

Boliden Odda AS

# ► **Biodiversity GRI Report 2022**

Site: Boliden Odda

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## Summary

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# 1 General information

Boliden Odda AS is located on Eitrheimsneset in Sørfjorden by Odda, in Ullensvang municipality. Boliden Odda is a smelter producing mainly metallic zinc and sulfuric acid. The area of the industrial facility is approximately 32 hectares. Including an old deposit which is now a golf course, it is approximately 41 hectares. In addition to this, Boliden is using underground facilities for storing of special waste, two kilometers north of the facility, and is depositing blasted rock on the sea bottom in the same area.

Within a radius of 2 kilometers from the industrial facility, there are 17 areas of high biodiversity value. Among these, there are two protected areas, 13 special habitat types, one breeding area for cod, and one reindeer area (Table 1).

As part of the process with expanding the industrial facility, environmental impact assessments (EIA) of biodiversity were conducted in 2019. No significant impacts were detected.

*Table 1: Protected areas and other areas of high biodiversity value within a radius of 2 kilometres from the centre point of the industrial facility. Whether the area is a terrestrial, freshwater or marine ecosystem is given by the letters T, F or M respectively, in the column "Main ecosystem".*

Name	Type of area	Main ecosystem	Total area (ha)	Area within 2 km from facility (ha)
Folgefonna nasjonalpark	National park	T	54 803	17
Buer landskapsvernområde	Landscape protection area	T	2 142	12
Sørfjorden	Area of high biodiversity value	M	2 000	317
Hardangervidda villreinområde	Area of high biodiversity value	T	813 000	24
Errestå	Area of high biodiversity value	T	2,0	2,0
Øyonshelleren	Area of high biodiversity value	T	18	18
Nord for Eitro	Area of high biodiversity value	T	10	10
Vest for Tveitane	Area of high biodiversity value	T	1,4	1,4
Tokheimskleiva	Area of high biodiversity value	T	0,3	0,3
Tokheimselva fossesprøytsone	Area of high biodiversity value	T	0,5	0,5
Byrkjenes sør	Area of high biodiversity value	T	13,1	12,8
Byrkjenes nord	Area of high biodiversity value	T	29	29
Indre Lindeneset	Area of high biodiversity value	T	18	18
Sleveåne bekkekløft	Area of high biodiversity value	T	4,3	4,3
Sleveåne fossesprøytsone	Area of high biodiversity value	T	0,1	0,1
Lindenes	Area of high biodiversity value	T	16	16
Tyssedal sør	Area of high biodiversity value	T	16	1,1

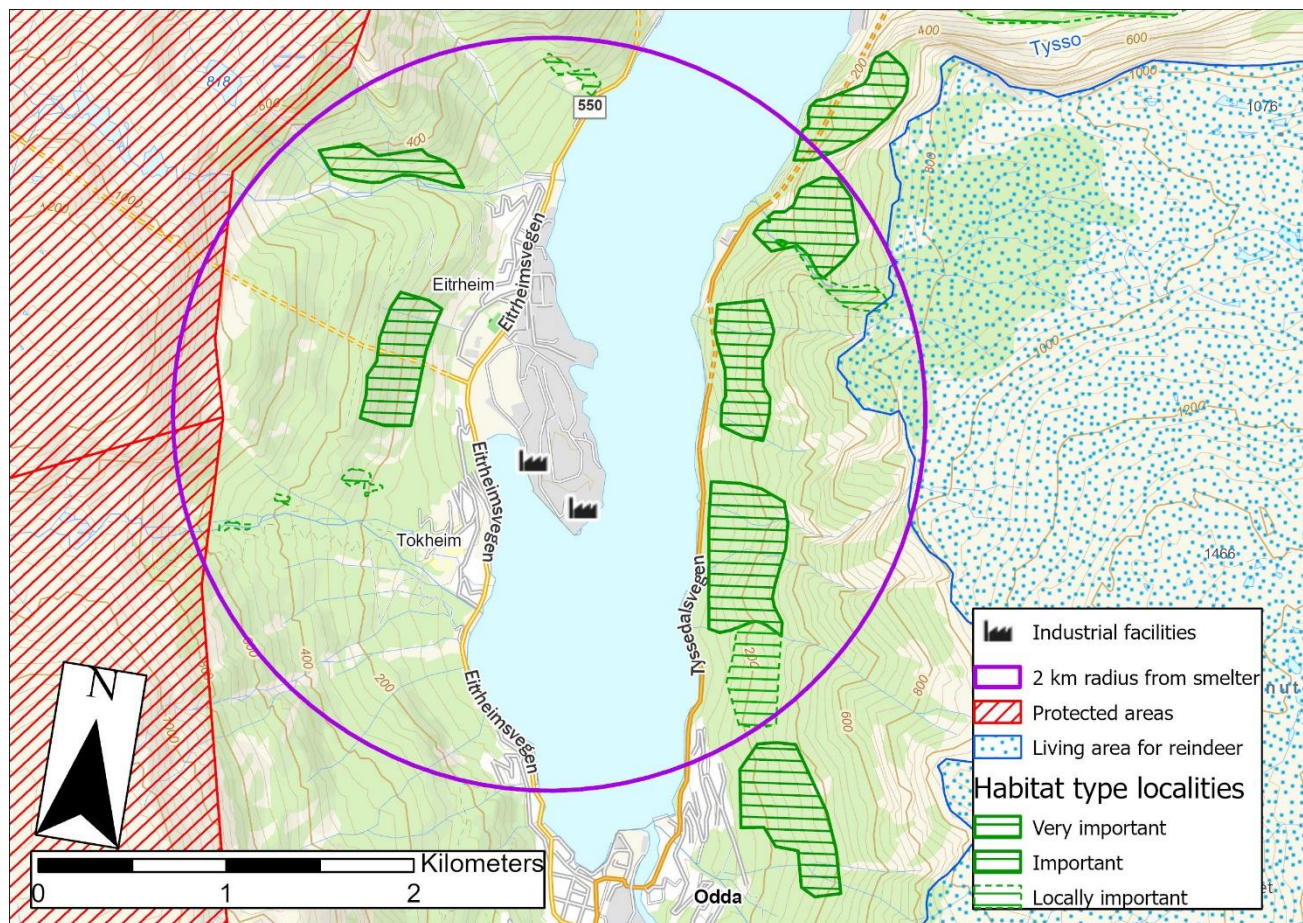


Figure 1: The smelter (factory symbol) is located on Eitrheimsneset in Odda. Within a radius of 2 kilometres from the smelter, there are small parts of two protected areas (red), several special habitat types (green) and a small part of a large living area for reindeer (blue). The entire southern part of Sørkjøya (the water body on the map) is registered as spawning grounds for cod (*Gadus morhua*).

## 2 Impacts of activities, products, and services on biodiversity

Expected impacts related to the expansion of the smelter was evaluated in the 2019 EIA, which concluded that the total increased impact from the expansion of the smelter was concluded to be small. However, there are some impacts from the facility. Previous impacts from the industrial facility have resulted in both habitat conversion and reduction of species due to respectively construction of the facility, and airborne and waterborne pollution. The impacts from ongoing activities are mainly due to emissions to and deposition in the sea, but these impacts are minor compared to earlier years. There are several other industrial facilities in and around Odda, and it is difficult to disentangle the impacts from the respective industrial facilities, when it comes to emissions to large recipients such as the air and the sea.

### 2.1 Ongoing impacts

- **Emission bursts of SO<sub>2</sub>:** Through a year, the overall mean emissions of SO<sub>2</sub> are minimal. However, bursts of SO<sub>2</sub> emissions are known to occur. Airborne SO<sub>2</sub> can negatively impact e.g., lichens and mosses if deposited in high concentrations. The Western part of Norway is a hotspot for rare mosses and lichens, but the inner Sjørfjorden area is almost devoid of such species due to the heavy pollution since the early 1900s.
- **Diffuse runoff:** There is some metal pollution runoff to Eitheimsvågen, deriving from the old deposit, and from unloading of metals at the dock.
- **Other emissions:** According to permits, the company has emissions of some substances, e.g., zinc (Zn), arsen (As), lead (Pb) and cadmium (Cd) to water. These emissions derive from specific known sources and are due to industrial processes.
- **Deposition of blasted rock:** According to permits, the company deposits blasted rock on the seafloor in Sjørfjorden. This will typically lead to some emissions of nitrogen, particles, plastics, and other substances.
- **Area use:** The site occupies and has occupied a former nature area for decades. The ongoing expansion of the facility is altering the land-use to a small degree.
- **Invasive species:** There are no known occurrences of invasive species on the industrial facility.

### 2.2 Characteristics of impacts

Ongoing impacts (emissions and deposition) affect marine species. As the ongoing impacts are small compared to those of earlier periods, relatively small areas of seabed are affected. The deposition of blasted rock disrupts the community of bottom-living species, but they will be able to recolonize the deposition site from adjacent areas when the deposition is finished. The duration of these ongoing impacts will last as long as the underground storage facilities are being expanded. However, earlier emissions to air and sea have altered the ecosystems to a large degree, and especially the marine environment in Sjørfjorden is still severely impacted by earlier activities. The large reduction of emissions to air probably makes it possible for pollution-sensitive species to recolonize the area, although emission bursts of SO<sub>2</sub> could set this back. Apart from possible effects of the emissions, the ongoing activities does not lead to any noticeable changes in ecological processes outside the natural range of variation.

## **2.3 Monitoring programs**

There are several monitoring programs and studies monitoring emissions from the smelter, see reference list in appendix 1 for details:

- Program for monitoring of coastal waters in Hardanger 2017-2021
- Program for monitoring of coastal waters in Hardanger 2022-2026.
- Monitoring of emissions to air (continuous)
- Biomonitoring of metal pollution from smelter (2015)
- Emission and effect of Thallium in the sea (2022)
- Metal pollution in soil (2006)

### 3 Habitats protected or restored

- In the zoning plan for the industrial facility, there are no areas protected as zones with special regulations for biodiversity.
- Eitrheimsvågen west of the industrial facility was earlier used as a deposit but was in the 1990s redeveloped into a recreational area with a golf course. In this process, a pond was created, and a new beach zone was established. Trees were planted between different parts of the golf course, and around the pond. These areas are small but serve a function for local biodiversity such as birds, insects, and crustaceans. As of March 2023, the golf course is used as rigging area for the expansion of the industrial facility. Thus, the area has low value for biodiversity, but the western parts, and the parts close to the pond will be restored to park areas after the construction work is finished in during the autumn of 2024.
- Habitats for local biodiversity
  - Tree groups: Approximately 0,7 ha. Some tree groups are impacted due to ongoing construction activity.
  - Pond: Approximately 0,3 ha. There are relatively high levels of heavy metals such as zinc in the pond, but some fishes and insects still thrive. The fish species three-spined stickleback (*Gasterosteus aculeatus*) has been observed. Regarding vegetation a species in the bur-reed genus (*Sparganium* sp.) has been registered, and a vegetation mapping probably would yield observations of a few other aquatic species.
  - Beach zone: Approximately 0,8 ha. Has remained unaltered since it was created and provides habitat for e.g. birds, crustaceans and algae.
- There are no existing partnerships with third parties to protect or restore habitats.
- When considering which areas to be included here it has been assessed whether the habitats have a structure and/or vegetation that provides habitats for several species groups, and that are to a certain extent allowed to develop without intensive management such as frequent mowing.

## 4 Red list species and national conservation list species with habitats in areas affected

There is a total of 46 red-listed species and 6 species on national conservation lists observed within a 2 km radius of Boliden Odda. We have limited this overview to include observations from the last 50 years (from 1973 onwards). Some of the species are commented on below and/or elaborated in appendix 1.

Species group	Red list status/national conservation list	Number of species
Birds	Critically endangered - CR	4
	Endangered - EN	6
	Vulnerable - VU	15
	Near threatened - NT	15
	Least concern – LC, but on National conservation list	6
Mammals and fishes	Near threatened - NT	2
Vascular plants	Endangered - EN	2
	Vulnerable - VU	1
	Near threatened - NT	1

- Atlantic salmon (*Salmo salar*) – near threatened (NT). Spawns in the river Opo, but not affected by industrial facility. Deposition of blasted rock in Sørfjorden could potentially give some impact when the salmon migrates towards the river.
- Red-listed seabirds. Since the present-day emissions from the industrial facility are next to nothing, the seabirds are not affected.
- Common gull (*Larus canus*) – vulnerable (VU). It has been observed (latest in 2021) that the common gull was breeding in the industrial facility. No negative impact from industrial facility.
- Red-listed passerines. No negative impact from industrial facility, but it is possible to contribute positively to these populations.
- White-backed woodpecker (*Dendrocopos leucotos*) (LC). The species is on a national conservation list. No negative impact from industrial facility.
- Hedgehog (*Erinaceus europaeus*) (NT). No negative impact from industrial facility if still present in the area.
- Red-listed plant species. The ongoing activities of the industrial facility does not affect the species negatively.
- In total 353 species with the status least concern “LC” on the Norwegian red list for species has been observed in the vicinity of the smelter since 1973.



Figure 2: Left: White-backed woodpecker. Photo: John Haugen. Middle: Common gull. Photo: Tycho Anker-Nilssen. Right: Log-tailed duck. Photo: Jan Ove Gjershaug. Licence all photos: (CC BY-SA 4.0).

## 5 Summary and improvements

Suggestions for improvements and further monitoring concerning biodiversity. See appendix 1 for elaboration on the specific suggestions.

### 5.1 Monitoring

- Biomonitoring of development in air quality
- Monitoring of fresh-water species on-site
- Restart biomonitoring of heavy metals in mosses
- Continuous monitoring of SO<sub>2</sub> emissions
- Monitoring of habitat recolonization on blasted rock deposits

### 5.2 Improvements

- Creation of habitats on former golf course
- Hay meadows – habitats for pollinating insects
- Planting of trees
- Mapping and combating of invasive plant species
- Restoration of seabed
- Breeding platforms for seabirds
- Reduction of emissions to air and sea

Tabell 1: Data summary of nature conservation areas located in the vicinity of smelter.

<b>Protected nature areas located in the vicinity (Y/N)</b>	Yes
<b>Number of protected areas and high biodiversity value sites 2 km from smelter</b>	17
<b>Closest distance (kilometers)</b>	0 (Sørfjorden)
<b>Type of protected area</b>	National park, landscape protection area
<b>Total area of protected area and high biodiversity value sites 2 km from smelter</b>	483,5 ha
<b>Number of red listed species observed in the 2 km radius</b>	40
<b>Number of Critically Endangered and Endangered species observed in the 2 km radius</b>	10
<b>Smelters impact to conservation area is assessed (Y/N)</b>	Yes
<b>Impact assessment latest update</b>	2019
<b>Is there in the environmental permit any monitoring or other requirements considering the area (Y/N)</b>	Yes

## 6 Appendices

Appendix 1: *Boliden Odda GRI Biodiversity Report 2022 – supplementary assessments*

Appendix 2: *GRI 304 requirements table*