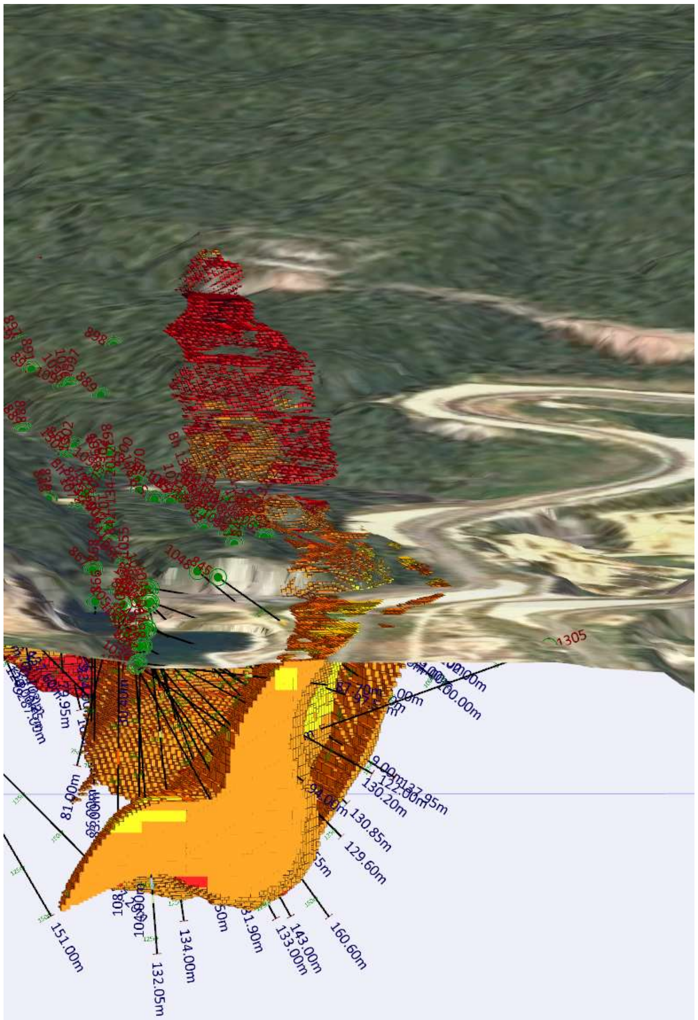
# Application for exploitation rights;

## Stensundtjern Øst, Stensundtjern Vest / Finnkåteng




**Rana Gruber AS**

**November 2020**

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# Innhold

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# 1 Introduction

This application is forwarded in order to obtain for exploitation rights (utvinnigsrett) in the Stensundtjern and Finnkåteng area situated some kilometers vest of the village Storforshei (Dunderlandsvalley) and summarizes the current status/results of geological mapping, ore modeling and resource/reserves estimation in the Stensundtjern / Finnkåteng area, Dunderland valley. Rana Gruber ASs current mining activities in the Ørtfjell area about 10km further east are shortly summarized.

## 1.1 Exploration and exploitation rights

Rana Gruber AS currently holds a number of exploration- (NO: undersøkelsesrett) and exploitation (NO: utvinningsrett) rights in the Dunderland valley about 25km north of Mo i Rana. Figure 1 summarizes the current licenses hold by the company connected to the Stensundtjern/Finnkåteng project.

With this application Rana Gruber AS wishes to secure exploitation rights (utvinningsrett) in the eastern and western extensions of the existing rights at Stensundtjern as well as in the Finnkåteng area as shown in Figure 2 and Table 1. Detailed maps in A3 format showing the position and size for the areas covered in the application are supplied in appendix A.

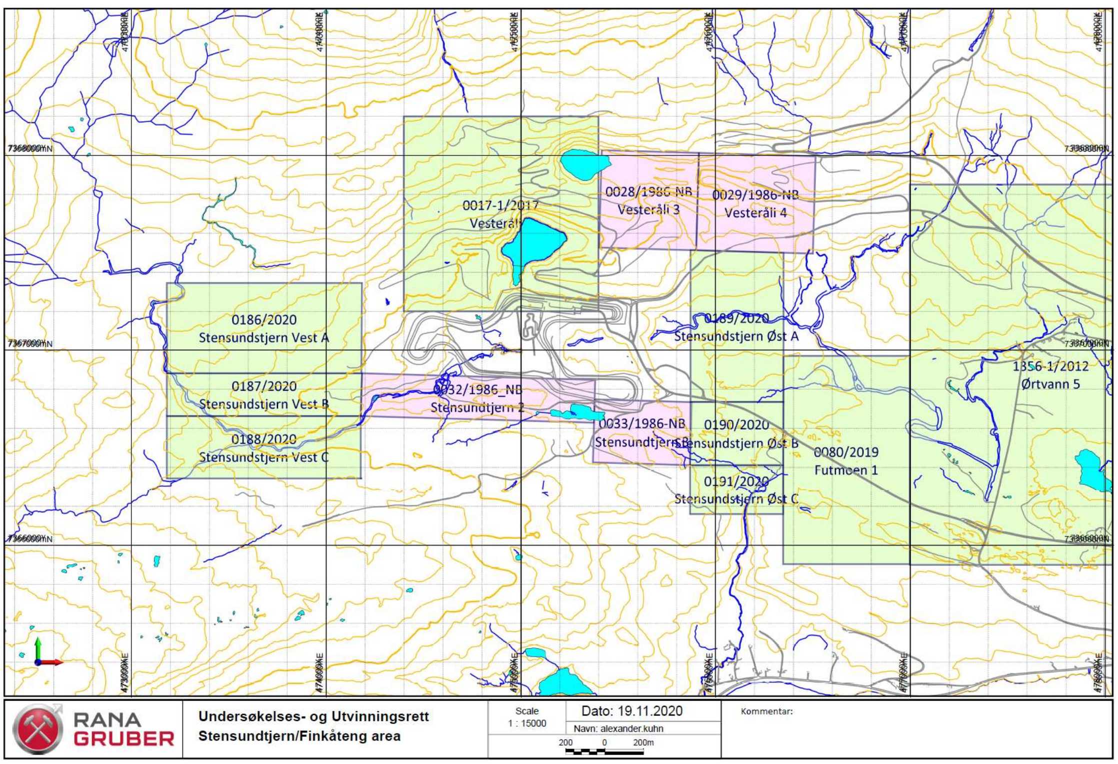


*Figure 1. Exploration (green) and exploitation (magenta) rights, Stensundtjern/Finnkåteng; Rana Gruber AS.*

*Table 1. Corner coordinates and surface area for the areas covering the exploitation right application.*

| Area Name | East | North | Area (m2) |
|---|---|---|---|
| Stensundtjern Øst | 475876.700 | 7366607.309 | 156 133.56 |
| Stensundtjern Øst | 476351.642 | 7366593.796 | |
| Stensundtjern Øst | 476342.296 | 7366265.319 | |
| Stensundtjern Øst | 475867.355 | 7366278.832 | |
| Stensundtjern Vest | 474178.711 | 7366675.467 | 213 111.36 |
| Stensundtjern Vest | 474188.747 | 7366997.171 | |
| Stensundtjern Vest | 473526.900 | 7367016.001 | |
| Stensundtjern Vest | 473516.842 | 7366694.298 | |
| Finnkåteng | 475400.000 | 7367739.000 | 372 900.00 |
| Finnkåteng | 475400.000 | 7367400.000 | |
| Finnkåteng | 474300.000 | 7367400.000 | |
| Finnkåteng | 474300.000 | 7367739.000 | |

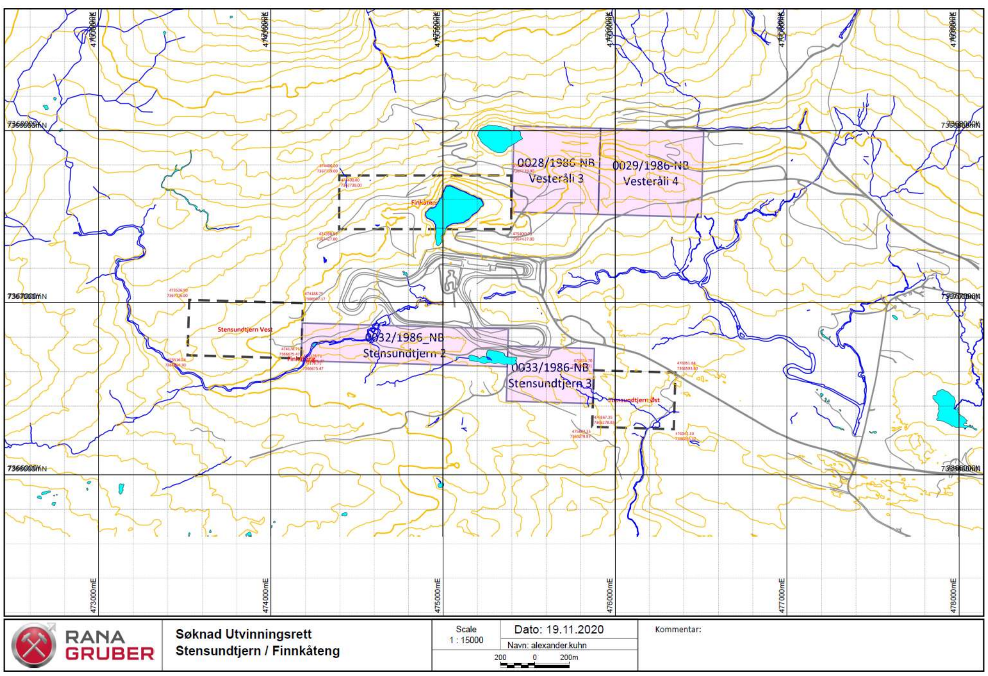


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*Figure 2. Position of the three exploitation rights applied for (stippled rectangles), Stensundtjern/Finnkåteng; Rana Gruber AS.*

## 1.2 Location and infrastructure

The iron ore deposits in the Dunderland valley are situated about 27 km northeast of the city Mo i Rana and just about 15 km south of the Arctic Circle (Figure 3). The area currently mined as well as the area in focus in this application is easily accessible by car (public road and mining road) and connected by railway.

Mo i Rana is located at a junction of two major European roads (E6 and E12) and is accessible by both car, plane and train and hosts an ice-free harbor.

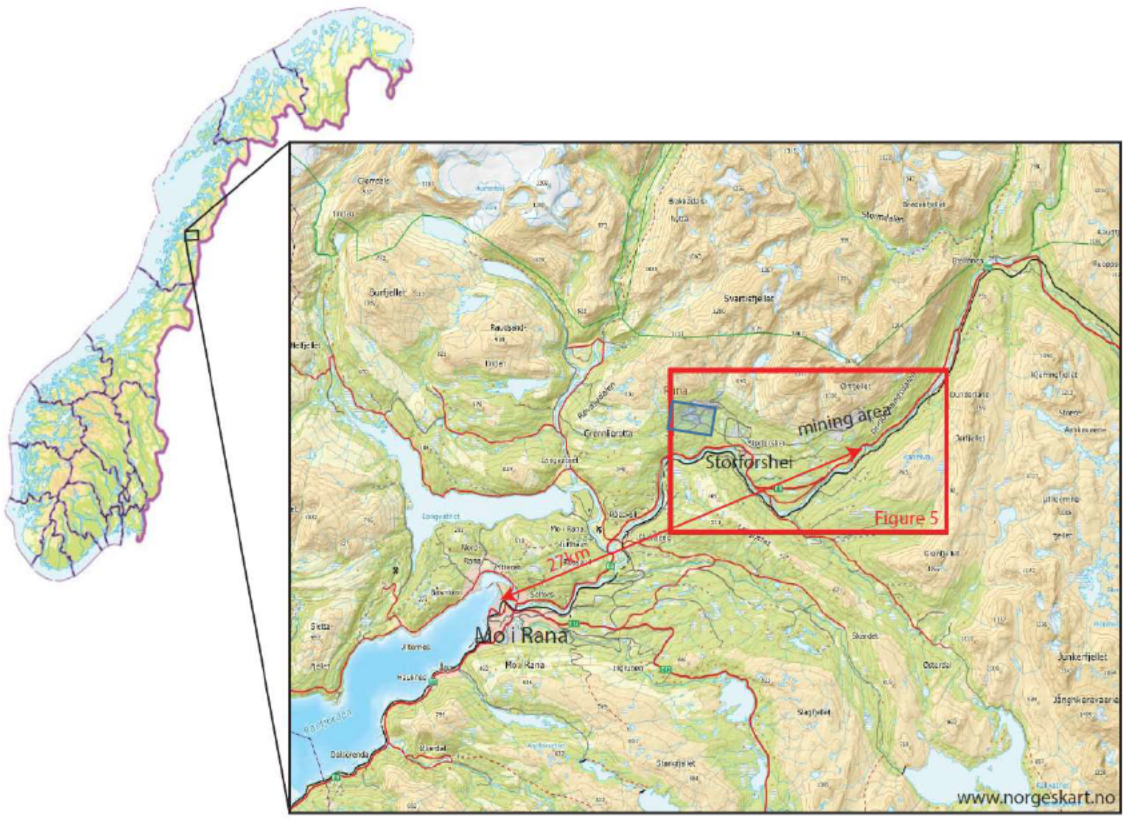


*Figure 3. Topographic map showing the area northeast of the city of Mo i Rana. The focus area that hosts the iron ore deposits is highlighted by the red rectangle; and the Stensundtjern/Finnkåteng area is indicated by the blue shaded rectangle (source: www.norgeskart.no).*

# 2 Geological setting and mineralization

## 2.1 Geology of Norway

Norway's geology reflects a long history extending nearly 3 billion years back in time. The rocks bear witness of ancient mountain ranges that had risen and that had been eroded down to sediments as the Earth has undergone gradual changes. Today, Norway is part of the so-called Fennoscandian shield that constitutes the Precambrian bedrock/basement of Scandinavia, Figure 4. The oldest rocks dating back to between 2.5 and 3 billion years (Archean bedrock) are found in Finnmark, along the coastline of Troms and Nordland county. Moving south and west in Norway, the bedrock becomes gradually younger, dating back to approximately 900 million years in the southern parts of Norway. Above this Precambrian bedrock lies the remnants of the 400 to 500 million year old Caledonian mountain range. A distinct belt consisting of a serious of far travelled nappe units that have been tectonically thrust on top of the Scandinavian bedrock. The youngest rocks found on the Norwegian mainland witness of volcanic activity in the Oslo region about 250 to 300 million years ago.

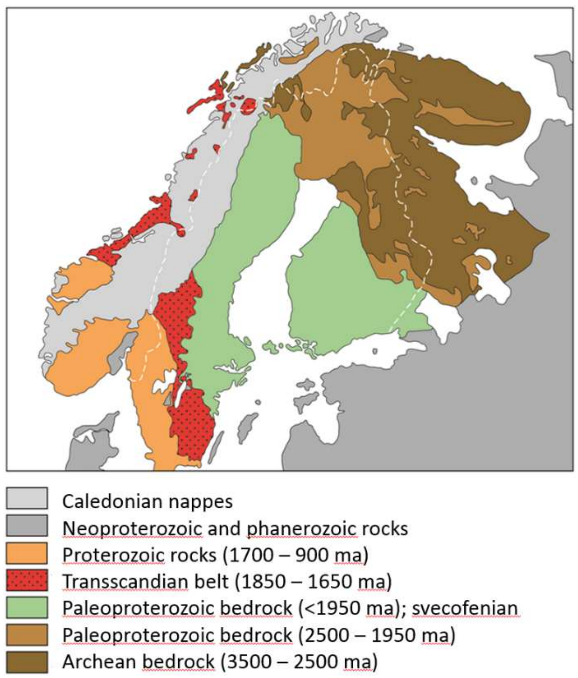


*Figure 4. Simplified geological map over the Fennoscandian shield. The map shows the main classification according to age (ma: million years) and type of the geological units (modified after Ramberg et al. 2006).*

The remnants of the 500 to 400 million years old Caledonian mountain range extents from northern Ireland, Scotland, Scandinavia, Svalbard, eastern Greenland and parts of north-central Europe. It was formed by the closure of the Iapetus Ocean when the continents of Laurentia and Baltica collided. When two continents collide in such an orogenic event, one of them tends to go down. As a modern day example, India is currently being pressed down below Tibet (Eurasia). In a very similar way, Scandinavia was subducted (pressed) underneath Greenland/Laurentia around 420 to 400 million years ago. During this process, the margin of Baltica was heterogeneously deformed and metamorphosed. Deformation and metamorphism increases more and more the closer we get to the actual collision zone. Additionally, thrust nappes that during collision were ripped off the margin of Baltica, parts of Laurentia and fragments of island arc complexes originating from the paleo-ocean called Iapetus are where tectonically emplaced (thrusted) on top of the Baltic bedrock. These thrust sheets/nappe series are often referred to as allochthones units (uppermost, upper, middle and lower allochthones). The Caledonian allochthonous units are illustrated in Figure 5.

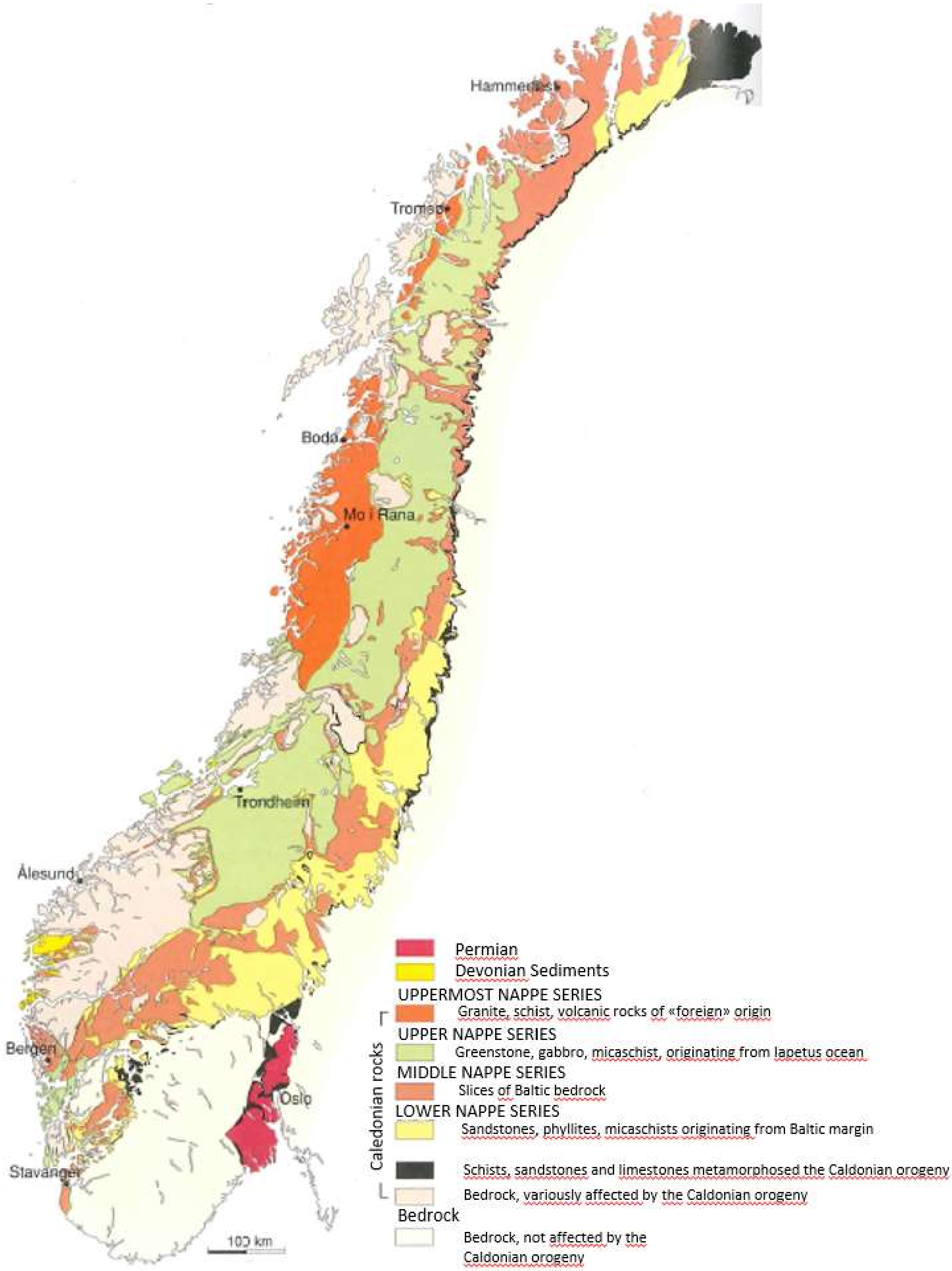


*Figure 5. Geological map showing the different allochthonous nappe units in the Norwegian part of the Caledonian mountain range (Ramberg et al. 2006).*

## 2.2 Regional geology

The geology in Nordland County in northern Norway mirrors very much the general geology in Norway. Caledonian nappes (mainly the upper and uppermost nappe units) dominate and lie on top of the autochthonous basement gneisses that are exposed in so-called tectonic windows. In Nordland these windows are the Høgtuva, Nasafjellet, Tysfjord windows.

Figure 6shows a map illustrating the extent of the Caledonian upper and uppermost nappe units in Nordland and Trøndelag (greenish and orange coloured units). The upper nappe units is build up the Seve - and Køli nappes. The Seve unit consists of a fairly heterogeneous collection of different nappes. The lithologies range from ultramafic and mafic rock sequences to metapelitic and psamitic gneisses. These rocks represent the transition zone between the Baltic shield and the Iapetus ocean. The Köli nappes also include a very large number of ultramafic bodies of all sizes and varied sedimentary (partly fossiliferous) and volcanic/igneous rocks. The units represent the relics of the former Iapetus ocean and local marginal basins. The uppermost nappe unit (with its sub-units Helgeland nappe complex and Rødingfjell nappe complex) represent remnants of the western part of the continental margin as well as the former ocean floor of the Iapetus Ocean. Rock types present include Precambrian continental rocks, Caledonian granitoids as well as metasediments such as mica schists and calcite-/dolomite marbles.

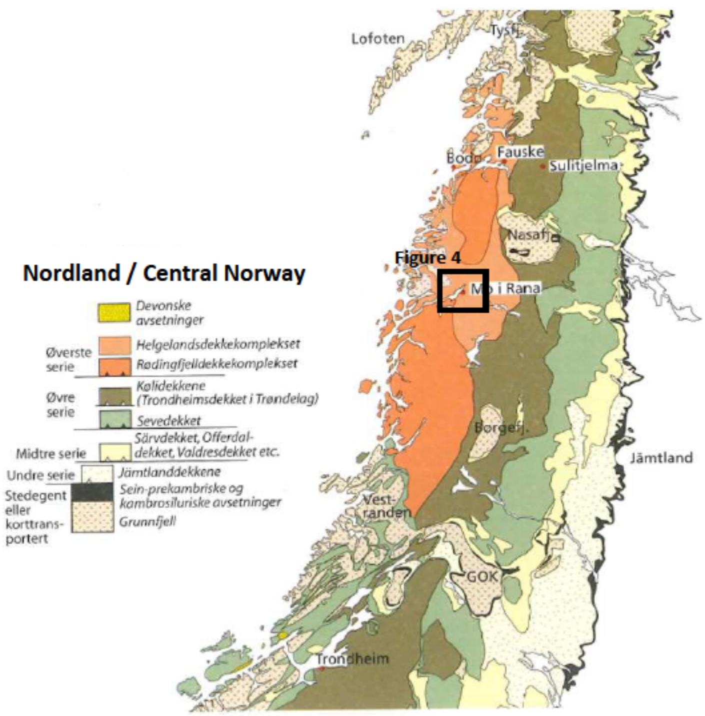


*Figure 6. Map showing the main stratigraphic units and tectonic nappe series (thrust sheets) in Nordland and Midt-Norge (Ramberg et al. 2006).*

It is within the Rødingfjell nappe complex the known mineralizations and deposits (e.g. the Mofjellet Zn-Pb-Cu-Au and the Ørtfjellet iron ore deposit) in Rana municipality are found. In Rana the Rødingfjellet nappe complex is build up by sub-units called the Mofjell group, the Plurdal group and the Ørtfjellet group, Figure 7. The Mofjell group in general is dominated by massive grey gneisses with layer nog amphibolite and aluminous biotite and muscovite gneisses. Regionally this unit is part of the Rana-Hemnes Zn-Pb-Cu metallogenic area that host several both larger and smaller deposits. The two largest deposits known to date in the Mofjell group are the Bleikvassli and the Mofjellet deposits. The hosting lithologies are metasedimentary sequences with minor intercalations of mafic and felsic metavolcanic rocks. According to Grenne et al. (1999), most of these sequences were probably deposited on the margin of the Laurentian plate during rifting of Rodinia and development of an Atlantic-type or passive margin.

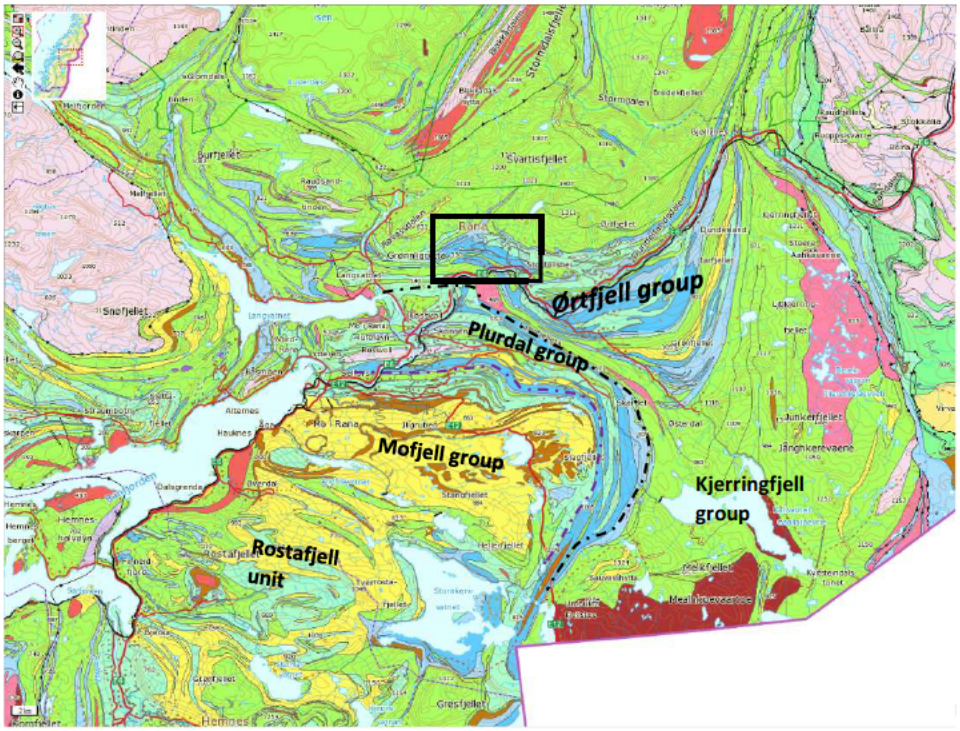


*Figure 7. Geological map of the Rana area in Nordland county, northern Norway (Source: www.ngu.no). The stippled black line outlines the tectonic contact between the Ørtfjell and Plurdal group (Langfjell tectonic zone). Blue colours are calcite and dolomite marbles, blue-green colours are calcareous schists, green colours are various mica schists (partly kyanite, graphite and/or garnet bearing), brown colours are amphibolites, brown-red colours are gabbros and red/pink colours are granitic rocks.*

The known iron ore mineralizations and deposits in the Dunderland valley belong to the Ørtfjell Group. The immediate host rocks of the mineralizations are mica schists of various types (garnet bearing, carboniferous), but the schists themselves occur in a sequence dominated by dolomitic and calcitic marble several hundred meters thick (see also figures 8). Due to the tectonic overprint in the region both the host rock and the iron ore formations are strongly folded and often show a distinct cleavage underlined by the occurrence of flaky hematite crystals (specularite). In general, the ore can be described as an iron-oxide rich mica schist. The outcropping iron oxide deposits and mineralization cover an area of about 105 km$^2$ in the Dunderland valley north of Mo i Rana.

# 3 Exploration

## 3.1 Geological Mapping

The iron ore mineralization in the Dunderland valley were first mentioned in literature in 1828 by Bergmester H.C.Strøm. Strøm describes the rock type as iron-micaschists. However, the first serious attempts to investigate the area started 1880 to 1890 by engineer Hasselblom. This work and more geological mapping and some core drilling was later carried on by the Dunderland Iron Ore Company (DIOC) and focused mainly on the Bjørnhei, Vesteråli, Finnkåteng and Ørtvann area. The early history of mapping and ore production is described in detail by Oxaal (1919).

Later, from the late 1940's onward intensive mapping and diamond drilling were main activities in the Dunderland valley carried out by Rana Gruber AS (RG). All geological mapping was primarily done by RG's geologists in scale 1:2000 and 1:1000. Results from this detailed mapping were compiled in a regional map covering large parts of the Dunderland valley ore district (Søvegjarto 1986). Figure 8 illustrates the geology in the area Stensundtjern/Finnkåteng with focus on the mapped ore bodies. These maps also form the base for the published geological maps by the geological survey of Norway (NGU), sheets "Storforshei" and "Dunderlandsdalen" scale 1:50 000 covering the area (Søvegjarto et al. 1989, Gjelle et al. 1991).

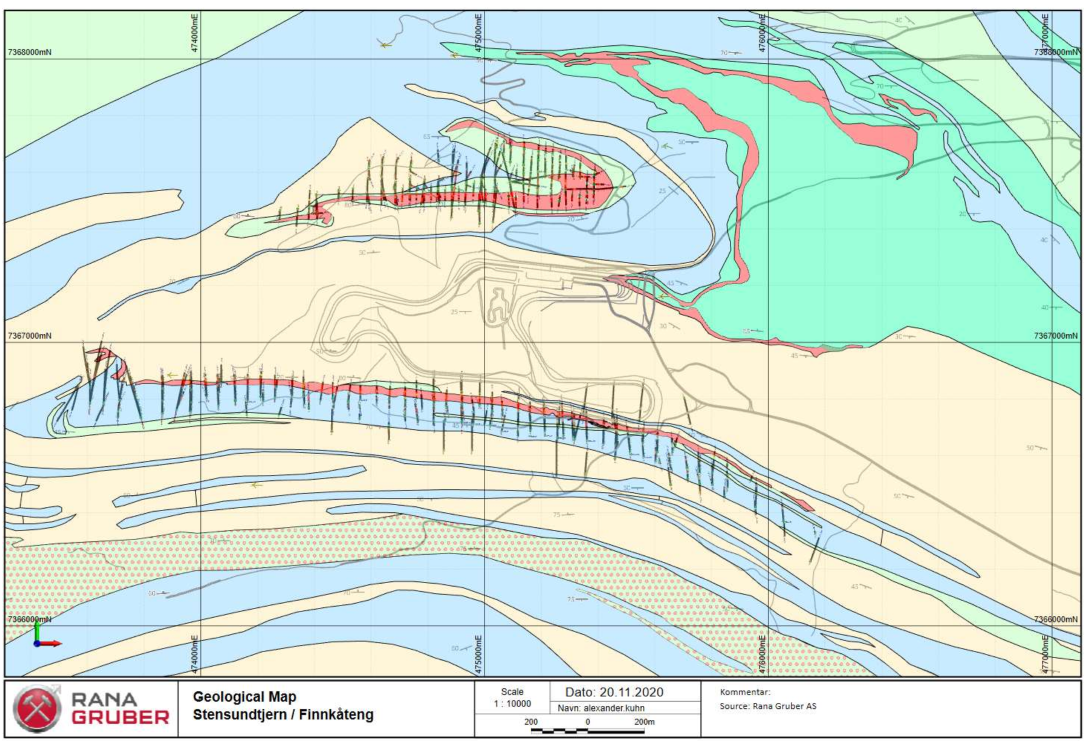


*Figure 8. Geological map of the Stensundtjern and Finnkåteng iron ore formations (Source Rana Gruber AS, 1973-2020).*

## 3.2 Diamond drilling

During the exploration works carried out by Rana Gruber, diamond drilling has been conducted at numerous iron ore deposits/mineralisations, in the Dunderland valley starting in the late 1940s. However, diamond drilling was concentrated on the main ore deposits Ørtvann, Vesteråli, Stensundtjern, Finnkåtaeng and Ørtfjell. All core drilling in the Stensundtjern and Finnkåteng area has been done from the surface.

This large exploration drilling program ended around 1986 after drilling more than 1400 (1410) boreholes totalling 185 107m of drill core (see Table 2). Until 1973/74 the entire core material was drilled with a diameter of 22mm. Thereafter, from approximately borehole no. 955, the entire core material had a diameter of 35mm.

After approx. 1950 most of drill holes were measured for deviation. The oldest deviation measurements were performed using the HF etching method. Later, from the late 1960's onwards both the Craelius orientation and the Fotobor method were applied.

In 2012 diamond drilling commenced in the Stensundtjern area and in 2014 in the Finnkåteng area to both increase the geological understanding, to increase the ore resources and reserves as well as for quality control of historically acquired exploration data. All modern drill cores have a core diameter of 46mm.

All holes drilled after 2012 (and longer than 100m in length) were measured for hole deviation using a non-magnetic Devico DeviFlex instrument. The Deviflex instrument uses three accelerometers and four strain gauges to calculate changes in inclinations and azimuth. The instrument communicates with a PDA for immediate viewing of data and quality check. Current standard of operations at Rana Gruber states that all holes exceeding 100m in length must be measured for drill hole deviation. Drill hole deviation is measured in 3m steps both down- and up-the hole.

*Table 2. Diamond drilling in the Dunderland Iron ore formation.*

| Area | Year | 1901 to 1986 | 2009 to 2014 |
|---|---|---|---|
| Ørtfjell | # holes | 592.00 | 47.00 |
| | meter drilled | 101 591.60 | 7 070.00 |
| Nord Dunderland | # holes | 40.00 | 4.00 |
| | meter drilled | 5 115.50 | 1 283.90 |
| Stensundtjern | # holes | 212.00 | 37.00 |
| | meter drilled | 20 225.80 | 7 120.50 |
| Lomli | # holes | 9.00 | 12.00 |
| | meter drilled | 1 304.10 | 3 556.20 |
| Bjørnhei | # holes | 10.00 | - |
| | meter drilled | 932.81 | - |
| Vesteråli | # holes | 168.00 | - |
| | meter drilled | 14 411.89 | - |
| Finnkåteng | # holes | 151.00 | 8.00 |
| | meter drilled | 12 934.90 | 2 251.00 |
| Ørtvann | # holes | 197.00 | - |
| | meter drilled | 25 090.00 | - |
| Neverhaugen | # holes | 10.00 | - |
| | meter drilled | 934.35 | - |
| Ørtfjellmo | # holes | 21.00 | - |
| | meter drilled | 2 567.64 | - |
| **Total number** | | **1 410.00** | **108.00** |
| **Total meter drilled** | | **185 108.59** | **21 281.60** |

Drill cores were logged by company geologists, mineralized sections were marked, split and one half of the core assayed at Rana Gruber's raw material laboratory for its iron content (both Fe total and Fe magnetic were assayed) as well as its MnO and S content. The other half of the core was placed back in the core tray and stored for further investigations. Standard procedures then stated that the sample size of a mineralized section to be analyzed should not exceed 7m length.

The raw material laboratory at Rana Gruber AS uses internationally recognized standard procedures for chemical assaying of total iron content, sulfur and MnO for all raw material (rock samples, core samples and operational samples as well as final products).

- Total iron content: follow ISO 2597-1: Iron ores- Determination of Total Iron Content, Part 1: Titrimetric method after tin(II)chlorite reduction / ISO 9607:1990, method 2: Iron ore-determination of total iron content - Titanium(III)chloride reduction methods
- Fe magnetic: The Outokompo OY Satmagan instrument is used to measure the magnetite content of the iron ore by saturation magnetization of the samples
- Sulfur (S): ISO 4689-3 “Iron ores – Determination of Sulfur Content, Part 3; Combustion/Infrared method
- MnO is determined using UV/VIS spectrometric methods (Lambda35 photospectrometer)

All analytical methods are described in detail in Rana Gruber procedures and all analyses are performed against international recognized standards.

Most of the historic drill cores and all modern drill cores are available for investigation and are catalogued and stored at Rana Gruber’s core storage at Storforshei.

All drill holes belonging to the Stensundtjern, Finnkåteng as well as Ørtfjell, Lomli, Ørtvann and Nord Dunderland ore bodies are digitized into a database and included in RG’s drill hole databases and mine planning software. As an example, Figure 9 illustrates the digitized drill hole trajectories for the Finnkåteng, Stensundtjern deposits.

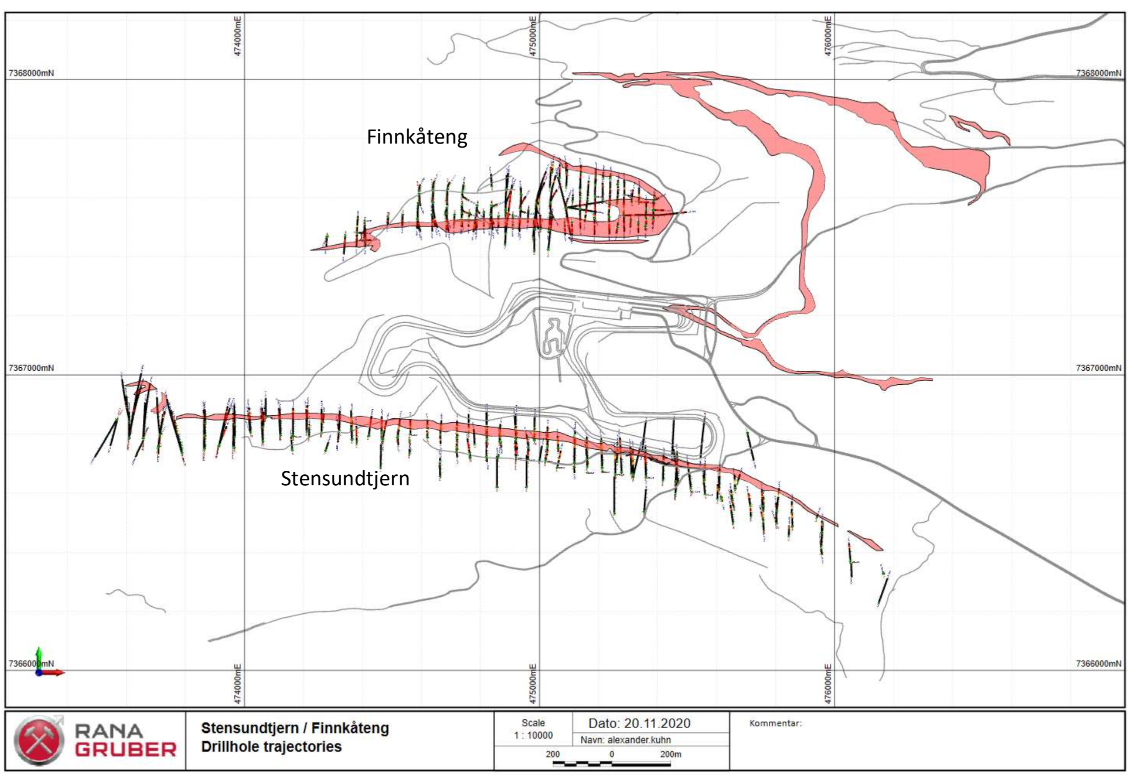


*Figure 9. Drill hole trajectories and outlines of the mapped iron ore mineralization (red) at surface in the Stensundtjern and Finnkåteng area.*

## 3.3 Ore geology

The iron ore contains an average of 30 to 34 % iron in the form of the oxide minerals hematite ($Fe_2O_3$) and magnetite ($Fe_3O_4$). The ration of hematite to magnetite varies between the different orebodies found in the Dunderland valley. While the Kvannevann ore body is strongly hematite dominated 97-5 to 98% hematite) other ore bodies like e.g. Stensundtjern and Ørtvatnet display quite different hematite to magnetite ratios with magnetite contents rising op to 15% of the total iron oxide content. Typical gangue minerals are quartz, feldspar, calcite/dolomite, epidote, chlorite, mica, amphibole and apatite.

The main types of ore found can be characterized as sandy hematite, flaky hematite, magnetite-hematite- ore and magnetite ore.

The *sandy hematite ore* is often banded, with alternating layers of hematite and quarts (mm-scale, see Figure 10a) and is equigranular in appearance with straight grain boundaries. The average grain size is about 20µm and the hematite crystals show a random orientation in thin section. The quartz rich bands contain some disseminated hematite crystals.

Due to the heavy tectonic and metamorphic overprint we quite often observe *flaky hematite (specularite) ore* (Figure 10b) containing hematite crystals that underline the strongly foliated nature of the ore. The ore is banded with alternating layers containing hematite, quarts and carbonates. Typically, the bands are folded and the ore has an equigranular texture with straight grain boundaries. Compared to the sandy hematite, the hematite occurs as tabular and elongated grains and has larger grain sizes in the range of 40 to 50µm. In general, the hematite is orientated along the folded layering and foliation. However, some hematite grains have grown over these orientated crystals especially in fold axes (Figure 11).

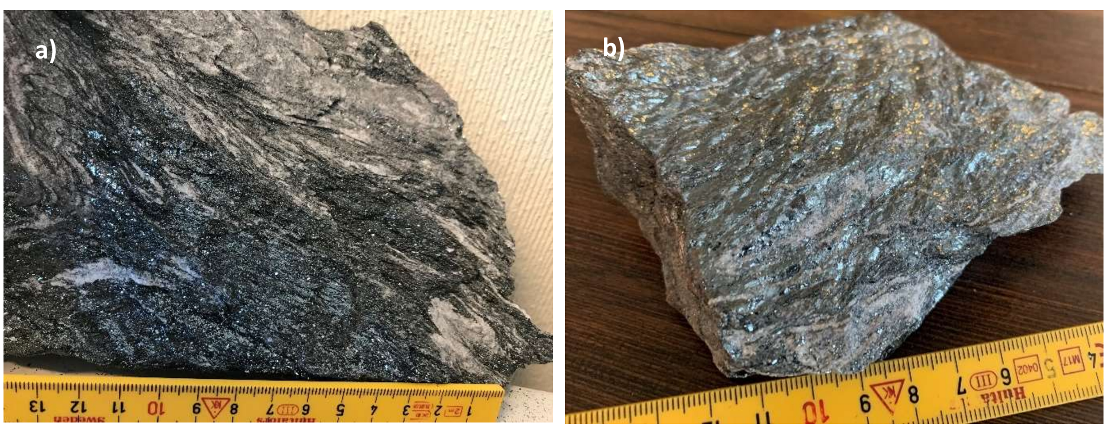


*Figure 10. (a) typical sandy hematite ore, b) flaky hematite ore (specularite ore).*

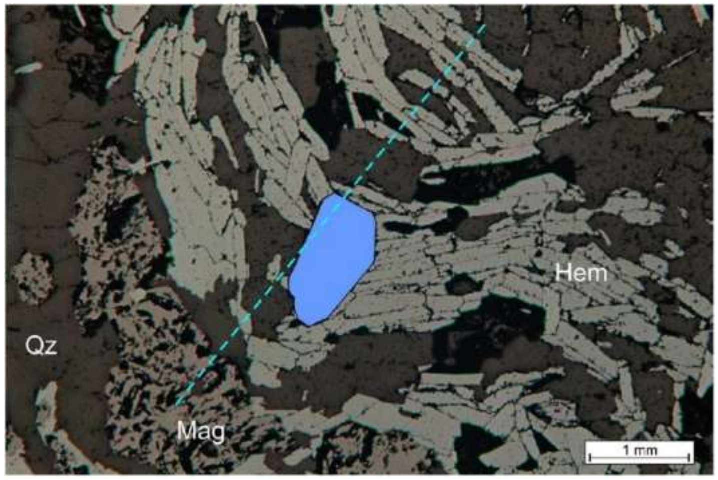


*Figure 11. Two generations of hematite crystals, folded tabular and elongated hematite overgrown by a second generation of hematite (blue grain) along fold axis (Martinussen 2014)*

Very often the ore contains both hematite and magnetite with hematite being the most prominent oxide mineral. This *magnetite-hematite ore* is layered and folded quite similar to the sandy and flaky ore types. The amount of magnetite varies between 1-2% in the Kvannevann ore and 9-10% in the Stensundtjern ore. The hematite is tabular and elongated in shape and is oriented along the prominent foliation and has a typical grain size of 30µm. In contrary, the magnetite has a much larger grain sizes (1 mm) and shows no apparent orientation.

The *magnetite ore* is coarse grained with an average grain size of 0.5cm, grain boundaries are straight to slightly irregular, and magnetite crystals occur rounded while hematite has a tabular shape.

## 3.4 Geophysical investigations

In 2012, Rana Gruber AS together with the geological survey of Norway (NGU) conducted an airborne geophysical survey in the Dunderland valley area (Rodionov et al. 2012). The area of investigation is shown in Figure 12. This survey resulted in high-resolution maps of the investigated area showing the total magnetic field, apparent resistivity, Uranium ground concentration, Thorium ground concentration, Potassium ground concentration and more. As an example, Figure 13shows the result of the total magnetic field as recorded by the 2012 survey.

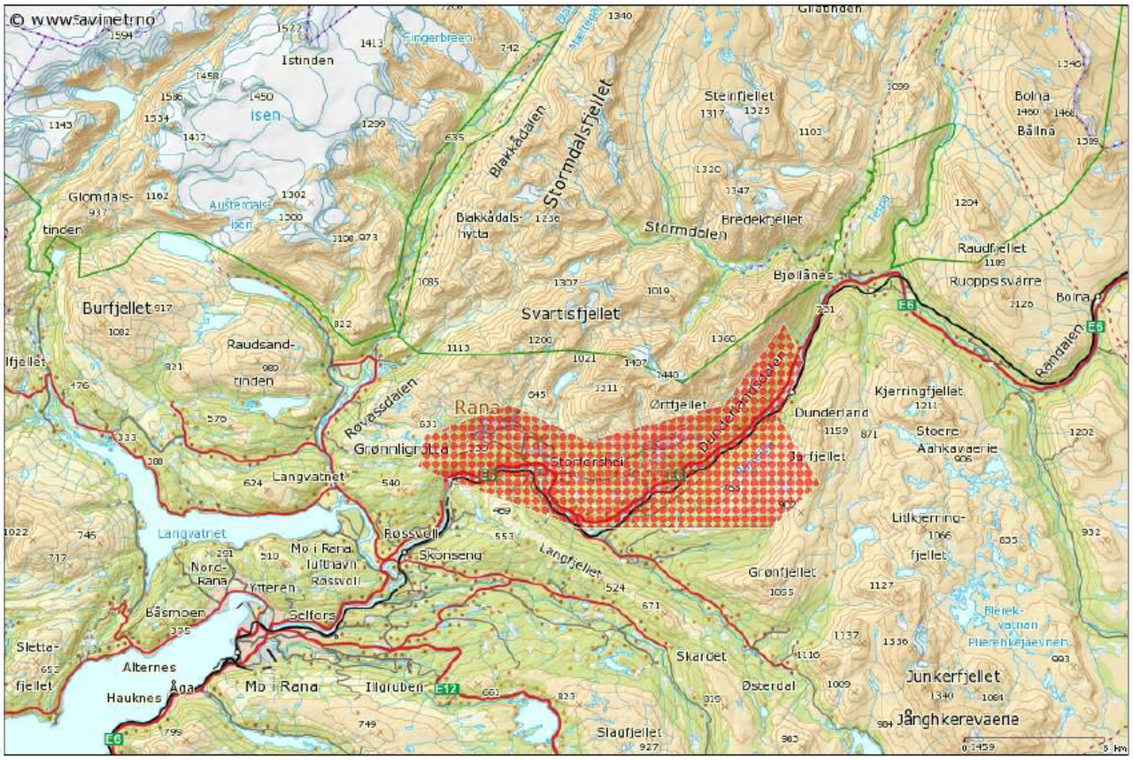


*Figure 12. Surveyed area, location map of the 2012 airborne geophysical survey (Rodionov et al. 2012).*

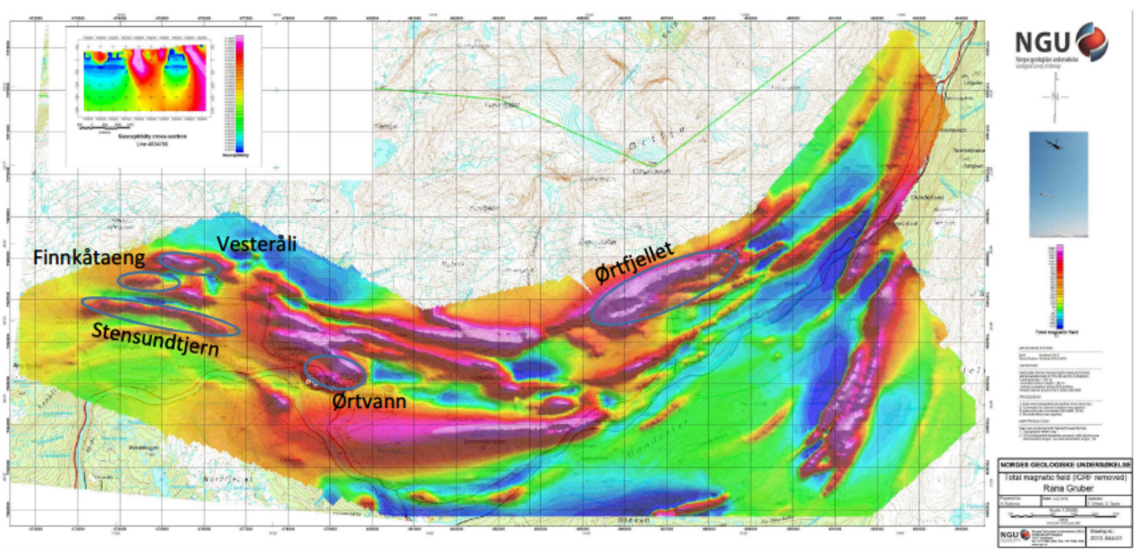


*Figure 13. Total magnetic field obtained by the 2012 airborne geophysical survey (Rodionov et al. 2012).*

# 4 Mineral resource estimates

## 4.1 Geological modelling

As part of an ongoing process to certify all ore deposits according to the international NI-43101 / PERC standards, updated modelling and estimation has been conducted starting in 2019 with the Kvannevann deposit that is currently in production. In early 2020 Rana Gruber began the certification process for the remaining deposits at Stensundtjern, Finnkåteng, Ørtvann and Nord-Dunderland. All modelling and resource estimation has been conducted in cooperation with an independent consultant, Howard Baker, from Baker Geological Services (BGS) located in the UK. The modelling and estimation results presented in the following sections are from this recent work and are thus compliant with the National Instrument 43101 (NI-43101).

The original ore models were based on observations and structural measurements collected from surface outcrops, from geological maps as well as from drill hole logs. Distance between the drilling profiles within the different deposits is approximately 50m. Fans or single holes were drilled from the collar locations. All deposits have been drilled with collar locations on the surface.

The geological models for the mineralized zones were constructed as solid models (triangulated models). The surface maps of the outcropping ore zones, results from face mapping underground, drill hole data as well as structural data were digitized/collected and used as a base for implicit modelling of the ore zones. The updated models presented in this document as shown in Figure 14 and Figure 15 were provided by BGS and were generated using Implicit Modelling in Leapfrog. It should be noted that parts of the Stensundtjern and Finnkåteng deposits have already been mined but were still included in the modelling process. This enabled all exploration data to be used and allowed for a more comprehensive statistical and geostatistical study to be completed. The mined areas were later clipped by the current topography. Adjacent lithologies were also modelled to provide context and increased control over ore boundaries and future planning of pit designs.

Based on grade and other statistical indicators, a high-magnetite (> 10 %) domain was modelled in the Stensundtjern iron formation. Internal waste domains have been modelled and accounted for in both deposits. The table below shows an overview of the modelled ore domains (Table 3).

*Table 3. Overview over the modeled domains at Stensundtjern and FInnkåteng.*

| Area | Zone | Ore Domain Type |
|---|---|---|
| Stensundtjern | 100 | Primary Iron Formation |
| | 101 | High Fe-mag domain with > 10% Fe-mag |
| | 102 | Secondary Iron Formation |
| Finnkåteng | 100 | Iron Formation |

[redacted]

*Figure 14. Geological models for the Stensundtjern iron ore formation, primary iron ore formation (red) / high FE_MAG domain (black).*

*Figure 15. Geological model for the Finnkåteng iron ore formation, the model has been cut against the existing open pit.*

## 4.2 Geostatistics and block models

Comprehensive statistical analyses have been performed on the available assay data to make certain they are suited for the estimation processes. Significant re-assaying and re-sampling of some of the drill cores has been conducted in order to quality check the older data. The total amount of included samples and mean grade for each element are listed in Table 4 and Table 5.

In banded iron formations there is often a strong correlation between analytes, especially FE_TOT and FE_MAG. By analyzing the correlation between these two and the overall grade distribution in the deposits, it was determined as appropriate to model a separate high-magnetite domain in the Stensundtjern deposit. The cut-off for this domain was set at >10 % magnetite based on distinct cluster on the scatter plot for FE_TOT against FE_MAG (Figure 16). The effect of this is clearly visible when viewing the results of the contact analysis before and after domaining (Figure 17). Additional domaining was not found necessary for Finnkåteng.

Compositing was undertaken in intervals according to the average sample intervals from the raw drillhole logging and all shorter residual composites were added to the previous interval. The process assumes equal weighting per composite, and it is generally regarded as necessary to discard remnants that are generated in the downhole compositing process to avoid bias in the estimation. However, a composite length analysis was performed and resulted in no significant change in mean grades, and it was therefore decided to keep all intervals, meaning no shorter intervals were discarded.

Variography was successfully performed and allowed the generation of suitably reliable interpolation parameter for further block model interpolation and resource estimation. Because the deposits are part of a folded iron formation, unfolding of the composited data points was performed to “fold” the deposits back to its original stratigraphic shape. This process mimics the original geology before folding took place and leads to more accurate statistical analysis between data points.

*Table 4. Amount of available assay data for each modelled zone in the Stensundtjern and Finnkåteng iron formations.*

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*Table 5. Estimated mean grade for the Stensundtjern and Finnkåteng iron ore formations.*

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| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

[redacted]

*Figure 16. Scatter plot of FE_TOT vs. FEMAG for Stensundtjern showing a distinct cluster of values with a cut-off at around 10% FEMAG.*

*Figure 17. Results of contact analysis of FE_MAG distribution across the domain boundaries before (right) and after (left) domaining.*

A single block model was used to estimate each deposit, but for Stensundtjern the estimation was contained within each of the three modelled ore domains. The block model dimensions are the same for both deposits and are considered appropriate for the spatial resolution of the source data. The dimensions are as follows:

- X: 25 meters
- Y: 10 meters
- Z: 5 meters

The block model interpolation has been validated by visual inspection, comparison of the global mean grades against sample grades and swath plot validation. The latter is a very useful tool to investigate how the modeled block grades compare to the input composite grades that were used to generate them.

Figure 18 shows the block model results colour coded for FeTot and FeMag for the Stensundtjern iron formation, Figure 19 illustrates the FeTot block model in a vertical cross section (central part of the deposit).

*Figure 18. Result of block modeling estimation (FeTot and FeMag) for the Stensundtjern iron ore formation.*

[redacted]

*Figure 19. Cross section through the central part of the Stensundtjern iron ore formation showing the spatial distribution of FeTot within the ore body.*

## 4.3 Resource estimation

Based on the ongoing work for NI43-101 certification by BGS, the mineral resource for Stensundtjern and Finnkåteng deposits have been estimated [redacted]. A detailed summary in accordance with NI43-101 is given in Table 6 and Table 7.

*Table 6. Resource estimation for the Stensundtjern deposit, generated by BGS (100 = primary hematite ore, 101 = magnetite-rich domain > 10% FE_MAG, 102 = secondary hematite ore).*

| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
|---|---|---|---|---|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

*Table 7. Resource estimation for the Finnkåteng deposit, generated by BGS.*

| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
|---|---|---|---|---|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | | [redacted] | [redacted] | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

# 5 Mine plan / Open pit plans

Production in both the Stensundtjern and Finnkåteng iron ore formations is planned in open pits. Initial plans indicate the feasibility to produce [redacted] with an average FeTot content of [redacted] at Stensundtjern and roughly [redacted] with an average FeTot content of [redacted] at Finnkåteng. Details of these initial plans are summarized in Table 8 and illustrated in Figure 20 and Figure 21.

*Table 8. Summary og the expected tons and grades from the Stensundtjern and Finnkåteng iron ore formations.*

| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
|---|---|---|---|---|---|---|---|---|
| [redacted] | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

| [redacted] | [redacted] | [redacted] | | [redacted] | [redacted] | | [redacted] | [redacted] |
|---|---|---|---|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

[redacted]

*Figure 20. Pit shells illustrating several production stages and push backs in the Stensundtjern deposit.*

[redacted]

*Figure 21. Initial plan for re-opening production in an open pit operation in the Finnkåteng iron ore formation.*

# 6 Economic considerations

## 6.1 Beneficiation and processing

[redacted]

## 6.2 Operational and capital costs

[redacted]

[redacted]

[redacted]

*Table 9. Cost/revenue estimate for the combined Stensundtjern and Finnkåteng open pit operations, Storforshei.*

| | | ton | NOK/t | NOK | NOK |
|---|---|---|---|---|---|
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | | [redacted] | [redacted] | | |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | | | | [redacted] | [redacted] |
| [redacted] | | | | | |
| | | | [redacted] | | [redacted] |
| [redacted] | [redacted] | [redacted] | [redacted] | | [redacted] |
| | [redacted] | [redacted] | [redacted] | | [redacted] |
| | | | | [redacted] | [redacted] |
| [redacted] | | | | | |
| | [redacted] | | | | [redacted] |
| | [redacted] | | | | |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | [redacted] | | | [redacted] | [redacted] |
| | [redacted] | | | [redacted] | |
| | [redacted] | | | [redacted] | |
| | [redacted] | | | | |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | [redacted] | [redacted] | [redacted] | [redacted] | |
| | | | | [redacted] | [redacted] |
| | | | | [redacted] | [redacted] |

## 7 Current mining operations

All mining activities are currently concentrated in the Ørtfjellet area where Rana Gruber AS operates both an underground (Kvannevann mine) and two satellite deposits that are mined in open pit mines (Kvannevann East pit and Nordmalm pit).

Underground operations commence in a sublevel caving mine planned with 4 sublevels with a vertical spacing of 32m (level 219, level 187, level 155 and level 123) and 22m horizontal spacing between the production/extraction drives.

Each level comprises a haulage drive situated in the footwall and orientated parallel to the strike of the ore body as well as a number of production/extraction drives that run the width of the ore body from the haulage drive all the way towards the hanging wall. 4 ore passes are placed strategically along the strike of the developed drives. The main level at 123 comprises a crusher, workshops, offices and a canteen for the miners.

Above surface, ore and waste is broken by traditional open pit methods on benches with a height of 15m. The final pit wall is established with a bench height of 15m and a bench width of 10m, resulting in an average pit slope of about 56 degrees. Towards the hanging wall double bench heights are established. This is possible due stable rock type and favorable orientation of both layering, foliation and prevalent fracture sets.

Combined, these operations produce roughly [redacted] and approx. [redacted] per year. The iron ore is transported by railway to the beneficiation plant in Mo i Rana.

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## APPENDIX A

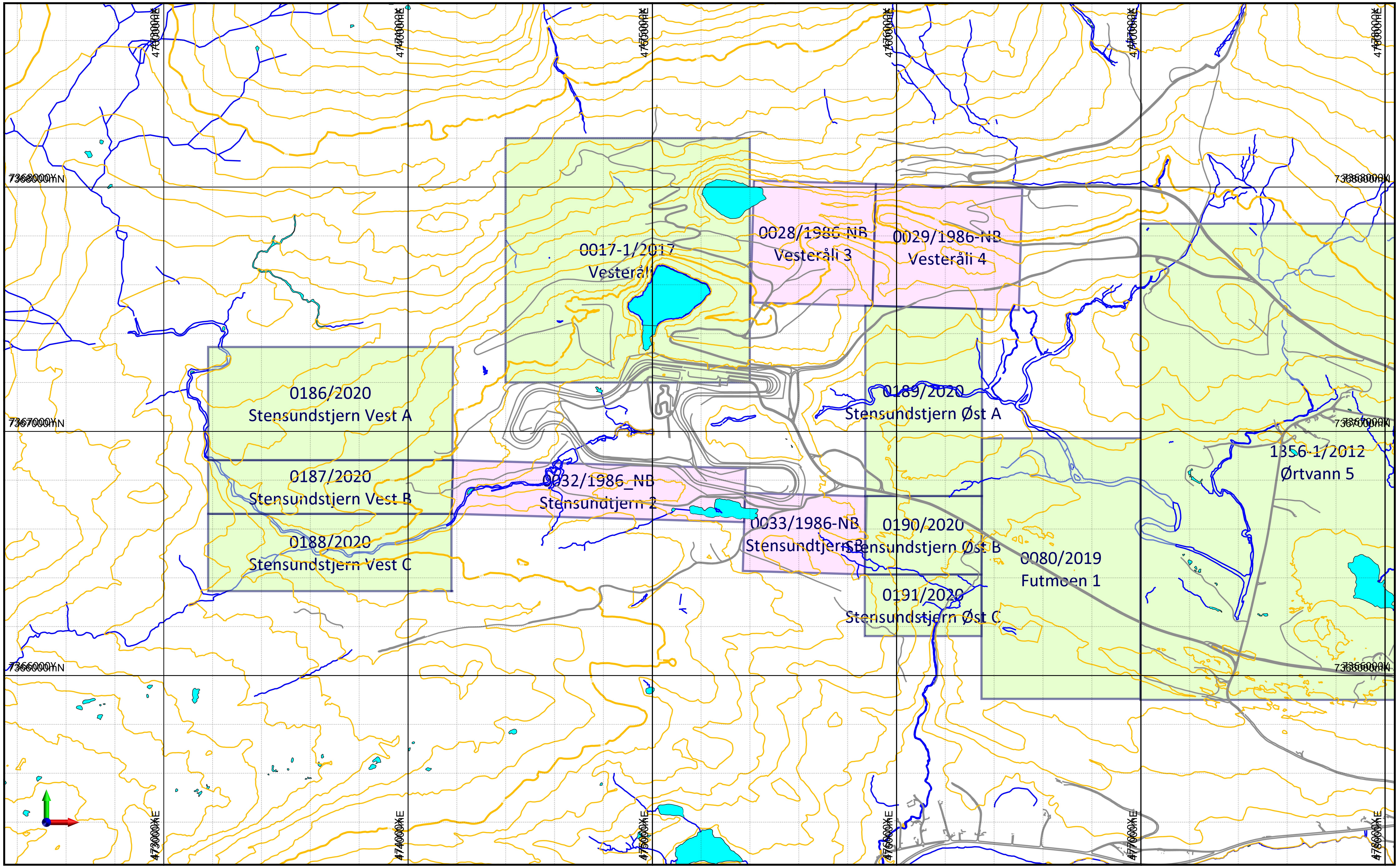
A1 Overview map showing existing mining rights, Stensundtjern & Finnkåteng

A2 Stensundtjern and Finnkåteng, new mining rights

A3 Stensundtjern Vest

A4 Stensundtjern Øst

A5 Finnkåteng




RANA GRUBER

**Undersøkelses- og Utvinningsrett**
**Stensundtjern/Finkåteng area**

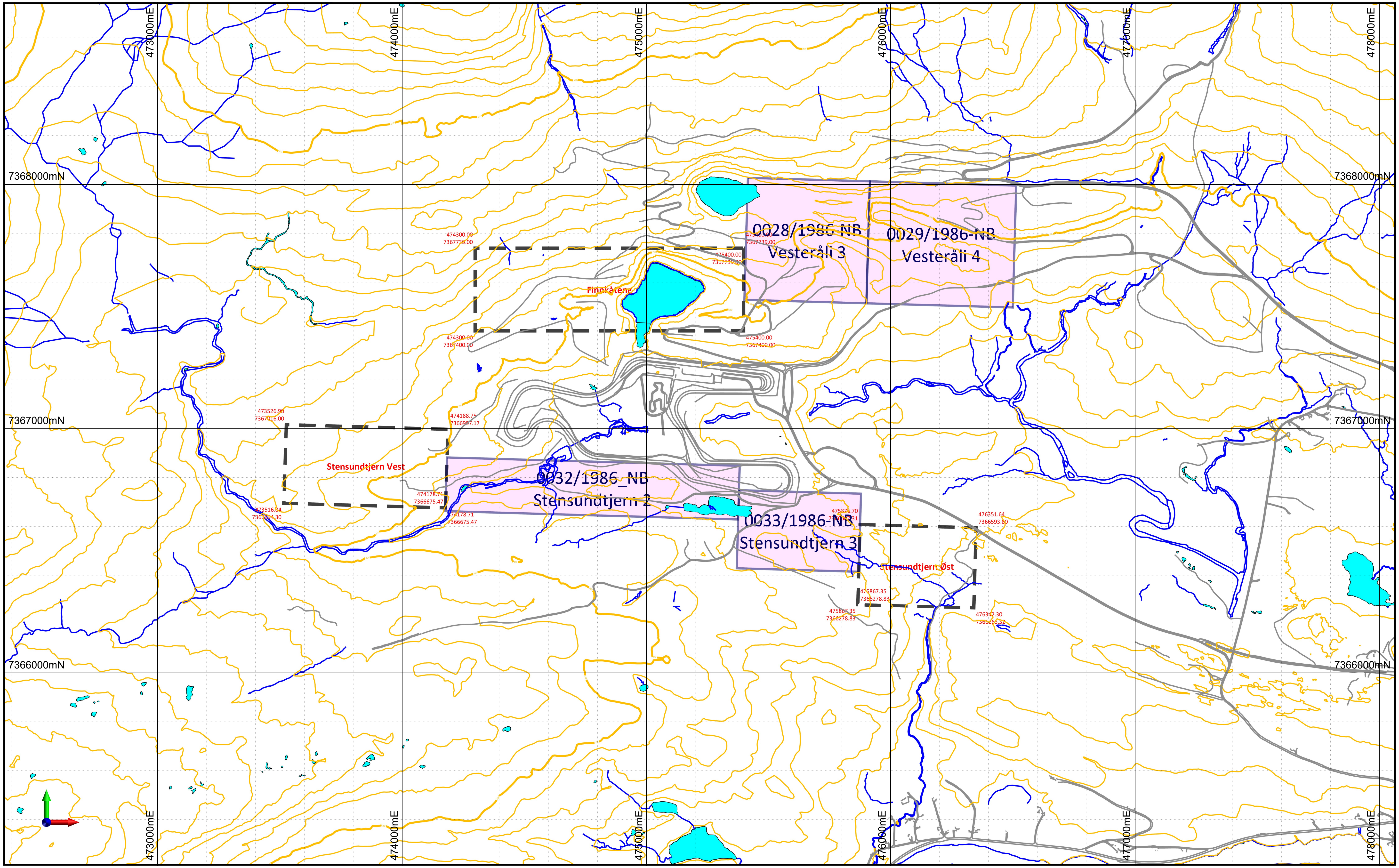
Scale
1 : 15000

200 0 200m

Dato: 19.11.2020

Navn: alexander.kuhn

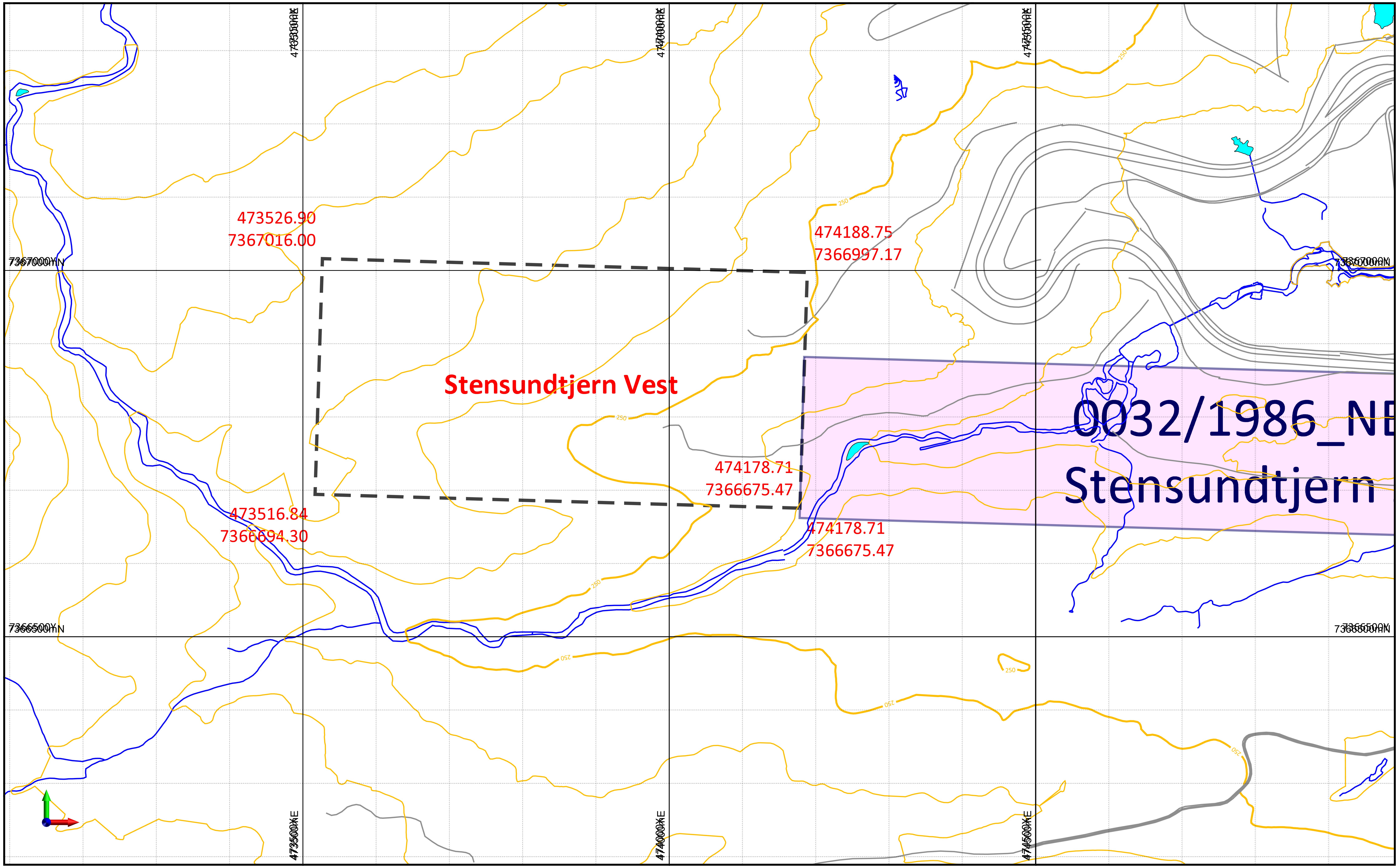
Kommentar:




RANA GRUBER

**Søknad Utvinningsrett**
**Stensundtjern / Finnkåteng**

| Scale 1 : 15000 | Dato: 30.11.2020 | Kommentar: |
|---|---|---|
| 200 0 200m | Navn: alexander.kuhn | |




RANA GRUBER

**Søknad Utvinningsrett**
**Stensundtjern Vest**

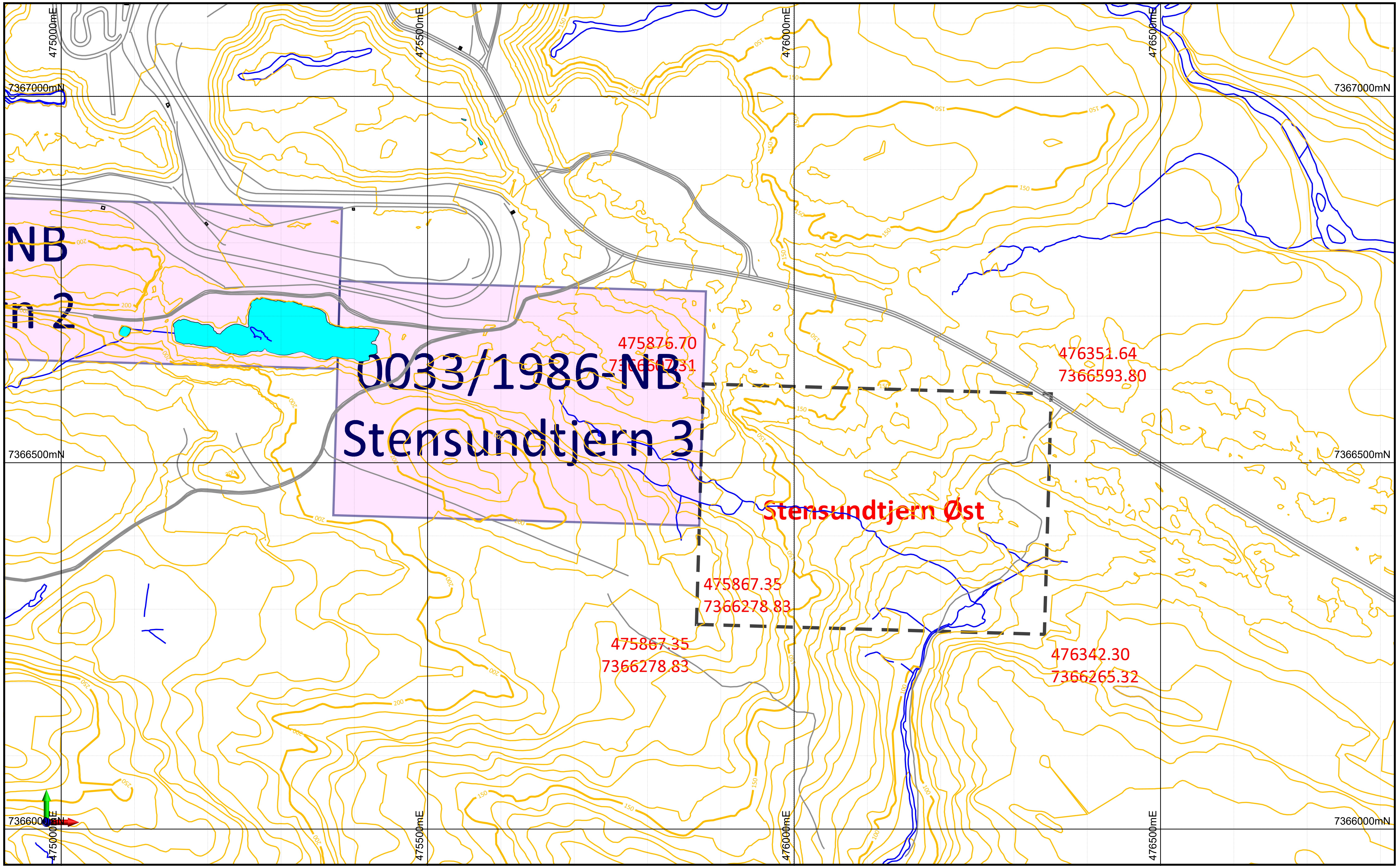
Scale 1 : 5000

Dato: 19.11.2020

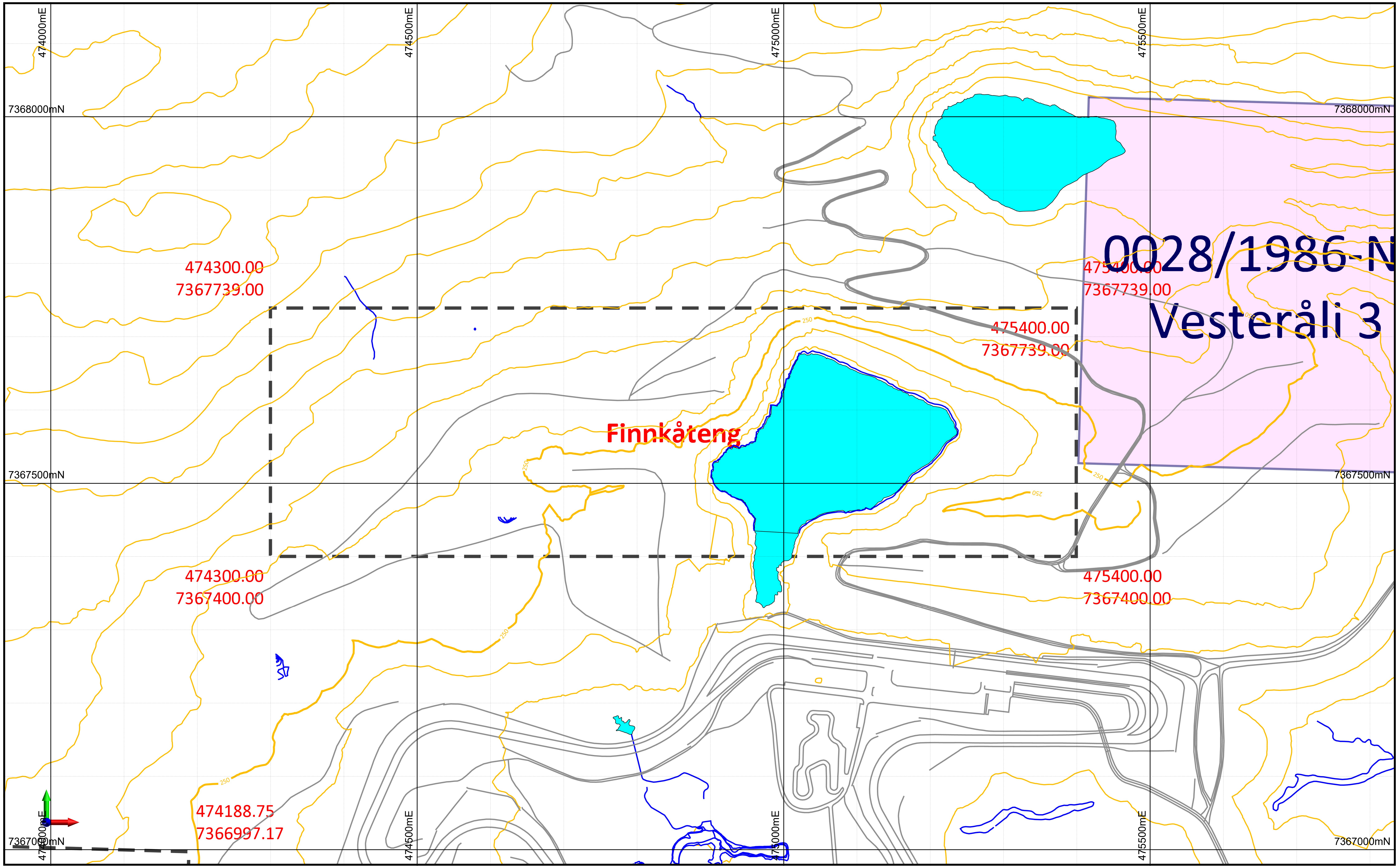
Navn: alexander.kuhn

100 0 100m

Kommentar:




| | | | |
|---|---|---|---|
| RANA GRUBER | **Søknad Utvinningsrett**<br>**Stensundtjern Øst** | Scale 1 : 5000<br>Dato: 18.11.2020<br>Navn: alexander.kuhn<br>100 0 100m | Kommentar: |




RANA GRUBER

**Søknad Utvinningsrett**
**Dinnkjåteng**

Scale
1 : 5000

Dato: 30.11.2020

Navn: alexander.kuhn

100 0 100m

Kommentar: