

Environmental impact related to the modernization of the Arctowski Station

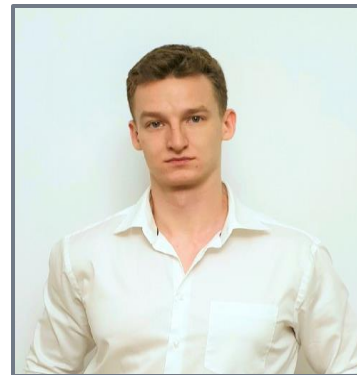
(legal basis, assessment methodology, mitigation actions guideline)

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THE SCOPE OF THE PRESENTATION

- ◆ Project time schedule
- ◆ The legal basis
- ◆ The environmental impact assessment methodology
- ◆ The environmental impact assessment results
- ◆ Cumulative impact assessment
- ◆ Mitigation actions
- ◆ Monitoring guidelines
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Project time schedule

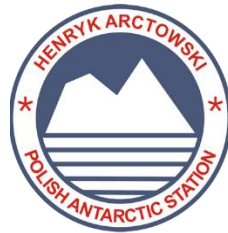


Construction of a new residential building and comprehensive conversion of the Arctowski Station "Arctowski – PolarPOL – Polish Multidisciplinary Laboratory of Polar Research in Antarctica was divided into stages.

SEASON*	SCOPE OF WORKS
2020/2021	1 STAGE: Construction of two garage halls.
2021/2022	2 STAGE: Foundation of the main building, utility networks, water pumping station building, technical gases storage, lighthouse modernization, providing drinking water reservoir with control measures, construction of a sewage treatment plant.
2022/2023	3 STAGE: Foundation of the main building to a closed shell form, lighthouse modernization.
2023 – Winter season	4 STAGE: Finishing works – Main building.
2023/2024	5 STAGE: Demolition of the existing buildings intended for removal, building a landing site for helicopters, renovation of facades of buildings remaining in operation.

* Indicative schedule

Legal basis



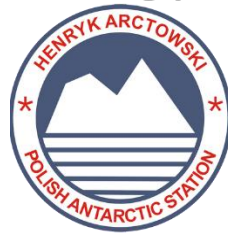
Article 8 of the Protocol on Environmental Protection to the Antarctic Treaty established in Madrid on 4th October 1991 and Annex I to the Protocol on Environmental Protection to the Antarctic Treaty

- planned activities will be subject to the procedures set out in Annex I to the Protocol in order to examine the impacts of such activities on the Antarctic environment as well as its dependent and associated ecosystems, taking into account whether such activities are considered to have:
 - (a) less than a minor or transitory impact;
 - (b) a minor or transitory impact; or
 - (c) more than a minor or transitory impact.

Local polish law – Act of 3rd October 2008 on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments (consolidated text Journal of Laws of 2020, item 283 as amended)

- does not include procedures and guidelines for the preparation of EIA in Antarctica.

Environmental impact assessment methodology



Impact of the Task on the environment was presented in relations to the existing state.

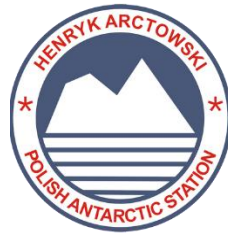
The planned construction will be carried out within the existing station infrastructure, **in areas that have already been transformed by human activity**, and **does not imply any expansion of resource usage in Antarctica**.

All impacts described will only occur at the stage of new facilities construction, i.e. they are temporary in nature.

Impact ranges on the fauna and flora were determined:

- range of **direct impact** – area of construction works and related operations i.e. transport and storage of materials
- range of **indirect impact** – related to noise emissions.

Environmental impact assessment results



Results of the analysis for the first stage:

- **impact on flora** – no direct impact on the vegetation occurring in the area of the Station, except for incidents (risk mitigated by implementing right procedures).
Probability of an indirect impact associated with lowering the ground water level in the area of the moss carpet is negligible;
- **impact on fauna** – no direct impact on animal breeding sites, only potential short-term indirect impact caused by noise emissions;
- **impact on soil and water quality and the amount of produced waste** – no direct impact on soil and water quality, apart from emergency situations (small scale risk, mitigated by implementing right procedures – no significant impact expected).
Direct, short-term impact on the amount of produced waste (to be disposed in accordance with Article 1(4) of Annex III to the Protocol).

Cumulative impact assessment



Two types of potential cumulative impact of the proposed activity:

- cumulative impact in the context of other activities implemented in the region - no cumulative impact with the first stage of works,
- cumulative impact in the context of subsequent stages of the Station conversion - lack of overlapping temporal or spatial impacts.

Dividing the conversion of the Station into stages enables to:

- minimize the impact of the whole Project
- introduce corrective actions to the impact monitoring assumptions, due to the convergence of factors that influence the state of the environment in the period of subsequent seasons.

Mitigation actions



Measures proposed as part of the efforts to minimize the impact of the Task on the environment:

- Training of all the construction workers, in the principles of moving in the area of the Station and outside the Station, handling the fauna, handling waste, reaction to emergency leaks from the machinery and spills while refuelling vehicles, etc.
- Get all the construction workers acquainted with the contents of the Protocol.
- Limiting the working hours of the construction machinery and other vehicles to the minimum, switching off the engines when stopped.
- Gradual increase of combustion engines speed to adapt the animals to the noise and allow them to move away to a calm place before the maximum sound level is reached.
- Constant monitoring held by a qualified person from the Station staff to make sure that the rules binding within the premises of the Station are observed, including supervision if restriction on the access to the moss carpet area is observed.
- Maintenance of the construction machinery and other vehicles in proper technical condition.
- Limiting the speed of vehicles to 10 km/h.
- Distribution of petroleum-derivative sorbents in the area of construction and unloading sites.
- Adequate protection of waste against dissipation and penetration into the environment.
- Carrying out the construction works from mid-January to the end of March.

Monitoring guidelines



In accordance with Article 5 of Annex I to the Protocol, in order to examine the impacts of the Task implementation, environmental monitoring is provided for:

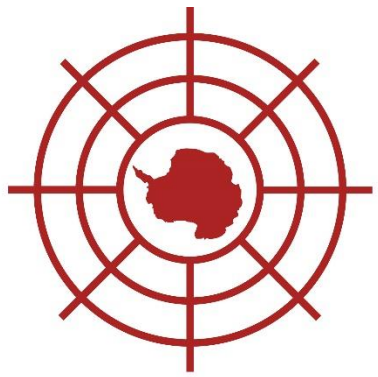
- Impact of noise on subantarctic skua (*Stercorarius antarcticus lonnbergi*), south polar skua (*Stercorarius maccormicki*), Wilson's storm petrel (*Oceanites oceanicus*) and black-bellied storm petrel (*Fregetta tropica*) populations – long-term monitoring;
- Noise levels at two locations near the construction sites to ensure that Temporary Threshold Shift (TTS) level, i.e. 93 dB(A), is not exceeded, since this could damage hearing in animals – short-term monitoring during construction works;
- Animal movements – short-term monitoring during construction works;
- Presence of non-native species – short-term monitoring for the time of material and human transport;
- Impact of possible trench dehydration on the moss carpet ecosystem (in terms of drying) – short-term monitoring during construction works;
- Amount of generated waste, its segregation, protection against penetration into the environment – short-term monitoring during construction works;
- Technical condition of the construction equipment – short-term monitoring during construction works.

References & Bibliography



In order to conduct the Initial Environmental Evaluation for the STAGE 1 of the project, the following sources were used:

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