Cu-Au-Co (REE) potential in Kotka and Pirttikoski exploration targets

PROSPECTUS

Contents

GTK Open File Work Report 54/2019

GTK

Overview

This PROSPECTUS describes the geological context for the Kotka Cu-REE (±Au, Co) and Pirttikoski Cu-Au exploration targets recently explored by the Geological Survey of Finland. It also presents data on claim areas Kotka 1 (ML2016:0034) and Pirttikoski 1 (ML2012:0040). The report is accompanied by digital data that include the following data packages: Bedrock drilling, Bedrock observations, Ground geophysical surveys and Till geochemistry

Executive summary

GTK has performed geophysical surveys and drilling campaings at both the Kotka Cu-REE-(±Au-Co) and Pirttikoski Cu-Au exploration targets.
These surveys have detected interesting geophysical anomalies and mineralized zones.

Selected drill intercepts from Kotka and Pirttikoski; Tube size NQ, oriented core. NA = not available

Hole	From (m)	To (m)	Cu %	Co ppm	Au ppb	∑REE ppm	Intercept Length (m)
Kotka							
R33	57.3	58.3	3.5	1070.0	671.0	2945.4	1.0
R37	53.0	56.0	0.4	45.0	48.7	585.4	3.0
R38	61.6	64.6	0.2	220.0	118.3	2384.3	3.0
R38	77.9	78.6	0.6	2960.0	438.0	NA	0.7
R39	95.4	96.4	7.2	1790.0	514.0	6138.0	1.0
R48	8.0	13.0	0.4	91.8	32.5	128.4	5.0
Pirttikoski							
R18	66.0	67.0	1.8	272.0	52.0	NA	1.0
R19	6.0	23.0	0.3	21.2	7.0	NA	17.0
Including	19.0	20.0	2.9	98.0	70.0	NA	1.0
R311	32.2	41.3	0.4	30.0	6.1	NA	9.1
Including	40.8	41.3	3.4	320.0	30.0	NA	0.5
R26	14.6	15.6	2.0	359.0	94.0	NA	1.0

Proposed future exploration for Kotka and Pirttikoski targets

Since the extent of mineralized zones is unknown we recommend time domain electro-magnetic (TEM) and IP surveys with deeper depth penetration in the Kotka area and systematic electrical resistivity tomography (ERT) and IP surveys in the Pirttikoski area. The source of geophysical anomalies in both areas should be tested by drilling.

Welcome to Finland

Finland, in the center of the Fennoscandian Shield, has similar geology and metallogeny to other Precambrian shields in Canada and Australia. The distinct pro-mining attitude, political and economic stability, and clear mining and environmental legislation in Finland create favorable conditions for the mineral extraction industry. Finland has a highly developed infrastructure system, with good port facilities, an extensive high-voltage power grid, and a comprehensive road and airport network.

Geological Survey of Finland (GTK) is the national geological organization, operating under the Ministry of Employment and the Economy (http://en.gtk.fi/). One of the main duties of GTK as a national geoscientific information center is to promote and support mineral exploration and mining in Finland by providing high-quality data.

GTK also actively identifies and evaluates areas with mineral potential, in order to encourage follow-up exploration and exploitation by the private sector.

GTK offers public geological databases and other data resources, and a wide range of expert services. GTK also provides confidential and client-tailored services, which include broad geoscientific and technical knowhow.

Exploration projects in Finland, such as Sakatti Cu-Ni-PGE (Anglo American Finland), Rompas Au (Mawson Resources Ltd.), and Aamurusko Au (Aurion Resources Ltd.), highlight the ore potential and unexplored nature of the country. Based on Fraser Institute annual surveys, for a number of years Finland has been ranked as a highly attractive country for mining and exploration.

For more information on these exploration targets, please visit the Mining Finland website http://www.mining-finland.com/opportunities.

Location, access, and environmental statement

The Kotka (also known as Kotkajärvi or Kotkanpoika) Cu-REE-(±Au-Co) occurrence and the Pirttikoski (also known as Sauhula) Cu-Au occurrence are located in southern Finland, about 100 km NW of Helsinki and 25 km west of Hämeenlinna (Fig. 1).

The Kotka occurrence is located in the village of Kotkajärvi. Road access to the area is good all year. The GTK's claim area (Kotka 1 ML2016:0034) is mostly marsh and forest, with some outcrops in the eastern and western parts of the claim. There are no Natura2000 areas or other nature reservation areas within the claim. The Peurasuo Natura 2000 area is about 250 m south-east of the GTK's Kotka 1 claim area (Fig. 2).

The Pirttikoski occurrence is about 5 km west of the Kotka exploration target, south of Pirttikoski village. The GTK's claim area (Pirttikoski 1 ML2012:0040) is partly marsh and open outcrop area, with agricultural fields in the NW part. As with the Kotka exploration target, road access to the area is good and there are no Natura 2000 areas or other conservation areas near the claim.

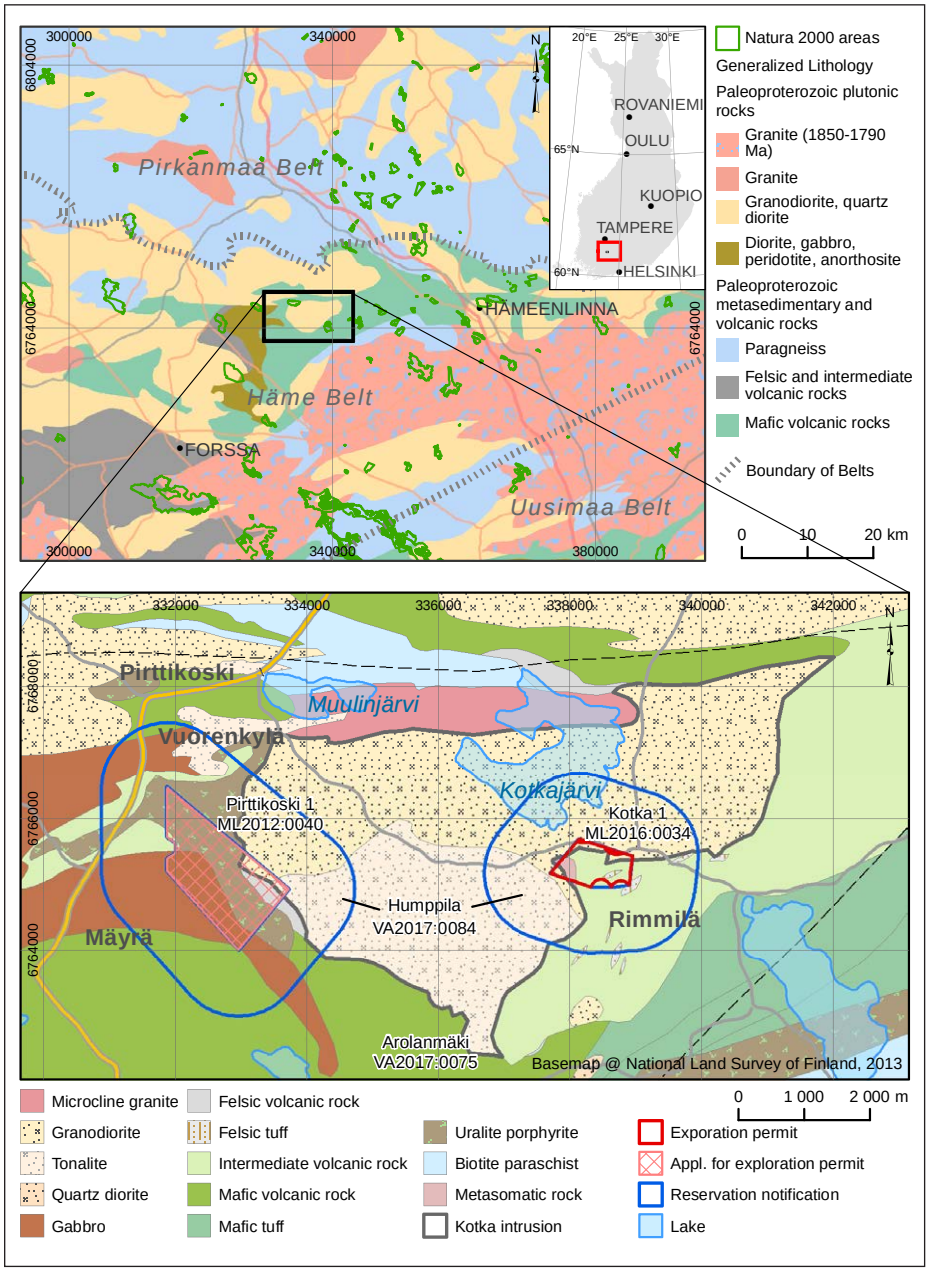


Figure 1. Location of the Kotka Cu-REE-(±Au-Co) and the Pirttikoski Cu-Au exploration targets. The Kotka 1(ML2016:0034/GTK) exploration permit is valid until 25 July 2021, the Humppila reservation notification (VA2017:0084 /Kultatie Holding) is valid until 3 October 2019.
Background map: Bedrock of Finland - DigiKP. Pirttikoski 1 exploration permit (ML2012:0040/GTK) was valid until 7 July 2018. An application for an extension was submitted to the Finnish mining authority (TUKES) on 2 July 2018 by GTK.

The location of the area is indicated in Fig. 2. The specific locations and more information about the Natura 2000 network areas and other types of nature conservation area that are protected by law can be found in following sources:

- General information on state-owned protected areas in Finland: http://www.metsa.fi/web/en/protected-areas
- Online map services for state-owned protected areas in Finland: http://www.metsa.fi/karttapalvelu
- GTK's online map service for the exploration and mining industry, including nature conservation areas, mineral deposit database, mining registry, geochemical and geophysical maps, Lidar imaging, etc:. http://gtkdata.gtk.fi/MDaE/

In Finland, most exploration activities must be performed under a valid reservation or exploration permit granted by the mining authority TUKES (https://tukes.fi/en/industry/mining-ore-prospecting-and-gold-panning). It is also highly recommended that guidance be sought from this authority when planning exploration activities. In areas belonging to private landowners and forest companies, exploration activities, such as diamond drilling, can also be performed if an one-to-one agreement is achieved between the landowner and the exploration company. Before any exploration activities commence, it is very important to inform and consult local landowners and the local community about the exploration activities.

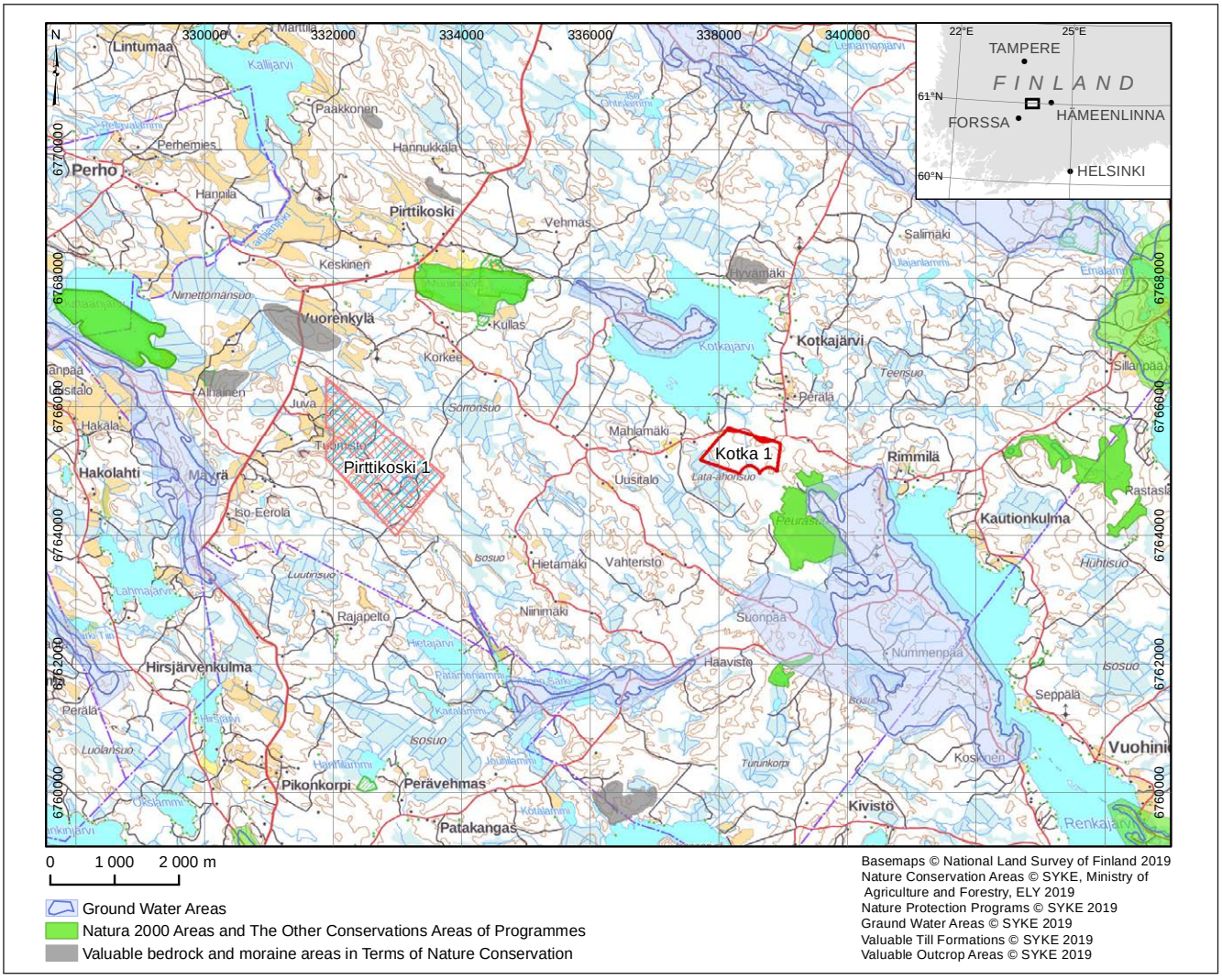


Figure 2. Topographical map of the Kotkajärvi-Pirttikoski area, indicating Nature 2000 areas, conservation areas, and special areas.

Regional geology

The Kotkajärvi-Pirttikoski region is in the eastern part of the Paleoproterozoic magmatic Häme Belt, close to the terrain boundary between the Häme and Pirkanmaa belts (Fig. 1). The Häme belt is characterized by mafic to felsic volcanic and various sedimentary rocks intruded by granitoids that are mainly formed in 1.89-1.88 Ga (Lahtinen 1994; Sipilä & Kujala 2014; Mäkitie et al. 2016a, 2016b). The supracrustal rocks are crosscut and migmatized by 1.85-1.78 Ga microcline granites and pegmatites.

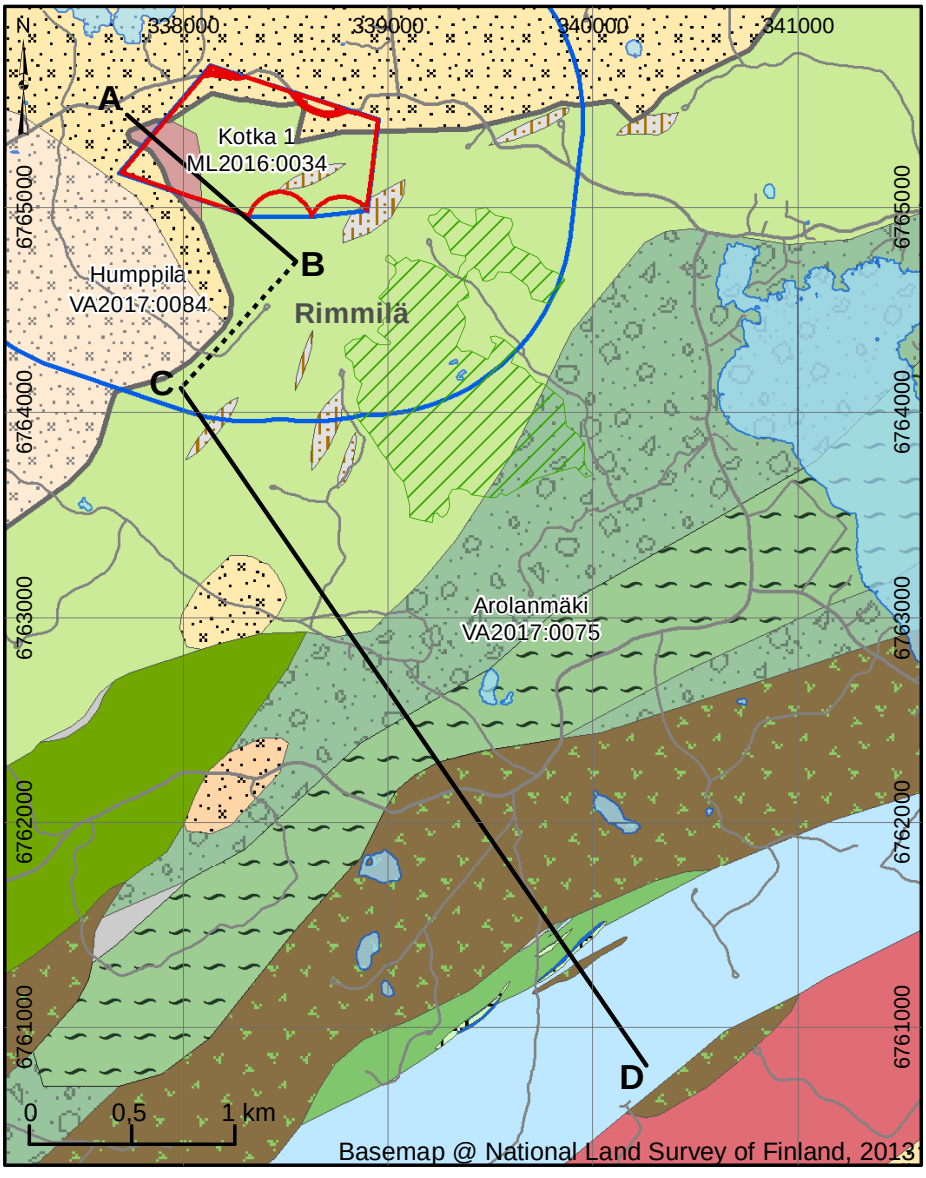
The intermediate to mafic volcanic rocks in the vicinity of the Kotkajärvi occurrence are pyroclastic deposits: tuffs, tuff breccias, and andesite and basalt flows of the Renkajärvi Suite. To the NW of the exploration target, the supracrustal rocks are pervasively altered. This alteration is charactesed by sericitization, silicification, cloritization of biotite, and epidotization (Figs. 3 and 4). Magnetite is common in altered rocks in the western part of the area. The alteration appears to be genetically related to massive granitoids near teh Kotka exploration target (Fig. 5). Granodiorites display elevated K concentrations near the contact zones to volcanic rocks. Hydrothermal alteration in the Häme Belt volcanic rocks is described in detail by Kärkkäinen & Tiainen (2016).

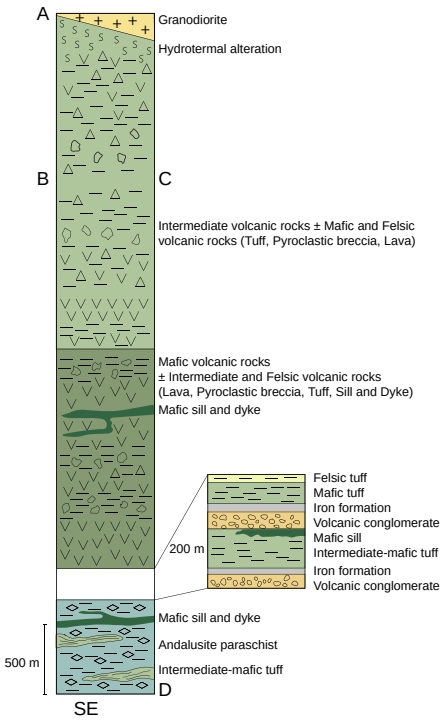
Figure 3. Left: Kotka granodiorite near the Kotka Cu-REE-(±Au-Co) exploration target in the western part of the target area (coin diameter is 23 mm). Right: epidotized felsic volcanic rock in the eastern part of the Kotka claim.

Figure 4. Kotka exploration target. Left: altered felsic tuff breccia. Right: epidotized volcanic rock near the Cu-REE-(±Au-Co) exploration target (coin diameter is 23 mm).

The general stratigraphy of Häme Belt rocks near the occurrence is displayed in Figure 5. The Kotka intrusion consists of granodiorites in the north and tonalite in the south. The intrusion is highly sheared, altered, fractured, and it covers an area of 25 km². The intrusion is indicated in Fig. 1. The magnetic intensity of the Kotka intrusion is very low compared with that of the surrounding volcanic rocks near the Kotka Cu-REE-(±Au-Co) exploration targets (Leväniemi & Grönholm 2016) (Fig. 6). There are no conductivity anomalies in the Kotka intrusion.

The bedrock in and around the Pirttikoski exploration target comprises sheared and fractured plutonic rocks, strongly altered mafic to intermediate volcanic rocks, and uralite porphyrites. The volcanic and hypabyssal rocks belong to the Forssa Suite, which geochemically resembles the volcanic rocks of the Renkajärvi Suite (Sipilä & Kujala 2014). The plutonic rocks are gabbros and granodiorites, with the gabbros containing traces of pyrrhotite and pyrite. As with the Kotkajärvi exploration target, various alteration assemblages have been identified, with silicification, skarn formation, and carbonatization being dominant.





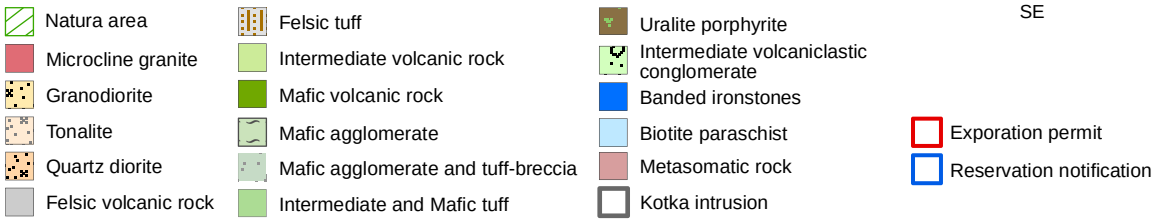


Figure 5. Detailed geological map of the vicinity of Kotka Cu-REE-(±Au-Co) occurrence. The stratigraphy of the Renkajärvi Suite volcanic rocks along the profile is indicated (after Sipilä & Kujala 2014).

Geophysical surveys

The Kotka Cu-REE-(±Au-Co) exploration target

The Kotka Cu-REE-(±Au-Co) exploration target was studied using ground-geophysical surveys in 2014, 2015, and 2018. The methods applied comprised electromagnetic maxmin, gravity, induced polarization (IP), magnetic and induced polarization tomography (IPT), and electrical resistivity tomography (ERT) (Fig.7). The electromagnetic maxmin, IP, magnetic, and the first gravity surveys were made in 2014. The gravity measurements were completed in 2018. The ERT and IPT surveys were both carried out during 2015 and 2018. Geophysical in situ soundings were performed in 12 drill holes in the period 2014-2016. In addition, samples collected from three drill holes were analyzed in a Petrophysics laboratory of GTK in 2015.

The magnetic, electromagnetic maxmin, and IP ground surveys were conducted using 50 m line spacing. The magnetic measurements were made in an area of 0.82 km². This survey was done continuously along profiles, resulting in a station spacing of 1-2 m. The electromagnetic maxmin and IP surveys were performed using 20 m station spacing, covering an area of 0.81 km² and 0.82 km², respectively. In the IP survey, the electrode configuration was dipole-dipole array with a=20 m and N=3, where a is distance between two current and between two voltage electrodes, and N is a multiplication factor of the distance between current and voltage electrodes, measured from the middle of two current and two voltage electrodes of the GTK system. The gravity survey was performed in an area covering 0.61 km². The line spacing in that survey was 20 or 50 m and station spacing was 10 or 20 m. The ERT and IPT measurements in 2015

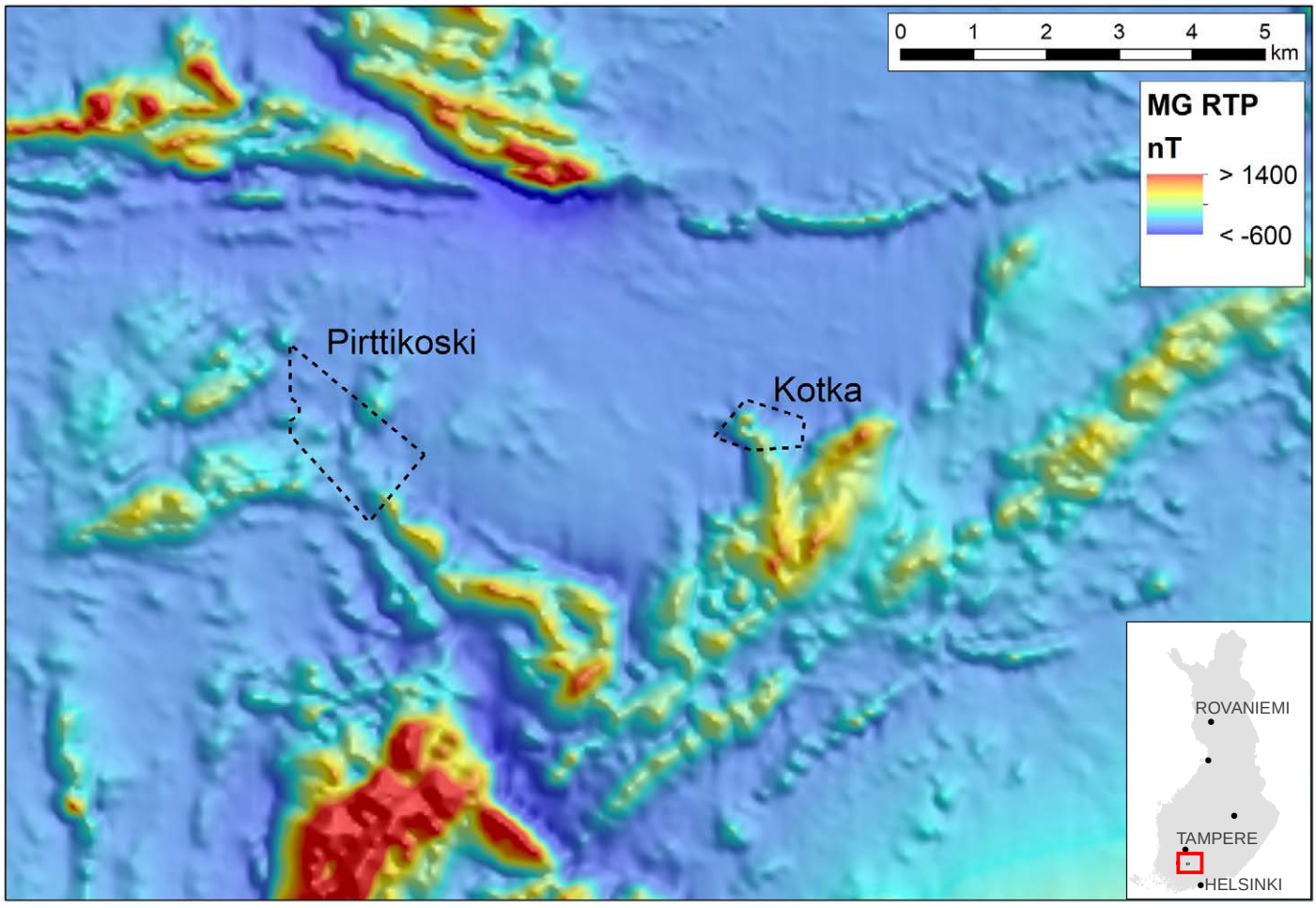


Figure 6. The Kotka and Pirttikoski target areas, marked in a regional aeromagnetic image. Reduction to pole (RTP) magnetic map (after Leväniemi & Grönholm 2016).

and 2018 were performed using 5 m minimum electrode spacing. The electrode configuration in the 2015 survey was pole-dipole array and that in the 2018 survey was multiple gradient array. The total length of the multi-electrode profiles was 5600 m. The location and extent of the ground geophysical measurements is shown on the right-hand side of Figure 7.

Petrophysical measurements on drill core samples comprised magnetic susceptibility, magnetic remanence, density, and resistivity. The geophysical in situ soundings comprised magnetic susceptibility, gamma-gamma density, natural gamma, and resistivity measurements. All the data obtained, except the results from the ERT and IPT measurements, are available in GTK's digital databases and files.

The Pirttikoski Cu-Au exploration target

The Pirttikoski Cu-Au exploration target was studied by geophysical ground surveys back in 1989 and 1990. The methods used in these surveys were magnetic, electromagnetic slingram, IP, and gravity. In the period 2014-2017, the exploration target was studied more intensively with IPT and ERT surveys.

The early magnetic and electromagnetic slingram surveys were carried out mostly using 20 m station distance and 50 m line spacing. The magnetic and slingram measurements covered an area of 2.24 km^2. The IP measurements were made by dipole-dipole electrode configuration using 20 m station spacing, a=20 m and N=3. Line spacing of IP measurements was 50 or 100 m, depending on the site. The systematic IP measurements covered an area of 1.3 km^2. One gravity profile crossed the claim area.

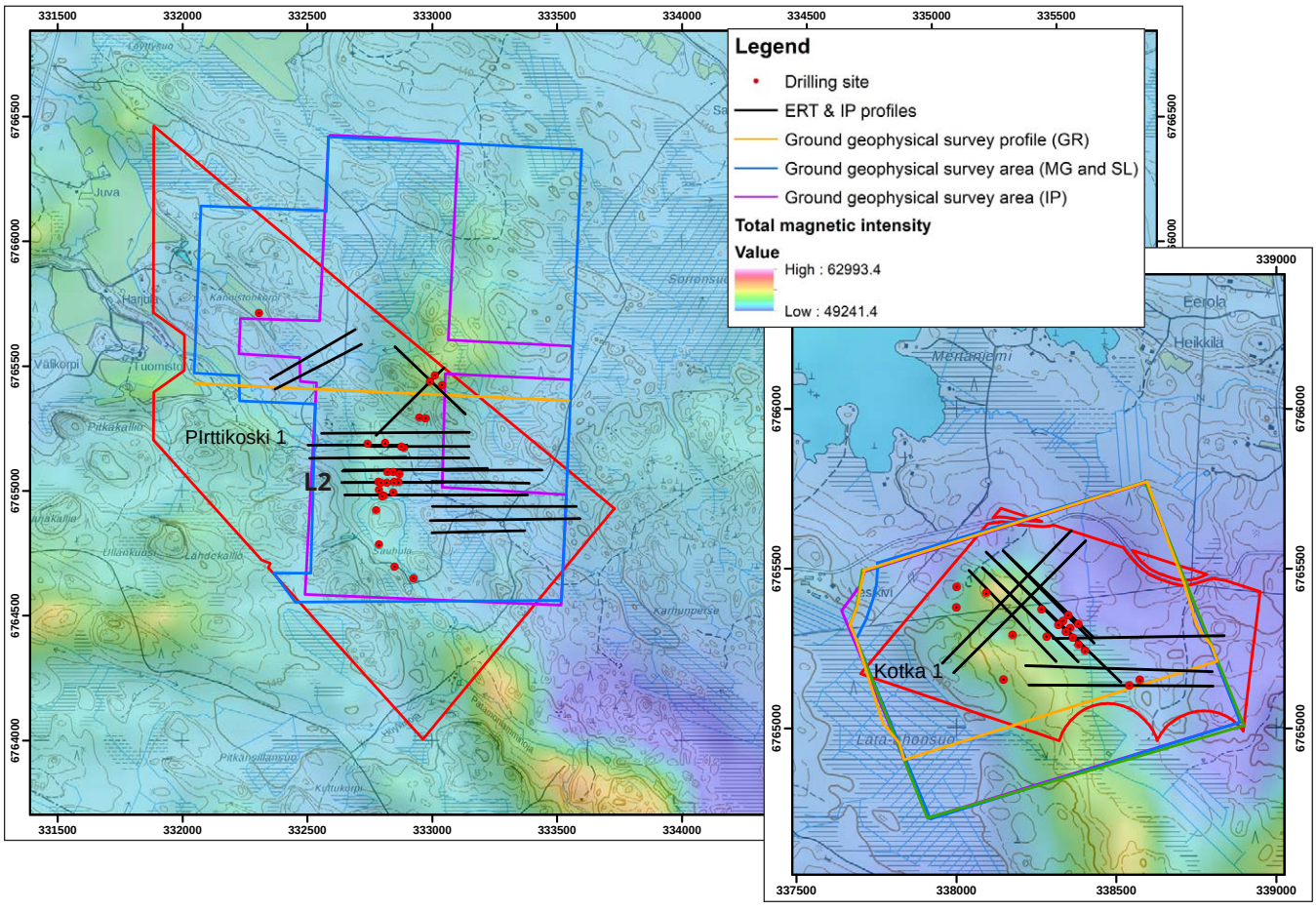


Figure 7. Map showing the areas covered by systematic geophysical ground surveys (MG=magnetic, IP=induced polarization, GR=gravity, SL=electromagnetic slingram method) and separate ground geophysical profiles (GR=-gravity, ERT & IPT=multi-electrode resistivity and induced polarization tomography) in the Pirttikoski 1 and Kotka 1 claim areas (red areas). The background is a total magnetic intensity map based on GTK's airborne magnetic data.

The length of that profile is 1.5 km and the station distance 20 m.

The latest geophysical studies in the area, in 2014-2017, involved ERT and IPT. These surveys were conducted by multiple gradient array, using 5 m minimum electrode spacing. The total length of the multi-electrode profiles was 9 km and some profiles were planned to partly overlap, in order to fill the gap between the profiles or to measure along the same profile as previously. The aim of this was to obtain data to compare the performance of old and new equipment, and also to increase the depth penetration by increasing the cable length in one laying of the cables. The location of the ground geophysical measurements is shown on the left-hand side of Figure 7. Short profiles using electromagnetic slingram and magnetic measurements were made in the area in 2012. An example of ERT interpretation from profile L2 (2015; Fig. 7), Cu and Co grades from samples taken from drill cores in the profile, is illustrated in Figure 8.

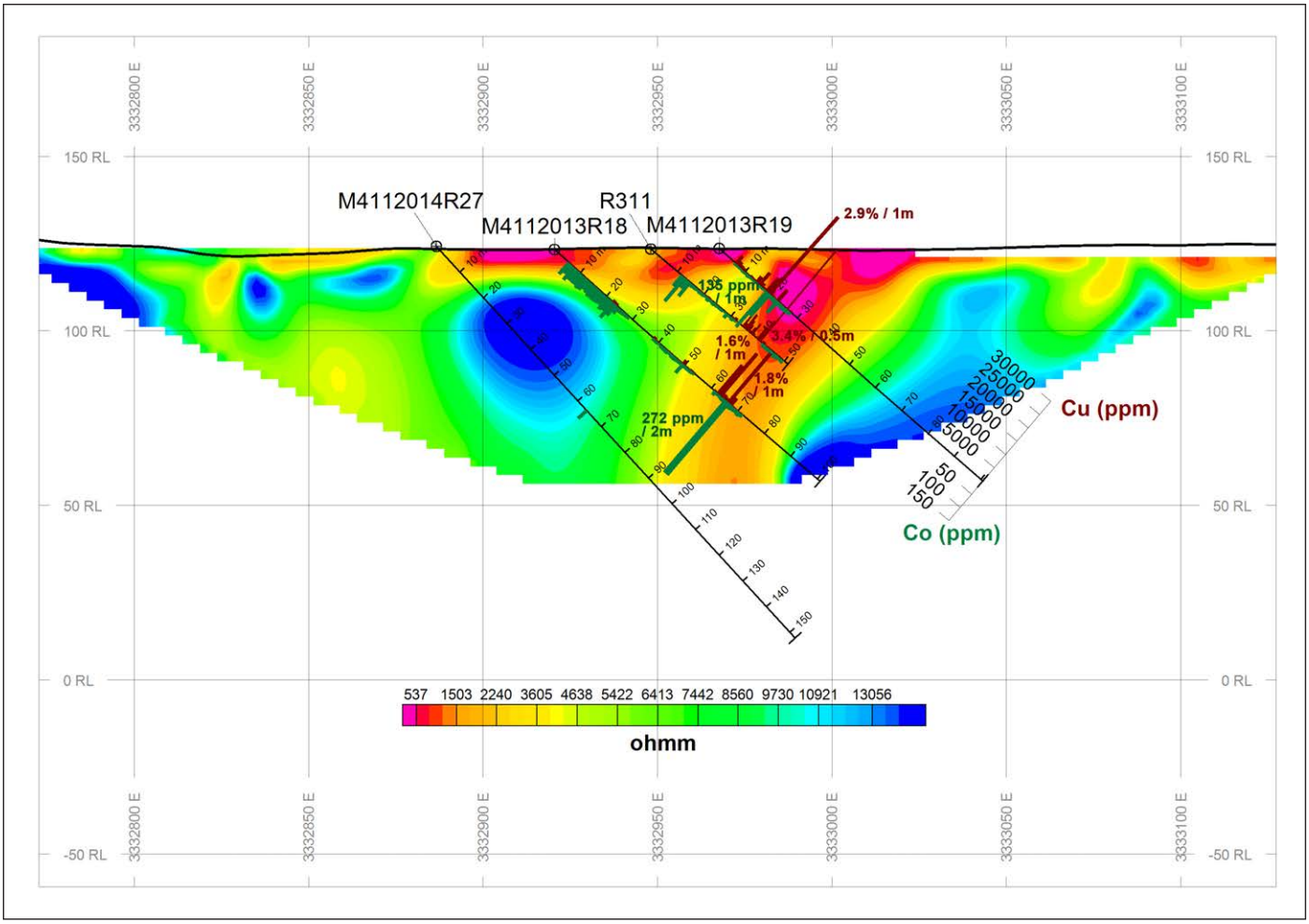


Figure 8. Interpretation of electrical resistivity tomography (ERT) in vertical section profile 2 in the Pirttikoski 1 claim area. Cobalt (green, in ppm) and copper (Cu, brown, in %) in samples from drill holes R27, R18, R19, and M311 are also shown (modified after Leväniemi & Grönholm 2016). Grid 50 m.

Geochemical surveys

Geological Survey of Finland carried out local-scale geochemical surveys for base metals and Au in the area during 1989-1992 and 2011-2012 (Lindmark 1996; Huhta et al. 2014, 2015). In addition, during the 1980s Rautaruukki Oy performed local-scale till geochemical surveys in the vicinity and within the current exploration permit areas of Pirttikoski and Kotka (see http://gtkdata.gtk.fi/MDaE/). The necessary metadata regarding the Rautaruukki Oy survey are partially missing and, e.g., assay methods are unknown.

GTK's geochemical survey in 1989-1992 was performed as line sampling and altogether 984 samples from various depths at 554 sampling sites within the exploration permit areas were collected. The sampled material was basal till, which was analyzed for several elements, including Au, by direct reading optical emission spectrometry (EKV) or atomic absorption spectroscopy (AAS). Analyses were made on either a sieved <0.06 mm size fraction (P-fraction) or an unknown T-fraction.

GTK's geochemical survey in 2011-2012 focused on assessing the ore potential of the whole Häme Belt, and therefore only 13 sample sites fell within the present exploration permit areas of Pirttikoski and Kotka (P_fraction_ICP in Fig. 9). The samples from this campaign were sieved to <0.06 mm size fraction (P-fraction) and analyzed by ICP-OES/MS for 42 elements, including Au.

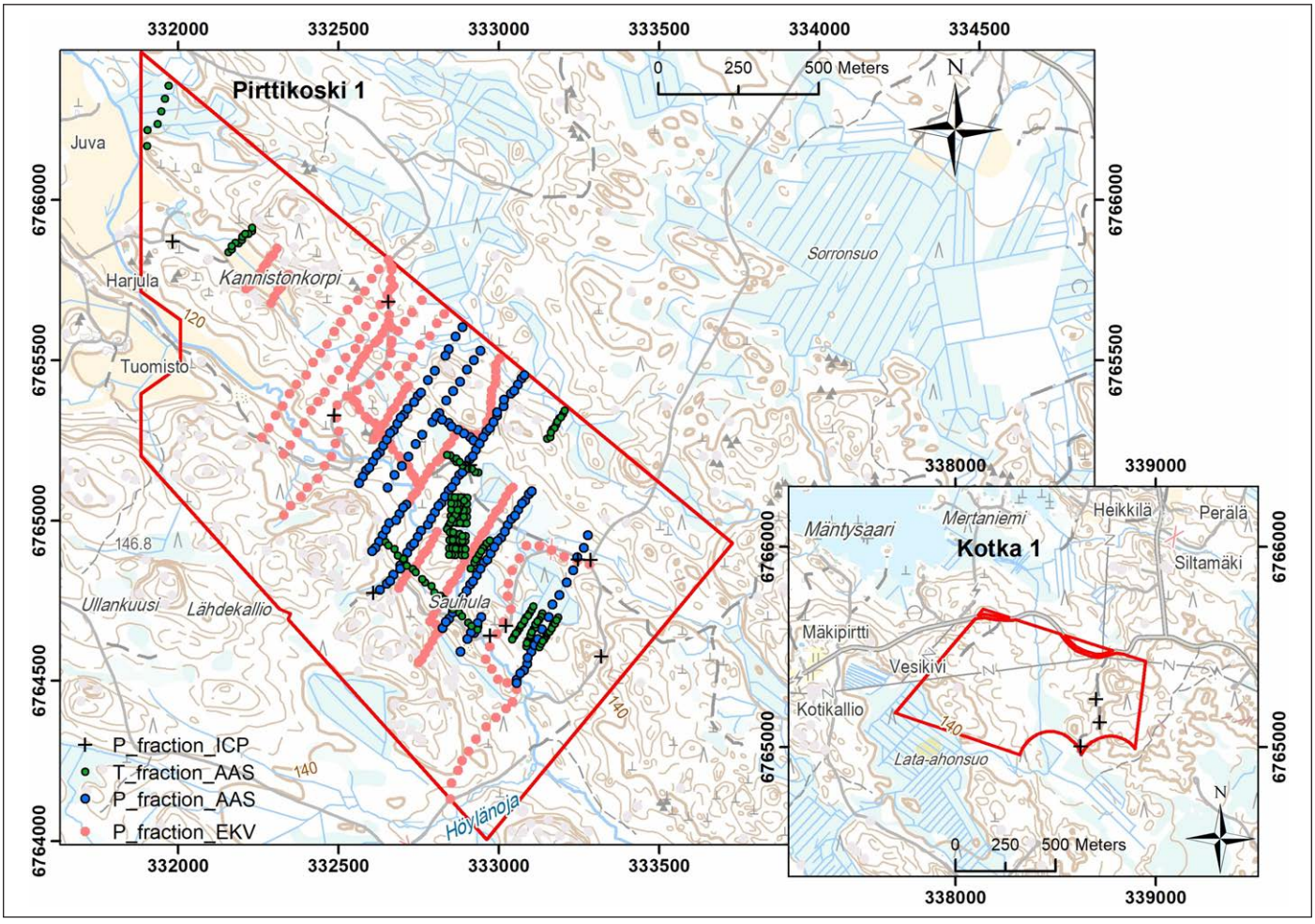


Figure 9. GTK's till sampling sites for geochemical surveys shown on topographic map. Abbreviations in the legend are explaoined in the text above. Basemaps© National Land Survey of Finland.

The Kotka Cu-REE-(±Au-Co) exploration target

The Kotka Cu-REE-(±Au-Co) exploration target has been explored by Outokumpu Oy and Rautaruukki Oy (Kinnunen 1987). In drilling (total 581 m) carried out by Rautaruukki Oy in the 1980s, the best intersections were 20.9 m @ 0.537 wt% Cu (drill hole R1) and 6.3 m @ 0.358 % Cu (drill hole R4). Elevated REE concentrations were also found in drill hole R3 (0.7 m @ 0.2 % La, 0.7m @ 0.4 % Ce, 0.7 m @ 0.1 % Nd, and 0.7 m @ 0.03 % Pr).

A total of 1695.80 m has been drilled in the Kotka area by GTK (2014-2016, 2018) (Fig. 10). Details of these campaigns are presented in Table 1. Two Cu-REE (±Au-Co) exploration targets have been located by drilling, one in the eastern and one in the western part of the claim area. The best intersections are 0.95 m @ 7.15 % Cu (drill hole R39), 1.1 m @ 0.8 % ∑REE (drill hole R49), and 0.65 m @ 0.3 % Co (drill hole R38) (Fig. 11). The highest Au content is 1 m @ 1.670 ppm Au (drill hole R38). Elevated Ag and Mo concentrations have also been found in the drill holes, up to 32 ppm and 1170 ppm, respectively.

The most common ore minerals at Kotka are chalcopyrite, pyrite, arsenopyrite, molybdenite, and cobaltite. The Cu-Co-As mineralization takes the form of disseminated fracture fillings and veinlets, to locally massive sulfides. Allanite and bastnäsite are the most important REE carriers and they are strongly enriched in the LREE (Al-Ani et al. 2016, 2018).

Drilling by GTK has revealed that the mineralization is hosted by altered volcanic rocks along the Kotka felsic intrusion contact zone.

The Kotka Cu-REE-(±Au-Co) and Pirttikoski Cu-Au exploration targets are both related to altered rocks along lithological contacts of the Kotka felsic intrusion and mafic-intermediate volcanic rocks, and there-fore considered to belong to the same mineral system.

The extent of mineralized rock in the claim area is unknown.

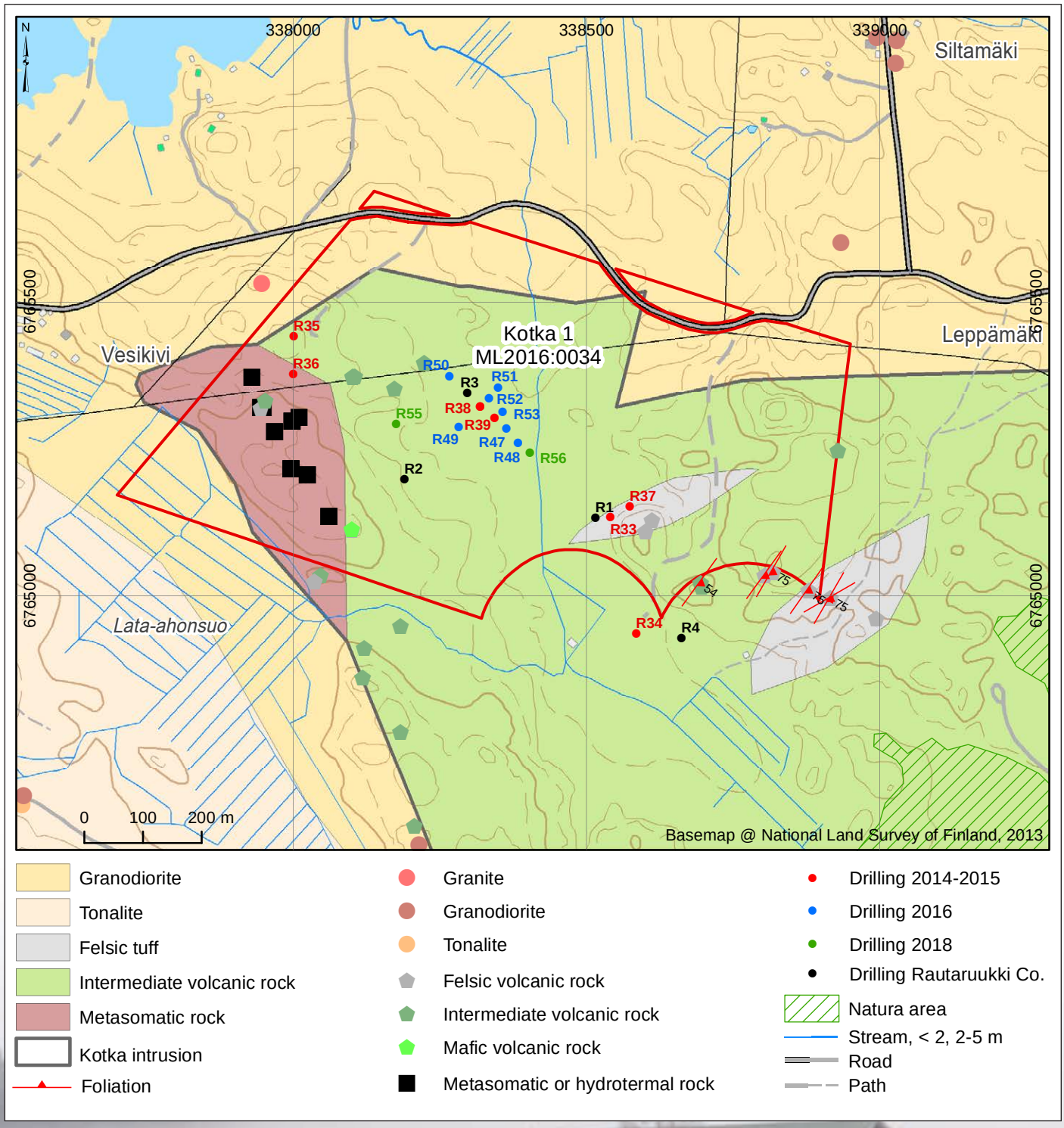


Figure 10. Location of the holes drilled by GTK in the Kotka area.

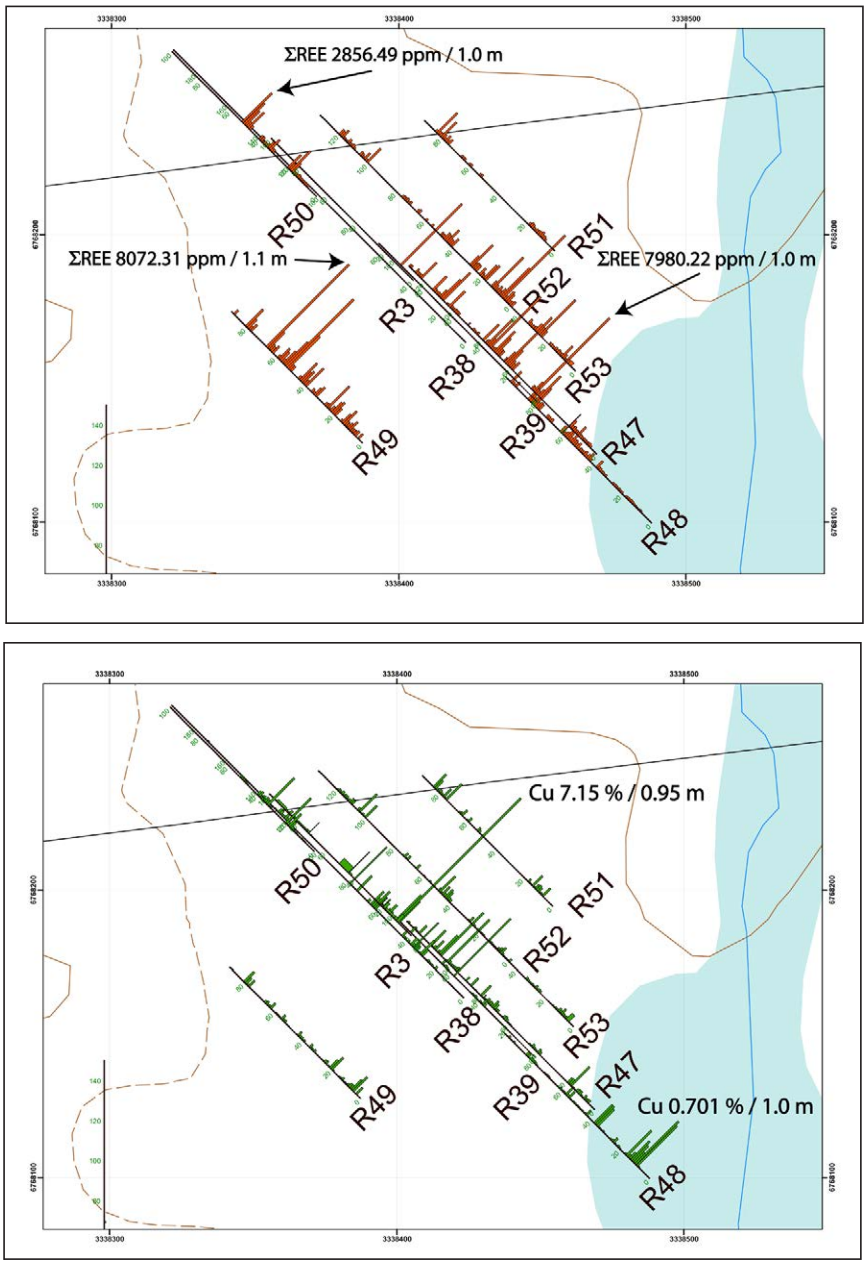


Figure 11. Diamond drilling profiles showing REE concentrations (ppm) in plan view and Cu concentrations (%) in the north-west part of the Kotka area.

Figure 12. Left: Cu-REE mineralization in drill hole R39. Right: Cu mineralization in drill hole R33 from the eastern part of the Kotka study area.

Table 1. Details of diamond drilling carried out by GTK in the Kotka area in 2014-2018. Coordinates in Finnish coordinate system (ETRS-TM35FIN).

Hole-id	Northing	Easting	Elev.(Z)	Direction	Inclination	Soil (m)	Length (m)
M4112014R33	6765133.93	338540.8	131.37	270	47.6	11.0	137.9
M4112014R35	6765441.52	338001.37	137.45	180	47.4	4.7	50
M4112014R36	6765377.49	338000.47	135.28	180	48.1	2.9	100
M4112014R37	6765151.93	338573.9	132.1	270	47.1	7.4	101.3
M4112014R38	6765322.75	338318.31	130.59	315	46.1	4.4	194.9
M4112014R39	6765302.17	338343.14	130.72	315	47.2	8.0	110.9
M4112016R47	6765283.92	338363.92	130.8	315	45.8	4.2	130.9
M4112016R48	6765260.29	338383.02	130.55	315	43.7	1.85	99.45
M4112016R49	6765287.81	338282.39	131.5	315	45.1	2.5	90.25
M4112016R50	6765373.58	338266.33	131.11	315	45.1	6.2	100
M4112016R51	6765354.61	338349.3	130.43	315	44.7	2.9	92.2
M4112016R52	6765335.73	338333.75	130.52	315	45.5	2.9	133.1
M4112016R53	6765312.86	338356.52	130.8	315	45.7	3.1	54.1
M4112018R55	6765291.89	338175.9	133.38	360	45	5.7	157.2
M4112018R56	6765242.73	338403.25	130.27	135	45	5.7	143.6
						Total	1695.80

The Pirttikoski Cu-Au exploration target

GTK studied the Pirttikoski Cu-Au occurrence back in 1989-1992 (Lindmark 1996) and again in 2012-2017. In these studies, a total of 1408.45 m was drilled in the area (1991-1992, 2013-2015) (Fig. 13 and Table 2).

This drilling revealed a NW-trending Cu-Au occurrence in fractured, strongly altered granitic rocks (Figs. 14, 15). The best intersections are 0.5 m @ 3.4 % Cu (drill hole R311), 6 m @ 1.09 % Cu (drill hole R18), and 17 m @ 0.3 % Cu (drill hole R19) (Fig. 14). Elevated Ag, Au, Co, and Mo concentrations have also been observed: 1 m @ 94 ppb Au (drill hole R26), 3 m @ 15 ppm Ag (drill hole R19), 1 m @ 14 ppm Mo (drill hole R19), and 2 m @ 0.0272 % Co (drill hole R18). The most common ore minerals are chalcopyrite, pyrrhotite, and pyrite. Accessory ore minerals include arsenopyrite, molybdenite, cobaltite, and native gold. Sulfides occur mostly as fracture fillings and veins.

On the basis of the drill core and the geophysical response in the ground survey, the mineralization is hosted by a NW-trending fracture zone along the contact of Kotka felsic intrusion and mafic volcanic rocks. The extent of the mineralization in the claim area is unknown. Geophysical surveys have revealed interesting IP and resistivity anomalies in the NW part of the claim area.

These anomalies are not drilled and are, hence, obvious targets for future drilling campaigns.

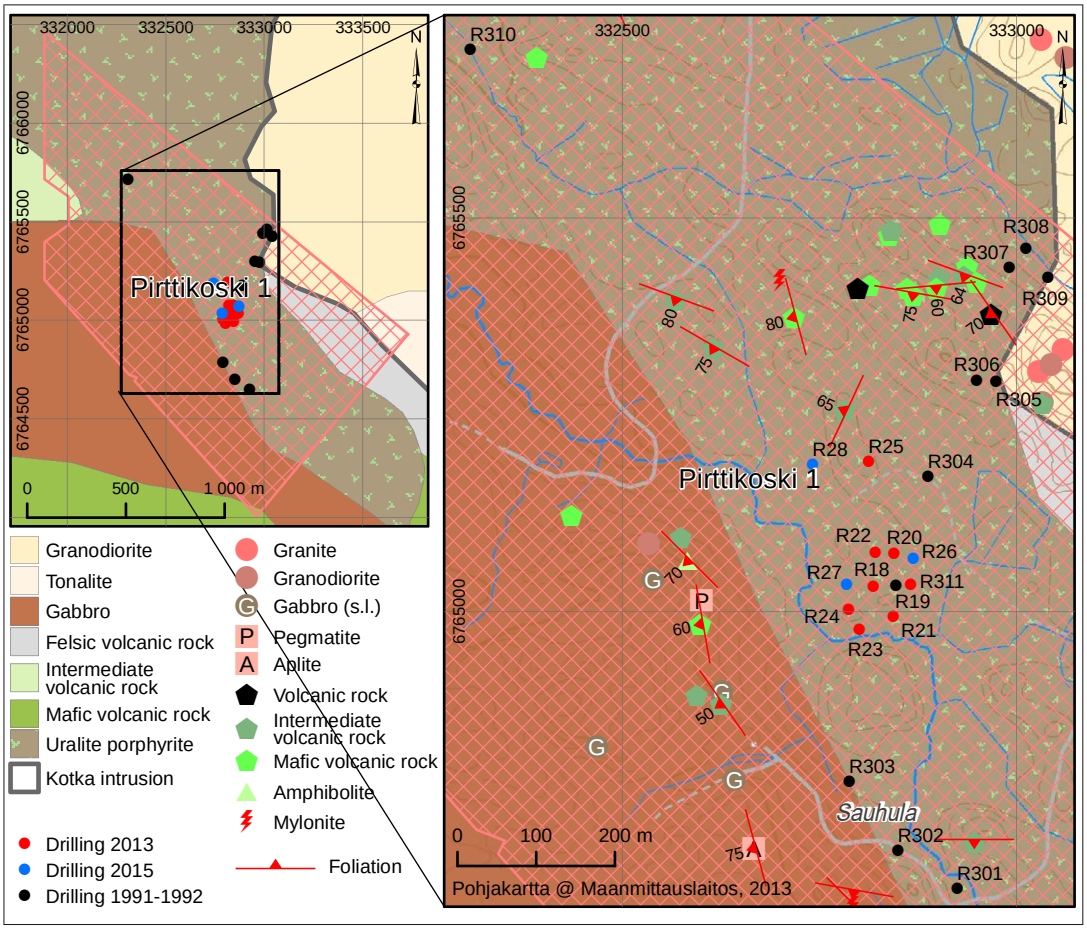


Figure 13. Bedrock map of the Pirttikoski Cu-Au exploration target, showing the drill hole locations. Drilling by GTK was carried out in 1991-1992, 2013, and 2015.

Table 2. Details of diamond drilling carried out by GTK in the Pirttikoski area in 1991-1992, 2013, and 2015. Coordinates in the Finnish coordinate system (ETRS-TM35FIN).

Hole-id	Northing	Easting	Elev.(Z)	Direction	Inclination	Soil (m)	Length (m)
M211391R301	6764649.2	332924.93	125	43	60	5.5	43.6
M211391R302	6764697.18	332849.96	129	33	70	7.6	37.4
M211391R303	6764784.15	332787.99	125	93	60	7.6	41.5
M211391R304	6765170.99	332887.94	125	83	60	1.3	31.25
M211391R305	6765291.94	332973.91	130	93	60	1.9	30.1
M211391R306	6765292.94	332949.92	133	93	60	3.3	31.45
M211391R307	6765436.88	332990.9	127	48	60	2.0	28.35
M211391R308	6765460.87	333011.89	127.38	273	60	2.6	27.0
M211391R309	6765423.89	333039.88	127.57	93	60	2.7	24.9
M211391R310	6765712.77	332307.18	120	63	60	6.9	46.7
M211392R311	6765033.05	332846.96	125.38	93	40	7.5	51.3
M4112013R18	6765032.582	332818.321	123.514	90	42	5.2	101.0
M4112013R19	6765035.031	332865.56	123.69	90	42	5.5	100.2
M4112013R20	6765073.805	332844.423	123.696	90	42	5.8	89.9
M4112013R21	6764994.467	332844.165	125.686	90	42	3.9	100.9
M4112013R22	6765075.273	332820.568	123.859	90	41	3.8	74.0
M4112013R23	6764977.843	332800.916	122.468	180	47	3.7	100.2
M4112013R24	6765002.797	332787.114	125.396	90	46	6.8	50.6
M4112013R25	6765190.435	332812.312	127.426	270	41	4.7	98.1
M4112014R26	6765067.094	332869.475	123.768	90	41	6.0	48.8
M4112014R27	6765035.255	332784.525	124.275	90	48	3.0	152.3
M4112014R28	6765187.203	332741.452	123.1	90	41	5.2	98.9
						Total	1408.45

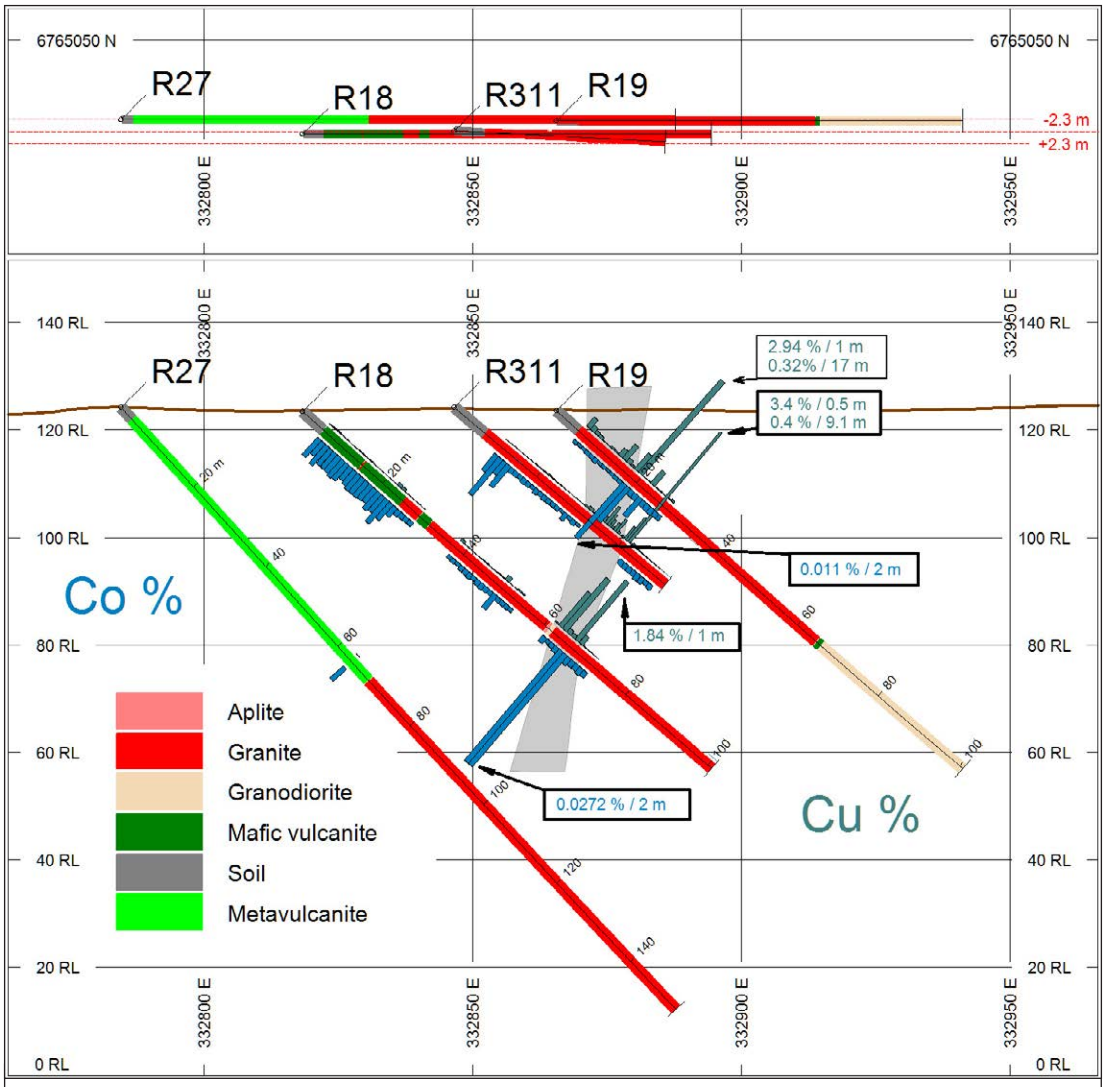


Figure 14. Pirttikoski. Drilling profile R27-R19 and vertical section of the Cu-Au mineralization (gray). Copper contents shown in green and cobalt in blue.

Figure 15. Pirttikoski drill core. Left: strongly deformed, fine-grained chlorite-carbonate schist, where the light bands are calcite and quartz (hole R306). Right: quartz and chlorite vein brecciated granitoid (hole R311).

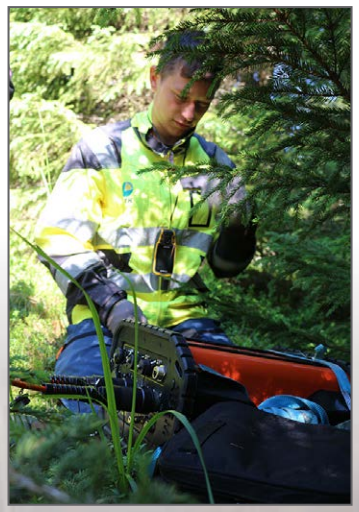
Mineral potential and recommendations

The Kotka Cu-REE (±Au, Co) exploration target

- Based on GTK's studies, the Cu-REE-(±Au-Co) exploration target is likely related to the altered contact zone of the Kotka intrusion and mafic and intermediate volcanic rocks.
- The exploration target may be a product of magmatic-hydrothermal system related to the Kotka felsic-intermediate intrusion.
- GTK has performed magnetic, electromagnetic, gravimetric, induced polarization (IP), and systematic electrical resistivity tomography (ERT) surveys in the area. These surveys have identified anomalies that are obvious targets for additional drilling.
- All the geophysical survey methods used have detected mineralized zones. However, we recommend time-domain electromagnetic measurements (TEM) and IP measurements with deeper depth penetration in the area.

The Pirttikoski Cu-Au exploration target

- Since the extent of the NE-SW oriented Cu-Au exploration target is unknown, the dimensions of the exploration target should be established by drilling campaigns at both open ends and to depth in the mineralized zone.
- With a geological setting similar to the Kotka exploration target, also Pirttikoski may be a product of magmatic-hydrothermal system related to a felsic-intermediate intrusion.
- Geophysical surveys have revealed interesting induced polarization (IP) and resistivity anomalies in the NW-part of the claim area. The source of these anomalies should be confirmed with drilling.
- We recommend systematic electrical resistivity tomography (ERT) and IP surveys in the Pirttikoski area.



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