



Orion Minerals<sub>NL</sub>

ASX RELEASE: 27 JULY 2017

## Underground drilling commences & further massive sulphide assays at Prieska

- ▶ **Underground drilling commences at the +105 Level Target building on surface drilling and positive geotechnical data following stope re-entry at Prieska.**
- ▶ **+105 Level Target provides a potential source of high grade open pit feed to commence the restart of Prieska.**
- ▶ **Assays from second Orion hole into Deep Sulphide target have returned 16.15m at 3.30% Zn, 1.72% Cu, 0.26g/t Au and 13.72g/t Ag from 1116m down hole depth, including a high grade zone of 4m at 5.34% Zn.**
- ▶ **The intersection is ~100m along strike from any historical intersection and is significantly thicker than what was expected, supporting the potential for a significant extension to previously identified mineralisation.**
- ▶ **Orion's intensive drill program on both the +105 Level and Deep Sulphide targets positions it to deliver maiden JORC compliant Mineral Resource estimates for both projects by Q3 CY17 and Q1 CY18 respectively.**

Orion Minerals NL (**ASX: ORN**) (**Orion** or the **Company**) is pleased to announce that underground drilling has commenced at its Prieska Zinc-Copper (**Prieska**) Project in South Africa.

The underground drilling is targeting mineralisation at the shallow +105 Level (Open Pit) Target. Drilling in 2016 successfully delineated a near surface supergene sulphide zone at this target. The current drill program aims to infill and extend mineralisation drilled from surface, utilising newly re-established underground access (Figure 1).

Assay results have been received for the second hole drilled at the Deep Sulphide Target with OCOD052 confirming the presence of mineralisation ~100m along strike from the previously drilled mineralisation. The strike extension is consistent with Orion's geological model and has the potential to significantly increase the scale of the Prieska Deep Sulphide target. The hole returned 16.15m at 3.30% Zn, 1.72% Cu, 0.26g/t Au and 13.72g/t Ag from 1116m (refer Figures 5 and 6, Appendix 1 and Appendix 2), including a high grade zone of 4m at 5.34% Zn from 1119m.

### **Orion's Managing Director and CEO, Errol Smart, commented on the result:**

*"Prieska's site team has generated significant momentum with surface drilling, underground drilling and underground works, all now in progress. The latest assay results are particularly pleasing as they confirm extensions to defined mineralisation and highlight the potential for a significant increase in the size of the Deep Sulphide project."*

Orion Minerals NL  
ASX Code: ORN  
Ordinary shares on issue: 917m  
Options: 217m

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### **+105 Level Target (Open Pit) drilling**

The open pit and underground drilling program at the +105 Level Target is designed to confirm, in-fill and extend the historical drilling, targeting mineralisation expected to be amenable to open pit mining.

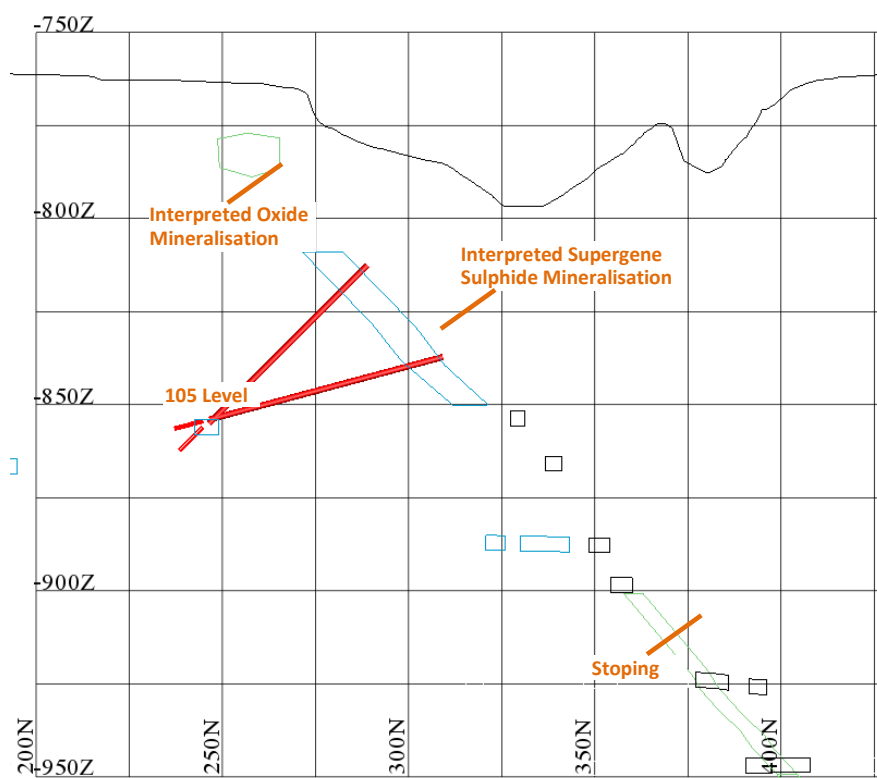
The underground drill program is intended to build on the open pit drill program which previously highlighted the potential for a high grade open pit project to commence the restart of Prieska, in parallel to the development of the larger Deep Sulphide target. Orion has mobilised two underground drill rigs to infill drill and extend mineralisation drilled from surface. (Figures 2, 3 and 4).



**Figure 1:** Photograph showing underground drill rig setting up ready to drill.

Orion has completed a 3197.7m surface drill program on the +105 Level Target over the past 12 months. The surface drilling tested mineralisation to the north-west of the area affected by sinkholes and also in the south-eastern area, where the mineralisation is impacted by mining related subsidence or sinkholes, making drilling problematic.

Underground inspection of ore drives and draw points on the 105 Level by Orion's geological and mining team (refer ASX release 29 June 2017) demonstrated an extremely competent hanging wall at the 910m ore drive. The combination of the observed supportive underground conditions and increased geotechnical data for review have provided encouragement for additional strike extension of the +105 Level Target Area.



**Figure 2: Section showing proposed underground drilling.**

All significant intersections from surface have been released in ASX releases of 25 July 2016, 22 August 2016, 14 September 2016, 2 November 2016, 7 December 2016, 16 December 2016 and 25 May 2017 with best results including:

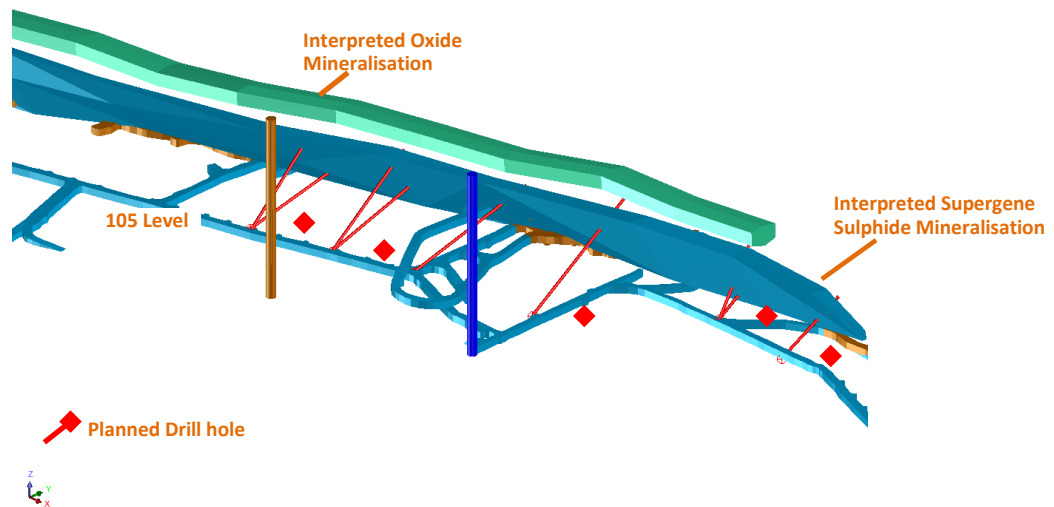
- 22m at 10.8% Zn, 1.38% Cu and 0.3g/t Au from 57m, including:  
7m at 17.8% Zn and 1.41% Cu (OCOR016);
- 20m at 8.58% Zn, 2.21% Cu and 0.3g/t Au from 48m, including:  
17m at 9.98% Zn and 2.01% Cu (OCOR023);
- 42m at 4.41% Zn, 2.36% Cu and 0.42g/t Au from 55m, including:  
5m at 9.28% Cu from 55m & 6m at 12.4% Zn from 75m (OCOR027);
- 9.3m at 4.0% Zn, 1.4% Cu, 0.13g/t Au and 9.0g/t Ag from 170m (OCOD033);
- 29.4m at 3.06% Zn + 1.52% Cu, 0.36g/t Au and 9.0g/t Ag from 112.6m, including:  
8.5m at 4.33% Zn + 2.17% Cu from 115m and 3m at 7.13% Zn from 139m (OCOD036);
- 12m at 4.14% Cu, 1.89% Zn and 0.29g/t Au from 57m, including:  
3m at 7.4% Cu and 4.34% Zn (OCOR017);
- 11.53m at 3.23% Zn, 0.97% Cu, and 0.22g/t Au from 187.76m, including:  
3.34m at 5.26% Zn, 1.51% Cu and 0.36g/t Au (OCOD043); and
- 20.6m at 1.36% Zn, 0.63% Cu, and 0.1g/t Au from 156.1m, including:  
2.6m at 5.2% Zn (OCOD035).

The current program is the next step in the process to define a maiden Mineral Resource estimate (as defined in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**), which is anticipated to be completed by the end of the September 2017 Quarter and feed in to the Bankable Feasibility Study (**BFS**) which is currently underway.

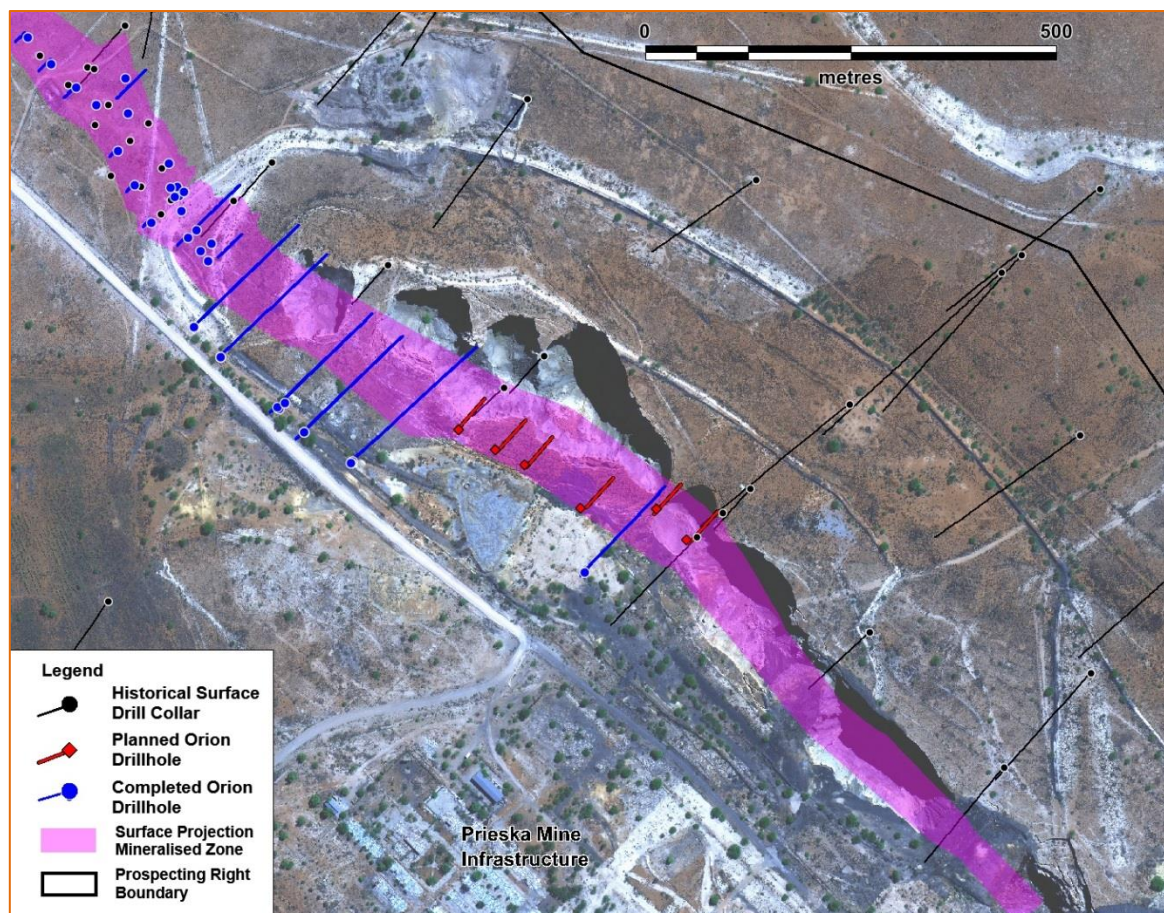
Importantly, historical production at Prieska has demonstrated an ability to consistently produce high quality zinc and copper concentrates from a blended oxide and intermediate and sulphide mill feed, utilising a conventional flotation flowsheet. The recently awarded BFS



will build on historical data with fresh metallurgical test work and mine scheduling to optimise the flowsheet.



**Figure 3:** Oblique view showing proposed underground drilling.



**Figure 4:** Plan showing proposed underground drilling.

## Deep Sulphide Target drill hole OCOD052 and assay results

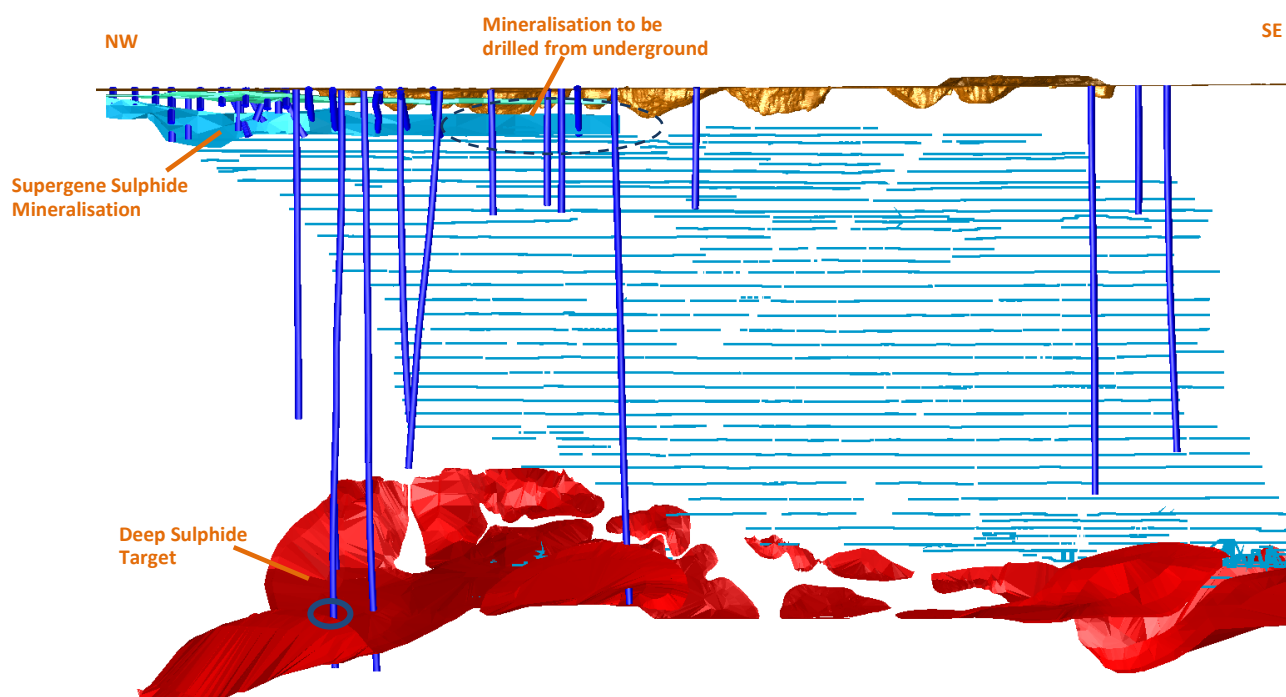
OCOD052 is Orion's second drill hole to reach target depth at the Deep Sulphide Target (refer ASX release 11 July 2017). The hole intersected mineralisation ~100m along strike from OCOD048 and importantly ~100m from any historical intersection and has the potential to support a significant extension to previously identified mineralisation.

Assay results for OCOD052 returned a length and specific gravity (**SG**) weighted intersection of 16.15m at 3.30% Zn, 1.72% Cu, 0.26g/t Au and 13.72g/t Ag, including a higher grade zone of 4m at 5.34% Zn + 1.35% Cu. As OCOD052 intersected the mineralisation at a high angle the thickness reported is anticipated to be approximate the true thickness of the mineralised zone.

Encouragingly, the intersection is significantly wider than modelled by historical operators and Orion's geological team. A thickness of approximately 6m was anticipated in this area (Figure 6) therefore the 16.15m intersection provides encouragement that this result and the subsequent daughter holes will delineate a more sizeable volume of mineralised material in this area.

Wedging is underway on OCOD052 with the first of a number of deflections, or daughter holes, to be commenced in coming days to enable mineralisation to be tested at distances of between 30m and 40m from the current intersection (or "mother" hole).

The results from OCOD052 continue to report associated gold and silver mineralisation (refer Appendix 2). Previous owners did not routinely analyse for precious metals and the Company will be undertaking metallurgical test work to confirm that gold and silver can be economically extracted and provide additional credits to the concentrate produced.

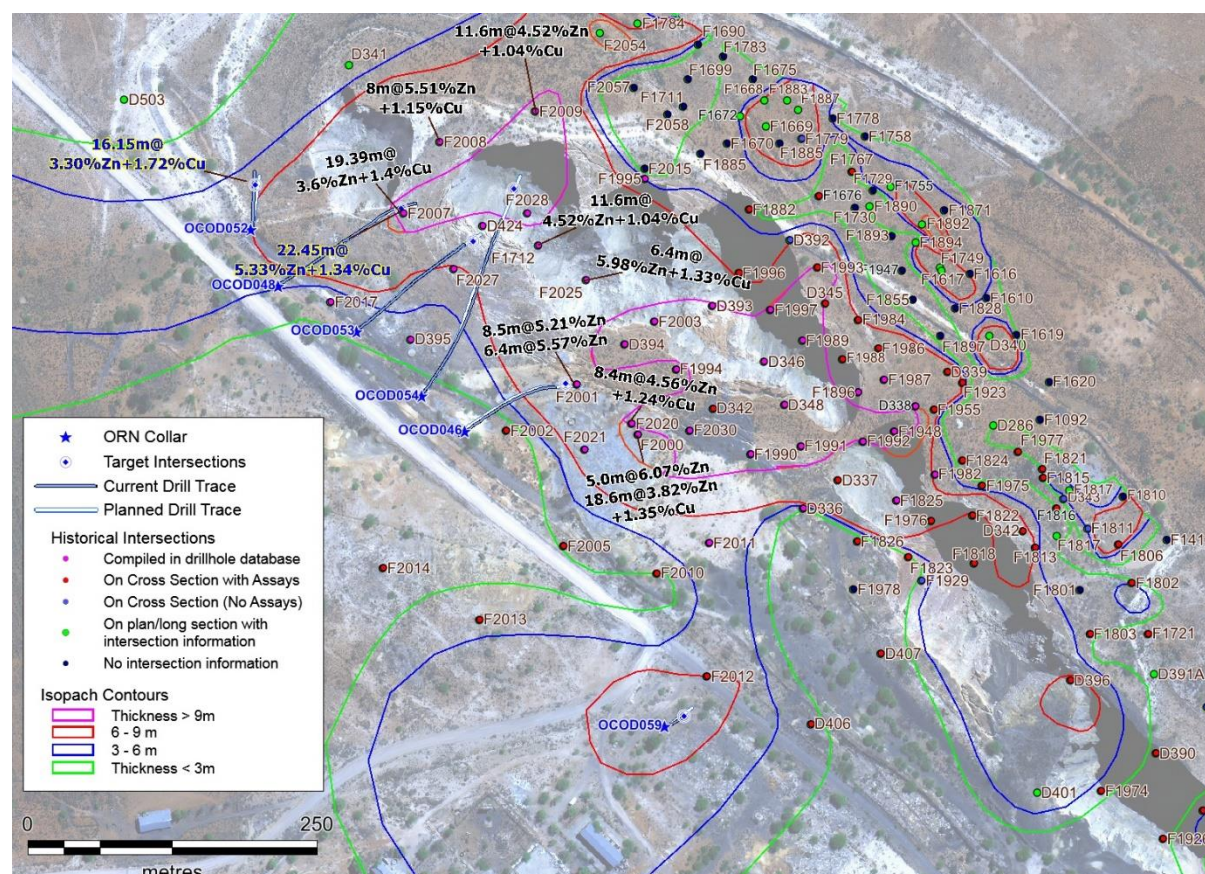


**Figure 5:** Long section looking to the north east showing current drilling, historical development and sinkholes at the Prieska Project. The intersection in OCOD052 is circled.

Drilling of the Deep Sulphide target to further extend and validate the mineralisation along strike continues with a further nine holes currently in progress (six with active diamond core drilling and a further three holes with pre collars completed; Figures 5 and 6) to systematically test and confirm the extensive historical drilling data. Results are anticipated to provide statistical validation of historic drilling that intersected unmined mineralised zones and add to



Orion remains on target to report a maiden JORC compliant Mineral Resource estimate by Q1 CY18. This will be fed into the recently commenced BFS (refer ASX release 11 July 2017).



**Figure 6: Plan showing drilling underway to test the Deep Sulphide Target at the Prieska Project.**

FEENART

Errol Smart  
**Managing Director and CEO**

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## Competent Persons Statement

The information in this report that relates to Orion's Exploration Results at the Prieska Project complies with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**JORC Code**) and has been compiled and assessed under the supervision of Mr Errol Smart, Orion Minerals Managing Director. Mr Smart (PrSciNat) is registered with the South African Council for Natural Scientific Professionals, a ROPO for JORC purposes and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Smart consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears. The Exploration Results are based on standard industry practises for drilling, logging, sampling, assay methods including quality assurance and quality control measure as detailed in Appendix 3.

## 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. 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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## Appendix 1: Significant Intersections from Deep Sulphide Target drilling at the Prieska Project.

Drill hole	Deflection	East (UTMz34S)	North (UTMz34S)	Depth (m)	From (m)	To (m)	Length (m)	Cu (%)	Zn (%)	Au (g/t)	Ag (g/t)
OCOD048	Parent	624452	6686375	1179	<b>1060.00</b>	<b>1082.45</b>	<b>22.45</b>	<b>1.34</b>	<b>5.33</b>	<b>0.26</b>	<b>10.60</b>
		<i>including</i>			<b>1060.80</b>	<b>1066.50</b>	<b>5.70</b>	<b>0.54</b>	<b>10.89</b>	<b>0.07</b>	<b>3.45</b>
	D1	From 702m downhole parent			In Progress – Wedging						
OCOD052	Parent	624419	6686406	1164	<b>1116.00</b>	<b>1132.15</b>	<b>16.15</b>	<b>1.72</b>	<b>3.30</b>	<b>0.26</b>	<b>13.72</b>
		<i>including</i>			<b>1119.55</b>	<b>1123.55</b>	<b>4.00</b>	<b>1.35</b>	<b>5.34</b>	<b>0.26</b>	<b>8.45</b>
	D1	From 785m downhole parent			In Progress – Wedging						
OCOD054	Parent	624576	6686282	---	In Progress – Core Drilling						
OCOD057	Parent	625446	6685138	---	In Progress - Precollar Completed						
OCOD059	Parent	624824	6686282	---	In Progress – Core Drilling						
OCOD062	Parent	625647	6685275	---	In Progress – Core Drilling						
OCOD063	Parent	625400	6685250	---	In Progress – Core Drilling						
OCOD064	Parent	624685	6686165	---	In Progress - Precollar Completed						
OCOD065	Parent	624520	6686338	---	In Progress – Core Drilling						
OCOD066	Parent	624349	6686476	---	In Progress – Core Drilling						

1. All intersections > 1m and >0.3% copper or > 0.5% zinc are quoted.
2. New results are shown in bold type.
3. Holes abandoned due to excess deviation or drilling issues are not shown in the table.
4. It is recommended that the supporting information contained in Appendix 3 is read in conjunction with these results.



Appendix 2: Drill hole OCOD052 down hole assay and SG results.

SAMPLE NUMBER	DEPTH (m)		SAMPLE LENGTH (m)	SPECIFIC GRAVITY	Zn (%)	Cu (%)	Au (g/t)	Ag (g/t)
	From	To						
OM0207	1116.00	1117.00	1.00	2.90	1.24	0.611	0.05	8
OM0208	1117.00	1118.00	1.00	3.36	1.3	2.26	0.26	14
OM0209	1118.00	1119.00	1.00	3.56	1.12	1.565	0.17	10
OM0210	1119.00	1119.55	0.55	3.26	2.17	1.685	0.16	14
OM0212	1119.55	1120.55	1.00	3.85	5.44	1.155	0.09	8
OM0213	1120.55	1121.55	1.00	3.98	5.22	1.305	0.2	10
OM0214	1121.55	1122.55	1.00	3.73	4.27	1.925	0.69	11
OM0215	1122.55	1123.55	1.00	4.04	6.37	1.04	0.08	5
OM0216	1123.55	1124.55	1.00	3.94	2.99	0.889	0.11	5
OM0217	1124.55	1125.55	1.00	3.36	2.89	0.852	0.15	5
OM0218	1125.55	1126.60	1.05	2.84	1.03	1.935	0.3	20
OM0219	1126.60	1127.45	0.85	3.00	4.42	2.18	0.55	28
OM0220	1127.45	1128.45	1.00	4.28	3.84	0.355	0.1	3
OM0222	1128.45	1129.30	0.85	4.39	3.39	0.175	0.03	1
OM0223	1129.30	1129.95	0.65	2.80	0.30	1.465	0.18	20
OM0224	1129.95	1130.95	1.00	3.80	2.59	7.34	0.7	61
OM0226	1130.95	1131.50	0.55	4.42	2.00	2.35	0.33	20
OM0227	1131.50	1132.15	0.65	4.06	5.51	2.17	0.56	16

**Appendix 3: The following tables are provided to ensure compliance with the JORC Code (2012) requirements for the reporting of Exploration Results for the Prieska Project.**

**Section 1 Sampling Techniques and Data**

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

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Nature and quality of sampling (eg 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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>Diamond core cut at core yard and half core taken as sample.</li> <li>Diamond core sampled on 1m intervals where possible, sample lengths adjusted to ensure samples do not cross geological boundaries or other features.</li> <li>Drilling carried out aiming to define an approximate 100m x 100m pattern by use of "mother" holes and deflections from these holes.</li> <li>Percussion / reverse circulation pre collars (where used) sampled on a composite basis.</li> <li>Mineralized zones are drilled using core drilling.</li> <li>Sampling carried out under supervision using procedures outlined below including industry standard QA/QC.</li> <li>Samples submitted for analysis to ALS is pulverized in its entirety at ALS and split to obtain a 0.2g sample for digestion and analysis.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).</li> </ul>	<ul style="list-style-type: none"> <li>Diamond core drilling using NQ and BQ sized core.</li> <li>Pre collar drilled using percussion drilling on certain holes (above mineralisation)</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>All mineralised intersections are done with core drilling.</li> <li>Core stick-ups reflecting the depth of the borehole are recorded at the rig at the end of each core run.</li> <li>A block with the depth of the hole written on it is placed in the core box at the end of each run.</li> <li>At the core yard, the length of core in the core box is measured for each run. The measured length of core is subtracted from the length of the run as recorded from the stick-up measured at the rig to determine the core lost.</li> <li>No grade variation with recovery noted.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Logging</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>All percussion holes are logged on 1m intervals using visual inspection of washed drill chips and both full. Core is logged by geology and recorded between geological contacts by qualified geologists.</li> <li>Qualitative logging of colour, grainsize, weathering, structural fabric, lithology, alteration type and sulphide mineralogy carried out.</li> <li>Quantitative estimate of sulphide mineralogy and quartz veining.</li> <li>Logs are recorded at the core yard and entered into digital templates at the project office.</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>BQ and NQ core cut at core yard and half core taken as sample.</li> <li>Samples from percussion pre collars are collected by spear sampling.</li> <li>Sampling on site aims to generate a &lt; 2kg sub sample to enable the entire sample to be pulverised without further splitting.</li> <li>Water is used in the dust depression proses during percussion drilling, resulting in wet chip samples.</li> <li>With core samples, the entire sample length is cut and sampled.</li> <li>Sample preparation is undertaken at ALS Laboratory Johannesburg, an ISO accredited laboratory. ALS utilises industry best practise for sample preparation for analysis involving drying of samples, crushing to &lt;5mm if required and then pulverising so that +85% of the sample passes 75 microns.</li> <li>CRM's, blanks and replicates are inserted every 30 samples and analysed with each batch.</li> <li>Lab supplied CRM's, blanks and replicates are analysed with each batch.</li> <li>Specific gravity measurements are made over the full length of each individual sample on split core where possible. Where not possible due to crushed or broken core, a minimum of 80% of the core sample is used. The specific gravity is determined by measuring and subtracting the wet weight from the dry weight using an electronic density scale. Care is taken to clean and zero the scale between each weighing.</li> <li>The sample is first weighed in air and the weight recorded. The sample is then weighed, while completely submerged in clean water within a measuring beaker. The mass of beaker and water are deducted for net submerged weight and volume displacement read on measuring beaker.</li> <li>The sample is then removed and placed back into the core tray in the correct position and orientation. The procedure is repeated for each geological sample interval.</li> <li>The data is recorded in the Specific Gravity Data Sheet. The specific</li> </ul>



Criteria	JORC Code explanation	Commentary
		<p>gravity is calculated for each sample using the formula:</p> $SG = \frac{\text{weight of sample}}{(\text{weight of sample in air minus the weight of the sample in water})}.$
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>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.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	<ul style="list-style-type: none"> <li>Samples from drilling were submitted to ALS Chemex in Johannesburg. Samples were analysed for base metals using a four acid digest and ICP-OES and for gold by fire assay with AAS finish.</li> <li>External quality assurance of the laboratory assays is monitored by the insertion of blanks, duplicates and certified reference materials (<b>CRM</b>)</li> <li>Coarse field duplicates consisting of a split sub-sample of the original crushed sample material.</li> <li>Three CRMs are alternated through the sample stream and where possible matched to the material being drilled.</li> <li>Two blanks are used (pulp and chips).</li> <li>No external laboratory checks have been carried out at this stage.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul style="list-style-type: none"> <li>The executive geologist is personally supervising the drilling and sampling along with a team of experienced geologists.</li> <li>Both the Managing Director and the Technical Director have reviewed the raw laboratory data and independent geologists have confirmed the calculation of the significant intersections.</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>Collar data has been laid out using a handheld GPS and these coordinates are reported here.</li> <li>All of the Orion drill hole collars are surveyed by a qualified surveyor using a differential GPS which may result in minor adjustments to coordinate data.</li> <li>Downhole surveys are completed using a North-Seeking Gyro instrument.</li> <li>The historic mine survey data is in the old national Clarke 1880 coordinate system. All data is collected the surveyor is in Clarke 1880 and in UTM WGS84 Zone 34 (Southern Hemisphere). UTM WGS84 Zone 34 coordinates are reported above.</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>Drill holes aim to intersect mineralisation on approximately 100m x 100m spacing with infill drilling to be carried out in areas of interest as determined by results.</li> <li>Variography studies were carried out on the historic data set to determine the drill spacing for Mineral Resource estimates.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Drilling is oriented perpendicular, or at a maximum achievable angle to, the attitude of the mineralisation.</li> <li>As a result most holes intersect the mineralisation at an acceptable angle.</li> <li>Where surface access or geotechnical conditions do not allow access to optimal drill collar positions, holes may be inclined.</li> <li>The intersections will be corrected once the mineralised zone is modelled in three dimensions and local attitude can be accurately determined.</li> <li>No sampling bias is anticipated as a result of hole orientations.</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>Chain of custody is managed by the Company. Samples were stored on site in a secure locked building and then freighted directly to the lab.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>No audits or reviews have been carried out at this stage.</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The Prospecting Right is held by a subsidiary company of Agama Exploration and Mining (Pty) Ltd (<b>Agama</b>), which is a wholly owned subsidiary of Orion. As such, Orion effectively holds a 73.33% interest in the project.</li> <li>The Prospecting Right covers a strike of 2200m for the Deep Sulphide mineralisation out of a total interpreted strike of 2800m.</li> <li>The Prospecting Right covers the complete known strike of the +105 Level Target.</li> <li>All of the required shaft infrastructure and lateral access underground development is available within the Prospecting Right.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<p><u>Deep Sulphide Target</u></p> <ul style="list-style-type: none"> <li>All exploration and life of mine drilling (V, D and F holes) was done by Anglovaal, resulting in a substantial amount of hard copy data from which the Company has been able to assess the prospectivity of the remaining mineralisation.</li> <li>The Anglovaal exploration resulted in the delineation and development of a large mine.</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p><u>+105 Level Target</u></p> <ul style="list-style-type: none"> <li>The 2012 drilling of the NW section of the +105 Level Target was carried out by the previous owners of the Subsidiary (Orion acquired the subsidiary in March 2017).</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Copperton deposit is a Volcanogenic Massive Sulphide deposit. The deposit is contained in the Areachap Group, which also hosts the Boks Puts, Areachap, Kielder, Annex Vogelstruisbult and Kantienpan deposits.</li> <li>The historically mined section of the deposit is confined to a tabular, stratabound horizon in the northern limb of a refolded recumbent synform which plunges at approximately 45° to the southeast. It is hosted within deformed gneisses of the Copperton Formation, which have been dated at 1285 Ma and forms part of the Namaqualand Metamorphic Complex.</li> <li>The mineralised zone outcrop has a strike of 2400m, was oxidised and or affected by leached and supergene enrichment to a depth of approximately 100m, and outcrops as a well developed gossan. It has a dip of between 55° and 80° to the northeast at surface and a strike of 130° to the north. The width of the mineralised zone exceeds 35m in places but averages between 7m and 9m. The mineralised zone persists to a depth of 1100m (as deep as 1200m in one section) after which it is upturned.</li> <li>The +105 Level Target area comprises the oxide / supergene / mixed zone (and a zone of remnant primary sulphides) situated from above the upper limit of mining at approximately 100m depth up to surface.</li> </ul>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li><i>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:</i> <ul style="list-style-type: none"> <li><i>easting and northing of the drill hole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>down hole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> </li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>All Significant Intersections, location data and other drill hole information is tabulated in Appendix 1 and Appendix 2.</li> </ul>



Criteria	JORC Code explanation	Commentary
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>Significant Intersections are calculated by average of assays result &gt; 0.3% copper or 0.5% zinc and weighted by the sample width and specific gravity of each sample. In general, the significant intersections correspond strongly to geological boundaries (massive sulphides) and are clearly distinguishable from country rock / surrounding samples. No truncations have been applied at this stage.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>All intersection widths quoted are down hole widths.</li> <li>Most holes intersected the mineralisation perpendicular or at high angle to the attitude of the mineralisation.</li> <li>The mineralisation has complex geometry and mineralisation widths need to be estimated based on interpretation of surrounding intercepts.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate diagrams (plan, cross section and long section) are shown in the announcement text.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>All drill holes are listed in Appendix 1, including those with no mineralisation.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Hardcopy maps are available for a range of other exploration data. This includes mine survey plans, geological maps, airborne magnetics, ground magnetics, electromagnetics, gravity and induced polarisation. All available exploration data has been viewed by the Competent Person.</li> <li>The mine operated from 1972 to 1991 and is reported to have milled a total of 45.68 Mt of ore at a grade of 1.11% copper and 2.62% zinc, recovering 0.43 Mt of copper and 1.01 Mt of zinc. Detailed production and metallurgical results are available for the life of the mine.</li> <li>In addition, 1.76 Mt of pyrite concentrates and 8,403 t of lead concentrates as well as amounts of silver and gold were recovered.</li> <li>Copper and zinc recoveries averaged 84.9% and 84.3% respectively during the life of the mine.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> </ul>	<ul style="list-style-type: none"> <li>Drilling is ongoing to test the Deep Sulphide Target with planned holes</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	shown on relevant figures in this release.