

## Vital intersects high-grade REO in Tardiff Zones 2 & 3 including outside existing resource at Nechalacho

### Highlights

- Vital completed 10 holes across Tardiff Zones 2 and 3 to define a Stage 2 Mine Plan for Nechalacho rare earths project in Canada, with all holes hitting extensive mineralisation
- Drilling at Tardiff Zones 2 and 3 intersected thick zones with total rare earth oxides grades above 2% TREO
- Best results from Zone 2 from the 5 drill holes include:
  - 25.1m at 3.03% TREO
  - 19.0m at 2.05% TREO
- All Zone 2 intersections are within 75m of surface with the best results in the western most drill holes, indicating high-grade TREO is open to the west
- Zone 2 high-grade TREO intercepts are outside the Upper Zone Mineral Resource, indicating potential for an additional high-grade TREO resource in the Tardiff area
- The remaining 5 holes drilled at Zone 3 also hit shallow, high grade REO intersections
- Best results from Zone 3 include:
  - 51.0m at 2.13% TREO
  - 36.7m at 1.96% TREO
- All 5 holes drilled in Zone 3 confirmed the high grades previously encountered with high-grade mineralisation open in all directions
- With high grade mineralisation remaining open at all zones, Vital will undertake additional drilling at Tardiff to delineate the boundaries of the three Tardiff high-grade zones in addition to identifying the relationships between the zones, including whether they are in fact connected.
- Previously announced metallurgical results from Tardiff indicate that this bastnaesite mineralisation can be processed through the same plant being constructed to process North T ore.

Vital Metals Ltd (ASX:VML) (“Vital”, “Vital Metals” or “the Company”) is pleased to announce it has received outstanding first-pass assay results from the Tardiff Zones 2 and 3 within its 100%-owned Nechalacho Rare Earth Project, Northwest Territories, Canada. The results have added potential to extend the mine life of the Nechalacho project significantly, with further drilling needed to better define the Tardiff zones, which remain open in all directions.

Vital is commencing Stage 1 rare earth production at Nechalacho via ore sorting, with plans to mine the North T deposit in Stage 1. Stage 2 will focus on the Tardiff deposit, where it anticipates building a large-scale, long life rare earth mining and processing operation.

**Vital Metals Managing Director Geoff Atkins said,** *“Drilling results from Tardiff Zones 2 and 3 have shown the potential for Nechalacho to be a much larger rare earths operation than we anticipated. We completed the drilling at Tardiff as part of defining a Mine Plan for Stage 2 operations at Nechalacho, which will initially focus on Tardiff Zone 1, but with the results showing mineralisation in both Zone 2 and 3 remaining open, we will plan further drilling in these areas over the next year to get a better understanding of the mineralisation and determine if the three zones are connected.”*

*“Our recent metallurgical test work, reported in recent weeks, showing material from Tardiff Zone 1 was amenable to a similar process flowsheet, with an additional beneficiation step such as flotation, to that being utilised at North T, has given us great confidence for the potential of Nechalacho to be built into a large-scale, long-life rare earths operation. We will complete further metallurgical testwork Tardiff Zones 1 material to define a process flowsheet to provide further clarity on the scope of Stage 2.”*

*“With the commencement of production at Nechalcho, we are excited about the future of this project, which continues to grow in potential and is turning into one of the worlds best light rare earth projects.”*

The Nechalacho rare earth project consists of two distinct deposits which Vital will develop over two stages. The North T deposit hosts a high-grade resource of **101,000 tonnes at 9.01% LREO**<sup>1</sup> in the measured and indicated JORC 2012 categories, making it one of the highest grade rare earth deposits in the world. Development of this deposit is currently underway under Stage 1. The second deposit, the Upper Zone where the Tardiff Zones are located, boasts an impressive light rare earth oxides (LREO) resource of **94.7 million tonnes at 1.46% TREO**<sup>2</sup> in the measured, indicated and inferred JORC 2012 categories and will be the focus of expanded operations in Stage 2.

Vital’s drilling program targeted three high-grade REO zones previously identified in wide-spaced historic drilling by Avalon Materials Inc and its predecessors. These zones are known as Tardiff Zones 1, 2 and 3.

Tardiff Zones 1 and 3 were drilled on a close spacing (25m x 25m) to enable their resource confidence levels to be upgraded so mining and processing studies can be carried out on these zones. The drilling at Tardiff Zone 2 was designed to get a better understanding of high-grade REO mineralisation that is not currently in the resource estimation released in 2019. All drill holes were drilled to a maximum depth of 72m vertical.

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<sup>1</sup> ASX Announcement 15 April 2020: Substantial Increase in Resource Size and Grade at North-T Zone Nechalacho

<sup>2</sup> ASX Announcement 13 December 2019: Vital Announces JORC 2012 Compliant Resources for the Nechalacho Rare Earth Deposit



Figure 1 – Nechalacho Upper Zone

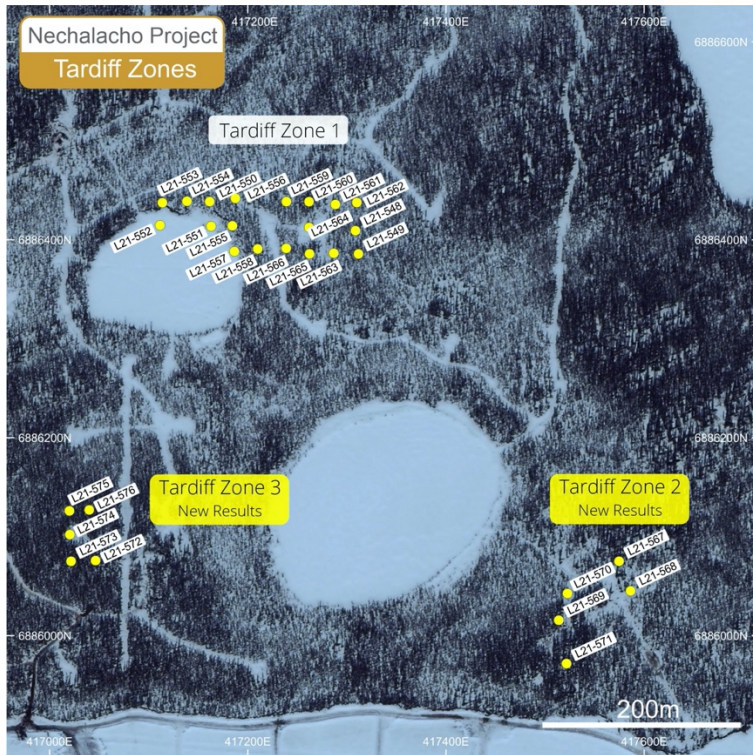


Figure 2 – Vital’s Drilling program targeting Tardiff Zones 1, 2 and 3

### Tardiff Zone 2

Vital drilled five drill holes at Tardiff Zone 2 to investigate high-grade REO mineralisation identified by drill holes drilled in the 1980s with minor follow-up by Avalon in 2013. The 1980s drilling returned high-grade assays but Vital’s experience of REO assaying at Nechalacho in the 1980s found it was not accurate for resource estimation. REO assaying of the 1980s drill holes was sporadic and much of the core had not been assayed for TREO where high zirconium grades indicate high-grade REO would have been in the core. Vital decided to position five holes to get an understanding of the thickness and grade of the REO mineralisation in the Tardiff Zone 2 area.

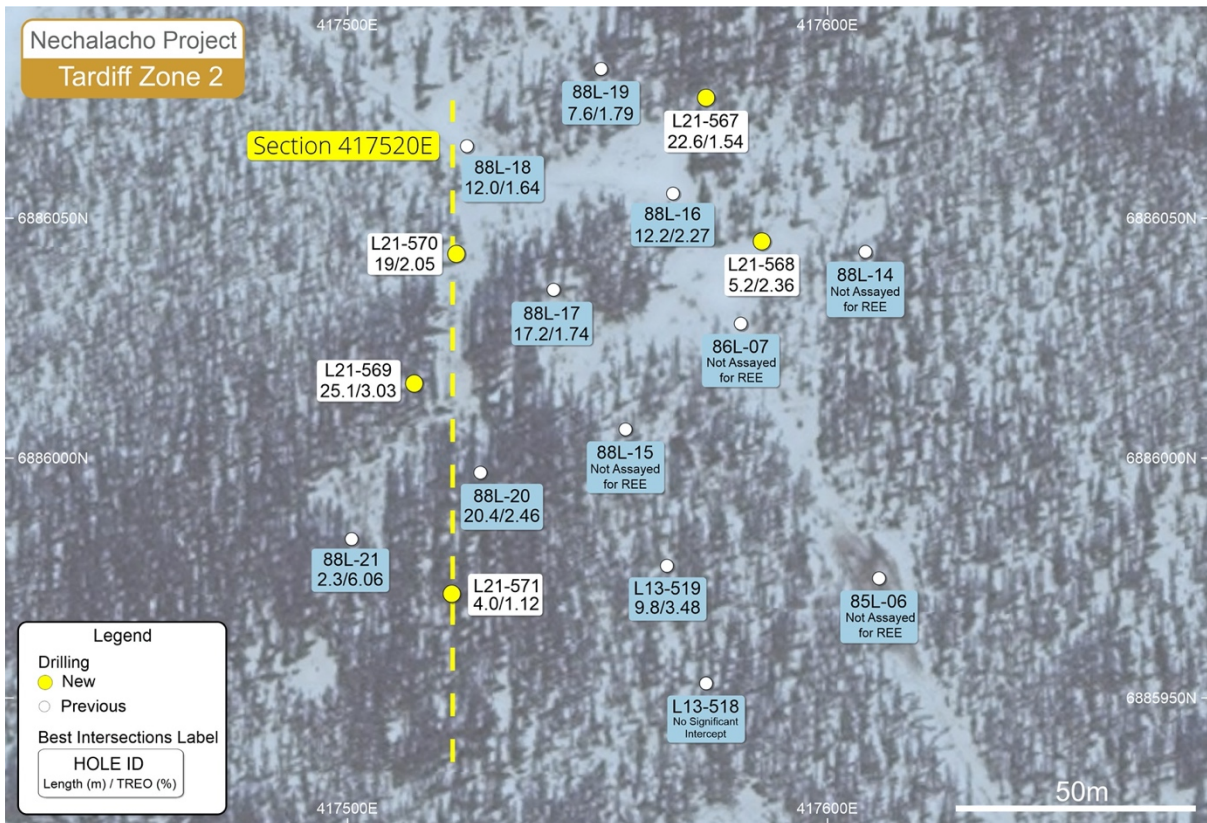


Figure 3 – Tardiff Zone 2 Drill Plan

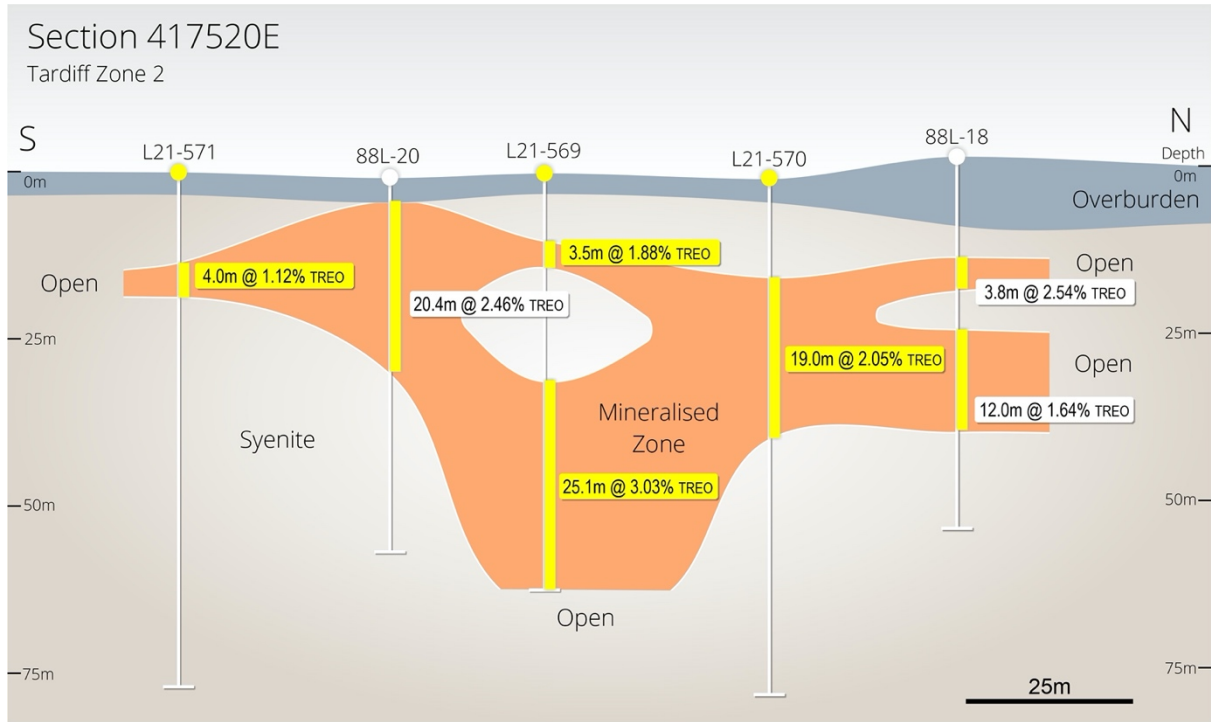


Figure 4 – Section at Tardiff 2

All five holes drilled at Tardiff Zone 2 successfully intersected the REO mineralisation and demonstrated similar grades and intercept lengths to nearby historic drill holes. Pleasingly, holes L21-269 and L21-570 on the western side shows the high-grade REO mineralisation is open to the west and appears to be getting thicker and higher grade to the west. The 2021 drilling has shown there is potential for a significant high grade REO resource in the Tardiff Zone 2 area and further drilling is required to delineated the size and grade of this zone of mineralisation.

Tardiff Zone 2 intersections are shown in the following table.

Hole Name	From (m)	To (m)	Interval (m)	TREO Grade (%)
L21-567	3	25.6	22.6	1.54
L21-567	37	50	13	1.53
L21-568	3.8	9	5.2	2.36
L21-568	16.6	19.4	2.8	3.92
L21-569	8	11.5	3.5	1.88
L21-569	24.9	50	25.1	3.03
L21-570	12	31	19	2.05
L21-571	11	15	4	1.12

Table 1: Intervals greater than 1% TREo in the Tardiff Zone 2

### Tardiff Zone 3

Historical drill holes from drilling programs by Avalon Materials Inc between 2007 and 2013 targeted the heavy rare earth rich Basal Zone (below the Vital Metals owned Upper Zone). The targeting of the Basal Zone resulted in very poor definition of the Upper Zone as many of the holes were drilled as fans from a single drill pad. One of these fans of five holes delineated a high-grade zone of REO mineralisation near the surface. As the fan of five holes were drilled from one drill pad, the high-grade mineralisation was only defined over a small area of 25m by 30m and it was unknown if the high grades extended beyond this small area.

Vital completed five holes to the north, south and west of the historic fan of holes aiming to increase the size of the high-grade zone and understand the extent and orientation of the high-grade zone.

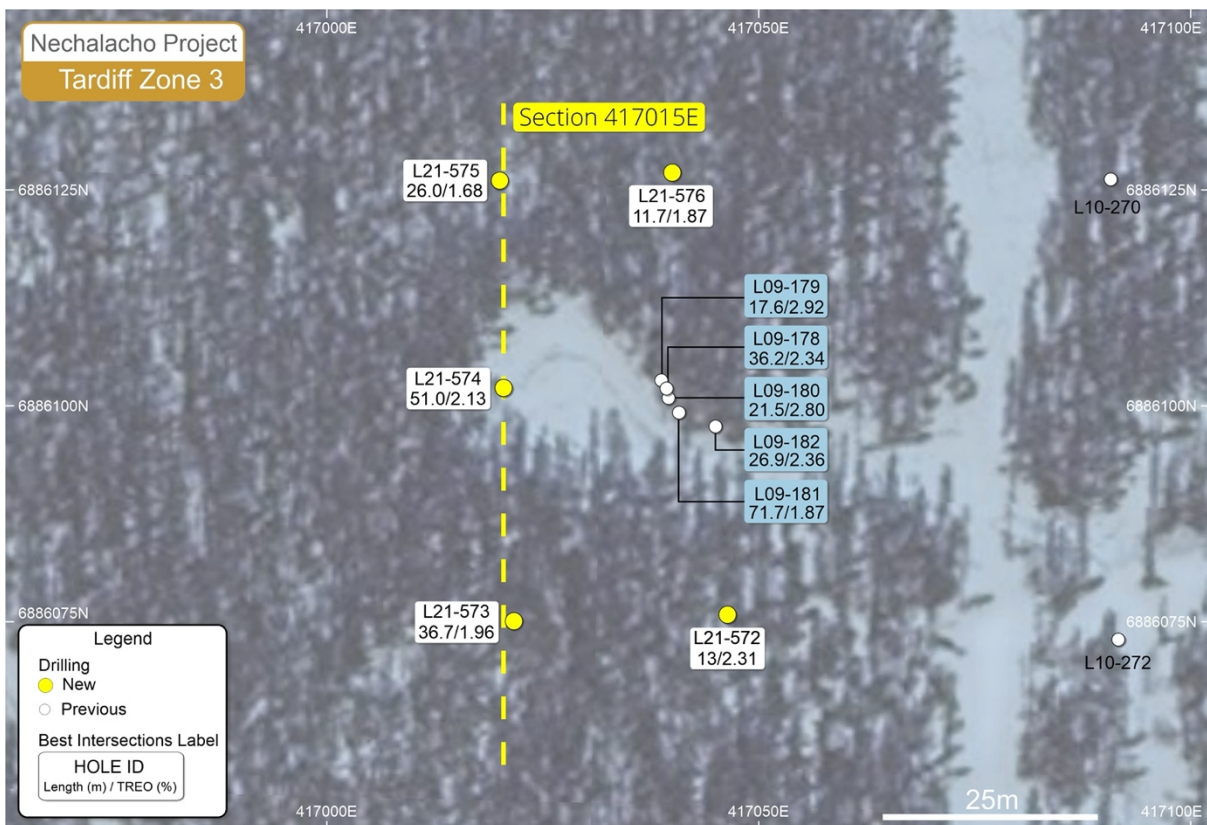
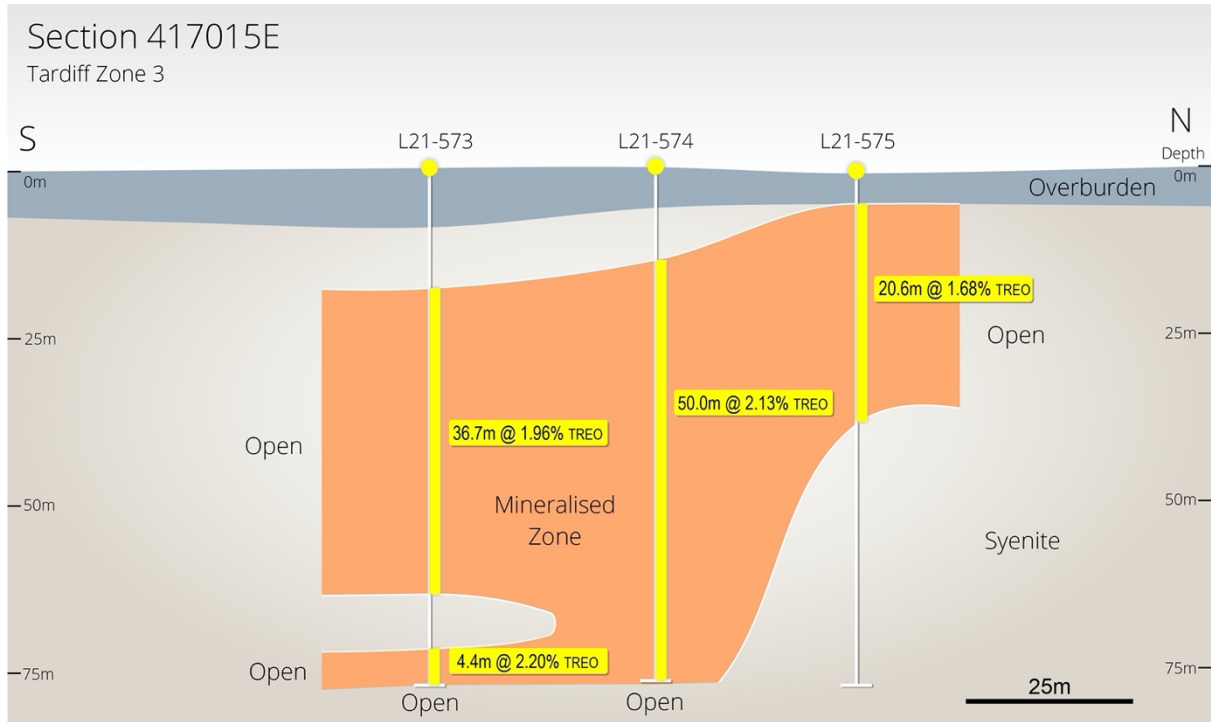


Figure 5 – Tardiff Zone 3 Drill Plan



**Figure 6 – Section at Tardiff Zone 3**

All five drill holes at Tardiff Zone 3 all successfully intersected the higher grade REO mineralisation, with the high-grade mineralisation open in all directions. It appears as though the high-grade zone strike is in an east-west direction and dips to the south. Vital will plan further drilling to better understand the potential of this zone of high-grade mineralisation.

Tardiff Zone 3 intersections are shown in the following table.

Hole Name	From (m)	To (m)	Interval (m)	TREO Grade (%)
L21-572	22.75	33	10.25	1.83
L21-572	37	50	13	2.31
L21-573	14.5	51.2	36.7	1.96
L21-573	57.6	62	4.4	2.20
L21-574	11	62	51	2.13
L21-575	3.8	29.8	26	1.68
L21-576	5.3	17	11.7	1.87
L21-576	21	30.3	9.3	1.71

Table 2: Intervals greater than 1% TREo in the Tardiff Zone 3

## Conclusions and Next Steps

Results for the Tardiff Zone 1,2 and 3 drilling program demonstrate that broad high grade zones of significant tonnages are present within the larger Upper Zone, with the previous drilling programs undertaken by Avalon being too wide to delineate these zones and their extent. In addition, the drilling program undertaken at Tardiff Zone 2 indicates the potential for a significant high grade resource which is not currently contained within the Mineral Resource estimate.

Following the positive nature of these results, coupled with the results achieved from the scouting metallurgical testwork program previously announced (refer ASX announcement 23<sup>rd</sup> June 2021), Vital will now proceed to define a mining and processing operation at Tardiff, which will commence utilising Tardiff Zone 1 ore before expanding into Zones 2 and 3.

As part of this program, Vital will undertake further drilling for all three of the Tardiff Zones. The goals of this program will be to delineate the boundaries of the three Tardiff high-grade zones in addition to identifying the relationships between the zones, including whether they are in fact connected. Further with a number of holes ending in high grade mineralisation, the future drill program will test the full depth of the high grade zones. Vital expects this drilling to commence during the northern winter.

**-ENDS-**

*This announcement has been approved by the Board of Vital Metals.*

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### ABOUT VITAL METALS

Vital Metals Limited (ASX:VML) is an explorer and developer focussing on rare earths, technology metals and gold projects. Our projects are located across a range of jurisdictions in Canada, Africa and Germany.

### Qualified/Competent Persons Statement

#### Nechalacho Rare Earth Project

The information in this report relating to Exploration Results at the Nechalacho Rare Earths Project is based on, and fairly represents, information and supporting documentation prepared for Vital Metals Limited by Mr Brendan Shand. Mr Shand is a Competent Person and a member of the Australasian Institute of Mining and Metallurgy and an employee of the Company. Mr Shand 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 'Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Shand consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

### ASX Listing Rule Information

This announcement contains information relating to Mineral Resource Estimates extracted from ASX market announcements reported previously and published on the ASX platform on 13 December 2019 and 15 April 2020. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the original market announcements continue to apply and have not materially changed.



## JORC Code, 2012 Edition – Table 1 report – Nechalacho Upper Zone

### Section 1 Sampling Techniques and Data

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

JORC Code explanation	Commentary
<p><i>Sampling techniques</i></p>	<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>
<p><i>Drilling techniques</i></p>	<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>
<p><i>Drill sample recovery</i></p>	<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>

JORC Code explanation	Commentary
<p><i>Logging</i></p> <ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li>• <i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Geological drill logs completed by an experienced professional geoscientist were produced to a standard to support a mineral resource estimation.</li> <li>• For the 2021 drill program, core photographs are available. For the historic Avalon drill holes and 1980s drill holes photographs are not available.</li> <li>• All the half splits from the 2021 drilling program were retained with the drill core stored on site, as half core, and can be viewed. The core from the historic drilling is stored on site.</li> <li>• Total length of the logged core for the 2021 program is 1712 m and the core are 100% logged.</li> </ul>
<p><i>Sub-sampling techniques and sample preparation</i></p> <ul style="list-style-type: none"> <li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> <li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Half core splits were sampled for the 2021 drill program and the historic Avalon drill holes.</li> <li>• For each sampled interval the entire interval was half split to ensure a representative sample of the interval. The sampled core was crushed before assaying to ensure the material from the entire interval was analysed during the assaying process.</li> <li>• Duplicates of both the coarse-crushed (&lt;2 mm) rejects and of the assay pulps were analysed and showed good reproducibility of the REE assays, indicating that both materials are sufficiently homogeneous.</li> <li>• The core sample intervals honour the contacts of the mineralization zones, thus providing adequate sample coverage.</li> <li>• Sub-sampling methods are unknown for the 1980s drill holes.</li> </ul>
<p><i>Quality of assay data and laboratory tests</i></p> <ul style="list-style-type: none"> <li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>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.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The assay methods for the REE include lithium borate fusion followed by ICP-MS and are thus considered total.</li> <li>• External REE standards supplied by Avalon Advanced Materials Inc. and inserted in the field, and external REE standards inserted by the laboratory (ALS) were analysed with each batch of assays to ensure the assaying procedures gave accurate results.</li> <li>• Field blanks were inserted to monitor contamination; results were acceptable.</li> <li>• Quality of the assay data is unknown for the 1980s drill holes. The quality of 1980s assay data from other areas at the Nehalacho Project has been shown to be very poor.</li> </ul>

JORC Code explanation	Commentary
<p><i>Verification of sampling and assaying</i></p> <ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The assay data was collated by Brendan Shand of Cheetah Resources.</li> <li>• The entire data set was downloaded from the ALS portal and converted to oxides. No assay data was manually inserted reducing the likelihood of human data entry errors. Assay data for rare earth elements was converted to rare earth oxides.</li> <li>• Geology tables distinguishing host rock syenite were created from the original drill logs.</li> <li>• A review of data received from Avalon for the historic drill holes was carried out by Brendan Shand.</li> </ul>
<p><i>Location of data points</i></p> <ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All 2021 drill holes were surveyed at the time by a professional surveyor – Sub-Arctic Geometrics Ltd of Yellowknife who used local survey reference points to ensure accuracy.</li> <li>• The grid system used is UTM NAD83 Zone 12 N, currently the standard system used in the area.</li> <li>• All historic drill holes have been surveyed by professional surveyors.</li> </ul>
<p><i>Data spacing and distribution</i></p> <ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The drill hole spacing is approximately 25 by 25 m over the 3 Tardiff Zones</li> <li>• The drill hole spacing is considered to be adequate for the measured resource confidence category.</li> <li>• Sample compositing will be applied when using the data for resource estimation.</li> </ul>
<p><i>Orientation of data in relation to geological structure</i></p> <ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All 2021 drill-holes were drilled at -90 to intersect the horizontally layered REO mineralisation at 90 degrees to achieve unbiased sampling. All the historic Avalon drill holes in the Tardiff Zone 2 and 3 were angled or sub-vertical and intersected the mineralisation at shallow angles resulting in no biased sampling.</li> </ul>
<p><i>Sample security</i></p> <ul style="list-style-type: none"> <li>• <i>The measures taken to ensure sample security.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All assay samples were sealed using zip locks, and multiple samples were placed in rice bags sealed with zip locks. Independent lab verified sealed sample integrity upon receipt.</li> <li>• Analyses for elements such as rare earths, niobium and zircon are unlikely to be altered as a result of insecurity of samples such as contamination.</li> </ul>

JORC Code explanation		Commentary
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<ul style="list-style-type: none"> <li>As the drilling is only recent no audits have been carried out on the sampling techniques and data.</li> </ul>

## Section 2 Reporting of Exploration Results

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

JORC Code explanation		Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Upper Zone is located on Mining Lease NT-3178 registered to Avalon Advanced Materials Inc. and expires 21 May 2027. On June 24, 2019, Avalon Advanced Materials Inc. announced that it has entered into a definitive agreement with Cheetah Resources Pty Ltd. to transfer ownership of the near-surface mineral resources on the Property, which includes the Upper Zone (see Avalon News Release NR 19-04). On October 30, 2019, it was announced that Avalon received the full payment from Cheetah Resources Pty Ltd. for the near-surface resources on the Nechalacho rare earth elements property at Thor Lake (see Avalon News Release NR 19-04). On February 6, 2020, the completion of a co-ownership agreement was announced, under which Cheetah Resources Pty Ltd. acquired ownership of the near-surface resources on the property, including the Upper Zone, and a jointly-owned special purpose vehicle to hold and manage the permits and authorizations to operate at the site was created (see Avalon News Release NR 20-01).</li> <li>Operating licenses in the Northwest Territories are subject to the approvals by provincial and environmental regulators and require consultation with local communities.</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>The historic resource development drilling was carried out by Avalon Materials Inc with the bulk of this drilling carried out between 2007 and 2013.</li> </ul>

JORC Code explanation		Commentary
		<ul style="list-style-type: none"> <li>The geologist who supervised the historic work, J.C. Pedersen, P. Geo, is an experienced geologist in the rare earths field and is well known as a reliable geoscientist to the present parties. He also supervised the 2021 drilling program.</li> <li>The data for the 1980s drilling at Tardiff Zone 2 was supplied by Avalon but Vital does not know who carried out the drilling.</li> </ul>
Geology	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>The Upper Zone is a polymetallic (REE, Nb, Zr) deposit hosted by the Thor Lake Syenite. It is a large layered magmatic deposit.</li> <li>REO mineralization in the Lake Zone is layered in separate zones of light rare earths at the top of the deposit (Upper Zone) and a mixture of light and heavy REO mineralisation in the lower part of the deposit (Basal Zone).</li> </ul>
Drill hole Information	<ul style="list-style-type: none"> <li>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: <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The historic data set for the Lake Zone includes 582 diamond drill holes with many of them in fans from the surface utilising a small number of drill pads to target the basal zone which begins approximately 80 metres below the surface. The historic drill hole data gave poor representation of the Upper Zone as the fans resulted in many holes close together in clusters and wide spaces between the clusters.</li> <li>The historic drill holes ranged from 1.5 to 1070 m in length with the bulk of the drill holes between 150 and 300 m long for a total length of 120,062 m.</li> <li>See the attached appendices for the details of each of the holes and the assay intervals in the 2021 drilling program.</li> <li>See the attached appendices for the details of the historic Avalon drill holes and 1980s drill holes in the Tardiff Zones 2 and 3 area.</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li>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.</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>Where there was more than 1 assay for an interval a weighted average was used for the grade of the interval. The weighted average was calculated by using the following formula. Interval grade= (Sum of (Assay length X assay grade) )/(total interval length)</li> <li>No capping was applied as no outliers were observed.</li> </ul>

JORC Code explanation	Commentary
<p><i>Relationship between mineralisation widths and intercept lengths</i></p> <ul style="list-style-type: none"> <li>• <i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li>• <i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li>• <i>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’).</i></li> </ul>	<ul style="list-style-type: none"> <li>• For the 2021 drilling the intervals reported closely approximate the true width of the mineralisation as most holes intersect at right angles to the dip of the mineralisation. The historic Avalon drill holes were angled or sub-vertical and intersected the mineralisation at shallow angles to the dip of the mineralisation. So the true width for these holes is slightly shorter than the down hole intervals. The other historic holes were vertical and the intersections are true width.</li> <li>• The sample intervals are suitable for the mineralisation.</li> <li>• The drill holes intersect the deposit at approximately right angles to the orientation of the orebody which is the ideal orientation.</li> <li>• The orientation of the holes to the mineralization is well established.</li> </ul>
<p><i>Diagrams</i></p> <ul style="list-style-type: none"> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• See figures in this ASX release for maps and section.</li> </ul>
<p><i>Balanced reporting</i></p> <ul style="list-style-type: none"> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All intervals greater 2 metres in length and 1% TREO are reported in the interval tables.</li> </ul>
<p><i>Other substantive exploration data</i></p> <ul style="list-style-type: none"> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable.</li> <li>• Deleterious and contaminating materials are not present except for some thorium as is commonly present in rare earth deposits and well established with respect to levels.</li> </ul>
<p><i>Further work</i></p> <ul style="list-style-type: none"> <li>• <i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The higher-grade REO mineralisation in Tardiff Zone 2 is open to the west of the 2021 drilling. It is recommended 2 sections of drillholes 25 and 50 to the west be drilled. Also if the core from the 1980s drill holes can be located this is resampled and assayed.</li> <li>• The high grade mineralisation in Tardiff Zone 3 is open in all directions and it is recommended further drilling is carried out along the suspected strike and dip.</li> </ul>

**Appendix 2: List of Drill Holes for the 2021 Upper Zone Drill Program**

Hole_ID	Northing	Easting	Elevation	Length (m)	Azimuth	Dip
L21-548	6886409.18	417308.71	241.70	71	0	-90
L21-549	6886385.71	417311.70	241.52	50	0	-90
L21-550	6886438.61	417161.58	240.94	62	0	-90
L21-551	6886413.62	417163.04	240.50	59	0	-90
L21-552	6886414.57	417111.53	240.55	53	0	-90
L21-553	6886437.43	417113.88	241.46	53	0	-90
L21-554	6886438.98	417138.67	241.19	53	0	-90
L21-555	6886414.08	417184.51	240.47	56	0	-90
L21-556	6886441.90	417187.55	241.20	62	0	-90
L21-557	6886388.18	417186.54	240.43	56	0	-90
L21-558	6886390.75	417210.07	240.49	50	0	-90
L21-559	6886438.60	417239.03	241.41	56	0	-90
L21-560	6886438.52	417261.85	241.48	62	0	-90
L21-561	6886435.69	417288.51	241.36	72	0	-90
L21-562	6886437.65	417310.11	241.54	62	0	-90
L21-563	6886386.39	417286.82	241.12	74	0	-90
L21-564	6886412.41	417261.94	240.88	74	0	-90
L21-565	6886385.78	417262.43	241.18	62	0	-90
L21-566	6886391.36	417238.81	240.79	56	0	-90
L21-567	6886075.11	417574.72	240.35	50	0	-90
L21-568	6886045.17	417586.33	238.95	50	0	-90
L21-569	6886015.55	417513.91	240.75	50	0	-90
L21-570	6886042.55	417522.69	240.15	62	0	-90
L21-571	6885971.70	417521.74	240.95	62	0	-90

Hole_ID	Northing	Easting	Elevation	Length (m)	Azimuth	Dip
L21-572	6886075.81	417046.40	244.43	50	0	-90
L21-573	6886075.06	417021.67	244.36	62	0	-90
L21-574	6886102.07	417020.47	244.23	62	0	-90
L21-575	6886126.08	417020.03	243.63	62	0	-90
L21-576	6886127.00	417040.00	244.00	59	0	-90

### Appendix 3: List of historic Drill Holes in the Tardiff Zone 2 area

Hole_ID	Northing	Easting	Elevation	Length (m)	Azimuth	Dip
85L-06	6885975	417610.8	237.09	401.5	0	-90
86L-07	6886028	417581.9	239	60.96	0	-90
88L-14	6886043	417607.9	240.3	90.53	0	-90
88L-15	6886006	417557.9	240	127.1	0	-90
88L-16	6886055	417567.8	241.1	60.05	0	-90
88L-17	6886035	417543	241	44.81	0	-90
88L-18	6886065	417524.9	242.9	44.81	0	-90
88L-19	6886081	417552.8	242	75.29	0	-90
88L-20	6885997	417527.7	240.1	44.81	0	-90
88L-21	6885983	417500.9	240.2	44.81	0	-90
L13-518	6885953	417574.7	237.875	50	0	-89.5
L13-519	6885978	417566.6	238.348	50	0	-89.32

### Appendix 4: List of historic Drill Hole intercepts in Tardiff Zone 2

Hole_ID	From	To	Length	TREO%
L13-518	No significant intercept			
L13-519	23	32.8	9.8	3.48
85L-06	Not assayed for REO			
86L-07	Not assayed for REO			



Hole_ID	From	To	Length	TREO%
88L-14	Not assayed for REO			
88L-15	Not assayed for REO			
88L-16	5.18	17.37	12.19	2.27
88L-17	2.59	19.81	17.22	1.74
88L-18	12.19	16	3.81	2.54
88L-18	20.88	32.92	12.04	1.64
88L-19	15.54	23.16	7.62	1.79
88L-20	2.74	23.16	20.42	2.46
88L-21	4.88	7.16	2.28	6.06
88L-21	17.53	22.25	4.72	1.90

**Appendix 5: List of historic Drill Holes in the Tardiff Zone 3 area**

Hole_ID	Northing	Easting	Elevation	Length (m)	Azimuth	Dip
L09-178	6886102	417039	244.488	169.47	0	-90
L09-179	6886102	417038.8	244.44	178.61	0	-75.61
L09-180	6886101	417039.6	244.503	169.47	270	-74.68
L09-181	6886099	417040.8	244.633	184.47	180	-75
L09-182	6886098	417045	244.76	193.47	90	-73.49
L13-518	6885953	417574.7	237.875	50	0	-89.5

**Appendix 6: List of historic Drill Hole intercepts in Tardiff Zone 3**

Hole_ID	From	To	Length	TREO%
L09-178	6.84	43	36.16	2.34
L09-178	69	75.25	6.25	1.42
L09-179	7	24.6	17.6	2.92
L09-179	31	39.05	8.05	1.35
L09-179	83.1	94.45	11.35	1.69
L09-180	7	28.5	21.5	2.80
L09-180	36	43.95	7.95	1.59
L09-180	57	73	16	1.68
L09-181	12	83.7	71.7	1.87

Hole_ID	From	To	Length	TREO%
L09-182	9	17	8	1.60
L09-182	26.35	53.2	26.85	2.36
L09-182	61	65.8	4.8	1.20