



**BOLIDEN  
KEVITSA**

**BIODIVERSITY  
GRI REPORT  
2021**

**BOLIDEN**

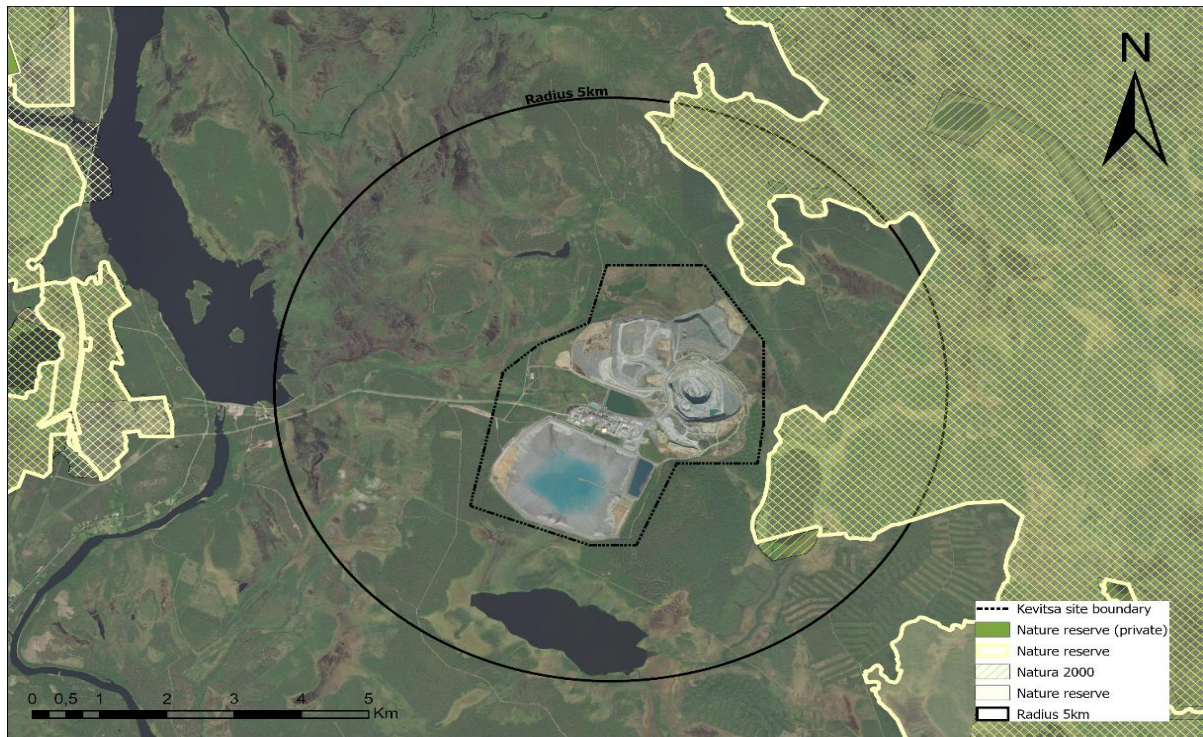
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# 1. GENERAL INFORMATION

Kevitsa is a large open pit mine in northern Finland. It is located 142 km to the north-northeast of Rovaniemi in Lapland and around 140 km to the north of the Arctic Circle within the Municipality of Sodankylä (See Figure 1). Kevitsa open pit mine has an operational site of 14, 17 km<sup>2</sup>. The main extracted products are nickel and copper concentrates in addition to substantial amounts of platinum, palladium, gold, and cobalt.

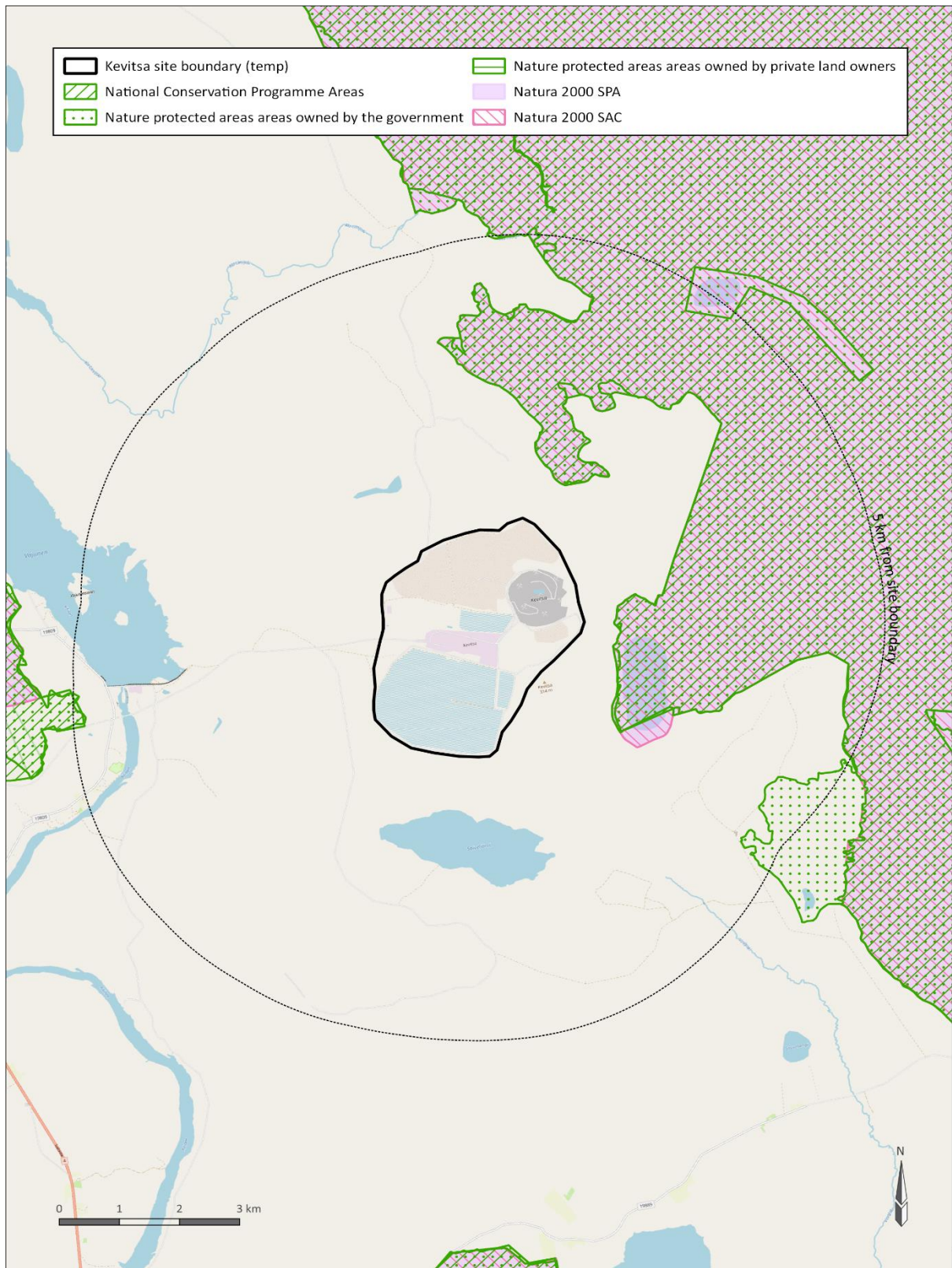


**Figure 1.** Overviewing Map on Kevitsa's mining Site depicting the Facility, Nature Reserves (Public and Private) and Natura2000 areas within 5 Km Radius.

Three Natura 2000 areas (see figure 2) are located near Kevitsa mining site as follows:

- **Koitelaiskaira Wilderness** (FI1301716, 43,938 hectares).
- **Pomokaira Wilderness** (FI1301712, 92,358 hectares).
- **Viiankiaapa Bog** (FI1301706, 6,595 hectares).





**Figure 2.** Map Representing the Nature Protection Areas

Conservation areas also include protected wetlands of Ilmakiaapa Bog, Pomokaira-Tenniöaapa Bog, Viiankaapa Bog and Koitelaiskaira National Park. The following figures (figure 3 and figure 4) provide a glimpse on the

neighboring nature protection & conservation areas along with the surface/ground water bodies within the vicinity of Kevitsa's mines.

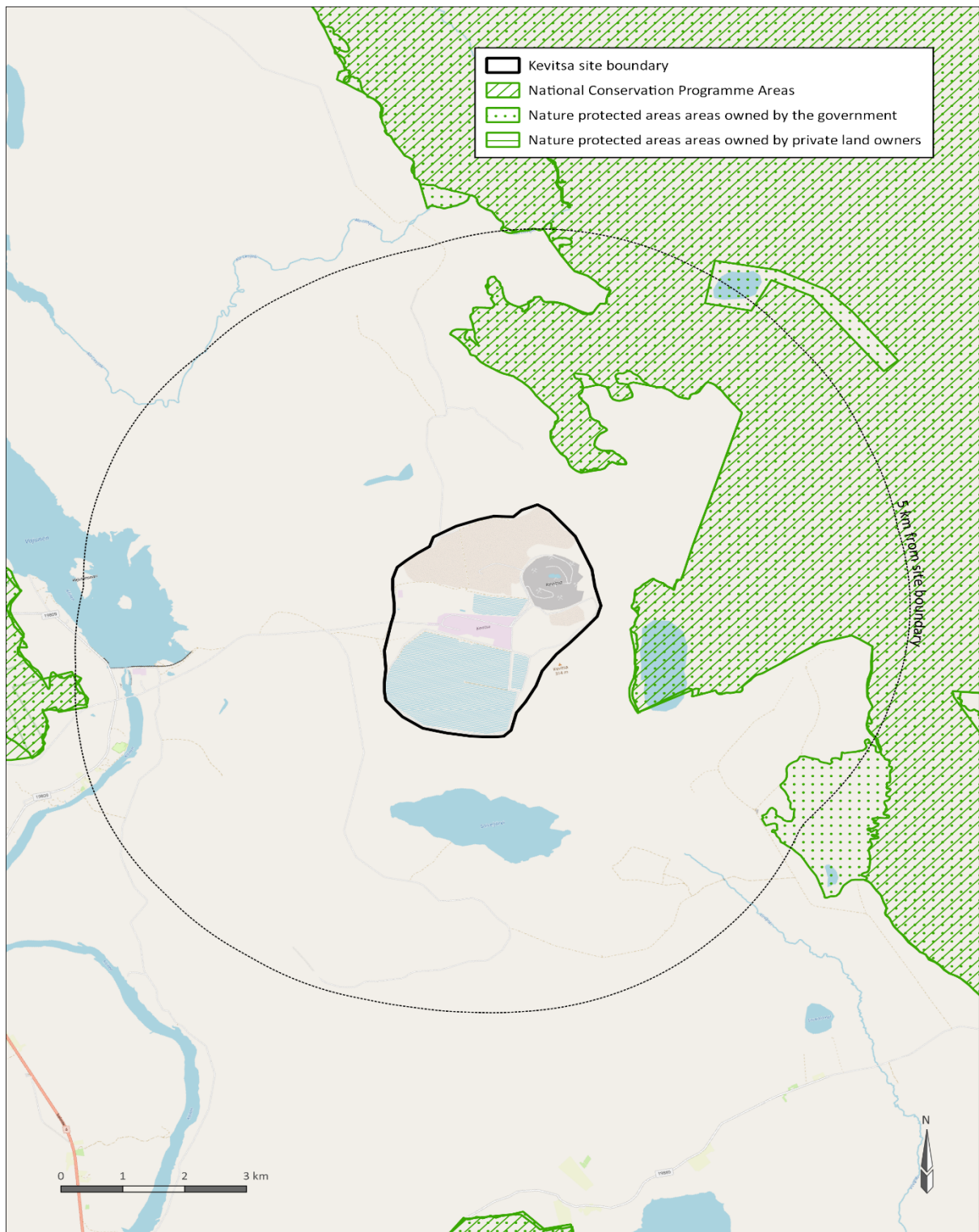


Figure 3. National Conservation Areas & and Nature Protected Areas Close to Kevitsa's Site.

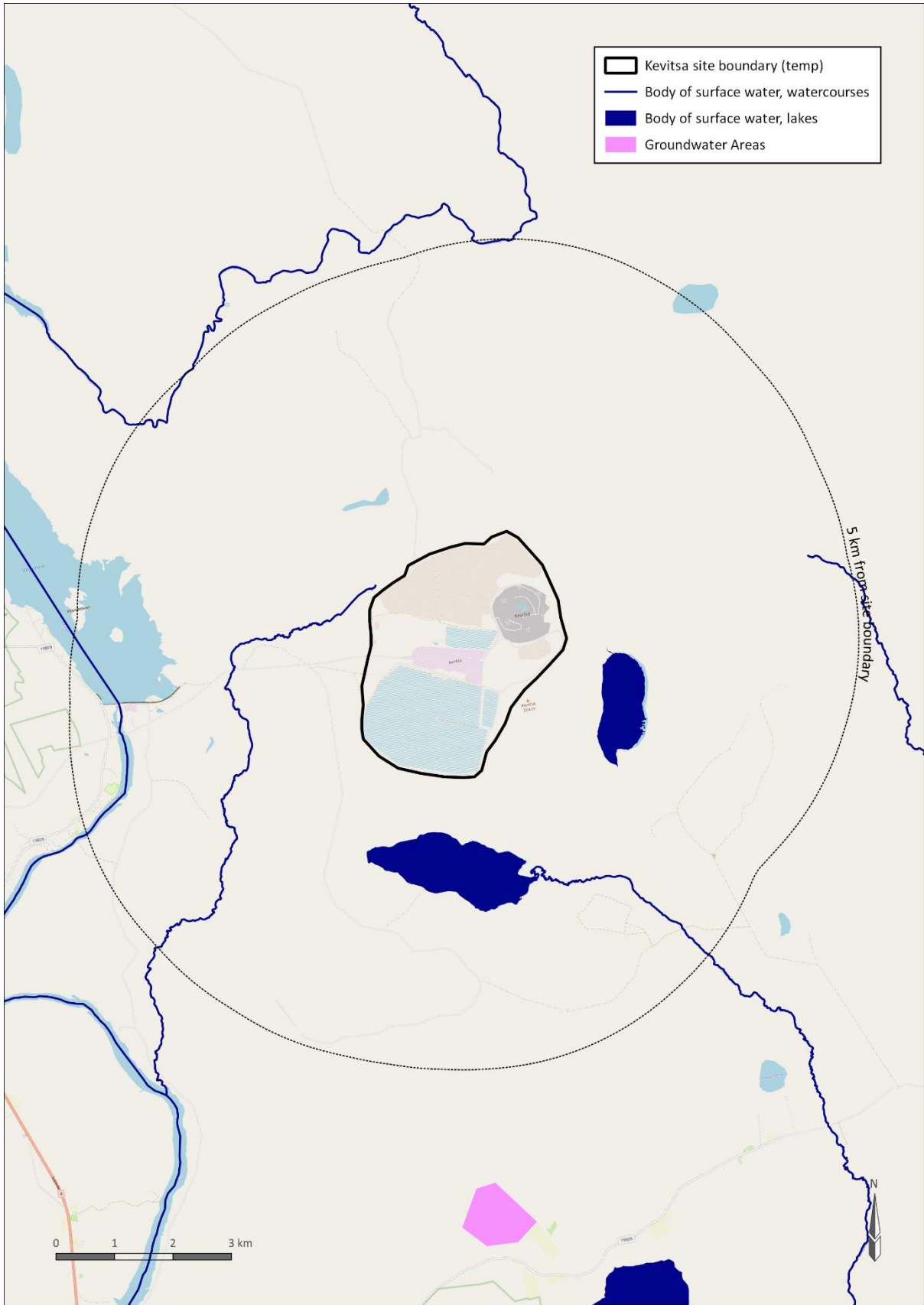


Figure 4. Surface and Ground waterbodies close to Kevitsa's site.

The Environmental Impact Assessment took place in 2010. It covered the entire lifecycle of the mine and the likely environmental impacts of the mining project on the following aspects:

- Emissions to Air
- Discharge to Water Flows and Aquatic Ecosystems
- Water Extraction
- Soil Pollution
- Land-use Change
- Disturbance: Noise and Vibration
- Endangered Species
- Invasive Alien Species
- Green House Gas Emissions



## 2. ENVIRONMENTAL IMPACTS AND IMPACT ASSESSMENT OF MINING OPERATIONS ON BIODIVERSITY

We have nine criteria for which impacts on biodiversity should be evaluated: Emissions to Air, Discharge to Water Flows and Aquatic Ecosystems, Water Extraction, Soil Pollution, Land-use Change, Disturbance: Noise and Vibration, Endangered Species, Invasive Alien Species and Green House Gas Emission.

### 2.1. Emissions to Air

Airborne emissions resulting from the mining activities include dust (fine particles) as well as flue gases produced by explosions, machinery/traffic, and the heating plant. The dispersion of dust and flue gases produced by the heating plant have been studied using modelling software. The dust resulting from the mining activities is believed to mostly remain within the mining site, and only low concentrations of fine particles will travel further afield.

The quality of air will remain within the relevant guideline and threshold values in the nearby residential areas, and the elevated levels within the mining site will also be within the acceptable limits.

In the vicinity of the mining area, the spread of air pollutants is monitored by determining the metal concentrations accumulated in humus and forest moss in the area. Moss and humus samples are collected from the same sample areas during June-July every 3rd year. Latest monitoring period was done 2018.

### 2.2. Discharge to Water Flows and Aquatic Ecosystems

Ground water pollution will mostly materialize in the area where wastewater is discharged into River Kitinen. Waterborne emissions from the mine will principally consist of nitrogen compounds, suspended solids, and heavy metals.

The hydrological balance is positive, meaning that more water will be discharged to River Kitinen than will be pumped from it. Even the most extensive alternative would only cause a small increase in the levels of impurities in River Kitinen, up to approximately 8 micrograms per liter as regards nickel, for example. This is comfortably below the environmental quality standard (20 micrograms per liter) even with the natural background concentrations considered. The increase in the levels of suspended solids is negligible relative to the average levels found in rivers.

As regards nutrients, the increase in the level of phosphorus is also marginal. The increase in nitrogen levels is more substantial, due to the use of explosives. The increase is nevertheless minor relative to the natural background of River Kitinen. No notable increase in eutrophication is expected considering the levels of phosphorus in the water. Wastewater from the mining site is not believed to pose health risks or to limit the recreational use of the river. Changes in the levels of impurities and the flow of water may nevertheless affect diatoms and benthos in nearby water bodies.

In terms of aquatic ecosystems, Mataraoja Brook is expected to be the most affected. Effects on fishing mostly comprise changes in the levels of impurities and the flow of water. The impacts have been assessed on the basis of estimates and information on fishing in the area. Mining on the basis of the existing environmental permits will have little impact on fish. The project's impacts on Mataraoja Brook and River Viivajoki are minor, and the quality of water in River Kitinen, where wastewater will be discharged, will not drop considerably thanks to the efficient dilution process.

Monitoring of wastewater discharge is carried out on a daily basis. Daily composite samples are collected every day when the effluent treatment plants are running. During the summertime, part of the treated wastewater is discharged to wetland area and part to wetland area by-pass line. From the wetland area collection pond, the water is pumped to Kitinen river and from there water sample is taken weekly. The water that is pumped to



Kitinen river consists of the treated wastewater as well as natural water (groundwater) from wetland area.

Monitoring of the levels of impurities in neighboring rivers is done every month.

### 2.3. Water Extraction

Raw water intake from Vajunen pool has no known environmental impacts, because in normal operation state it is only few percents from River Kitinen minimum flow.

The hydrological balance is positive, meaning that more water will be discharged to River Kitinen than will be pumped from it.

Dewatering of the open pit also causes a decrease in groundwater in the vicinity of the quarry. In the Kevitsa area, poor groundwater formation and flow conditions reduce the groundwater depletion caused by operations. The amount of dewatering in the pit and the development of groundwater depletion at different stages of operation have been examined with the help of hydrogeological surveys and with the groundwater model based on hydrogeological surveys.

According to the modeling, the groundwater level will be higher in the tailings area and side rock area than at present. In the vicinity of the open pit, the water level drops.

Raw water intake is monitored with flow meters. Groundwater quality and level is monitored 1-12 times a year with 33 monitoring pipes and two groundwater monitoring pipes to be installed later, as described in the environmental monitoring plan of the mine.

### 2.4. Soil Pollution

The mining project's most significant impacts on soil, bedrock, and groundwater will be attributable to the open pit.

The stockpiling of topsoil and especially the waste materials (waste rock and tailings) may have adverse effects on the quality of soil and groundwater. Depending on the properties of the stockpiled waste materials, the resulting leachate may compromise the quality of groundwater and the soil underneath the waste disposal sites. Leachate may also spread harmful substances across a wider area depending on the local properties of soil and bedrock.

Local impacts on soil and groundwater quality may also follow from the storage of products, chemicals, and fuels as well as from the use and servicing of machinery. The storage areas and the mineral processing plant will be built so as to prevent soil contamination. Contamination could nevertheless occur mostly in the case of failures and special circumstances.

Effects on soil and bedrock will be limited to the locations of the waste disposal sites and the mineral processing plant.

Assessment done in the Kevitsa mining area, not in the protected areas. Latest soil research done in 2010. Lapland Water Research Ltd carried out soil surveys in the area between 2004 and 2007. A total of 100 trial pits were dug for evaluating the quality of the soil and for measuring the height of the water table. The thickness of peat was also measured in 88 different locations. Particle size analyses were carried out on 47 samples taken from 26 different trial pits, and permeability was measured in 14 trial pits. Till samples were also taken from 14 trial pits. In addition, the height of the water table was measured. Geobotnia Oy has carried out extensive soil surveys in the area in connection with the ongoing construction works. Soil surveys carried out in the Kevitsa area in 2010 included the following:

- \*Trial pits (x 11) in the future location of the mineral processing plant.
- \*Till samples (x 37).
- \*Core samples (x 23) taken in connection with installing groundwater standpipes.
- \*Weight sounding and percussion sounding tests in the future locations of the tailing's storage facility (TSF A and TSF B) and the water reservoir.

### 1.1. Land-use Change

Substantial earthwork, water supply arrangements, foundation engineering, roadworks, and infrastructural development were required before the Kevitsa mine could be opened. Large industrial buildings will also be constructed on the mining site. Most of the structures needed to be in place before commercial production can begin, and construction works were scheduled for a period of between one and two years before the mine opened.

During this period, land use in the area changed from agriculture and forestry to mining both within the mining site and in areas where infrastructure relating to the mine was constructed. Back then, there were no other changes in terms of land use.

### 1.2. Disturbance: Noise and Vibration

A zone averaging a noise level of 50 dB (A) will extend to a distance of 65–69 meters from the center line of the road. The most significant consideration in terms of industrial noise is that noise levels will be at their highest during the ongoing construction works.

As the project progresses and the mine gets deeper, the levels of noise pollution will decrease. The highest levels of noise pollution will be registered within the mining site itself. Vibration will have little impact on buildings near the mining site

A noise distribution model has been produced of the industrial noise generated by the mining site and the associated road noise. New sources of noise pollution will be measured and added to the model as necessary. Noise levels will also be measured in the immediate vicinity of the mining site in connection with the construction works associated with the potential scaling up of the mine or during normal operating conditions.

### 1.3. Endangered Species

There are no plants in the mining area that are protected and endangered under the Nature Conservation Act. In the vicinity of the mining district boundary, the habitat of the Moor frog has been found. This habitat is not expected to be endangered as a result of mining operations. The effects of the activity on the occurrence of the Moor frog have been ordered to be monitored further.

The sedge species known as *Carex Capitata* (Lettonuppisara in Finnish) was identified as a regionally endangered species in Kevitsa during the first Environmental Impact Assessment procedure of the mining project. The species's habitat was eliminated because of the construction of the water reservoir. As of 01/2012, a compensation proposal to build a private protected area for this Sedge species was submitted to the authorities which was accepted.

Biological monitoring for bioindicator species: Latest biological monitoring round was done 2021, next ones will be done in every three years.

### 1.4. Invasive Alien Species

No invasive species identified inside the mining area. This has to be taken under consideration in future operations, for example re-vegetation.

### 1.5. Green House Gas Emission

The greenhouse gas emissions resulting from the project, measured in tons of carbon dioxide equivalents, were studied on a general level taking into account the extraction process, transport, and mineral processing.

The mining site's total carbon dioxide emissions amounted to approximately 43,600 and 73,200 tons per annum, which equates to between approximately 0.06% and 0.1% of Finland's total greenhouse gas emissions in the 2000s. Relative to the emissions generated by the industrial sector in the 2000s, the greenhouse gas emissions of the Kevitsa mine equate to between approximately 0.38% and 0.64%.

The airborne emissions resulting from the mining project are controlled by means of best available techniques (BAT) as well as dust collection systems and air pollution treatment, as necessary. Air quality within the mining site is controlled and monitored according to the guideline values and threshold values specified by the Finnish Government. These measures ensure that air quality within the mining site and in its immediate surroundings do not pose risks to human health or the well-being of the environment.

Flue gas emissions from the heating plant are controlled by opting for the best available technology and treatment techniques (solid fuel boiler). SO<sub>2</sub> emissions resulting from energy production are curbed by using low-Sulphur fuels.

Emissions resulting from transport and the use of heavy machinery are controlled by opting for environmentally friendly engines. Transport vehicles and machinery are also serviced at regular intervals in order to keep exhaust gas emissions to the minimum.



Figure 5. Locations of the Surface Water Monitoring in Kevitsa.

## 2. HABITATS PROTECTED OR RESTORED

The previously mentioned Natura2000 areas located near Kevitsa mining site as follows:

- **Koitelaiskaira Wilderness** (FI1301716, 43,938 hectares) immediately to the east of the Kevitsa mining site. The area is protected as a site of Community importance (SCI) under the European Habitats Directive and as a special protection area (SPA) under the European Birds.
- **Pomokaira Wilderness** (FI1301712, 92,358 hectares) along the transport route between Sodankylä and Kittilä. This area is protected as a site of Community importance (SCI) under the European Habitats Directive and as a special protection area (SPA) under the European Birds Directive.
- **Viiankiaapa Bog** (FI1301706, 6,595 hectares) is located approximately 8 kilometers to the south of the mining site. The area is protected as a site of Community importance (SCI) under the European Habitats Directive and as a special protection area (SPA) under the European Birds Directive. The site's designation is based on 11 habitat types listed in the European Habitats Directive and on nine species of birds listed under the European Birds Directive. Human use of Viiankiaapa Bog is subject to the provisions of the Finnish Nature Conservation Act. Viiankiaapa Bog is one of the largest and most impressive string bogs in Sodankylä local authority, and it includes vast flank fen areas. Viiankiaapa Bog also has rich fens as well as pine & spruce mires on the edges of the wetland. The area has a rich bird life and is home to several important species of birds.



### 3. RED LIST SPECIES AND NATIONAL CONSERVATION LIST SPECIES WITH HABITATS IN AREAS AFFECTED

A closer look at the adjacent area of Kevitsa's site enabled us to identify five species of qualifying interest which were the subject of focus under the development of the Biodiversity Management Plan for Kevitsa.

**Table 1.** Species of Value Under the Focus Lenses of Kevitsa's BMP

| Species  | Status   | Location   |
|--|--|--|
| <b>The Goldeneye Duck (Knipa / Bucephala Clangula)</b>                       | The common goldeneye or simply goldeneye is a medium-sized sea duck of the genus <i>Bucephala</i> . The genus name is derived from the Ancient Greek <i>boukephalos</i> ("bullheaded", from <i>bous</i> , "bull " and <i>kephale</i> , "head"), a reference to the bulbous head shape of the bufflehead. Common goldeneyes are aggressive and territorial ducks, and have elaborate courtship displays.  | Nearest monitored nesting boxes are located around Lake Satojärvi, Southeast of the mining area.   |
| <b>The Smew Duck (Salskrake / Mergellus Albellus)</b>                        | The smew is a species of duck, and is the only living member of the genus <i>Mergellus</i> . <i>Mergellus</i> is a diminutive of <i>Mergus</i> and <i>albellus</i> from Latin <i>albus</i> "white". This genus is closely related to <i>Mergus</i> and is sometimes included in it, though it might be closer to the goldeneyes ( <i>Bucephala</i> ). The smew has hybridized with the common goldeneye ( <i>B. clangula</i> ). A sea duck fossil from the Middle Miocene shows that birds similar to smew existed up to 13 million years ago. | Nearest monitored nesting boxes are located around Lake Satojärvi, Southeast of the mining area, and along the Mataraoja creek, West of the mining area. |
| <b>Moor Frog (Åkergröda / Rana Arvalis).</b>                                 | Moor frog is part of the EU Habitats directive annex IV (a) -species. Deliberate killing, capture, collection and disturbance and commercial use of moor frog is prohibited. Causing deterioration or destruction of breeding sites or resting places the reproduction and resting sites of moor frog is also prohibited.  | Moor frogs can be found inhabiting near Satojärvi lake and close to the bog area between mine site and Satojärvi's lake.                                 |
| <b>Dichelyma capillaceum moss (Hårklomossa / Dichelyma capillaceum moss)</b> | Growing on marshlands or fens, preferably on limestone foundation 12-30 cm long, stem tightly pairbransched, sharply spiked branches.  | Nearest found <i>Dichelyma capillaceum</i> moss occurrence was found at the Northeast from the mining area, along the Mataraoja.                         |

Additionally, within the mining area, a protected Capitata Sedge as *Carex Capitata* (Lettonuppisara in Finnish) was destroyed during the construction phase of the mine. Compensation method was agreed with the supervising authorities 2012, but compensation has not been finalized.

The brown bear, the Eurasian lynx, the grey wolf, and the European otter (*Lutra lutra*) are among the animals found in the area and are listed under the European Habitats Directive.

### 3.1. Natura2000 Areas

There is a vast Natura2000 site comprising **Koitelaiskaira Wilderness** (FI1301716, 43,938 hectares) immediately to the east of the Kevitsa mining site. The site's designation is based on 13 habitat types listed in the European Habitats Directive (priority habitat types in **bold**; Finland's environmental administration, 2010):

- **Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) < 1%**
- Alpine and boreal mountain heathlands 1%
- Boreal herb-rich forests < 1%
- **Fennoscandian wooded swamps 1%**
- Fennoscandian springs and spring fens < 1%
- Humic ponds and lakes 1%
- **Natural boreal forests 24%**
- **Raised bogs < 1%**
- Rich fens < 1%
- **String bogs 60%**
- Transition mires and quaking bogs 5%
- Water courses of plain to montane levels with the *Ranunculum fluitantis* and *Callitriche-Batrachion* vegetation < 1%
- **Wooded wetlands < 1%**

The site has the following species of birds listed in the European Birds Directive; Four of which were found as threatened:

- Arctic Tern *Sterna paradisaea*
- Bluethroat *Luscinia svecica*
- Black Grouse *Tetrao tetrix*
- Black Woodpecker *Dryocopus martius*
- Common Crane *Grus grus*
- Eurasian Eagle-owl *Bubo bubo*
- Eurasian Golden Plover *Pluvialis apricaria*
- Eurasian Three-toed Woodpecker *Picoides tridactylus*
- Eurasian Pygmy Owl *Glaucidium passerinum*
- Great Grey Owl *Strix nebulosi*
- Hazel Grouse *Bonasa bonasia*
- Hen Harrier *Circus cyaneus*
- Merlin *Falco columbarius*
- Northern Hawk Owl *Surnia ulula*
- Ruff *Philomachus pugnax*
- Red-necked Phalarope *Phalaropus lobatus*
- Short-eared Owl *Asio flammeus*
- Smew *Mergus albellus*
- Tengmalm's Owl *Aegolius funereus*
- Whooper Swan *Cygnus cygnus*
- Wood Sandpiper *Tringa glareola*
- Wood Grouse *Tetrao urogallus*

On another note, the Natura2000 site comprising **Pomokaira Wilderness** (FI1301712, 92,358 hectares) along the transport route between Sodankylä and Kittilä has a designation based on 12 habitat types listed in the European Habitats Directive (priority habitat types in **bold**; Finland's environmental administration, 2010):

- **Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) 10%**
- Alpine and boreal mountain heathlands 1%
- Boreal herb-rich forests < 1%
- Fennoscandian natural rivers < 1%
- Humic ponds and lakes < 1%
- **Natural boreal forests 30%**
- Rich fens < 1%
- Siliceous rocky slopes with chasmophytic vegetation 2%
- **String bogs 35%**
- Subarctic *Salix* spp scrub 2%
- **Wooded wetlands 15%**
- Water courses of plain to montane levels with the *Ranunculum fluitantis* and *Callitriche-Batrachion* vegetation 2%

The site has the following species of birds listed in the European Birds Directive. Three threatened species are found in the area.

- Merlin *Falco columbarius*
- Tengmalm's Owl *Aegolius funereus*
- Northern Hawk Owl *Surnia ulula*
- Eurasian Eagle-owl *Bubo bubo*
- Eurasian Golden Plover *Pluvialis apricaria*
- Common Crane *Grus grus*
- Great Grey Owl *Strix nebulosa*
- Arctic Tern *Sterna paradisaea*
- Whooper Swan *Cygnus cygnus*
- Wood Sandpiper *Tringa glareola*
- Wood Grouse *Tetrao urogallus*
- Black Woodpecker *Dryocopus martius*
- Eurasian Three-toed Woodpecker *Picoides tridactylus*
- Hazel Grouse *Bonasa bonasia*
- Bluethroat *Luscinia svecica*
- Hen Harrier *Circus cyaneus*
- Ruff *Philomachus pugnax*
- Short-eared Owl *Asio flammeus*
- Black Grouse *Tetrao tetrix*
- Smew *Mergus albellus*
- Eurasian Pygmy Owl *Glaucidium passerinum*
- Red-necked Phalarope *Phalaropus lobatus*

The site also has six of the species listed in the European Habitats Directive.

- European otter (1–5 individuals) *Lutra lutra*
- Lapland buttercup *Ranunculus lapponicus*
- Marsh saxifrage *Saxifraga hirculus*
- Wolverine (1–5 individuals) *Gulo gulo*
- (Noctuid moth) *Xestia borealis*
- Wideleaf polargrass *Arctagrostis latifolia*

Conservation statuses of threatened and significant species of plants and fungi found in Kevitsa Area. See table 2. Below:

**Table 2:** Conservation statuses of threatened and/or significant species of plants and fungi found in Kevitsa Area

| Species   |                           | NCS | RCS | P | SC | NR | Prevalence in the Kevitsa area  |
|---|---------------------------|-----|-----|---|----|----|---|
| <i>Carex capitata</i>                               | Capitate sedge            | LC  | RT  |   |    |    | Found near the headwaters of Mataraoja Brook and on a moorland island in a wetland area to the north of the brook   |
| <i>Carex heleo-nastes</i>                           | Hudson Bay sedge          | VU  |     |   |    | X  | One population in Sippiöaapa Bog  |
| <i>Carex livida</i>                                 | Livid sedge               | LC  |     |   |    | X  | Several vast populations in Sippiöaapa Bog, around Lake Saiveljärvi, in Kevitsanaapa Bog, and in the wetlands found to the east and west of the Kevitsansarvi area  |
| <i>Dactylorhiza incarnate</i> ssp. <i>incarnata</i> | Early marsh orchid        | VU  |     |   |    |    | Several populations to the north of Kevitsanaapa Bog, in the rich spruce-birch fen located between Kevitsanvaara Hill and Kevitsansarvi, around Lake Satojärvi, in Sippiöaapa Bog, and in the Loivonen wetland area |
| <i>Listera ovata</i>                                | European common twayblade | LC  |     | X |    |    | One population in the eastern parts of the location of TSF1 in the Loivonen wetland area  |
| <i>Lychnis alpina</i> var. <i>serpentinicola</i>    | Alpine catch-fly          | NT  |     |   | X  | X  | Two populations in the Vaiskonselkä area  |
| <i>Amylocystis lapponica</i>                        | (Bracket fungus)          | NT  |     |   |    |    | Found to the west and southwest of Lake Satojärvi   |
| <i>Fomitopsis rosea</i>                             | Rosy conk                 | NT  |     |   |    |    | One population to the southwest of Satovaara Hill   |
| <i>Phlebia centrifuga</i>                           | (Wood-rotting fungus)     | NT  |     |   |    |    | Two populations to the east of Lake Satojärvi   |

NCS = national conservation status (Rassi et al., 2010): VU = vulnerable; NT = near threatened; LC = least concern. RCS = regional conservation status: RT = regionally threatened. P = protected under the Finnish Nature Conservation Act. SC = special concern as per the Finnish Nature Conservation Decree. NR = national responsibility under international conventions.

Conservation statuses of significant species of birds in Kevitsa area sighted during biological surveys in the locations TSF2 and TSF4 in June. See table 3 below:

**Table 3.** Conservation Statuses of significant species of birds in Kevitsa area sighted

| Species                   |                           | Conservation status |          |          | No of breeding pairs (sighted) | Total No of breeding pairs (indicated) | Conservation score |
|---------------------------|---------------------------|---------------------|----------|----------|--------------------------------|--|--------------------|
|                           |                           | EU                  | NR       | NCS      |                                |  |                    |
| Whooper Swan              | <i>Cygnus cygnus</i>      | X                   | X        |          | 1                              | 1.0                                    | 5.00               |
| Common Goldeneye          | <i>Bucephala clangula</i> |                     | X        |          | 8                              | 6.0                                    | 1.02               |
| Common Teal               | <i>Anas crecca</i>        |                     | X        |          | 7                              | 5.0                                    | 0.77               |
| Wood Sandpiper            | <i>Tringa glareola</i>    | X                   | X        |          | 6                              | 16.1                                   | 3.77               |
| Greenshank                | <i>Tringa nebularia</i>   |                     | X        |          | 1                              | 1.1                                    | 1.49               |
| Yellow Wagtail            | <i>Motacilla flava</i>    |                     |          | VU       | 3                              | 18.8                                   | 1.01               |
| Meadow Pipit              | <i>Anthus pratensis</i>   |                     |          | NT       | 6                              | 29.1                                   | 1.38               |
| <b>Total</b>              |                           | <b>2</b>            | <b>5</b> | <b>2</b> | <b>32</b>                      | <b>77</b>                              | <b>14.4</b>        |
| <b>Total, all species</b> |                           |                     |          |          | <b>109</b>                     | <b>341</b>                             | <b>29.4</b>        |

EU: species listed in **Annex 1** of the European Birds Directive. NR= species for the survival of which Finland is responsible for on a global scale. NCS= species for which a national conservation status is specified/threatened species (VU= vulnerable, NT= near threatened)