The plates on Grid A4B lie within 100m of known Ni-Cu sulphide mineralisation intersected in historic drill hole JAC007. The hole intersected 62.5m of sulphide mineralisation at 0.26% Ni and 0.17% Cu from 304m (refer Appendix 1).

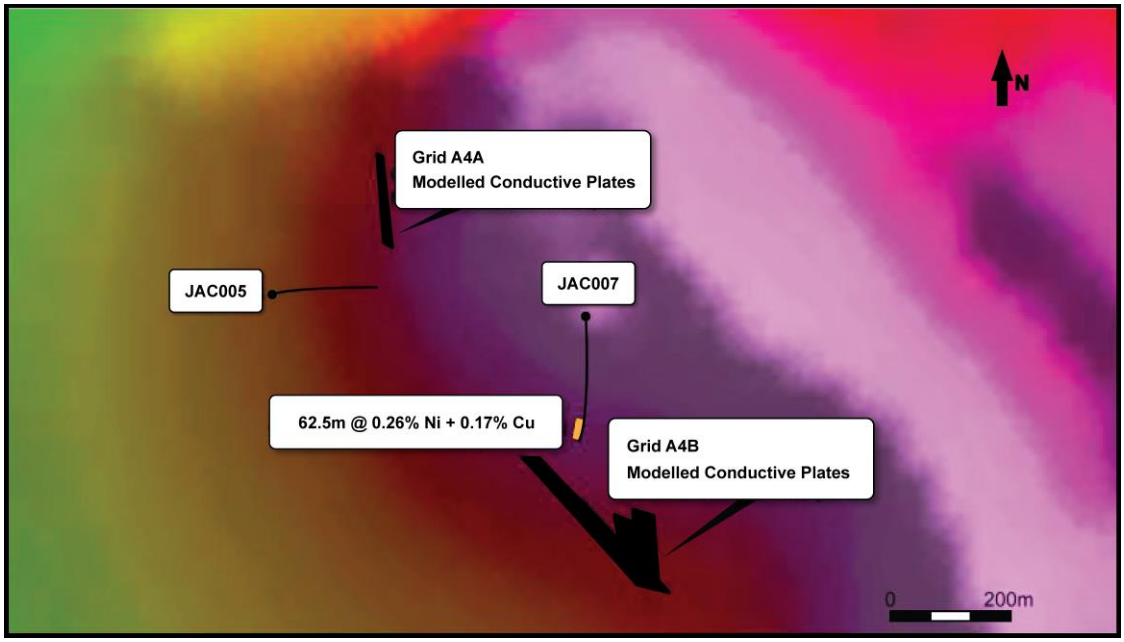


Figure 6: Plan showing EM conductors and historic drill results on the Area 4 prospect overlain on an airborne magnetic map.

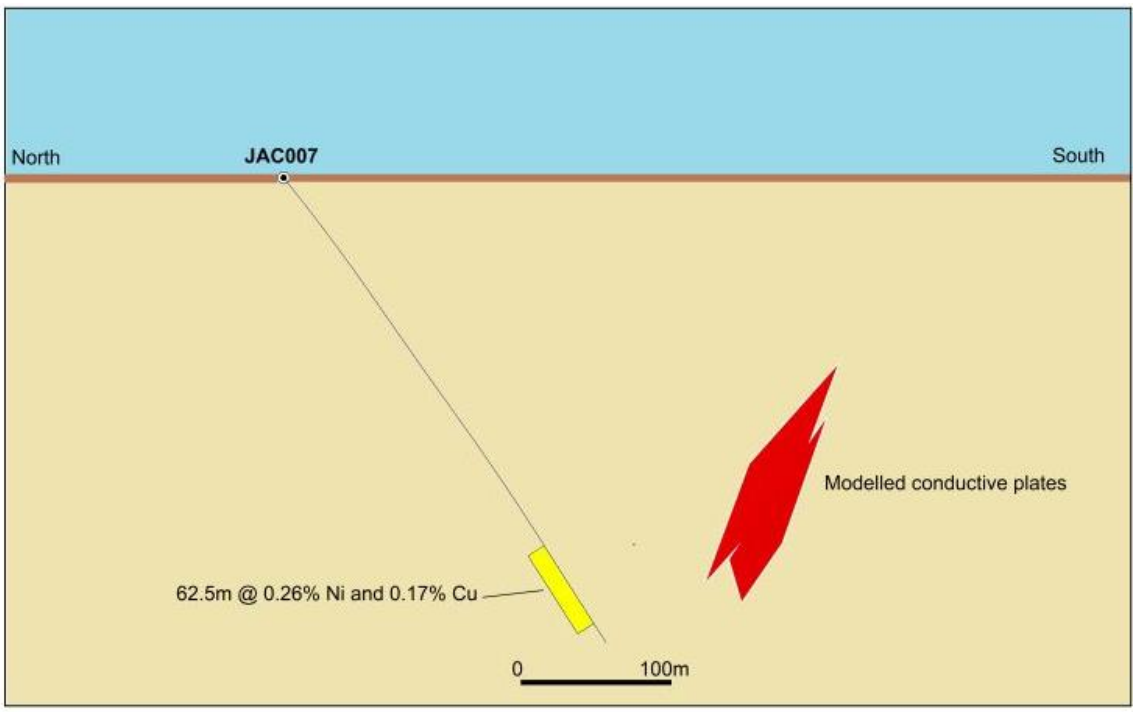


Figure 7: Section looking east through drill hole JAC007 showing the Ni-Cu sulphide intersection and newly detected FLTDEM conductors at the Area 4 prospect.

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 volcanogenic massive sulphide (**VMS**) deposit by Anglovaal in 1968. During this period, several VMS and Ni-Cu-sulphide occurrences were discovered.

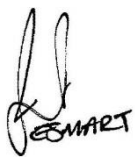
The Areachap Belt formed in a complex, long-lived multi-phase orogenic assembly zone, related to the amalgamation of the Rodinia Supercontinent. Worldwide, super-continent amalgamation episodes are associated with the emplacement of potentially Ni-Cu sulphide-bearing intrusions and are therefore of high 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.

Details of TDEM system in use

The AEM survey targets are followed up with a best-in-class electromagnetic (**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 50-100m on grid-lines spaced 200m apart.

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

"The FLTDEM survey is rapidly confirming our expectations from the SkyTEM™ survey. The combination of strong conductors identified in close proximity to known Ni-Cu sulphides is very encouraging. We have mobilised a diamond drill rig to begin testing these targets immediately."



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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

This release may include forward-looking statements. Such forward-looking statements may include, among other things, statements regarding targets, estimates and assumptions in respect of metal production and prices, operating costs and results, capital expenditures, mineral reserves and mineral resources and anticipated grades and recovery rates, and are or may be based on assumptions and estimates related to future technical, economic, market, political, social and other conditions. These forward-looking statements are based on management's expectations and beliefs concerning future events. Forward-looking statements inherently involve subjective judgement and analysis and are necessarily subject to risks, uncertainties and other factors, many of which are outside the control of Orion. Actual results and developments may vary materially from those expressed in this release. Given these uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. Orion makes no undertaking to subsequently update or revise the forward-looking statements made in this release to reflect events or circumstances after the date of this release. All information in respect of Exploration Results and other technical information should be read in conjunction with Competent Person Statements in this release (where applicable). To the maximum extent permitted by law, Orion and any of its related bodies corporate and affiliates and their officers, employees, agents, associates and advisers:

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

Appendix 1: Table of intersections >0.1Ni from the Rok Optel and Area 4 Sulphide Ni -Cu prospects in this release.

Drill hole	East (UTMz34S)	North (UTMz34S)	Azimuth	Dip	End of hole depth	From (m)	To (m)	Length (m)	Ni (%)	Cu (%)
PUD001	580 533	6 745 751	285	-50	387	249.80	258.00	8.20	0.23	0.10
						No Sample				
						284.10	292.04	7.94	0.25	0.10
						No Sample				
						312	318.59	6.59	0.14	0.10
PUD002	580 630	6 746 045	273	-49	451.77	235.90	239.40	3.50	0.31	0.18
						No Sample				
						242.00	244.80	2.80	0.23	0.11
						No sample				
						251.75	271.50	19.75	0.15	0.17
						No Sample				
						346.50	353.55	7.05	0.30	0.32
						including				
						263.50	265.05	1.55	0.54	0.11
						No Sample				
						379.00	389.20	9.75	0.34	0.22
						No sample				
						424.90	432.00	7.10	0.37	0.17
						including				
						426.30	427.50	1.20	0.71	0.16
PUD003	580 607	6 745 954	280	-52	436.40	294.00	317.12	23.12	0.32	0.28
						including				
						303.10	309.02	5.92	0.46	0.35
						including				
						306.00	307.80	1.80	0.58	0.60
						320.62	328.57	7.95	0.29	0.17
						No sample				
						418.60	432.00	13.40	0.20	0.12
DDH004	580 525	6 745 672	282	-52	386.79	270.30	278.67	8.37	0.27	0.12

DDH006	580 268	6 745 820	120	-45	318.30	217.10	246.50	29.40	0.15	0.07
PUD007	579 990	6 745 574	101	-60	522.90	446.40	454.31	7.91	0.21	0.14
						462.11	466.90	4.79	0.16	0.28
JAC007	582 084	6 754 733	187	-57.2	379.38	304.16	366.66	62.50	0.26	0.17

Appendix 2: 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 includes 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 1982, and the available information includes plans with geological 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 by the Competent Person 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 1982.

ROK OPTEL

- This information is 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 undertaken by Newmont South Africa Limited. 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) may warrant disclosure of detailed information.	**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.
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. • Percussion drilling with diamond core tails 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*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL** • No details are available of the core recovery or possible sample bias.

Criteria	JORC Code explanation	Commentary
	and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	
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 host stratigraphy dips steeply to the west., intrusive geometry is uncertain. Drilling was undertaken from the west and north to intersect geophysical anomalies Intersection angles to mineralised units are uncertain. **ROK OPTEL** • The host stratigraphy dips steeply to the West. Intrusive geometry is uncertain. Drilling was undertaken from the east and west to test IP anomalies. Intersection angles to mineralised units are uncertain
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 from "DDH" to "PUD" by Newmont.

Criteria	JORC Code explanation	Commentary
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 Appendix 1 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 are weighted by width and density. If no density data are available, width weighting is applied.
Relationship between	• *These relationships are particularly important in the reporting of*	**HARTEBEESTPAN (AREA 4) & ROK OPTEL**

Criteria	JORC Code explanation	Commentary
mineralisation widths and intercept lengths	*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').*	• 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 illustrated by Figures 4, 5, 6 and 7 and tabulated in Appendix 1.
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 FLTDEM 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. • Modelled TDEM plates will be drill tested to confirm sources of conductance. • Diamond drilling is planned to test TDEM plates.