
**10 OCTOBER 2019**

# HÄGGÅN BATTERY METALS PROJECT
# RESOURCE UPGRADE ESTIMATE SUCCESSFULLY COMPLETED

## INDICATED RESOURCE OF 320 MILLION LBS $V_2O_5$ at 0.35% $V_2O_5$

## HIGH-GRADE VANADIUM ZONE CONFIRMED FROM SURFACE TO APPROX. 100 METRES DEPTH

**Aura Energy Limited (AEE; ASX, AURA; AIM)** is pleased to advise the results from its 100% owned Häggån Battery Metals Project, Sweden resource upgrade drilling program and resource modelling.

This has resulted in a new **Global Resource of 2 Billion tonnes at an average grade of 0.3% $V_2O_5$, containing 13.3 Billion lbs $V_2O_5$**, at a 0.2% $V_2O_5$ cutoff, which includes 320 million lbs $V_2O_5$ at 0.35% $V_2O_5$ as Indicated Resource, and 13.0 Billion lbs $V_2O_5$ at 0.3% $V_2O_5$ as Inferred Resource. (Refer Table 1)

Importantly, the infill drilling and modelling work has confirmed 42 million tonnes at 0.35% $V_2O_5$ at 0.2% $V_2O_5$ cut-off as Indicated Resource in a coherent near-surface zone.

Häggån is a large poly-metallic deposit containing economically significant levels of V (vanadium), Ni (nickel), Zn (zinc), Mo (molybdenum) and other metals. Resource estimates have previously been conducted and reported on the Häggån Project in 2010, 2011, 2012 and 2018 and since then additional infill drilling has been carried out.

In summary, the new Resource Estimate at Häggån, at a range of $V_2O_5$ cut-offs, is presented in Table 1. The 0.2% $V_2O_5$ cut-off is used to report the Häggån Resource Estimate.

| $V_2O_5$ Cut-off | Class | Mt Ore | V2O5 | Mo | Ni | Zn | K2O | Million lbs |
|---|---|---|---|---|---|---|---|---|
| % | | | % | ppm | ppm | ppm | % | $V_2O_5$ |
| 0.10% | Indicated | 45 | 0.34 | 213 | 365 | 501 | 4.11 | 332 |
| | Inferred | 2,503 | 0.27 | 200 | 312 | 433 | 3.73 | 14,873 |
| 0.20% | Indicated | 42 | 0.35 | 217 | 375 | 512 | 4.13 | 320 |
| | Inferred | 1,963 | 0.30 | 212 | 337 | 463 | 3.80 | 13,010 |
| 0.30% | Indicated | 31 | 0.38 | 223 | 398 | 536 | 4.23 | 258 |
| | Inferred | 954 | 0.35 | 226 | 374 | 503 | 3.95 | 7,390 |
| 0.40% | Indicated | 11 | 0.44 | 225 | 429 | 580 | 4.46 | 101 |
| | Inferred | 113 | 0.43 | 232 | 419 | 562 | 4.25 | 1,072 |

**Table 1: 2019 Resource Statement, Häggån.**

At a higher cut-off grade of 0.4% $V_2O_5$, the resource contains approximately 113 million tonnes at an average grade of 0.43% $V_2O_5$ containing 1.1 billion lbs of $V_2O_5$ in Inferred Resources, and 11 million tonnes at an average grade of 0.44% $V_2O_5$ containing 101 million lbs $V_2O_5$ in Indicated Resource.

**Of particular interest within this global resource, is the definition as Indicated Resource of a coherent zone of mineralisation of 42 million tonnes at +0.35% vanadium pentoxide commencing at surface and extending to +100 metres below surface.** This is referred to as the Northwest High-Grade zone.

The Resource Estimate is based on 16,500m of diamond drilling in 91 drillholes. The Indicated Resource is based on 3,530m in 25 diamond drillholes.

The high-grade $V_2O_5$ zone defined as Indicated Resource is open in all horizontal directions. More drilling will be required to define the limits of the high-grade resource.

**Project Location**

The Häggån Project is located in central Sweden in a rural area, approximately one hour by car from the city of Östersund in the province of Jämtland. Östersund is well served by national and international air services, by rail and by road.


**Häggån Tenements**

Through its 100% owned Swedish subsidiary Vanadis Battery Metals AB, Aura holds five exploration permits, totalling 57.6 $km^2$ over and around the Häggån resource. The entire Häggån resource lies within one of these, Häggån nr1 which covers 18.3 $km^2$. The Häggån nr1 permit is currently in its final period of tenure which expires on 28 August 2022. After this the area can be retained as a mining licence.

**Figure 1: Location**

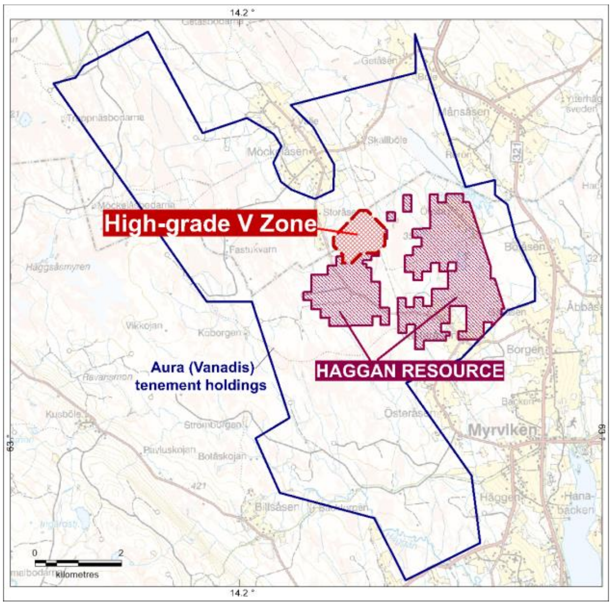


***Figure 2: Situation of the High-Grade vanadium zone within the Häggån Resource. The mineral tenements are held 100% by Aura's 100% owned Swedish subsidiary Vanadis Battery Metals AB.***

## Geology

The Häggån polymetallic mineralisation lies within a Cambrian to Lower Ordovician age geological unit known as the Alum Shale Formation. The Alum Shale was laid down within an ancient ocean which formed when what is now Greenland rifted apart from Scandinavia. The shallow marine waters coupled with prolonged stability resulted in the deposition of highly bituminous shales. This shale facies is generally between 10 and 60 metres thick and extends sporadically in Scandinavia from northern Norway to southern Sweden. The Alum Shale contains elevated but variable levels of a number of metals, principally vanadium, nickel, molybdenum, zinc, cobalt and in places copper and uranium. These metals are believed to have been derived by weathering of granitic rocks in the adjoining Fennoscandian Shield and transported to the Iapetus Sea where the extreme anoxic conditions allowed the metals to precipitate or chelate with organic matter during sedimentation.

During the mid-Palaeozoic the former sea closed due to the collision of the Laurencia (Greenland) continental plate with the Baltica plate (Scandinavia). This collision resulted in thrusting of the lower Palaeozoic sequences, including the Alum Shale, from the west to the east over older basement rocks of the Fennoscandian shield. Together with slices of older basement, the sedimentary rocks were thrust several hundred kilometres eastwards over the edge of the Fennoscandian Shield in several large sub-horizontal thrust sheets c. 400 Ma ago.

Häggån lies close to the eastern edge of this sedimentary thrust-sheet package. (Refer to Figure 3).

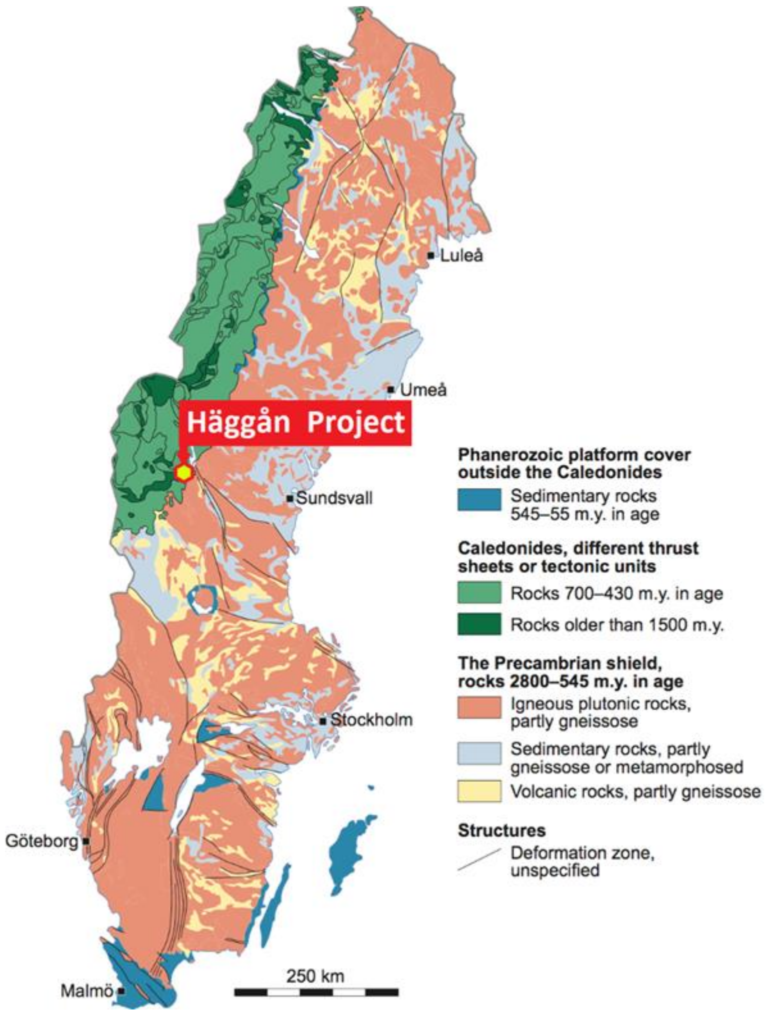


***Figure 3: Häggån geological setting***

**Mineralisation**

The mineralisation in the Alum Shale in the area investigated by Aura is enriched in various elements, principally:

- Vanadium
- Nickel
- Molybdenum
- Cobalt
- Zinc

Vanadium occurs within the lattice of the mineral roscoelite, a variety of mica. Nickel, molybdenum, cobalt and zinc are present as sulphides. All minerals, with the exception of recrystallised carbonates, are very fine grained, typically around 10 microns in grain size.

The highest metal concentrations generally occur in the upper parts of the Alum Shale, and the highest vanadium grades in the Aura licences appear to occur in the upper thrust sheet.

The NWHG Zone here extends approximately 1 kilometre in both north-south and east-west directions. The coherence of this zone is shown in both cross-sections and plan in Figures 6 and 7 below.

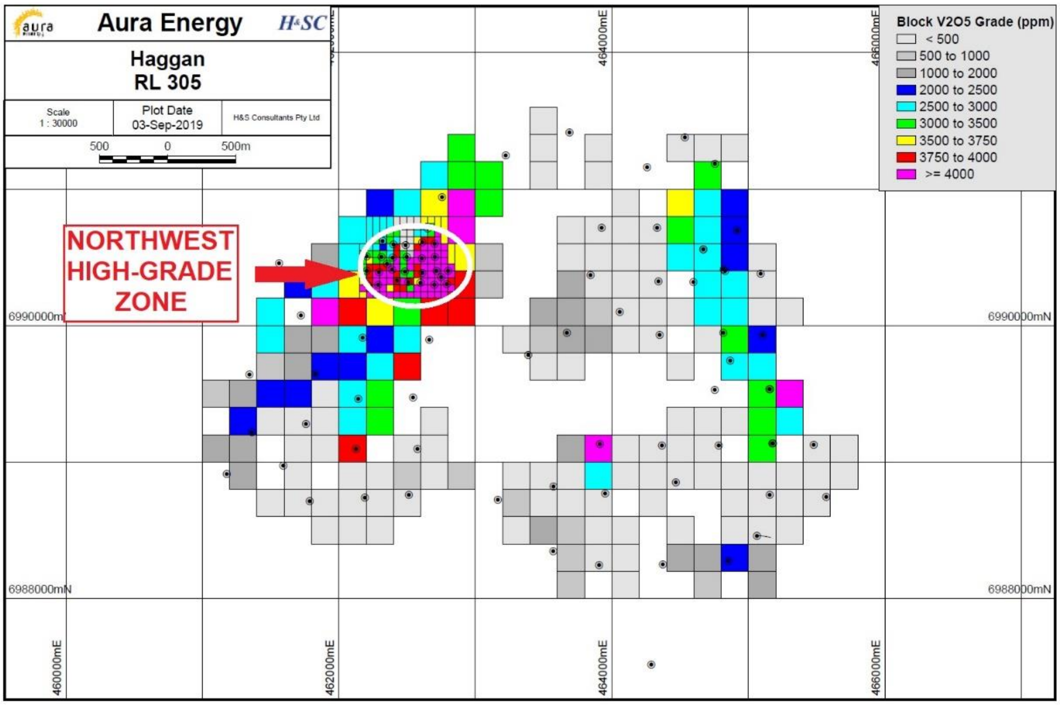


**Figure 4: Horizontal section (plan view) of Häggån Resource at a depth of approximately 45 metres below surface**

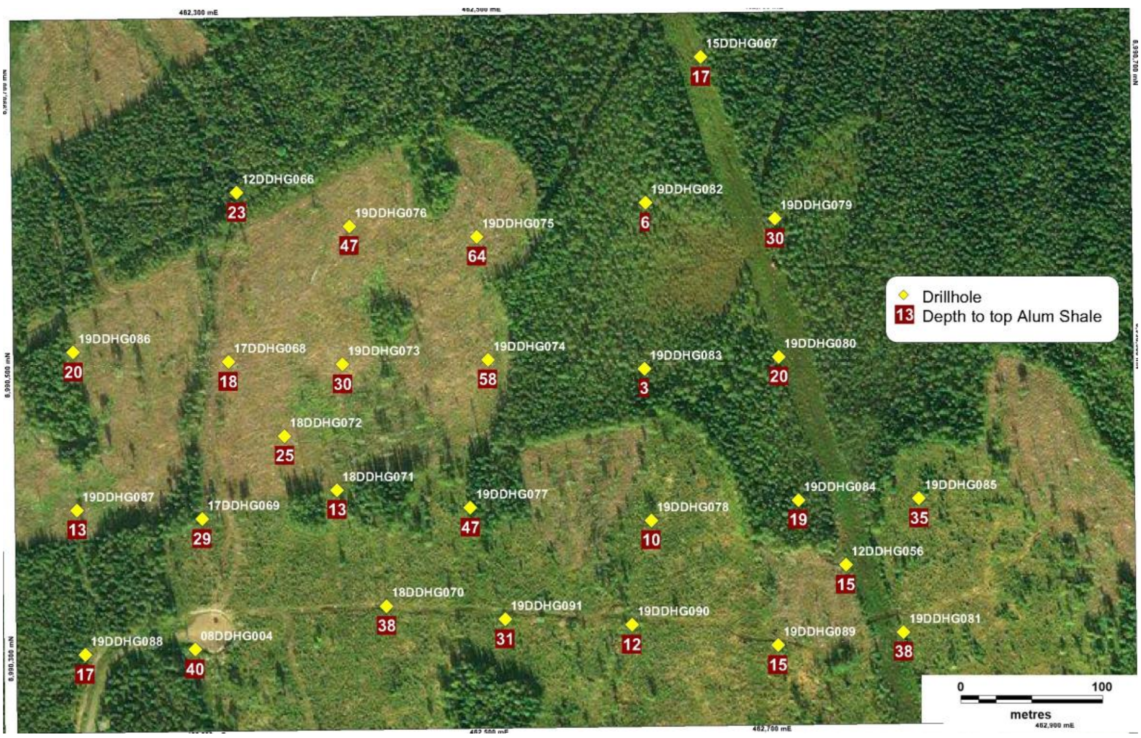


*Figure 5. Plan of collars of drillholes on which the Indicated Resource is based.*

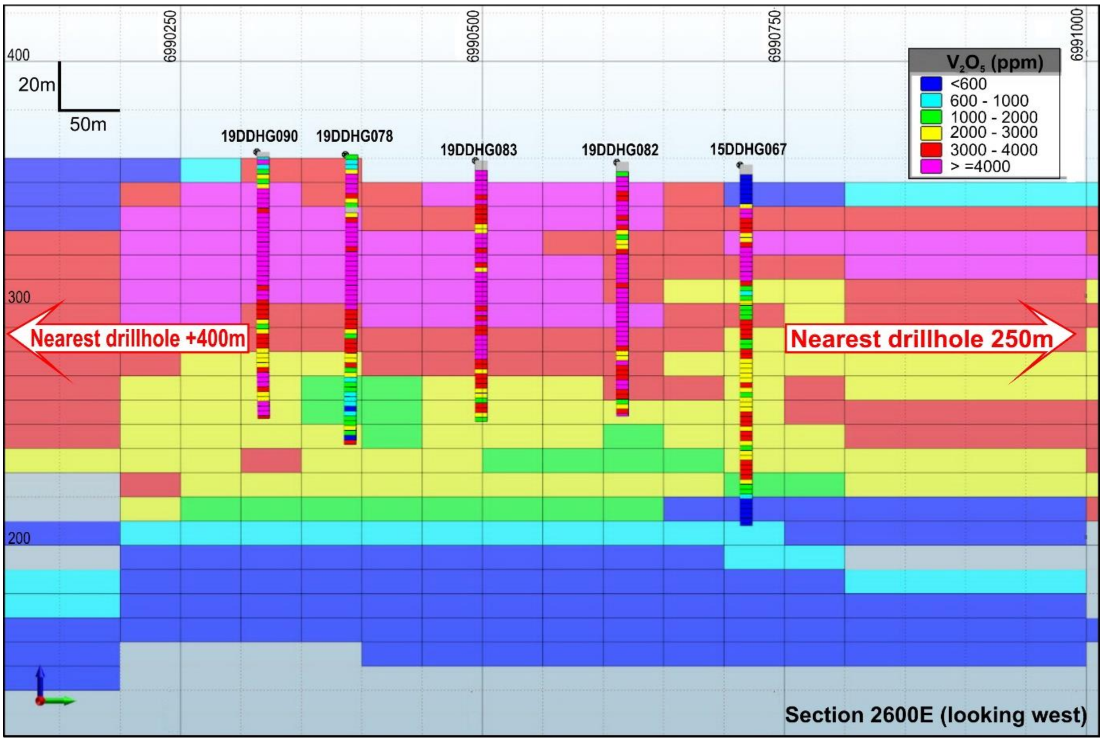


**Figure 6: North-South section 2700E of Häggån Resource model. The central Indicated Resource blocks are 50m x 50m x 10m.**

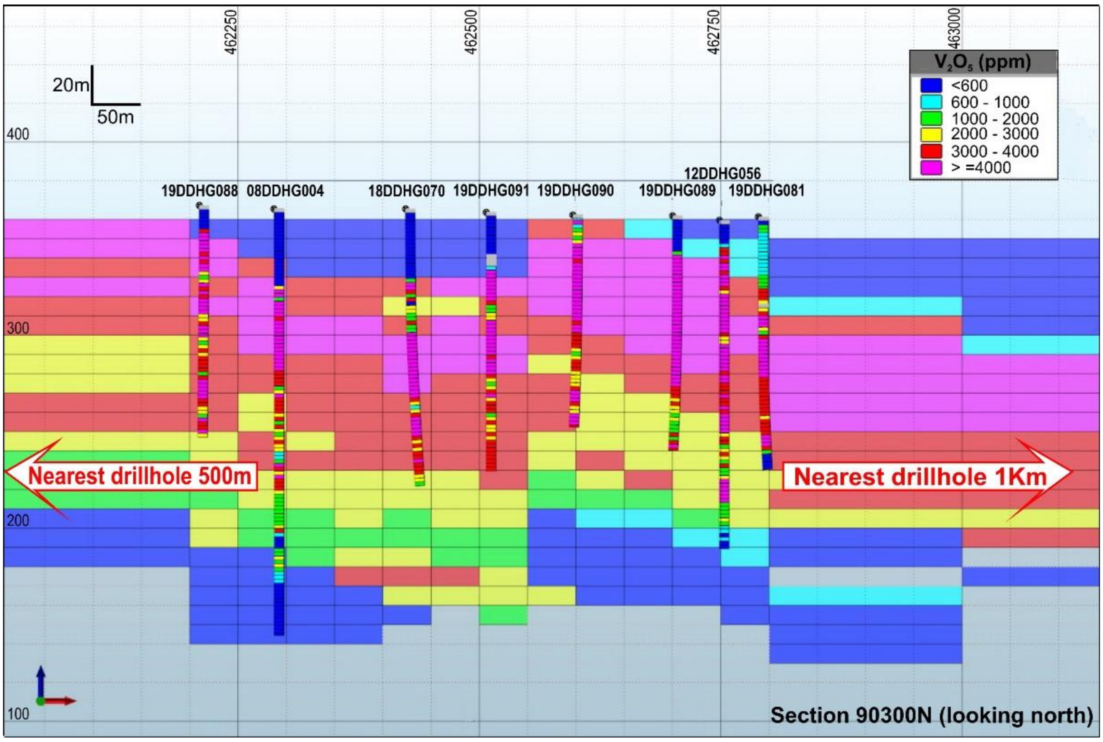


**Figure 7: East-West section 90300N of Häggån Resource model**

## Potential to Expand Measured/Indicated Resources

The 2018/19 resource upgrade drilling program was designed for cost reasons to upgrade approximately 70% of the resource on which a scoping study will be based into measured/indicated categories. However, the recent infill drilling has not defined the limits of the high grade (+0.4% $V_2O_5$) mineralisation. There is therefore excellent potential to expand the Indicated Resource on high grade mineralisation.

**The following 2 photos were taken at the location of the High Grade Vanadium Zone. The area is swampy and used for low level tree farming.**

## Summary of Resource Estimation and Reporting Criteria

In accordance with Australian Securities Exchange Listing Rule 5.8 and the JORC 2012 reporting guidelines, a summary of the material information used to estimate the Mineral Resource is set out below (for further detail please refer to the Appendix to this Announcement).

### Geology and Geological Interpretation

Mineralisation at Häggån is hosted by bedded black shales of the Cambrian to Ordovician Alum Shale in tectonically or otherwise stratigraphically thickened metal enriched north-north-west striking elongated geological domains. The mineralised sequence outcrops in an area in the east of the tenement but elsewhere underlies a variably thin cover of limestone and glacial till. Minor inter-beds of carbonate enriched shale or siltstone occasionally occur within the mineralised sequence. The mineralised unit overlies a mixed sequence of siltstone and massive mineralized black shale above a granitoid gneissic basement. It is interpreted that there are a series of overthrusts which have displaced and caused thickening of Alum Shale within the resource area.

### Drilling Techniques and Hole Spacing

The 2019 Häggån Resource Estimate is based on several drilling campaigns:

2008: 3,453 metres in 17 diamond drillholes
2010: 5,091 metres in 25 diamond drillholes
2011: 2,279 metres in 10 diamond drillholes
2012: 1,625 metres in 9 diamond drillholes
2015: 149 metres in 1 diamond drillhole
2017: 374 metres in 2 diamond drillholes
2018/19: 2,930 metres in 22 diamond drillholes

All drillholes except one were vertical. The majority of the holes were drilled with BQTQ bit (core diameter 47 mm).

Hole spacing within the Inferred Resource is approximately 400 metres by 400 metres, with precise locations determined by ease of access. Hole spacing within the Indicated Resource is approximately 100 metres x 100 metres.

### Sampling and Sub-Sampling Techniques

Half-core was cut by diamond saw using a sample interval of 2 metres unless the interval included a lithological contact in which case each lithology was sampled separately. Samples were dried at 105°C, then prepared by ALS method Prep 22 (Crush to 70% less than 6mm, pulverize entire sample to finer than 85% passing 75 microns). A 100 gram sample of pulp was taken by mini-riffle splitter for analysis.

### Sampling Analysis Method

All samples were analysed by ICPMS & ICPAES for a wide range of elements following 4-acid digestion.

### Cut-off Grades

The 2019 Resource Estimate is reported at a lower cut-off grade of 0.2% $V_2O_5$. Open pit modelling based on the resource block model has indicated a break-even grade of 755 ppm (0.076%) $V_2O_5$. A resource cut-off grade of 0.2% $V_2O_5$ is therefore conservative.

Tonnages and grades are reported for comparison also at a range of other cut-off grades.

**Estimation Methodology**

The vanadium, nickel, zinc, molybdenum, calcium and sulphur concentrations were estimated by Ordinary Kriging using Micromine software by H&S Consultants (H&SC). H&SC considers Ordinary Kriging to be an appropriate estimation technique for this type of mineralisation.

H&SC created a wireframe solid to define the volume represented by vanadium grades above background concentrations. This wireframe is largely limited to the shale unit. Only the volumes inside the wireframes were estimated using only assays from within the respective wireframes.

The absence of extreme values precluded the need for top-cutting.

No assumptions were made regarding the recovery of by-products.

Variography was performed for vanadium, nickel, zinc, molybdenum, calcium and sulphur on composite data from the Häggån mineralised volume.

Block dimensions for Indicated Resource are 50 x 50 x 10 metres and for Inferred Resource 200 x 200 x 10 metres (east, north, and vertical respectively). The plan dimensions were chosen as they are nominally half the drill hole spacing. The vertical dimension was shortened to reflect downhole data spacing and flat-lying nature of the mineralisation.

Three search passes were employed with progressively larger radii and decreasing search criteria. The blocks in the Häggån deposit that were populated in the first pass are classified as Indicated, and those populated in the second pass are classified as Inferred Mineral Resources. Blocks populated in the third pass formed the foundation of an Exploration Target which is not reported here. The criteria for each search pass is detailed below:

Pass 1: Search radii = 130 x 130 x 8 metres, minimum points = 13, maximum points = 24 (6 per quadrant), minimum drill holes = 4, maximum points per drill hole = 6

Pass 2: Search radii = 400 x 400 x 10 metres, minimum points = 9, maximum points = 24 (6 per quadrant), minimum drill holes = 2, maximum points per drill hole = 6

Pass 3: Search radii = 800 x 800 x 20 metres, minimum points = 6, maximum points = 24 (6 per quadrant), minimum drill holes = 1, maximum points per drill hole = 6

The maximum extrapolation of Inferred Mineral Resource estimates is 380 metres. The relatively large extrapolation distances is supported by the continuity and predictability indicated in the areas drilled. H&SC estimate that approximately 10% of the Inferred Resources are extrapolated beyond the drilling. None of the Indicated Resource is extrapolated.

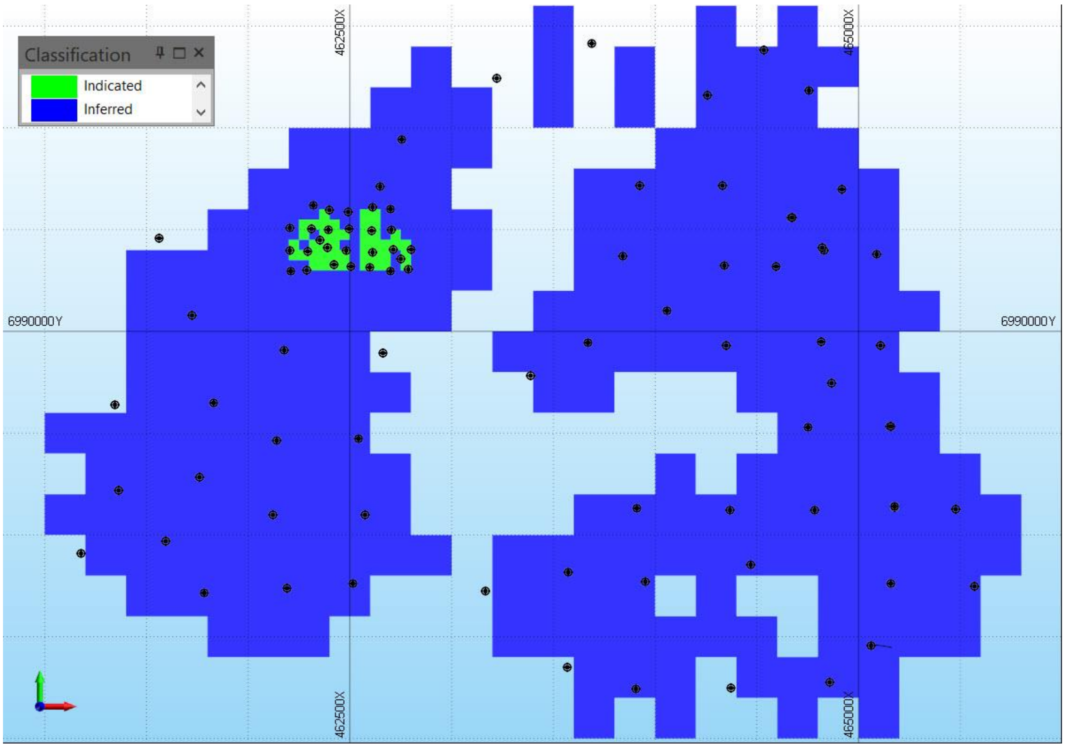


Figure 9: Plan showing outline of Resource blocks in relation to drillholes used in the resources estimation, indicating where the resource blocks have been extrapolated beyond drillholes.

The estimation procedure was reviewed as part of an internal H&SC peer review. The final H&SC block model was reviewed visually by H&SC and it was concluded that the block model fairly represents the grades observed in the drill holes. H&SC also validated the block model statistically using a variety of histograms, and summary statistics.

**Mining and processing methods and parameters**

Given the flat lying nature of the mineralisation and the low overburden to resource ratios the resource is very well suited to standard open pit mining.

A significant volume of test work has been undertaken on definition of vanadium deportment and process behaviour, and for the other resource metals. This demonstrated that vanadium is present mainly in the form of V(III) hosted within the mica mineral roscoelite.

Refer to ASX Release: “High Grade Vanadium Zone Defined, 23rd May 2018”

| HoleID | From | To | Intercept | V2O5 | K20 | Mo | Ni | Zn | Easting | Northing |
|---|---|---|---|---|---|---|---|---|---|---|
| | m | m | m | % | % | ppm | ppm | ppm | m | m |
| 08DDHG004 | 40.0 | 168.0 | 128.0 | 0.33 | 3.8 | 200 | 345 | 460 | 462,288 | 6,990,300 |
| " | 176.0 | 188.0 | 12.0 | 0.17 | 3.6 | 177 | 257 | 305 | | |
| 17DDHG068 | 17.8 | 90.0 | 72.2 | 0.36 | 4.01 | 224 | 392 | 539 | 462,314 | 6,990,502 |
| " | 98.0 | 176.0 | 78.0 | 0.25 | 3.51 | 242 | 319 | 469 | | |
| 17DDHG069 | 29.5 | 154.0 | 124.5 | 0.4 | 4.14 | 248 | 410 | 536 | 462,294 | 6,990,391 |
| " | 170.0 | 176.0 | 6.0 | 0.14 | 3.44 | 180 | 321 | 339 | | |
| 18DDHG070 | 37.4 | 144.0 | 106.6 | 0.37 | 4.15 | 219 | 393 | 539 | 462,423 | 6,990,329 |
| 18DDHG071 | 25.8 | 129.0 | 103.2 | 0.36 | 4.14 | 223 | 392 | 549 | 462,389 | 6,990,411 |
| 18DDHG072 | 26.7 | 88.0 | 61.3 | 0.3 | 4.05 | 194 | 348 | 512 | 462,353 | 6,990,449 |
| " | 102.0 | 141.1 | 39.1 | 0.34 | 4.1 | 244 | 394 | 498 | | |
| 19DDHG073 | 20.1 | 98.0 | 77.9 | 0.28 | 3.8 | 183 | 297 | 452 | 462,394 | 6,990,499 |
| " | 108.0 | 140.9 | 32.9 | 0.33 | 3.95 | 247 | 384 | 491 | | |
| 19DDHG074 | 52.3 | 88.0 | 35.8 | 0.37 | 4.27 | 189 | 368 | 489 | 462,497 | 6,990,502 |
| " | 98.0 | 162.0 | 64.0 | 0.31 | 3.84 | 234 | 359 | 499 | | |
| 19DDHG075 | 63.3 | 90.0 | 26.7 | 0.35 | 4.31 | 181 | 373 | 524 | 462,490 | 6,990,588 |
| " | 98.0 | 104.0 | 6.0 | 0.19 | 3.27 | 169 | 250 | 338 | | |
| " | 116.0 | 165.2 | 49.2 | 0.31 | 3.75 | 235 | 369 | 495 | | |
| 19DDHG076 | 46.1 | 82.0 | 35.9 | 0.37 | 4.35 | 186 | 379 | 575 | 462,400 | 6,990,597 |
| " | 98.0 | 100.0 | 2.0 | 0.14 | 4.07 | 133 | 189 | 194 | | |
| " | 120.0 | 122.0 | 2.0 | 0.14 | 3.55 | 149 | 217 | 253 | | |
| " | 130.0 | 140.0 | 10.0 | 0.34 | 4.06 | 217 | 380 | 438 | | |
| " | 148.0 | 152.8 | 4.8 | 0.33 | 3.9 | 221 | 362 | 550 | | |
| 19DDHG077 | 43.8 | 149.9 | 106.1 | 0.35 | 3.93 | 242 | 392 | 503 | 462,484 | 6,990,397 |
| 19DDHG078 | 7.3 | 98.0 | 90.7 | 0.37 | 4.26 | 240 | 399 | 539 | 462,611 | 6,990,387 |
| " | 108.0 | 119.8 | 11.8 | 0.17 | 4.02 | 193 | 243 | 386 | | |
| 19DDHG079 | 27.6 | 131.9 | 104.3 | 0.36 | 4.18 | 232 | 385 | 549 | 462,701 | 6,990,599 |
| 19DDHG080 | 27.1 | 112.0 | 84.9 | 0.4 | 4.26 | 247 | 425 | 559 | 462,703 | 6,990,501 |
| " | 124.0 | 131.9 | 7.9 | 0.25 | 3.79 | 188 | 303 | 444 | | |
| 19DDHG081 | 37.0 | 122.1 | 85.0 | 0.36 | 4.05 | 234 | 395 | 506 | 462,789 | 6,990,306 |
| 19DDHG082 | 5.9 | 105.0 | 99.2 | 0.4 | 4.47 | 213 | 404 | 547 | 462,610 | 6,990,611 |
| 19DDHG083 | 4.3 | 107.8 | 103.5 | 0.4 | 4.42 | 207 | 402 | 549 | 462,608 | 6,990,494 |
| 19DDHG084 | 19.0 | 130.1 | 111.1 | 0.36 | 4.26 | 208 | 375 | 512 | 462,716 | 6,990,400 |
| 19DDHG085 | 34.5 | 137.3 | 102.7 | 0.41 | 4.29 | 234 | 418 | 553 | 462,801 | 6,990,400 |
| 19DDHG086 | 20.0 | 90.0 | 70.0 | 0.33 | 4.4 | 178 | 353 | 493 | 462,204 | 6,990,510 |
| " | 96.0 | 124.0 | 28.0 | 0.14 | 3.74 | 177 | 264 | 648 | | |
| 19DDHG087 | 2.9 | 117.1 | 114.2 | 0.31 | 3.92 | 204 | 360 | 631 | 462,205 | 6,990,399 |
| 19DDHG088 | 12.0 | 119.9 | 108.0 | 0.38 | 4.2 | 196 | 384 | 550 | 462,210 | 6,990,297 |
| 19DDHG089 | 18.3 | 121.5 | 103.2 | 0.42 | 4.32 | 228 | 417 | 547 | 462,700 | 6,990,298 |
| 19DDHG090 | 3.0 | 110.2 | 107.2 | 0.38 | 4.16 | 233 | 405 | 537 | 462,597 | 6,990,313 |
| 19DDHG091 | 30.1 | 134.6 | 104.5 | 0.37 | 4.18 | 234 | 406 | 553 | 462,507 | 6,990,318 |

***Table 2: Table of intersections in all drillholes on which the Indicated Resource is based.***

- *Cut-off grade: 0.1% $V_2O_5$*
- *Maximum 4m of included waste*
- *All holes collared vertically*

**For further information please contact:**

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## Competent Person Statements

*The Competent Person for the 2012 Häggån Mineral Resource Estimate and classification, updated in 2019, is Mr Rupert Osborn MSc of H&S Consultants Pty Ltd. The information in the report to which this statement is attached that relates to the 2019 Resource Estimate is based on information compiled by Mr Rupert Osborn, who has sufficient experience that is relevant to the resource estimation. This qualifies Mr Osborn as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Osborn is an employee of H&S Consultants Pty Ltd, a Sydney based geological consulting firm. Mr Osborn is a Member of The Australian Institute of Geoscientists (AIG) and consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

*The Competent Person for drill hole data, cut-off grade and prospects for eventual economic extraction is Mr Neil Clifford MSc. The information in the report to which this statement is attached that relates to drill hole data for both existing and new drill holes (with the new drill holes are from 18DDHG070 to 19DDHG091 and the results set out in Table 2), cut-off grade and prospects for eventual economic extraction is based on information compiled by Mr Neil Clifford. Mr Clifford has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Clifford is an independent consultant to Aura Energy. Mr Clifford is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Clifford consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

# JORC Code, 2012 Edition – Table 1 report template

## 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.<br><br>Include reference to measures taken to ensure sample representativity and the appropriate calibration of any measurement tools or systems used.<br><br>Aspects of the determination of mineralisation that are Material to the Public Report.<br><br>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. | The 2019 Häggån resource estimate was based on several drilling campaigns:<br>▪ 2008: 3453m in 17 diamond drillholes<br>▪ 2010: 5091m in 25 "<br>▪ 2011: 2279m in 10 "<br>▪ 2012: 2226m in 14 "<br>▪ 2015: 149m in 1 "<br>▪ 2017: 374m in 2 "<br>▪ 2018/19: 2930m in 22 "<br><br>All drill samples were obtained by diamond drilling. Drillcore samples were provided to ALS Global at Piteå in Sweden (ALS) for preparation. Samples were analysed by ICP by ALS.<br><br>The Alum Shale, host to the mineralisation, has a relatively consistent content of the target metals.<br><br>Half-core was cut by diamond saw using a sample interval of 2m unless the interval included a lithological contact in which case each lithology was sampled separately. Samples were dried at 105°C, then prepared by ALS method Prep 22 (Crush to 70% less than 6mm, pulverize entire sample to better than 85% passing 75 microns). A 100g sample of pulp was taken by mini-riffle splitter for analysis. |
| ***Drilling techniques*** | Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc). | Diamond drill core; standard tube; all BQTQ (core diameter 47mm) or an equivalent size depending on the contractor used.<br><br>All 2018/19 holes & approximately 20% of previous holes were surveyed downhole, generally at 3m intervals. The majority of holes surveyed have limited deviation, with a maximum deviation at the bottom of a hole of c. 11 m.<br><br>All holes but 1 drilled in 2010 were collared vertically. The 1 inclined hole was drilled at an angle of -65° to 090° and drillcore was oriented. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Drill sample recovery*** | Method of recording and assessing core and chip sample recoveries and results assessed.<br>Measures taken to maximise sample recovery and ensure representative nature of the samples.<br>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. | Any core loss was marked by the drillers and measured and recorded by the geologist during core logging.<br>The Alum Shale, host to the mineralisation, consistently has recoveries of +95%.<br>Assays in the few intervals which include higher core loss appear typical of assays in areas of high recovery nearby. There is no evidence of any grade bias that might arise from the small number of intervals with poor or no core recovery. |
| ***Logging*** | Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.<br>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.<br>The total length and percentage of the relevant intersections logged. | Core was aligned and checked for continuity and marked out in one-meter intervals. It was checked for drill bit marking as bit matrices are known to contain molybdenum. Comments were recorded in the database regarding the presence of bit marks.<br>Core was geologically logged, recording lithology, oxidation, mineralogy (where possible), texture, fracture density & structure and radiation levels recorded by handheld scintillometer. Down hole depth intervals were recorded with an accuracy of 20 cm.<br>All core was photographed.<br>All core was geologically logged. |
| ***Sub-sampling techniques and sample preparation*** | If core, whether cut or sawn and whether quarter, half or all core taken.<br>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.<br>For all sample types, the nature, quality and appropriateness of the sample preparation technique.<br>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.<br>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.<br>Whether sample sizes are appropriate to the grain size of the material being sampled. | Core was sawn in half using a core saw.<br>All drill holes were diamond drill holes.<br>• Half core was taken using a sample interval of 2 m. Sample was dried at 105°C, then crushed to 70% - 2 mm using ALS method Prep 22 (crush to 70% less than 6mm, pulverize entire sample to better than 85% passing 75 microns). c. 100g sample of pulp to split off using mini-riffle splitter for analysis.<br>• Precision of sampling and analysing pulps is, based on QC sample results, considered to be within +/- 5% and acceptable for use in resource estimation at any confidence level.<br>• The grain size of the Alum Shale is extremely fine, less than 10 microns, and commonly around 1 micron. The uranium mineralisation is finely disseminated throughout the shale, again at a micron scale or less. Consequently, the mineralisation and its host rock are very well represented in the 2m samples of core collected (average sample 3.3 kg). Sample size is therefore appropriate. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***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.<br><br>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.<br><br>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. | Multi-element assaying was done by ALS Method ME-ICP61 on a 0.25g sample (4 acid digestion with ICP-AES finish). The ICP method after 4 acid digestion is reported to give near total assay for all resource elements.<br><br>For quality control every 25 samples submitted for assay included 1 duplicate, 1 blank, and 1 CRM (certified reference material). The 3 CRMs used in the resource upgrade drilling were produced from Häggån Alum Shale to ensure matrix matching and certified by OREAS. QAQC data were inspected by Aura before data were accepted and entered into the Aura database. Review of these QAQC results indicates acceptable levels of accuracy and precision have been established. |
| ***Verification of sampling and assaying*** | The verification of significant intersections by either independent or alternative company personnel.<br><br>The use of twinned holes.<br><br>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.<br><br>Discuss any adjustment to assay data. | No twin holes were drilled.<br><br>The following information primary data is recorded: Collar, alteration, assays, drilling type, Geology, Geotech, Magnetic susceptibility, mineralisation, radiometrics, samples, scintillometer, spectrometer, structure, veining, surface samples, batch details.<br><br>All logging was done by the geologist and entered in an Excel spreadsheet. Photos of the core are taken after the hole was logged. Data is kept on site on an external hard drive as well as being sent by email to Aura Energy in Australia where it was uploaded into the independently managed EarthSQL data base.<br><br>No data enters the database without verification by the Database Manager.<br><br>Database is managed by external contractor EarthSQL.<br><br>No adjustment has been made to assay data as received from the laboratory. |
| ***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.<br><br>Specification of the grid system used.<br><br>Quality and adequacy of topographic control. | Initial hole collar location was taken during drilling with handheld GPS at an accuracy of +/-3 metres. All holes on which the Indicated Resource are based were subsequently surveyed at the conclusion of the program by DGPS with an accuracy of better than 20cm.<br><br>All drill collars prior to 2015 were recorded in Swedish grid system RT 90 2.5. Subsequent holes were recorded in grid system SWEREF 99 TM following a change by the Swedish Government. All collars were converted to SWEREF 99 TM for the 2018 and 2019 resource estimation. |

| Criteria | JORC Code explanation | Commentary |
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| | | Holes were vertical in all cases except Hole 39 which was inclined at 65° towards 090 UTM. All drillholes since 2015 have been downhole surveyed. Approximately 20% of drillholes prior to 2015 were downhole surveyed. The maximum deviation occurred in Hole 22 which had a dip of 75º at 250 m. This represents an average deviation of 0.3 degrees per meter and a maximum location error at the bottom of the hole of 11 m for holes assumed to be vertical. Other surveyed holes had visibly less deviation.<br><br>Drillholes on which the Indicated Resource is based were drilled on an approximately 100m x 100m pattern, and holes on which the Inferred Resource is based are located on an approximate 400 m by 400 m grid; precise locations depended partially on access.<br><br>Topography: Collar RLs were determined by GPS to an accuracy of approx. 3m. Holes collars used in the Indicated Resource estimate were re-surveyed by DGPS to an accuracy better than 20cm. |
| ***Data spacing and distribution*** | Data spacing for reporting of Exploration Results.<br><br>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.<br><br>Whether sample compositing has been applied. | Exploration Results are not reported here as Mineral Resource Estimates exist.<br><br>H&S Consultants (H&SC) consider the drillhole spacing to be sufficient for their Resource Classification as Indicated and Inferred.<br><br>The vast majority of sample intervals are 2 m in length. For the purposes of Resource Estimation, samples were composited to 2 m intervals. The boundaries of the mineralisation wireframes were honoured. |
| ***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.<br><br>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. | As the mineralisation occurs in sub-horizontal sheets, vertical drilling is an appropriate drilling orientation. |
| ***Sample security*** | The measures taken to ensure sample security. | Drillcore was collected by Aura personnel from the drill sites and immediately taken and housed in Aura's local locked core shed. After logging the core was transported to ALS Laboratories facility by either Aura or ALS personnel for core sawing, sample preparation and assaying. |

| Criteria | JORC Code explanation | Commentary |
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| ***Audits or reviews*** | The results of any audits or reviews of sampling techniques and data. | Procedures were reviewed during visits by independent consultants Rupert Osborn of H&S Consulting in Dec 2018 and by W H Ireland in 2016 and no issues were identified. |

## Section 2. Reporting of Exploration Results

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

| Criteria | JORC Code explanation | Commentary |
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| ***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.<br>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. | All Resources of the Häggån Project are located on Exploration Permit Häggån No. 1. This permit is held in the name of the Aura Energy Ltd 100%-owned Swedish subsidiary company, Vanadis Battery Metals AB, which holds a 100% interest in this permit and adjoining permits.<br>Only standard Swedish Government royalties apply to these permits.<br>No native title interests are known to exist in the permits.<br>A small, 2-hectare Natura 2000 area occurs against the eastern boundary of Häggån No.1 permit; this area is not in the vicinity of the currently-planned mining area should a project be initiated at Häggån.<br>The Häggån Nr 1 Exploration Permit on which the entire resource is situated is valid until 28/8/2022. |
| ***Exploration done by other parties*** | Acknowledgment and appraisal of exploration by other parties. | Aura is not aware of any prior exploration by others. |
| ***Geology*** | Deposit type, geological setting and style of mineralisation. | Mineralisation at Häggån is hosted by bedded black shales of the Cambrian to Ordovician Alum Shale in tectonically or otherwise stratigraphically thickened metal-enriched north-north-west-striking elongated geological domains. The mineralised sequence outcrops in an area in the east of the tenement but elsewhere underlies a variably thin cover of limestone. Minor inter-beds of carbonate-enriched shale or siltstone occasionally occur within the mineralised sequence. The mineralised unit overlies a mixed sequence of siltstone and massive mineralized back shale above a granitoid gneissic basement.<br>It is interpreted that there is a series of overthrusts which have displaced and caused thickening of Alum Shale within the resource area, and the sub-horizontal thrust sheets have influenced the grade distribution within the Häggån deposit. |

| Criteria | JORC Code explanation | Commentary |
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| ***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:<br>• easting and northing of the drill hole collar<br>• elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar<br>• dip and azimuth of the hole<br>• down hole length and interception depth<br>• hole length.<br>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. | Drillhole collar locations are shown in figures in the ASX Announcement which this table accompanies. Collar locations for all holes on which the Indicated Resource is based are presented in Table 2 of the ASX announcement. |
| ***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.<br>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.<br>The assumptions used for any reporting of metal equivalent values should be clearly stated. | No Exploration Results are reported here as they are superseded by Mineral Resource Estimates. |
| ***Relationship between mineralisation widths and intercept lengths*** | These relationships are particularly important in the reporting of Exploration Results.<br>If the geometry of the mineralisation with respect | As the mineralisation occurs in sub-horizontal sheets, downhole lengths are believed to be a close approximation to true widths. |

| Criteria | JORC Code explanation | Commentary |
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| | to the drill hole angle is known, its nature should be reported.<br>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'). | |
| ***Diagrams*** | Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views. | Appropriate maps and sections and tabulations of intersects can be found on the Aura Energy website (www.auraenergy.com.au) or in releases to the Australian Stock Exchange (ASX), available on the ASX website. |
| ***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. | No Exploration Results are reported here as they are superseded by Mineral Resource Estimates. |
| ***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. | This information has been reported to the ASX over the 11 years since the discovery drillhole in 2008. |
| ***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).<br>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this | Further work plans are outlined in the report which this table accompanies.<br>Areas for likely extension of the mineralisation are indicated on block model sections in the report that this table accompanies. |

| Criteria | JORC Code explanation | Commentary |
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| | information is not commercially sensitive. | |

## Section 3 Estimation and Reporting of Mineral Resources

| Criteria | JORC Code explanation | Commentary |
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| ***Database integrity*** | Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.<br><br>Data validation procedures used. | Data was collated by Aura Energy from assays received from independent certified laboratories. All data is entered into the Aura database maintained by EarthSQL after validation. 2019 assay data has been received by EarthSQL directly from the laboratory and automatically merged with geological logs and sampling details provided by the site geologist. Any discrepancies or inconsistencies are highlighted by the database software and corrected. The assay data has then been manually reviewed for reasonableness.<br><br>Basic drill hole database validation completed by H&SC include:<br><br>Assayed intervals were assessed and checked for duplicate entries, sample overlaps and unusual assay values.<br><br>Downhole geological logging was also checked for interval overlaps and inconsistent data.<br><br>The downhole survey data provided was checked for unrealistic deviations.<br><br>During a site visit in December 2018 H&SC also checked the location of a selection of drill hole collars and compared drill hole geological logs to drill core.<br><br>Assessment of the data confirms that it is suitable for resource estimation. |
| ***Site visits*** | Comment on any site visits undertaken by the Competent Person and the outcome of those visits.<br><br>If no site visits have been undertaken indicate why this is the case. | Neil Clifford of Aura Energy visited the Häggån resource site immediately before and after the 2018/19 resource drilling program.. A site visit was conducted by and reported on by the Independent Geologist acting for Wardell Armstrong as part of Aura's AIM listing requirements.<br><br>Rupert Osborn of H&SC visited the Häggån Project for two days in December 2018. Mr Osborn discussed the geology and logging procedures with the site geologist, observed drill core and checked the location of ten drill holes using a handheld GPS. |

| Criteria | JORC Code explanation | Commentary |
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| ***Geological interpretation*** | Confidence in (or conversely, the uncertainty of ) the geological interpretation of the mineral deposit.<br>Nature of the data used and of any assumptions made.<br>The effect, if any, of alternative interpretations on Mineral Resource estimation.<br>The use of geology in guiding and controlling Mineral Resource estimation.<br>The factors affecting continuity both of grade and geology. | The estimated mineralisation is located almost entirely within a shale unit (the Alum Shale). The interpretations of deposit scale geology and mineralisation that formed the basis of the mineral resource estimates are based on original interpretations of the extents of the Alum Shale that were provided by Aura Energy in 2011. These interpretations are based on drill hole logs and assay data. H&SC used this information as well as data from the recent close spaced drilling to construct wireframes defining the volume represented by vanadium grades elevated relative to background concentrations.<br>The wireframe was treated as a hard boundary during estimation so that blocks inside the wireframe were estimated using only drill hole data from within the wireframe. Oxidation was not considered. The shale unit is predominantly overlain by limestone and underlain by quartzite.<br>The confidence in the interpretation of the shale unit is high, as the sedimentary package is reasonably predictable over large areas. However, the recent close-spaced drilling indicated that faulting appears to have occurred in the area. The exact location and orientation of the fault is poorly constrained. Preliminary analysis suggest that the vertical displacement is up to 70 m with an unknown lateral displacement.<br>The interpreted geology and mineralisation is reasonably simple and the grade variability is reasonably low (with Coefficients of Variation (CV) less than 1). It is therefore expected that any alternative interpretations are unlikely to significantly alter the Mineral Resource estimates. |
| ***Dimensions*** | The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource. | The estimated Mineral Resource covers a roughly oval area around 4,400 m wide east-west and 3,400 m north-south. This Mineral Resource is split into two discrete patches separated by 200 to 1,500 m. The mineralisation is interpreted to span the swathe between the patches. Mineralisation in this swathe forms part of the Exploration Target inventory as lack of drilling precludes the classification as a Mineral Resource.<br>The upper limit of the Mineral Resource occurs at surface although the average depth is about 130 m. The maximum depth of the Mineral Resource is 275 m |
| ***Estimation and modelling techniques*** | The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, | The vanadium, molybdenum, nickel, zinc, uranium, calcium, sulphur and potassium concentrations were estimated by Ordinary Kriging using the Micromine software. H&SC considers Ordinary |

| Criteria | JORC Code explanation | Commentary |
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| | interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.<br><br>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.<br><br>The assumptions made regarding recovery of by-products.<br><br>Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).<br><br>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.<br><br>Any assumptions behind modelling of selective mining units.<br><br>Any assumptions about correlation between variables.<br><br>Description of how the geological interpretation was used to control the resource estimates.<br><br>Discussion of basis for using or not using grade cutting or capping.<br><br>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available. | Kriging to be an appropriate estimation technique for this type of this mineralisation.<br><br>There are moderate correlations between vanadium, and molybdenum, nickel, zinc, uranium and sulphur, especially at low concentrations. Calcium and potassium concentrations are not correlated with any of the other estimated elements.<br><br>The low CV and absence of extreme values precluded the need for top-cutting.<br><br>Uranium concentrations were derived from Delayed Neutron Counting (DNC) analysis where available. DNC uranium values are not available from drill core drilled in 2008 or for the 2019 drilling. The majority of intervals that did not have DNC uranium values did have mixed acid ICP uranium assays. Regression analysis of intervals that had both DNC and ICP uranium values showed that the DNC derived uranium values are, on average, slightly higher than the ICP derived values and it is believed that the mixed acid ICP method is likely to slightly understate the more refractory proportion of uranium. The ICP uranium values for intervals that did not have DNC values were modified using the regression from ICP uranium assays to DNC uranium values.<br><br>In some cases, where scintillation counts indicate low levels of ionising radiation, samples within the mineralisation wireframes were not assayed using either ICP or DNC. In these cases, uranium concentrations were derived from the scintillation counts using the relationship between DNC and radiometrics. For these intervals, where no samples had been taken, the concentrations of vanadium, molybdenum, nickel, zinc and sulphur were derived from the derived uranium concentration using regressions from the DNC uranium assays. Calcium concentrations did not show a correlation with uranium and unsampled intervals were therefore assigned values based on the average value for the logged rock type.<br><br>H&SC created a wireframe solid to define the volume represented by vanadium grades above background concentrations for the Häggån deposit. This wireframe is largely limited to the shale unit. Blocks outside the wireframe are not included in the reported Mineral Resource.<br><br>The block model and composites were flattened relative to the top surface of the mineralisation wireframe for estimation.<br><br>A total of 5,254 two metre composites were used to estimate the mineralised wireframe at Häggån.<br><br>The resources at Häggån were previously estimated by Rupert Osborn of H&SC in August 2012 and updated in May 2018. The estimated grades in the new estimate are very close to those estimated in |

| Criteria | JORC Code explanation | Commentary |
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| | | previous models although the reported resources are different owing to a change in the cut-off grade used for reporting. The classification has increased from Inferred to Indicated in the area covered by the recent drilling campaign. The similarity between the estimates is expected as the methodology is similar and the resource estimates are considered to be relatively stable.<br><br>No assumptions were made regarding the recovery of by-products. The molybdenum, nickel, zinc and uranium concentrations were estimated but it is unclear if these can be economically recovered through beneficiation.<br><br>Variography was performed for vanadium, molybdenum, nickel, zinc, uranium, calcium and sulphur on composite data from the Häggån mineralised volume.<br><br>Drill holes at Häggån are on an irregular grid with a nominal spacing of 400x400 m. Recent drilling conducted in 2018-2019 focused on infilling drillhole spacing an area to 100x100 m on a regular grid. Drill hole assays were composited to two metres for estimation. Block dimensions in the area covered by the close spaced are 50x50x10 m (E, N, RL respectively) and are 200x200x10 m in the surrounding areas. The plan dimensions were chosen as they are nominally half the drill hole spacing. The vertical dimension was shortened to reflect downhole data spacing and flat-lying nature of the mineralisation. Discretisation was set to 5x5x2 (E, N, RL respectively).<br><br>Three search passes were employed with progressively larger radii and decreasing search criteria. The blocks in the Häggån deposit that were populated in the first pass are classified as Indicated, and those populated in the second pass are classified as Inferred Mineral Resources. Blocks populated in the third pass formed the foundation of an Exploration Target and are not reported. The criteria for each search pass is detailed below:<br><br>Pass 1: Search radii= 130x130x8m, minimum points= 13, maximum points= 24 (6 per quadrant), minimum drill holes= 4, maximum points per drill hole = 6<br><br>Pass 2: Search radii= 400x400x10m, minimum points= 9, maximum points= 24 (6 per quadrant), minimum drill holes= 2, maximum points per drill hole = 6<br><br>Pass 3: Search radii= 800x800x20m, minimum points= 6, maximum points= 24 (6 per quadrant), minimum drill holes= 1, maximum points per drill hole = 6<br><br>The maximum extrapolation of Inferred Mineral Resource estimates is 380 m. The relatively large |

| Criteria | JORC Code explanation | Commentary |
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| | | extrapolation distances is supported by the continuity and predictably indicated by the areas drilled.<br>The estimation procedure was reviewed as part of an internal H&SC peer review. No independent check models were produced due to the similarity between the previous estimates.<br>Estimates of the calcium and sulphur concentrations were conducted in order to better understand the possibility of acid leach processing and to begin to assess their importance as possible deleterious elements. It is unclear at this stage whether uranium will be considered as a deleterious element due to the changes in Swedish mining law in 2018.<br>The final H&SC block model was reviewed visually by H&SC and it was concluded that the block model fairly represents the grades observed in the drill holes. H&SC also validated the block model statistically using a variety of histograms, boundary plots and summary statistics.<br>No production has taken place, so no reconciliation data is available. |
| ***Moisture*** | Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content. | Tonnages were estimated on a dry weight basis. The moisture constant was not determined. |
| ***Cut-off parameters*** | The basis of the adopted cut-off grade(s) or quality parameters applied. | A vanadium pentoxide ($V_2O_5$) cut-off of 0.2% was used to report the resources as it was assumed that material can be economically mined at this grade in an open-pit scenario. This cut-off grade was used at the request of Aura Energy, which takes responsibility for reasonable prospects for eventual economic extraction. |
| ***Mining factors or assumptions*** | Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an | The Mineral Resources reported here have been estimated on the assumption that the deposits will be bulk mined by open pit.<br>The minimum model block size (50x50x10m) is the effective minimum mining dimension for this estimate.<br>Any internal dilution has been factored in with the modelling and as such is appropriate to the block size. |

| Criteria | JORC Code explanation | Commentary |
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| | explanation of the basis of the mining assumptions made. | |
| ***Metallurgical factors or assumptions*** | The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made. | Three programs of preliminary metallurgical test work have monitored vanadium extraction including two programs dedicated to the evaluation of vanadium processing options. The key features relating to vanadium recovery are noted below.<br>Vanadium is present in the V(III) valence state, hosted in the mica mineral roscoelite (K(V3+, Al, Mg)2AlSi3O10(OH)2).<br>Vanadium was identified as mainly in the V(III) valence state, generally refractory to direct acid leaching. Atmospheric acid leaching showed only up to 1.8% vanadium recovery.<br>Desliming with hydrocyclones increased the vanadium feed grade by a factor of 1.35, with 73% recovery and rejection of 45% of feed mass.<br>Oxalate salt roasting followed by acid leaching yielded up to 59% vanadium recovery.<br>Calcination followed by acid leaching yielded up to 32% vanadium recovery.<br>Acid pressure leaching yielded up to 61% vanadium recovery.<br>No vanadium penalty elements have been identified in work so far. |
| ***Environmental factors or assumptions*** | Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made. | No environmental impact assessments have been conducted at this early stage of evaluation. The planning and costing of remedial action to limit and control the environmental impacts of mining and processing will be addressed in the Prefeasibility Study. |
| ***Bulk density*** | Whether assumed or determined. If assumed, the basis for the | A total of 238 bulk density samples were taken from 22 drillholes during the recent 2018-2019 drilling. |

| Criteria | JORC Code explanation | Commentary |
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| | assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.<br>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.<br>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials. | Density determinations were conducted by ALS Global at Piteå on 30cm whole drillcore lengths taken every 10m through the shale unit. Core was oven dried, sealed by wrapping in clingwrap prior to SG determination by water displacement. 32 samples were determined with & without sealing and the results agreed to within 0.2% on average. QAQC (quality assurance, quality control) steps consisted of determinations of at least one sample of reference material in each batch of approximately eleven. 32 duplicate determinations were conducted, which agreed to better than 0.2% on average.<br>The results indicated that the density of the shale unit is reasonably consistent, although further analysis is recommended to explain the variations observed. The average density of 2.57 t/m³ from the 237 samples from the shale unit was applied to the entire volume represented by the mineralisation wireframes. The value of 2.73 t/m³ from the one limestone sample was assumed for all blocks outside the mineralisation wireframe. No reduction was made for weathering.<br>More density test work and analysis is recommended in order to raise the confidence of the resource estimate. |
| ***Classification*** | The basis for the classification of the Mineral Resources into varying confidence categories.<br>Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).<br>Whether the result appropriately reflects the Competent Person's view of the deposit. | The blocks in the Häggån deposit that were populated in the first pass are classified as Indicated Resources and those populated in the second pass are classified as Inferred Mineral Resources. Blocks populated in the third pass formed the foundation of an Exploration Target which is not reported here.<br>Relevant factors are considered to have been accounted for the Indicated and Inferred Resources.<br>Confidence and classification of the Mineral Resources may be improved by:<br>additional drilling to tighten the spacing between drill holes<br>conducting more density test work and data analysis<br>improving the structural and geological model<br>regional mapping to identify major faults<br>The classification appropriately reflects the Competent Person's view of the deposit. |
| ***Audits or reviews*** | The results of any audits or reviews of Mineral Resource estimates. | The Mineral Resource estimate presented here were completed in August 2019. The Mineral Resource estimate has not been independently audited or reviewed but has been subject to an internal H&SC review. |

| Criteria | JORC Code explanation | Commentary |
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| ***Discussion of relative accuracy/ confidence*** | Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.<br><br>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.<br><br>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available. | The relative accuracy and confidence level in the Mineral Resource estimates are considered to be in line with the generally accepted accuracy and confidence of Indicated and Inferred Mineral Resources. This has been determined on a qualitative, rather than quantitative, basis, and is based on the Competent Person's experience.<br><br>The geological nature of the deposit, and the low coefficients of variation lend themselves to reasonable level of confidence in the resource estimates.<br><br>The Indicated portion of the resource is considered to be a local estimate and is suitable for technical and economic evaluation.<br><br>The Inferred portion of the resource is considered to be a global estimate. The block model was created using blocks of a size considered appropriate for local grade estimation however none of the material is considered to be relevant for technical and economic analysis as it has been classified as Inferred or Exploration Target. Reserve calculation must be conducted on Resources classified as Indicated or Measured.<br><br>No mining of the deposit has taken place so no production data is available for comparison. |