

LAND-USE PLAN Ny-Ålesund 2023–2033



79°N



PLAN DESCRIPTION

CONSULTATION DRAFT 16 JUNE 2023

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The planning documents have been prepared on behalf of Kings Bay as by Hanne Karin Tollan, adviser land-use planning, cultural heritage and the environment.

The plan map has been digitised in accordance with current drawing rules and incorporated into access to the plan in collaboration with Longyearbyen Lokalstyre.

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1 INTRODUCTION

1.1 Background and purpose

The purpose of the land-use plan is to provide an updated legal management tool for the development, use and protection of land and buildings in the Ny-Ålesund land-use planning area in accordance with the current framework conditions and the overarching goals of Norwegian policy for Svalbard. The plan has a time horizon of ten years, and the need for revision must be assessed every four years. Development and management of land, buildings and infrastructure must contribute to the maintenance of the Norwegian population and facilitate the development of Ny-Ålesund research station as a Norwegian platform for world-class international research collaboration. Land use and activities must safeguard the natural/cultural environment, have the lightest possible carbon footprint and be adapted to climate change.

Kings Bay AS is the instance responsible for planning for the Ny-Ålesund land-use planning area in accordance with Section 48 of the Svalbard Environmental Protection Act. The purpose of the Svalbard Environmental Protection Act is to preserve a virtually untouched environment in Svalbard with respect to continuous areas of wilderness, landscape, flora, fauna and cultural heritage. Within this framework, the Act allows for environmentally sound settlement, research and commercial activities. Kings Bay AS is wholly owned by the Norwegian Ministry of Climate and Environment. It is an instrument through which the Government of Norway strives to maximise the attainment of industrial policy goals. The company facilitates day-to-day operations and support for the Ny-Ålesund Research Station and is responsible for all societal functions.

The established Research Strategy for Ny-Ålesund (2019) provides clear guidelines on the further development of Ny-Ålesund, including by facilitating thematically based research activity and shared use of buildings, research infrastructure, facilities and equipment. The Norwegian Polar Institute (NP) leases Ny-Ålesund as a research station and is responsible for implementing and monitoring the research strategy.



Figure 1. Ny-Ålesund

(photo 201: Svein Harald Sønderland, Kings Bay)

1.2 The Kongsfjord Property and the Ny-Ålesund land-use planning area

The Ny-Ålesund land-use planning area is located on the Brøgger Peninsula on the west coast of Spitsbergen, and is part of the Kongsfjord Property 38/1 (treaty property).

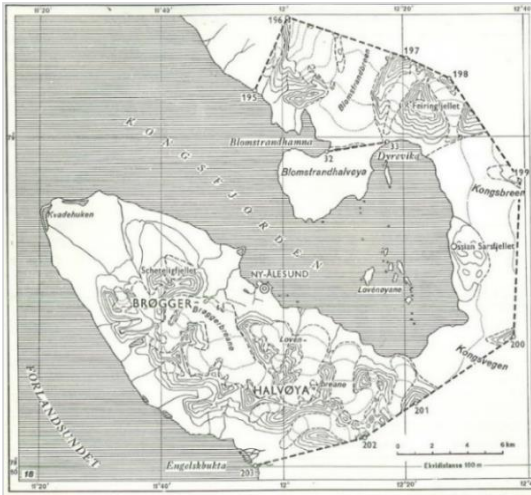


Figure 2. The Kongsfjord Property 38/1 – historical map



Figure 3. Ny-Ålesund land-use planning area

The Kongsfjord Property covers a total of 295 sq km including, in addition to the Brøgger Peninsula, a coastal strip on the east and north side of Kongsfjorden, cf. Figure 2. Kings Bay AS is the landowner and owner of all buildings in Ny-Ålesund, with the exception of the Sverdrup building (Norwegian Directorate of Public Construction and Property), the Zeppelin Observatory (Norwegian Polar Institute) and the Brandal Geodetic Earth Observatory (Norwegian Mapping Authority).

The Ny-Ålesund land-use planning area is 20 sq km as demarcated in Regulation FOR-2002-06-28-650, cf. Figure 3.

The land-use area includes Prins Heinrichøya, Dietrichholmen, Mietheholmen and territorial waters at varying distances from land. Previous land-use plans for Ny-Ålesund were adopted in 1998 and 2009.

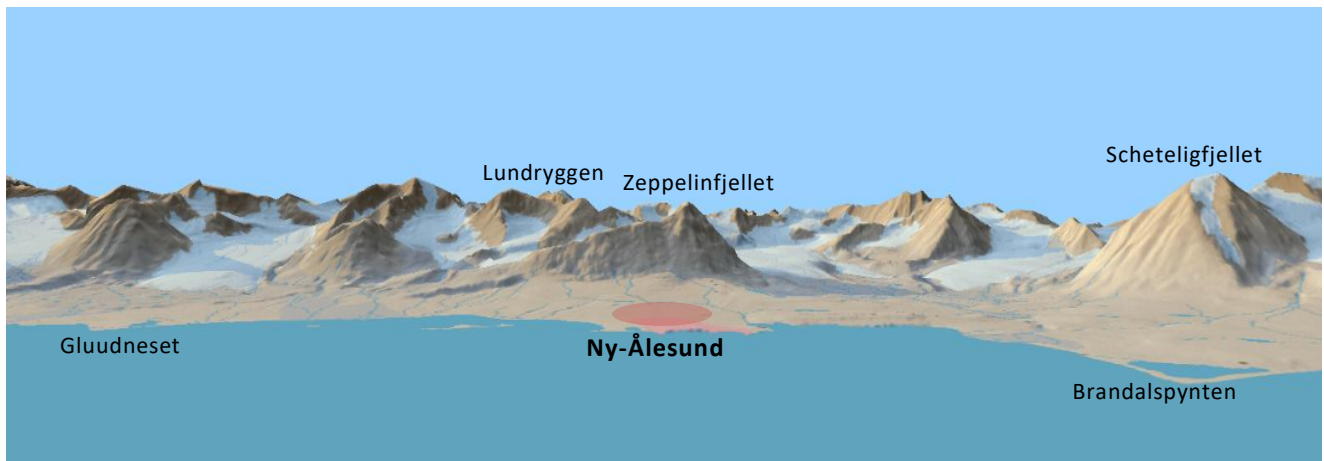


Figure 4. Terrain model

(source: [toposvalbard](https://toposvalbard.no/))

1.3 Land-use plan as a legal management tool

The land-use plan documents:

- Plan map with purpose-defined use and protection, consultation draft dated 16 June 2023 ([link to plan access](#))
- Supplementary provisions and guidelines, consultation draft dated 16 June 2023
- Plan description, consultation draft dated 16 June 2023

Background documents:

- a) Risk and vulnerability assessment land-use plan, dated 16 April 2023
- b) Description and assessment of biodiversity, memorandum dated 2 May 2023
- c) Extension of Kongsfjordhallen – impact/consequence assessment, memorandum dated 26 April 2023
- d) Ny-Ålesund 2023 – visual presentation/analysis, Dina Brode-Roger, 26 April 2023
- e) Planning programme established on 21 October 2021
- f) Comments received at the notified planning start-up and consultation for the planning programme including Kings Bay's opinion, memorandum dated 13 April 2023
- g) Danger zone tank installation, Safetec 14 June 2023

Knowledge base, cf. overview in the plan description section 4.1

The plan map and related provisions determine the permitted land use and are the legally binding parts of the plan. The plan description and guidelines elaborate on the plan's intention and are guiding for the processing of applications for permits pursuant to Section 58 of the Svalbard Environmental Protection Act. It is not permitted to depart from the land-use objective, but the Governor of Svalbard may grant permits for activities that contravene the supplementary provisions. If deviation from the land-use objective is considered, a new planning process must be implemented, either by revising the entire plan or preparing a sub-plan for the measure/purpose in question.

The requirement for a separate impact assessment in accordance with Section 59 may apply to subsequent plans for carrying out specific measures in the land-use planning area, if these are deemed to have substantial and long-term effects on the environment and society.

Kings Bay AS, as landowner and the instance responsible for planning, processes applications for permits for measures/activities and recommends suitable measures. The Governor of Svalbard is the decision-making authority. The planning provisions establish requirements for the content and structure of applications for permits for measures/activities. Provided that the measures applied for are in accordance with the purpose of the land-use plan and provisions on scope and execution, measures can start three weeks after the Governor of Svalbard has received the application/notice in accordance with Section 58 of the Svalbard Environmental Protection Act.

1.4 Planning process, established planning programme and framework conditions

The planning programme for the review of the land-use plan was established on 21 October 2021 by Kings Bay AS as instance responsible for planning, cf. Section 50 of the Svalbard Environmental Protection Act. The planning programme describes the organisation of the planning work, arrangements for participation and the prerequisites and content of the planning and investigation work.

Consultation for the planning programme was initiated at the same time as notice of the start of planning was issued on 28 May 2021. The draft consultation planning programme was sent by email to 65 consultation bodies. Announcements were placed in *Svalbardposten*, and on the Kings Bay AS and Ny-Ålesund Research Station's websites. The consultation period ran from 28 May to 9 July 2021. A total of 11 opinions were submitted relating to the planning work. Input and opinions from the notice/consultation round were used as a basis for planning and investigation work. Opinions submitted, including Kings Bay's opinion, are incorporated into the land-use plan's background documents.

Legislation/regulations and overarching frameworks and guidelines for planning are shown in the established planning programme.

Information and participation meetings have been held with affected parties and the Governor as the instance responsible for planning throughout the planning process. As a basis for the structure of the land-use plan and to incorporate Ny-Ålesund as a research station and research as the basis for the settlement, a thematic plan for research areas has been drawn up in collaboration with the Norwegian Polar Institute and the Ny-Ålesund Science Managers Committee ([NySMAC](#)).

2 DESCRIPTION OF THE LAND-USE PLANNING AREA – CURRENT SITUATION

2.1 Landscape and terrain

The land-use planning area is located on the Brøgger Peninsula, facing Kongsfjorden to the north-east. The general landscape is delimited by characteristic pointed alpine mountain formations and glaciers. Kongsfjorden is wide with several islets and reefs. The glaciers on the north side of the fjord form large interconnected systems of valley glaciers and cirque glaciers with several glacier fronts protruding into the sea. The glaciers on the Brøgger Peninsula are smaller cirque glaciers located on higher ground.

The land-use planning area is demarcated as a series of straight lines running from Brandalspynten to Scheteligfjellet (694 m) via Zeppelinfjellet (557 m), Lundryggen (590 m) and Sherdahlfjellet (445 m) to Gluudneset.

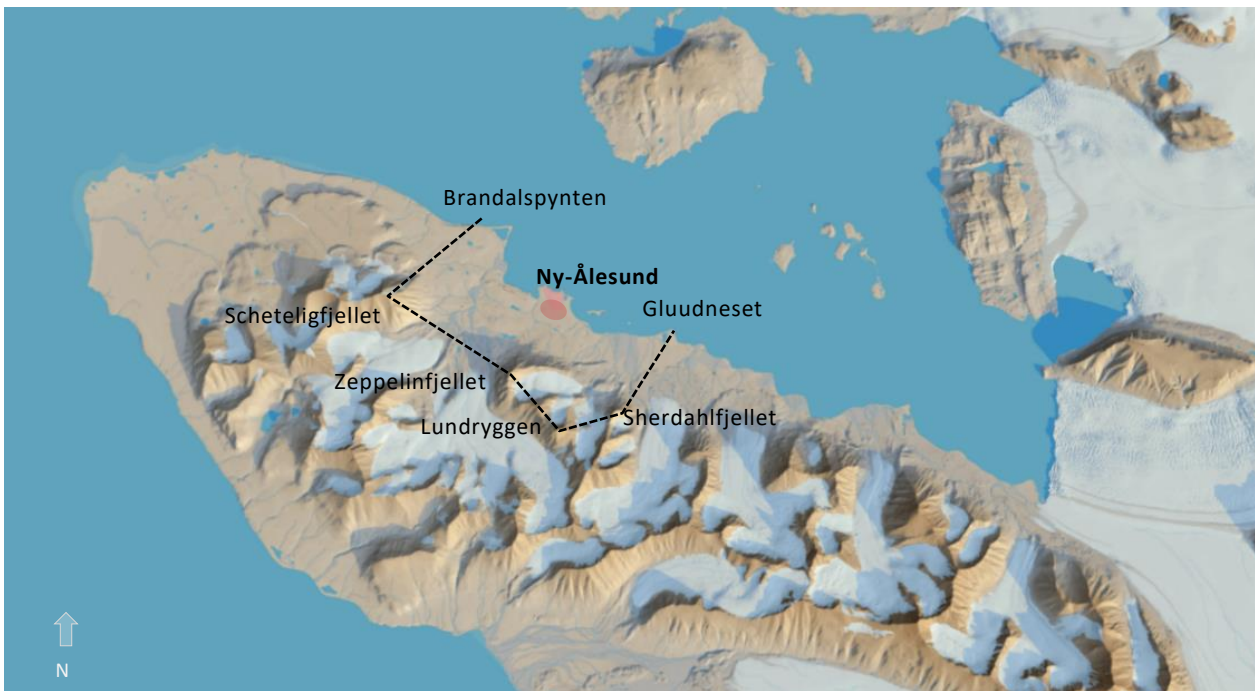


Figure 5. The land-use planning area in the general landscape
(source: toposvalbard)

Ny-Ålesund is situated on a plateau with gentle slopes and rounded terrain forms at the foot of the Zeppelinfjellet mountain. The settlement has a defined boundary and is included as a positive experience element. The landscape to the north is characterised by expansive views across the fjord and glacier fronts, and to the south high mountain formations that provide visual demarcation and back cover. The mountain ridge on which the airport is located falls steeply down to the sea, occasionally precipitously. This key feature of the local landscape contrasts with the expansive view over the gentler terrain forms on either side. The contrast is reinforced by multiple technical facilities on the ridge connected to the airport and research activities.

More specifically, glacial deposits, flood plains, alluvial fans and raised beaches are important terrain forms of significance for the landscape. The Bayelva, Voitelva and Wexelva rivers form clearly demarcated alluvial plains along the coastline. Bayelva is also called Raudelva (“the Red River”) on account of the red sand that colours its water. The alluvial plains are connected to often meandering rivers that build up gravel plains in the form of outwash plains and alluvial fans. In less compact areas along the fjord, uncompacted materials have formed raised beaches reflecting varying sea levels since the last Ice Age. Glacial deposits filled with ice dominate the local landscape. The geological layers on the Brøgger Peninsula are broken up by sharp faults that typify the landscape structure, cf. figure 6. There are frequent frosts and frost-blackened material is common, with large volumes of scree and rubble lying below the steep slopes.

Figure 6. Terrain/elevation map and geological map
(source: [the svalbard map](#))



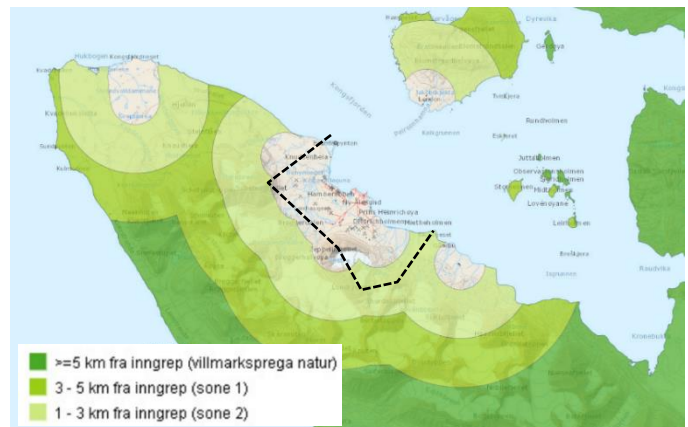
2.2 Natural environment

There is continuous recording, research and monitoring of the natural environment in Svalbard and in Ny-Ålesund. This provides a comprehensive knowledge base that is constantly updated and expanded.

Environmental Monitoring of Svalbard and Jan Mayen ([MOSJ](#)) performs environmental monitoring in the area for the Norwegian government. One of MOSJ's key functions is to provide a basis for assessing whether the political goals set for the environment in the northern regions are being met. The environmental goals for the polar regions can be viewed on the [Miljøstatus](#) website.

One of Norway's environmental goals is to maintain the existing scope of wilderness areas in Svalbard and to ensure that biodiversity is virtually unaffected by local activities. Wilderness areas are defined as areas that are 5 km or more as the crow flies from the nearest significant physical interventions in the terrain, buildings and installations. According to this definition, the entire land-use planning area currently features such interventions.

Figure 7. Areas of Ny-Ålesund with terrain interventions
(source: [environmental status map](#))



Flora and fauna

The vegetation in the land-use planning area has been mapped showing the distribution of main types of vegetation and other dominant non-vegetated/sparsely vegetated land-use types (ref. [the svalbard map](#)).

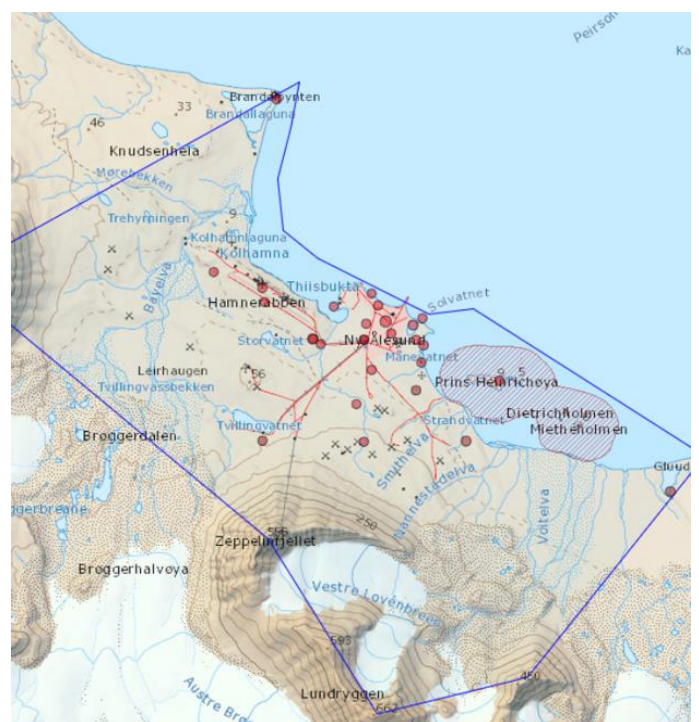
Cryptogams, i.e. plants that reproduce using spores, like mosses and ferns, are the dominant flora. All critically endangered or endangered moss species recorded within the land-use planning area are listed in [the Norwegian Biodiversity Information Centre's Species Maps](#).

Studies of vertebrates on the Brøgger Peninsula and within the land-use planning area reveal a large number of species, both native and migratory, such as the barnacle goose, various species of waders, the Arctic fox and Svalbard reindeer.

No critically endangered species of birds or mammals have been recorded within the land-use planning area, but a total of 29 endangered birds and four endangered mammals have been recorded.

No invasive/introduced species have been recorded within the land-use planning area.

Figure 8. Map section
(source: [the Norwegian Biodiversity Information Centre's Species Maps](#))



The islands in the [Kongsfjorden Bird Sanctuary](#) that are situated within the land-use planning area (Miethholmen, Prins Heinrichøya, Lovenøyane and Eskjeret) are particularly important for eiders, barnacle geese and grey phalaropes, which show a preference for nesting on the islets in Kongsfjorden. Brandallaguna is an important bird sanctuary in Kongsfjorden with a high species diversity and occasionally high populations of migrating birds each year. Lake Solvatnet and the inland waters at Knudsenheia are important habitats for birds.

For a detailed description and assessment of biodiversity including source references, please refer to the memorandum on the natural environment (dated 2 May 2023) as background document b) to the land-use plan.

2.3 Cultural environment

Ny-Ålesund was established as a coal-mining settlement in the early 20th century, but the town also has historical and cultural sites dating back to the whaling period in the 17th century. In the 1920s, Ny-Ålesund was the starting point for several Arctic expeditions, including Roald Amundsen's crossing of the North Pole in the *Norge* airship in 1926. Mining ceased in 1963 after a major mining accident in 1962.



Figure 9. The London houses

(photo 2022: Hanne Karin Tollan, Kings Bay)

Kings Bay owns and has a special responsibility for managing 29 buildings erected between 1916 and 1945, which are automatically protected under Section 39 of the Svalbard Environmental Protection Act. These make up half of the buildings in Ny-Ålesund and are Svalbard's largest collection of automatically protected buildings. In addition, the company has ownership responsibility for 11 buildings worthy of conservation built in the period 1945–1962 and a large number of protected technical cultural heritage sites from Ny-Ålesund's mining and polar past.

The mining area south of the settlement contains a large number of protected technical cultural heritage sites and traces of mining activity. Cultural heritage sites from hunting and fishing have been registered across the entire land-use planning area. The mooring mast and the foundations for the hangar for Amundsen's airship lie just outside the settlement.

In total, more than 160 automatically protected cultural heritage sites have been registered within the land-use planning area. 100-metre heritage protection zones have been established around automatically protected cultural heritage sites where no interventions are permitted without special permission from the Norwegian Directorate for Cultural Heritage, cf. Section 42 of the Svalbard Environmental Protection Act.

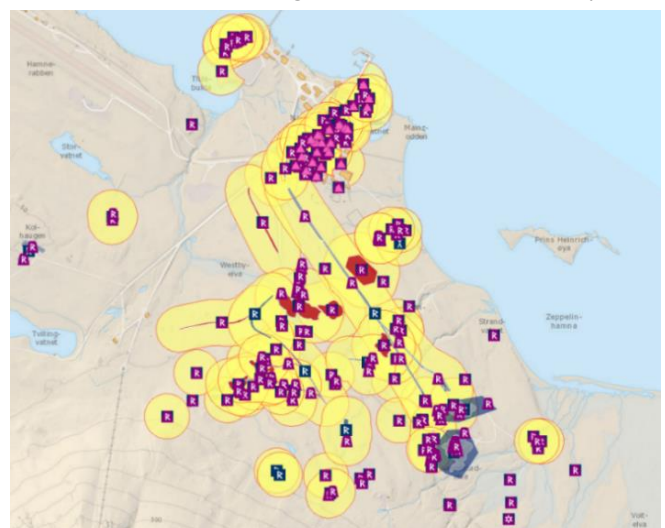


Figure 10. Registered cultural heritage sites
(source: Norwegian Directorate for Cultural Heritage)

Section 38 of the Svalbard Environmental Protection Act lays down the overriding principle for managing archaeological/historic monuments and sites: *Structures and sites and movable historical objects in Svalbard shall be protected and safeguarded as a part of Svalbard’s cultural heritage and identity, and as an element of a coherent system of environmental management.*

One of Norway’s environmental goals is to safeguard the hundred most important cultural heritage sites and cultural environments in Svalbard through predictable and long-term management. The Cultural Heritage Plan for Svalbard 2013–2023 prioritises Ny-Ålesund as one of the 50 most important cultural environments on the archipelago. The Cultural Heritage Plan highlights that more extensive restoration or renewal may be performed on parts of the buildings to preserve their utility value than could be justified based on considerations of cultural heritage. Active use provides good protection for buildings and facilities provided that this does not mean that the cultural heritage is destroyed and that cultural heritage considerations are always put first.

Protected buildings are managed and maintained in accordance with the Management Plan for Protected Buildings in Ny-Ålesund (2008). The Management Plan is being updated and revised to reflect changed assumptions for factors such as increasing knowledge about the impact of climate change on cultural heritage sites.

2.4 Civilian settlement and international research station

Following the cessation of mining operations in 1963, Ny-Ålesund was developed into a centre for international Arctic research and environmental monitoring. Ny-Ålesund is readily accessible, with relatively untouched surroundings as a reference point, and is thus very attractive for Arctic scientific research and research-based cultural heritage management. However, the major interest in the Kongsfjord area and Ny-Ålesund is placing strong pressure on a vulnerable natural and cultural environment that in accordance with overarching policies and legislation is to be protected as a nearly untouched environment.



Figure 11. Ny-Ålesund from above

(photo 2021: Vilborg Einarsdottir, www.jonaa.org)

Research activity provides a basis for maintaining societal functions and settlement. Eighteen research institutions run by ten nations perform regular activity, and around 150 research projects are being conducted at any given time in and around Ny-Ålesund. Thirteen buildings within the land-use planning area are leased out for research purposes. In order to help coordinate the research, the Ny-Ålesund Science Managers Committee (NySMAC) was established in 1994. The goals and management basis for further development of research

activities are established in the Research Strategy for Ny-Ålesund (2019). The Norwegian Polar Institute is responsible for implementing the research strategy and coordinating research activities in Ny-Ålesund.

The settlement can currently provide overnight accommodation for up to 200 people, including approximately 45 year-round residents. Ny-Ålesund is not a family-oriented community and there are no facilities for children. There were a total of 26,009 overnight stays in 2022, including 13,906 research days. The number of visitors crossing the harbour for the day was estimated at 19,000.

Kings Bay AS is responsible for societal functions such as electrical power, district heating, water, sewerage, waste management, fire protection, the port, the airport, air transport, accommodation, food and beverage services, rental of research infrastructure, offices and laboratories, as well as service and assistance with sampling and fieldwork.

Ny-Ålesund lacks redundant solutions for critical and vulnerable infrastructure, and there is an accumulated lag in necessary investment, upgrading and maintenance of existing buildings and technical infrastructure. Documented needs for the clean-up of ground pollution in the central area and the consequences for buildings and facilities of climate change also represent increasing challenges for public services and infrastructure.

There are insufficient buildings of the required standard available all-year-round. Kullkaia, as part of the research infrastructure, and the Vaskerilab and Gruvebadet Atmosphere Laboratory research buildings are condemnable and are expected to be replaced with new buildings/facilities.

To gain a better understanding of the character of the location, a visual presentation/analysis of Ny-Ålesund has been prepared. The analysis is included as background document d) to the land-use plan: Visual Profiling, Dina Brode-Roger, 26 April 2023.

2.5 Climate change

The climate is changing, and it is changing faster in the Arctic than anywhere else on the planet. Since the early 1970s, the average temperature on Svalbard has increased by 3–5 °C. Annual precipitation has increased by an average of 2 per cent per decade since measurements began in 1912, and it is estimated that the thickness of the active layer above the permafrost will increase by 1.0 m by 2100.

An analysis of extreme precipitation prepared as a basis for the climate report *Climate in Svalbard 2100* indicates that episodes of heavy precipitation such as rain could be expected at any time of the year in future. The record volume of rain recorded for Ny-Ålesund in a 24-hour period is 98 mm. This is more than twice the record for Longyearbyen, and means that 25 per cent of the average annual rainfall could fall within a 24-hour period.

A warmer and wetter climate will have increasingly serious consequences for public services and infrastructure in Ny-Ålesund. Climate change will result in an increased risk of avalanches and landslides and more extreme weather. Increasing volumes of rainfall and ever-deeper thawing of the permafrost pose a risk of landslides and rotting problems and potentially threaten the stability of existing buildings and infrastructure. This in turn undermines existing foundations and could result in irreparable settlement damage such as ruptures in foundations, building elements and technical infrastructure/pipeline networks.

In 2022, a record-high temperature for the month of March of 5.5 °C was recorded in Ny-Ålesund. This, together with 42.6 mm of rain in the same 24-hour period (ref. MET) resulted in an abnormally fast/large snowmelt and high volumes of stormwater. Culverts, pipeline networks and stormwater solutions are generally under-dimensioned for such climate events, which are expected to become more frequent during the planning period.



Figure 12. Clogged culverts, March 2022

The foundations of many newer and protected buildings in Ny-Ålesund have been relaid and secured. Due to layers of uncompacted materials within the construction zone, the foundations have been secured by anchoring steel piles into the bedrock.

Kings Bay's operations department has built up unique expertise and experience in this process around suitable groundwork and securing/relaying of building foundations in the Arctic climate. The company shares and builds on this expertise, including by participating in various research projects on climate change based on the themes of the conservation/restoration of buildings and cultural heritage sites. Updated technical solutions for securing buildings must be continuously assessed against conservation considerations and current management practices, which are expected to be continuously adapted to climate challenges in order to avoid conservation being neglected.



Figure 13. Relaying the hospital's foundations, 2018

In 2021, the Office of the Auditor General of Norway conducted an investigation into how Svalbard companies are handling climate challenges. The main findings of the Office of the Auditor General of Norway's report were that inadequate condition analyses and risk assessments were prepared for buildings and infrastructure in Ny-Ålesund, and that required measures are not being implemented quickly enough to meet the challenges posed by climate change. Five buildings whose foundations urgently need to be relaid as a result of reduced permafrost have been identified, and with the exception of buildings constructed on rock, all buildings in Ny-Ålesund need to have their foundations relaid/secured.

Kings Bay is preparing a management, operations, maintenance and development (MOM) system including a condition and risk assessment of buildings and infrastructure. This meets the recommendations of the Office of the Auditor General of Norway's report and will be used as a basis for prioritising measures for relaying/securing of foundations during the planning period.

The foundations of Kongsfjordbutikken were relaid in March 2023 by anchoring steel piles into the bedrock.

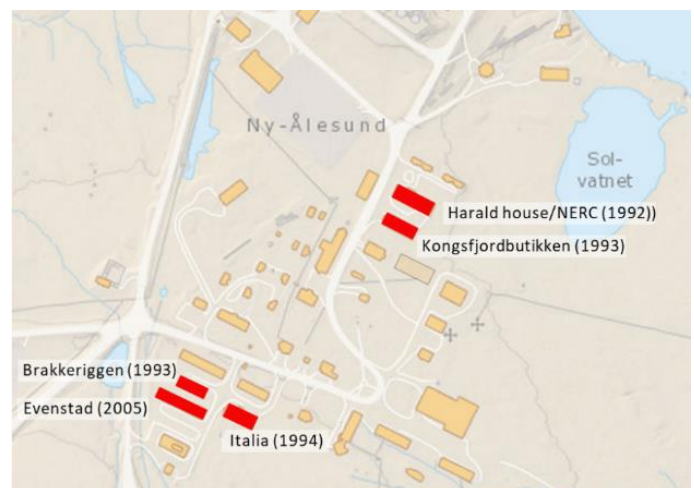


Figure 14. Prioritised buildings requiring relaying of foundations

3 STRUCTURE AND CONTENT OF THE PLAN

3.1 Development strategy and dimensioning basis

Development and land-use management during the planning period must maintain the civilian settlement and public services and infrastructure, safeguard nature/environmental considerations and support research activity in Ny-Ålesund. The Research Strategy (2019) establishes that the Ny-Ålesund Research Station must be further developed as a Norwegian platform for international collaboration, including by facilitating thematically based research activity and shared use of buildings, research infrastructure, facilities and equipment.

The Norwegian government has assigned Kings Bay AS special responsibility for safeguarding the cultural heritage in Ny-Ålesund. All activity and development within the land-use planning area must be based on responsible management and safeguarding of protected buildings, cultural heritage sites and the general cultural environment.

The current overnight accommodation capacity of up to 200 people will be continued as a dimensioning basis for the planning period. No arrangements will be made for increased capacity. However, the aim is to increase occupancy and activity in the low season/winter period, and to facilitate more collaboration and sharing of resources across institutions and countries.

When designing, developing and allocating land within the land-use planning area, emphasis must be placed on environmentally, energy- and resource-friendly solutions. Land use and operations must safeguard the natural/cultural environment and local characteristics, have the lightest possible carbon footprint and be adapted to climate change. Active and efficient use in terms of energy and area of existing buildings will be prioritised ahead of constructing new buildings, which are generally difficult to fit in without impairing the overall cultural environment in Ny-Ålesund. New land-use impacts must be avoided as much as possible.

Ny-Ålesund is primarily a research location. The deployment of research instruments must therefore be permitted within the entire land-use planning area, provided that this does not conflict with the operation and maintenance of the site or the preservation of cultural heritage, or harm vulnerable flora and fauna.

Public safety, satisfactory capacity, technical standards/environmental quality and operational reliability of pipeline networks and other technical infrastructure (power generation, water supply and treatment plants) must be safeguarded before new businesses are established.

Measures and relaying of foundations to secure existing buildings and facilities as a result of reduced permafrost/unstable building ground must be prioritised. This includes mitigating measures for handling/diverting stormwater from building structures and technical facilities/infrastructure.

3.2 Planning measures and implementation of sub-plans

Planning measures, land use and construction areas set aside in the 2009 Land-Use Plan have generally been continued. Alterations are limited to new research areas set aside outside the construction zone, and cultural heritage purposes specified for areas with protected buildings in the settlement. There is no provision for major development projects, and planned building measures are mainly located within the construction zone set aside in the previous plan, cf. chap. 4.2.

Previously adopted sub-plans have been incorporated into the plan map, and associated provisions have been implemented and adapted to the current situation. This applies to the sub-plan for Ny-Ålesund Earth Geodetic Observatory (2015) and the sub-plan for Andøya Space Center (2018).

Within the construction zone, buildings and land use are divided into two sub-areas based on their existing function and purpose.



Figure 15. Two-part construction zone

The areas in the north are reserved for operational, research and logistics functions, and include workshops, power stations, tank installations, warehouses, harbour facilities etc.

The areas in the southern section are reserved for housing, research and service purposes, including community centres, administration, camping activities, cafeteria, hotel, museum, offices, research buildings etc.

3.3 Plan map

The land-use plan has been designed in accordance with the requirements of the Svalbard Environmental Protection Act and current drawing rules for Svalbard (Ministry of Climate and Environment, 1 January 2016). The purpose of the land-use plan is legally binding for existing and future land use during the planning period. The plan map is presented in digital plan view ([link to plan view](#)) in collaboration with Longyearbyen Community Council.

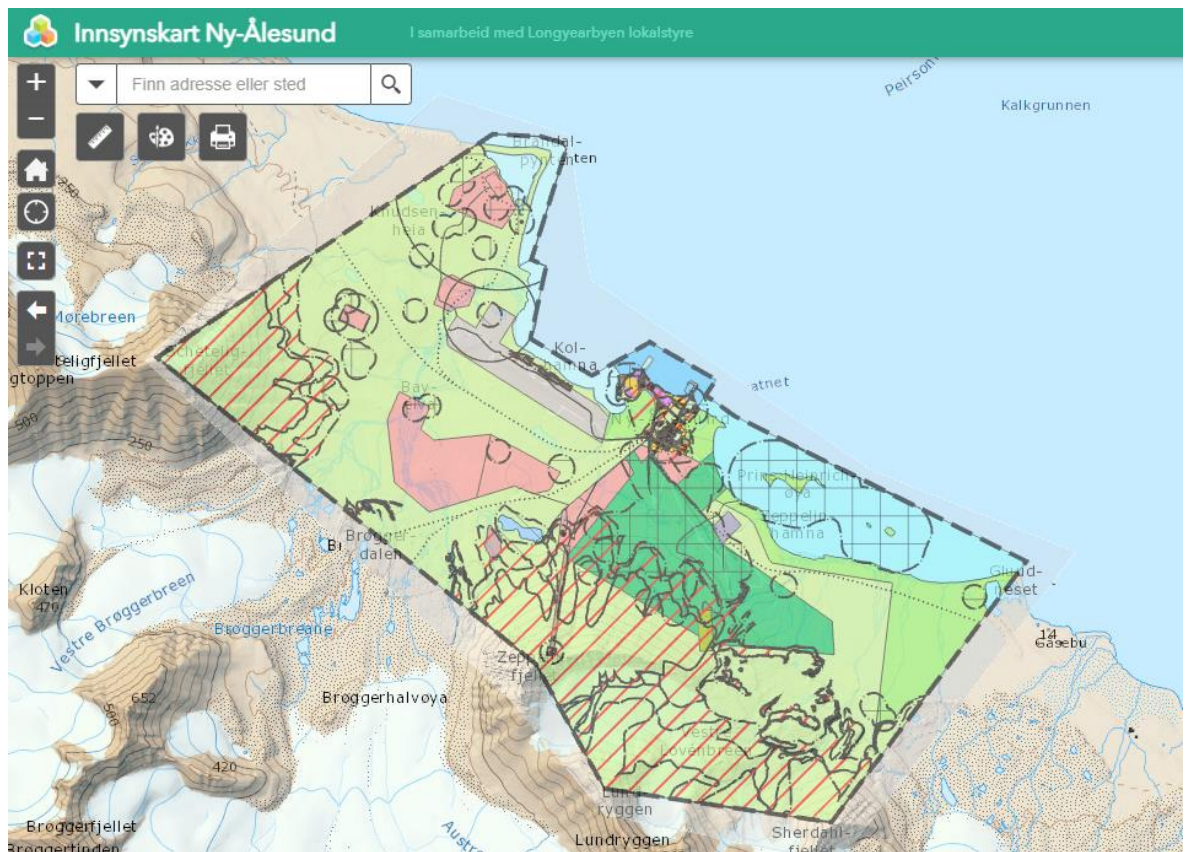


Figure 16.
Land-use plan
Ny-Ålesund
2023–2033

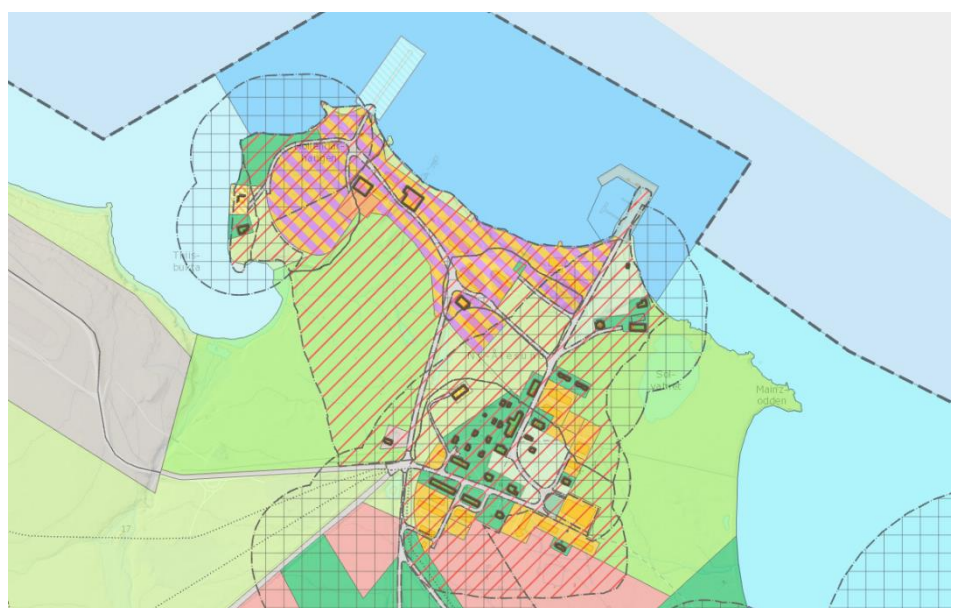


Figure 17. Construction zone section

3.4 Purpose and area overview

Field	Purpose	SOSI	Area, sqm
Construction areas, Section 49, third paragraph, subsection no. 1, and fourth paragraph			
BA1–12	Housing, offices, administration, warehousing, business, service provision and research building – including associated infrastructure, parking and outdoor facilities	1001	21,974
I/L1–7	Warehousing, workshop, energy facilities, tank installation, service provision, building/facility for municipal technical operations, harbour warehousing, research building and garage – including associated infrastructure, operational/parking area and outdoor storage/container arrangements	1826	69,920
BAA1–2	Combined building and cultural heritage area, includes buildings worthy of conservation	1900	4,336
RA	Environmental station – buildings and facilities for receiving and sorting waste	1550	2,120
C	Campsite – leisure purposes	1170	33,542
H	Kennels with associated heated shelter and building for storing feed and equipment	1180	1,323
SKB	Shooting range – shooting lodge/stand, security facilities and access/parking	1470	64 499
G	Outdoor living area	1600	811
Cultural heritage, nature and outdoor areas, Section 49, third paragraph, subsection no. 3			
K1–10	Cultural heritage area including existing protected buildings	5600	1,854,931
K11–16	Cultural heritage area with protected cultural heritage		
N1–3	Areas of natural habitat	5120	1,224,724
KN1–4	Cultural heritage and areas of natural habitat, includes protected cultural heritage	5153	17,210
KNF	Cultural heritage, natural and open-air area, includes protected cultural heritage	5150	11,548,675
Areas for raw material extraction, Section 49, third paragraph, subsection no. 4			
SM	Extraction of raw materials	1201	30,194
Research areas, Section 49, third paragraph, subsection no. 5			
F1–10	Research area – research buildings permitted within fields F4–6 and F9–10	1167	1,313,097
Important parts of the communication system, Section 49, third paragraph, subsection no. 6			
V	Roads, including new road to the shooting range (SKB)	2010	52,692
TB	Cableway – masts, overhead cables and other facilities/installations for cableway to field F5	2023	32,620
LHA	Airport – buildings, facilities and traffic areas for operation and maintenance of Ny-Ålesund Airport, as well as artillery ranges for research rockets	2030	474,478
H	Harbour	2040	4,484
GV	Footpath/path – boardwalk	1132	
	Snowmobile track	1163	
Special areas, Section 49, third paragraph, subsection no. 7			
H110	Catchment area for drinking water	110	
H190_1–4	Restricted access and passage area	190	
H310	Risk of landslides and avalanches	310	
H350_1-2	Danger zone, tank installation	350	
H360	Danger zone, shooting range	360	
H390_1–2	Ground pollution	390	
#1	Radio navigation – requirements for risk analysis		
#2	Heritage protection zone, Brandal Geodetic Earth Observatory		
Use and protection of the sea and waterways, with associated beach zone, Section 49, third paragraph, subsection 8			
NO	Areas of natural habitat in the sea/watercourse	6600	2,694,387
FE	Access and passage	6100	195,237
SH	Marina	6230	4,715
DV	Drinking water	6500	34,614
VAA	Research pier – wharf facility for research purposes	6900	6,698
Areas that are protected in accordance with the Svalbard Environmental Protection Act, conservation areas, Section 49, third paragraph, subsection 9			
H770	Heritage protection zone around cultural heritage sites, Svalbard Environmental Protection Act, Chapter V	770	
H771	Bird sanctuary, Svalbard Environmental Protection Act, Chapter III	771	

Figure 18. Overview of purpose and land use

3.5 Common provisions

Section 3 of the supplementary provisions applies to the entire land-use planning area and establishes requirements for:

- 3.1 Climate and environmental considerations
- 3.2 Aesthetics, colour, signage and lighting
- 3.3 Cultural heritage protection, including the reporting requirements, automatically protected cultural heritage sites with a protection zone, buildings worthy of conservation and pipe conduits/boardwalks
- 3.4 Planning and documentation requirements, including situation plan with supplementary documentation, works affecting terrain or vegetation-covered land, construction phase, and waste plan/clean-up
- 3.5 General permission for measures required for airport and public services and infrastructure
- 3.6 General permission for measures for sampling and deployment of research instruments
- 3.7 Sequencing requirements that ensure satisfactory capacity, technical standards/environmental quality and operational reliability of pipeline networks and other technical infrastructure

3.6 Construction areas, Section 49, third paragraph, subsection no. 1, and fourth paragraph

In addition to the documentation requirements in section 3.4 of the common provisions, when applying for permission to construct new buildings, an illustration plan must be prepared showing existing and planned buildings, including associated access and outdoor facilities. The plan must be designed holistically for the individual sub-field or several sub-fields together, show existing and future development potential, and include naturally associated transport facilities.

New buildings must be adapted to the surroundings/existing cultural environment in terms of construction volume, roof shape, façade design and use of colour, and have a high material and architectural quality commensurate with their function. Outdoor signage is not permitted unless there are special needs relating to safety, public services and infrastructure and general considerations/restrictions. Light pollution must be avoided and outdoor lighting must, in principle, be directed downwards and limited to the entrance area. Façade lighting and effect lighting are not permitted. There are requirements for the use of colours in accordance with local tradition and the prevailing colour plan for Ny-Ålesund.

Before new businesses can be permitted to connect to existing water, electricity, district heating or sewage networks, satisfactory capacity, technical standards/environmental quality and operational reliability of the pipeline network and other technical infrastructure (power generation, water supply and treatment plant) must be documented.



Figure 19. Service building, field BA6
(photo 2022: Dina Brode-Roger, Ny-Ålesund: Visual Profiling)

Fields BA1–12, construction areas for residential, research and service purposes

The BA fields in the southern part of the settlement include existing and future buildings and land use for one or more of the following purposes: housing, offices, administration, warehousing, service provision and research buildings with associated infrastructure, parking and outdoor facilities. The BA fields do not include protected buildings or buildings worthy of conservation, but are mainly located within the heritage protection zone for surrounding protected cultural heritage sites, cf. sections 3.3.2 and 11.1 of the planning provisions.

Fields BA2 and BA10 are undeveloped plots set aside for future needs. B12 is an existing garage with potential for new construction with higher land utilisation provided it is adapted to the surrounding cultural environment. BA4 includes the Vaskerilab building, which is expected to be demolished and replaced with one or more new buildings for housing, research and service purposes.

Permission may be granted for new buildings to be erected with a cornice height of up to 7.0 m and a ridge height of up to 9.0 m above the average level terrain around the building. Permission for new construction requires documented adaptation to existing buildings and the cultural environment.

Fields I/L1–7, construction area for operational, research and logistics purposes

The I/L fields in the northern part are prioritised for purposes relating to public services and infrastructure and include existing and future buildings and land use for one or more of the following purposes: warehousing, workshops, energy facilities, tank installations, service provision, building/facilities for municipal technical operations, harbour warehousing, research buildings and garages. Associated infrastructure, operations/parking area and outdoor storage/container arrangement are included in the purpose.

Field I/L4 is undeveloped land where a new building for reserve power/emergency heating station is planned. Field I/L6 includes Fjøset and Kongsfjordhallen, where the land-use plan authorises permanent extensions, cf. section 4.3.1 of the planning provisions. A memorandum including an assessment of mitigating measures and the impact and consequence of the extension is included in the land-use plan's background documents.

Section 4.3 of the planning provisions authorises building heights adapted to the individual field. Permission for new construction requires documented adaptation to existing buildings and the cultural environment.

Special requirements apply to buildings worthy of conservation in fields I/L3 (Renseverket), I/L5 (Old power station) and I/L6 (the BA_{rn}) to safeguard cultural heritage values, cf. section 3.3.3 of the planning provision.

Fields BAA1–2, combined building and cultural heritage area

Fields BAA1 and BAA2 are construction areas located within the heritage protection zone for surrounding protected cultural heritage sites, cf. section 11.1 of the planning provisions.

Special requirements apply to buildings worthy of conservation in fields BAA1 (Saga) and BAA2 (Naust in Thiisbukta) to safeguard cultural heritage values, cf. section 3.3.3 of the planning provisions.

Field RA, environmental station

The area has been set aside for the establishment of a waste reception facility to better meet the requirements of the current Regulations on Waste in Svalbard (ref. FOR-2020-07-03-1517). The existing and temporary Rubb hall at Kongsfjordhallen is expected to be moved here to handle waste from the settlement. The long-term goal is to establish a permanent building adapted to the purpose and surroundings.

Permanent and temporary buildings and facilities for receiving and sorting waste for onward transport are permitted within the area. Outdoor storage of material/waste fractions, setting up of containers, the Rubb hall and the establishment of fences/screening measures around the facility are permitted. There is a maximum permitted cornice height of 7.0 m and maximum ridge height of 9.0 m above average level terrain.

Field C, campsite

The area is set aside for camping activities, and it is assumed that all overnight stays in tents or similar within the land-use planning area will be located here. Bonfires are not permitted. Parts of the area lie within the protection zone around protected cultural heritage sites, where camping is only permitted on frozen, snow-covered ground. The Regulations relating to Camping Activities in Svalbard (FOR-2002-06-27-731) do not apply

to areas set aside for camping activities in accordance with the land-use plan. Section 4.6 of the planning provisions establishes further requirements relating to the use of the area.

Field H, kennels

The kennels are set aside for a specific purpose, where measures and facilities relating to dog-keeping are permitted. Within this purpose, cages/fenced running yards, doghouses, heat shelters and buildings for storing feed and equipment are permitted. Buildings and facilities must not exceed a height of 4.0 m.

The existing buildings are worthy of conservation and are covered by special requirements to safeguard cultural heritage values, cf. section 3.3.3 of the planning provisions.

Field SKB, shooting range

Field SKB includes the existing shooting range and associated shooting lodge etc. Within this area, buildings and facilities required for use and operation of the land as a shooting range are permitted. This applies to the shooting lodge/stand, generator shelter, setting up of targets, bullet traps, shooting ramparts, security facilities and access/parking. A new road to the shooting range is set aside in the land-use plan with a minimum road-width requirement of 3.0 m, cf. section 8.1 of the planning provisions. The total width of the road purpose is 6.0 m, due to the required side area/ditch and cable route.

New buildings are permitted with a cornice height of up to 3.0 m and a ridge height of up to 5.0 m above the average level terrain. The maximum total permitted built-up area (BYA) within the field is 200 sqm. The area lies within the danger zone for landslides/avalanches/rockfalls, where special requirements apply to new measures, cf. section 9.3 of the planning provisions.

Field G, green/outdoor living area

Field G includes the area in front of the service building as the centre of the settlement, which also provides most people's first encounter with Ny-Ålesund. The area has potential for upgrading/aesthetic improvement. Section 4.9 of the planning provisions establishes permission for landscaping and facilitation of outdoor activities. This applies to the establishment of permanent cover, boundary demarcation, outdoor furniture and wind/snow protection measures.

3.7 Cultural heritage, nature and outdoor areas, Section 49, third paragraph, subsection no. 3

Fields K1–10, cultural heritage area with existing protected buildings

These fields include areas within the settlement with protected buildings and associated heritage protection zones, where all measures require a special permit from the Norwegian Directorate for Cultural Heritage, cf. sections 3.3.2 and 11.1 of the planning provisions. Fields K5 and K8 also include buildings worthy of conservation, cf. section 3.3.3 of the planning provisions.



Figure 20. Cabin area, field K5 – protected and conservation-worthy buildings

(photo 2022: Hanne Karin Tollan, Kings Bay)

The change compared with the 2009 Land-Use Plan is that all construction areas with protected buildings are set aside for cultural heritage purposes in order to clarify cultural heritage protection as a premise for all use and activity. This applies to both museum buildings and buildings that are actively used for housing, research, service purposes etc.

The areas have great cultural and historical value and must mainly be preserved as they appear, where the aim is to achieve active use linked to the Ny-Ålesund Research Station and public services and infrastructure. Measures or activities that appear unsightly and come into conflict with existing cultural heritage sites/the cultural environment are not permitted.

Within field K1, established new buildings above existing drainage basins are permitted in order to ensure satisfactory operating conditions and public safety. The building height and façade design must be adapted to the surrounding protected buildings, and new buildings must be adapted to facilitate the relocation of the existing sewage treatment plant from the Ironworks. Planned new buildings in K1 lie within protection zones for several particularly valuable cultural heritage sites and may not be permitted without a special dispensation from the Norwegian Directorate for Cultural Heritage.

Protected buildings must be managed and maintained in accordance with the current/updated Management Plan for Protected Buildings in Ny-Ålesund.

Fields K11–16, cultural heritage areas

These fields include areas on the outskirts of the settlement, mainly without buildings, but with a large number of protected cultural heritage sites and associated protection zones, cf. sections 3.3.2 and 11.1 of the planning provisions. The areas have great cultural and historical value and must essentially be preserved as they appear. This applies to Hollenderhaugen (K11), the mining area (K14–16), the Amundsen mast, foundations for the airship hangar and the graveyard (K13). The clock tower in field K12 is not protected, but has great conservation and symbolic value.

Fields N1–3, areas of natural habitat

These fields include areas close to the construction zone and along the coastline with special value for biodiversity where interventions or measures/activities are not generally permitted. Facilities, works and measures required for the operation and provision of public services and infrastructure are permitted. Parking or other temporary storage of snowmobiles is not permitted. Within areas N1 and N2, public traffic is not permitted from 15 May to 15 August.

Fields KN1–4, cultural heritage and area of natural habitat

These fields include areas of natural habitat in the construction zone with protected cultural heritage sites and associated protection zones, cf. sections 3.3.2 and 11.1 of the planning provisions. The areas are centrally located in the settlement and are particularly exposed to unwanted traffic/wear and tear.

The open areas are of great natural and cultural heritage value and must essentially be preserved as they appear. Parking or other temporary storage of snowmobiles is not permitted. Unnecessary traffic must be avoided/prohibited out of consideration for vulnerable vegetation and cultural heritage.

Fields KN1–2 are centrally located in the settlement and include the Post House and the Green Harbour building, both protected, as well as the Amundsen statue and the area of natural habitat between the Hotel and the Yellow House. Field KN3 lies just south of Roald Amundsen's House, and field KN4 lies along the road to the harbour and includes the protected locomotive engine, wagons and track.

Field KNF, cultural heritage, natural and open-air area

This field includes outlying fields/areas of natural habitat around the construction zone with occasional protected cultural heritage sites and associated protection zones, cf. sections 3.3.2 and 11.1 of the planning provisions.



Figure 21. The locomotive engine, field KN4
(photo 2022: Dina Brode-Roger, Ny-Ålesund: Visual Profiling)

3.8 Areas for raw material extraction, Section 49, third paragraph, subsection no. 4

Field SM, raw material extraction

Existing raw material extraction at Tvillingvann is set aside for this purpose in the land-use plan. The area is permitted to be used for extraction and disposal of local uncompacted materials. Equipment not directly linked to operations may not be stored. The area lies within the danger zone for landslides/avalanches/rockfalls, where special requirements apply, cf. section 9.3 of the planning provisions.

3.9 Research areas, Section 49, third paragraph, subsection no. 5

The common provisions establish general authority for research activity within the entire land-use planning area, provided that the activity does not come into conflict with public services and infrastructure, the cultural/natural environment or other research, or is contrary to other provisions in the plan.

Fields F1–10, research areas

Deployment of research instruments and sampling must preferably take place in the designated research areas in fields F1–10, and in accordance with the plan's specific provisions on scope and execution. Initiation of measures/activities in accordance with the land-use plan may in principle take place three weeks after the Governor of Svalbard has received notice of the measure, ref. Section 58, second paragraph a) of the Svalbard Environmental Protection Act.

The following minor measures/activities are permitted within all F fields:

- sampling with intervention in the ground cover of up to 20 x 20 cm
- instruments/antennae with a maximum height of 4.0 m and a total intervention area of up to 10 sqm
- buildings linked to instrument facilities with a maximum BYA of 15 sqm and a maximum height of 3.0 m
- cable routes for connection to existing infrastructure

The Gruvebadet Atmosphere Laboratory in field F4 is a research building used for atmospheric research. The building has extensive structural damage as a result of unstable and constantly shifting foundations. The laboratory needs to be replaced/relocated in the immediate vicinity due to long-term measurement series at this point. The Mining Workshop in field F4 is worthy of conservation, cf. section 3.3.3 of the planning provisions. Within fields F4 and F6, section 7.2 of the planning provisions authorises the establishment of a new building for research with specific requirements for scope and execution (sqm BYA, building height and external material use) and with permission for interventions/preparation for connection to the necessary technical infrastructure (road, water and sewage, electricity and other networks).

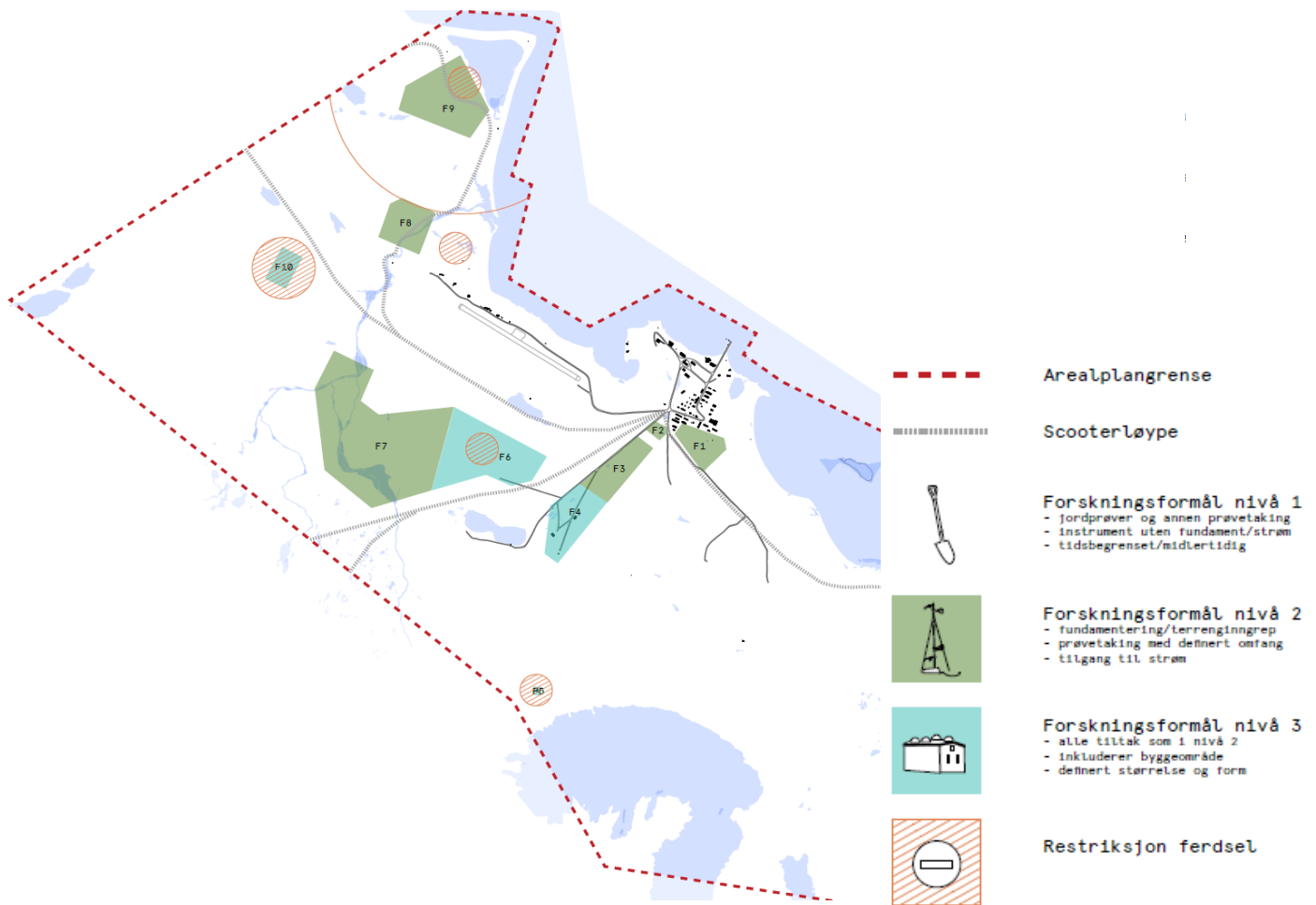


Figure 22. Research areas in the land-use plan

The Zeppelin Observatory in field F5 may be upgraded and/or replaced with a new building of similar function and size.

Within field F9, buildings, installations and facilities for research and/or relating to the operation of the Ny-Ålesund Earth Geodetic Observatory and Light Sensitive Cabin are permitted. Measures/new buildings with a negative impact on activities at the Geodetic Earth Observatory are not permitted. Section 7.4 of the planning provisions establishes specific requirements for the scope and execution of buildings and facilities, while section 9.6.1 of the planning provisions establishes special requirements to safeguard activities in field F9.

Field F10 is set aside for buildings, installations and facilities for the establishment of a magnetic observatory. Section 7.5 of the planning provisions establishes specific requirements for the scope and execution of buildings and facilities. Requirements relating to the use of natural materials (wood/stone) in façades and roofs have been established in order to ensure optimal adaptation to the terrain/natural environment with the intention of minimising visual consequences for the landscape.

The head of undertaking is responsible for decommissioning research instruments and associated facilities when use ceases.

3.10 Important parts of the communication system, Section 49, third paragraph, subsection no. 6

Section 3.5 of the planning provisions establishes general permission for facilities, works and measures required for the operation of the airport and harbour, and provision of public services and infrastructure. Special requirements apply to works and measures/activities within areas with zones requiring special consideration/protection zones, cf. sections 9 and 11 of the planning provisions.

Existing roads and the route for the new road to the shooting range in field SKB are set aside for this purpose in the land-use plan. The purpose includes roads and associated side areas/trenches where cable routes for technical infrastructure and exits to buildings and facilities are permitted. Footpaths and paths that are marked on the plan map with a line symbol may be constructed and maintained. On snowmobile routes marked with a line symbol on the plan map, measures/activities that may hinder snowmobile traffic are not permitted.

Field TB includes masts, overhead cables and other facilities/installations for the cableway to the Zeppelin Observatory in field F5.

Within this area, measures/activities that could come into conflict with the cableway are not permitted. The area lies within the danger zone for landslides/avalanches/rockfalls, where special requirements apply to new measures, and where extra caution must be exercised during all traffic and activity, cf. section 9.3 of the planning provisions. Section 8.2 of the supplementary guidelines to the planning provisions emphasises that extra care must be taken when the mountainside below the cableway is covered in snow. The probability of an avalanche being triggered by a small additional load (for example a person) depends on the existing snow cover, and is generally much higher than for naturally triggered avalanches as indicated for danger zones.

Field LHA includes buildings, facilities and an access and passage area for the operation and maintenance of Ny-Ålesund Airport. Works/measures in connection with existing activities within the area can be carried out if these do not hinder the airport's current or future operations, or any other existing activities or planned activities. Measures/activities within the airport area must be approved in advance by the Norwegian Civil Aviation Authority.

All traffic on the airstrip/runway, including within 50 m of the edge of the runway, is prohibited at all times, unless otherwise specifically clarified with the head of operations at Ny-Ålesund Airport.

Within this purpose, firing ranges for research rockets and associated launch pads, buildings and driving areas are permitted. A permanent building for a rocket launch pad may be permitted in accordance with the guidelines stipulated in the Governor of Svalbard's decision dated 25 May 2018, ref. 17/00291-30.

Within the harbour area in field H, works and new measures/activities associated with the harbour, marina and Kings Bay Marine Laboratory are permitted. This includes heavy landscaping, building, traffic areas, technical infrastructure, fences, security measures etc.

The Ny-Ålesund harbour facilities were granted ISPS (International Ship and Port Facility Security Code) certification by the Norwegian Coastal Administration on 17 June 2022. As a business, Kings Bay AS has overall responsibility for security management, coordination and management of the harbour facility's security organisation. This includes safeguarding the necessary considerations for access control, security and navigability/differentiation of traffic, and ensuring that all measures/facilities relating to the purpose of the harbour must be approved by the harbour master in Ny-Ålesund. Section 8.4 of the planning provisions permits the construction of a small service building that is planned to store life jackets and equipment associated with the use of the marina in field SH, and as a replacement for the previous harbour keeper's building. Requirements for a maximum BYA of 30 sqm and a maximum building height (ridge/cornice) of 3.5 m apply to this building.

3.11 Special areas, Section 49, third paragraph, subsection no. 7

H110, zone requiring special consideration drinking water

The catchment area for Tvillingvann as a source of drinking water has been set aside as a zone requiring special consideration where only measures that safeguard the function and safety of the drinking water supply are permitted, cf. section 9.1 of the planning provisions.

H190, restricted access and passage area

Restricted areas have been set aside around research/navigation facilities that are sensitive to disturbances, where traffic is not permitted unless it is connected to the operation and maintenance of the facilities.

H310, danger zone, landslides/avalanches/rockfalls

The danger zone is set aside for areas where the annual nominal probability of landslides/avalanches/rockfalls is calculated to be higher than 1:1,000 (H310_1) and higher than 1:5,000 (H310_2).

The cableway building in field TB and the shooting lodge in field SKB lie within the danger zone and the Gruvebadet Atmosphere Laboratory in field F4 is on the boundary of the danger zone. No new measures/activities are permitted unless the risk of landslides/avalanches/rockfalls has been investigated more thoroughly and relevant security measures have been implemented, cf. section 9.3 of the planning provisions. Extraction of raw materials in field SM is permitted in the summer season.

The Regulations on Technical Requirements for Construction Works (TEK) do not apply in Svalbard, but the safety requirements established in TEK17 Section 7.3 should be met for new buildings or conversion of existing buildings. This is achieved by locating the building outside areas that have a higher risk of landslides/avalanches/rockfalls than TEK allows, or by implementing safety measures or dimensioning and constructing the building to withstand the loads that could result from such an event.

Extra care must be exercised during all traffic and intervention/activity within the danger zones. This applies in particular to the Zeppelin Observatory (F5), the cableway (TB), the shooting range (SKB), extraction of raw materials (SM), the Mining Workshop (F4) and a number of research/measuring instruments that are situated within the danger zone, as well as the Gruvebadet Atmosphere Laboratory (F4), which is situated on the boundary of the danger zone.

For the cableway route in field TB to the Zeppelin Observatory, section 8.2 of the supplementary guidelines to the planning provisions emphasises that extra care must be taken when the mountainside below the cableway is covered in snow. The probability of an avalanche being triggered by a small additional load (for example a person) depends on the existing snow cover and is generally much higher than for naturally triggered avalanches as indicated for danger zones.

H350, danger zone, tank installation

H350_1 is the danger zone around the tank facility in field I/L7. H350_2 is the danger zone around the unloading/landing facility at the harbor. Within the danger zones, buildings and measures/activities associated with tank facilities and unloading/landing facilities are permitted. Permanent workplaces within underlying land use purposes are permitted. Housing/accommodation and particularly vulnerable objects are not permitted.

The tank facility must be secured with fences or the like in a proper manner.

H360, danger zone, shooting range

This area includes the shooting range, where all activity, use and traffic must comply with the prevailing safety instructions for the facility.

H390, ground pollution

Areas with mapped ground pollution are divided into two zones, where H390_1 contains areas with documented contamination and H390_2 areas with a lower probability of ground pollution. Section 9.6 of the planning provisions establishes special requirements for measures that involve interventions in the terrain in these areas.

#1, consideration for Ny-Ålesund Geodetic Earth Observatory

The zone within a radius of 900 m of Ny-Ålesund Geodetic Earth Observatory is set aside as provision area #1 with requirements for all activities and traffic to take account of operation of the observatory and light-sensitive research relating to the Light Sensitive Cabin. Only necessary driving is permitted on the existing road, and radio communication is only permitted in emergency situations, cf. section 9.7.1 of the planning provisions.

#2, restriction zone around the radio navigation instrument

The zone within a radius of 400 m of the radio navigation mast is set aside as provision area #2, where all activities and traffic are prohibited while the facility is in use. For all new permanent and temporary

measures/activities, including research instruments, special requirements for risk analysis and permission from the Longyearbyen Air Traffic Control and the head of operations at Ny-Ålesund Airport apply, cf. section 9.7.2 of the planning provisions.

3.12 Use and protection of the sea and watercourses, Section 49, third paragraph, subsection no. 8 - with associated beach zone

The land-use plan includes territorial waters at varying distances from the coastline. Field NO contains areas of natural habitat in the water/sea, where measures/activities may not be permitted without special justification. Measures/activities relating to the Norwegian Coastal Administration's navigation devices and the laying of submarine cables ashore may be permitted. Within field FE, measures/activities in connection with port, research and outdoor activities are permitted. A special area has been set aside for the further development and operation of a marina in field SH and for the establishment of a new pier/wharf adapted to the needs of the research environment in field VAA.

3.13 Conservation areas, Section 49, third paragraph, subsection no. 9 - in accordance with the Svalbard Environmental Protection Act section. III and V

H770, reserved area – protected cultural heritage sites with heritage protection zones

Restricted areas H770 have been set aside around protected cultural heritage sites where intervention, construction or activity that could damage or disturb the cultural heritage sites or the perception of these is not permitted, cf. Section 42 of the Svalbard Environmental Protection Act. The Norwegian Directorate for Cultural Heritage is the authority empowered to grant dispensations, cf. Section 44 of the Svalbard Environmental Protection Act.

By the resolution of 11 March 2008, the Norwegian Directorate for Cultural Heritage has granted general permission to Kings Bay to implement measures in the heritage protection zone, with relevant measures listed as:

- maintenance, expansion and narrowing of existing roads
- maintenance and establishment of new paths marked on land-use plan maps approved by the Governor
- maintenance of existing trenches with water and sewage pipes, district heating and cables
- excavation of new trenches for the necessary expansion of water and sewage, district heating and electricity networks, where this does not directly affect protected buildings
- maintenance and minor façade changes on non-protected buildings and facilities within the protection zones

The permission applies within the prevailing protection zones in the settlement. The mining area is not covered by this permission.

H771, reserved area – bird sanctuary

Mietheholmen, Dietrichholmen and Prins Heinrichøya including the surrounding territorial waters within a distance of 300 m are part of Kongsfjorden bird sanctuary, which is protected in accordance with Chapter III of the Svalbard Environmental Protection Act as established in the Regulations on the Establishment of National Parks, Nature and Bird Sanctuaries in Svalbard (FOR-1973-06-01-1). The protection zone has been set aside as reserved area H771 where no intervention is permitted, and all traffic, including access and passage on the sea and landing aircraft, is prohibited between 15 May and 15 August.



Figure 23. Reserved area, cultural heritage/the Amundsen mast and bird sanctuary, H770 and H771
(photo 2022: Dina Brode-Roger, Ny-Ålesund: Visual Profiling)

4 INVESTIGATION OF EFFECTS AND CONSEQUENCES

4.1 Duty to investigate and knowledge base

The established planning programme assumes that the review work is covered by the general investigation requirement, see Section 49, fifth paragraph:

The plan shall include an account of how environmental considerations (including those relating to the natural environment and cultural heritage, as well as aesthetic considerations) and the interests of the local community (including safety and the needs of children) have been incorporated. If the plan may have an impact on the environment outside the land-use planning area, this must also be described.

The requirement for a special impact assessment in accordance with Section 59 may apply to later plans for carrying out specific measures in the land-use planning area, if these are deemed to have substantial and long-term effects on the environment and society.

Below is a list of the known knowledge base used as a basis for assessment and description of how consideration of the environment and local community is incorporated into the land-use plan.

Topic	Knowledge base
Landscape	<ul style="list-style-type: none"> - Sub-plan impact assessment for Brandal: Landscape, vegetation and wildlife, NINA Report 675, 2011 - www.toposvalbard.no - Overall landscape assessment, section 2.1 in the plan description
Natural environment Environmental impact	<ul style="list-style-type: none"> - Ny-Ålesund EIA 2006 (NP) - Sub-plan impact assessment for Brandal, 2011-12/NINA Report 675, 2011 - Norwegian Polar Institute – access to maps including Ny-Ålesund GIS as part of the Svalbard map - Norwegian Biodiversity Information Centre’s Species Maps, Environmental Status Svalbard, MOSJ Environmental Monitoring Svalbard – Environmental Monitoring Ny-Ålesund (KB/NILU), various research data and measurement series - Action plan for invasive species in Svalbard (Governor of Svalbard (GoS), 2017) - Norwegian Biodiversity Information Centre’s Species Maps - The article “Five decades of terrestrial and freshwater research at Ny-Ålesund, Svalbard” (Å.Ø. Pedersen et al. (2022)) http://dx.doi.org/10.33265/polar.v41.6310, as well as various publications referenced in this article
Cultural heritage sites/ Cultural environment	<ul style="list-style-type: none"> - Askeladden, Miljøstatus - Management Plan for Protected Buildings in Ny-Ålesund, 2008 (GoS/KB) - Report on archaeological registrations Ny-Ålesund, 2012 (GoS) - Cultural Heritage Plan for Svalbard 2013–2023 (GoS) - Catalogue of prioritised archaeological/historical monuments and sites in Svalbard 2013 (GoS) - Archaeological registration summer 2022 (GoS) - Ongoing research project on cultural heritage sites in Ny-Ålesund as of 2023 - Inspection report including assessment of safety of mine entrances, 2012 (Directorate of Mining) - Established knowledge and experience, Kings Bay
Climate change/ climate adaptation	<ul style="list-style-type: none"> - Climate in Svalbard 2100 (Norwegian Centre for Climate Services 2019) - Climate profile Longyearbyen (2016)
Ground conditions and natural hazards – landslides, avalanches, rockfalls, erosion, including scree	<ul style="list-style-type: none"> - Long-term local measurement series and ongoing research project. COAT observation system - Natural hazard landslides/avalanches/rockfalls, 2021 (Skred AS) - Expected long-term consequences of climate change in Svalbard, 2018 (Norwegian Directorate of Public Construction and Property) - The Office of the Auditor General of Norway’s investigation of the Svalbard companies’ handling of climate challenges, 2021–2022
Pollution	<ul style="list-style-type: none"> - Mapping of ground pollution in Ny-Ålesund, 2019–2022 (Norwegian Geotechnical Institute)

	- Order on the preparation of a risk and measures needs assessment of PFAS contamination in Ny-Ålesund, 2022 (GoS)
Research infrastructure NyÅ RS Research activity	- Ny-Ålesund Research Station, Research in Svalbard (RiS) - Theme plan research Ny-Ålesund, 2021 Participation of Ny-Ålesund Science Managers Committee - Established knowledge and experiences
Community functions – settlement and technical infrastructure	Kings Bay AS: current land-use plans, business plans, governing documents, existing assessments/practice, reports, statistics and local experience/expertise Danger zone tankinstallation, Safetec 13 June 2023 Water supply in Ny-Ålesund, 2000 (Norwegian Water Resources and Energy Directorate) Ny-Ålesund: Visual Profiling, Dina Brode-Roger, 26 April 2023
Public safety and emergency preparedness – RVA	RVA-Svalbard 2022–2026 (GoS), RVA Hamnerabben, 2005 (DNV), RVA Ny-Ålesund 2022 (Kings Bay), RVA land-use plan Ny-Ålesund, 2023 (Kings Bay)

Figure 24. Overview of knowledge base

4.2 Changed land use and planned measures

The planning measures and land-use objectives are mainly a continuation of previously impact-assessed and adopted land-use plans (1998 and 2009) and sub-plans (2015 and 2018).

Changed land use/land-use objective

- incorporation of new research areas, fields F6–10
- former research area changed to cultural heritage area (between fields F2 and F3)
- former construction area changed to cultural/natural purposes (between the hotel and Yellow House)
- extended construction area for operational, research and logistics purposes, field I/L4
- route for new road to the shooting range
- former construction areas with protected buildings changed to cultural heritage purposes, fields K1–10
- former construction area for industry/warehousing/research set aside for establishment of environmental station, field RA
- set aside for existing raw materials extraction, field SM
- former field boundaries adjusted and some construction areas merged

No authority is established for a major development project in the current plan. Planned construction measures are mainly located within the construction area and in construction areas set aside in previous plans. Exceptions include the planned magnetic observatory in field F10 and permission for a new research building (replacement for Gruvebadet Atmosphere Laboratory) in fields F4/F6.

Measures/activities with requirements clarified as of 2023 with incorporated authority in the land-use plan

- Extension of Kongsfjordhallen – mitigating measures for permanent permit, field I/L6 (ref. the land-use plan's background document for a separate discussion of the measure's impact/consequence)
- Renovation of the Vaskerilab and establishment of a new building for residential/research/service purposes, field BA4
- New building for sewage treatment plant above existing basins at the Ironworks, field K1
- Replacement/relocation of Gruvebadet Atmosphere Laboratory – research building, fields F4/F6
- Establish an environmental station at the Treatment Plant, field RA – relocation of temporary Rubb hall at Kongsfjordhallen
- New road to the shooting range
- New building for emergency heating station, field I/L4
- Pier/wharf facility for research purposes, field VAA
- Magnetic observatory, field F10
- Permanent building for Andøya Space Center, field LHA (ref. the Governor's response to application of 25 August 2018, case 17/00291-30)

- Necessary upgrading of the district heating network and other pipeline networks/infrastructure – sequencing requirements in section 3.7 of the planning provisions
- Drainage ditch for stormwater from the Service building, field N2
- Relaying of foundations and upgrading of existing buildings and facilities, ref. the Office of the Auditor General of Norway's report

4.3 Method and investigation topic

The investigation has been carried out in three stages: knowledge acquisition/recording, technical planning analysis and assessment of how consideration of the environment and local community has been incorporated into the land-use plan, cf. Section 49 of the Svalbard Environmental Protection Act. This report emphasises changes in the land-use plan and new measures compared with land-use clarifications and impact assessments in previous land-use plan measures.

Consequences/impacts are assessed as the relationship between the scope of the activity and the assessed value of individual assessment topics and the cumulative impact on the environment and society. Mitigating measures in the land-use plan to ensure sufficient consideration of mapped values and interests are described.

Assessment topic

- Landscape and natural environment
- Natural hazards – landslides/avalanches/rockfalls, building ground and reduced permafrost
- Cultural heritage sites and cultural environment
- Local communities – research, settlement and operational/service functions
- Ground pollution
- Public safety and emergency preparedness – risk and vulnerability land-use plan

4.4 Landscape and natural environment

The land-use plan mainly continues previously adopted land-use plan decisions in Ny-Ålesund and does not include new land use that changes the intervention zone and wilderness status, cf. environmental objectives for the polar regions ([Miljøstatus](#)).

As a basis for land-use planning decisions in 2009, an EIA (*Environmental impact assessment of the research activities in Ny-Ålesund, 2006*) was carried out. In the context of previously adopted and impact-assessed land use, the land-use plan does not authorise changed land use or new measures outside the existing construction zone, with the exception of new research areas on the plateau between Kongsfjorden and the mountain range on the Brøgger Peninsula.

With assistance from the Norwegian Polar Institute, an updated registration and assessment of the consequences for the natural environment resulting from changed land use has been carried out, ref. memorandum on natural environment (dated 28 April 2023) as background document b) to the land-use plan.

No red-list species in the critically endangered or endangered categories have been recorded, either flora or fauna, within the new research areas F6–10.

There is no reason to assume that the revision of the land-use plan will have significant impacts on species such as Svalbard reindeer, the Arctic fox and polar bears, or on the marine mammals that occasionally visit the beach zone. Reindeer and the Arctic fox are largely used to the current level of human activity in the land-use planning area – which is not expected to change significantly as a result of the revision of the land-use plan – and the consequences for these species are considered to be insignificant.

When designing, developing and allocating land within the land-use planning area, emphasis must be placed on environmentally, energy- and resource-friendly solutions. Land use and operations must safeguard the natural/cultural environment and local characteristics, have the lightest possible carbon footprint and be adapted to climate change.

Planning and documentation requirements in the land-use plan's supplementary provisions require that consequences for/impacts on the landscape and natural environment are discussed and documented separately for each measure in order to ensure that permit applications are based on updated knowledge.

Planned measures within the construction zone are not considered to impact the overall landscape experience. This is based on the settlement's defined demarcation and the large dimensions of the overall landscape space.

The research areas outside the construction zone are located in areas already visually characterised by public infrastructure and technical interventions. The planning provisions' height and volume restrictions have been assessed as sufficient to safeguard landscape considerations for measures in new research areas.

Out of consideration of tundra vegetation, work/measures must be carried out on frozen and snow-covered ground. Arrangements for securing/returning the vegetation cover must be documented in permit applications.

Requirements for handling waste are established in accordance with current regulations and the head of undertaking is obliged to carry out the necessary measures to ensure that construction projects do not entail an unacceptable environmental risk and to return the area where measures have been implemented to its original appearance when use ceases.

Consideration of the landscape and natural environment are assessed to have been sufficiently incorporated into the land-use plan and its supplementary provisions.

The land-use plan does not allow for expanded capacity or changed land use that is considered to impact the environment (flora/fauna) outside the land-use planning area.

4.5 Natural hazards

Hazards such as avalanches, landslides, debris flows, slush flows, rockslides and rockfalls have been mapped (Skred AS, 2021). The survey did not investigate danger zones for quick clay landslides and mountain-scale rockslides. The overall risk of landslides/avalanches etc. has been surveyed for the following safety categories with associated annual probabilities for landslides/avalanches: S1 ($\geq 1/100$), S2 ($\geq 1/1,000$) and S3 ($\geq 1/5,000$).

The landslide hazard survey was carried out in accordance with NVE's guide *Protecting against landslides in steep terrain – Mapping of landslide risk in zoning plans and building applications* (NVE, 2020a). In areas that may be exposed to various types of landslides/avalanches, calculations are based on the overall nominal annual probability of such events.

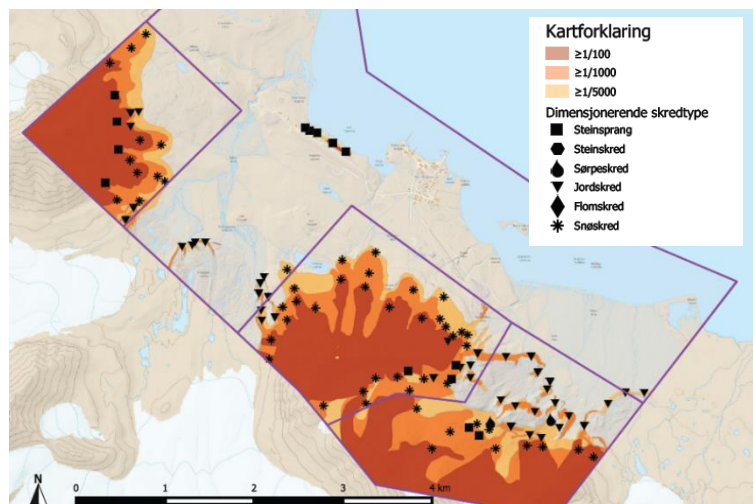


Figure 25. Landslide/avalanche/rockfall danger zones
(Skred AS, 2021)

Relatively large areas of the mountainsides in the land-use planning area are sufficiently steep to cause landslides/avalanches etc., and debris from previous landslides has been surveyed in all areas. There is no known history of slush flows in Ny-Ålesund, nor of landslides/avalanches etc. reaching the settlement.

All areas where the annual nominal probability of landslides/avalanches/rockfalls is calculated to be higher than 1:50,000 have been incorporated as danger zones in the land-use plan. The cableway in field TB, the mining workshop in field F4, the shooting range in field SKB and a number of research/measuring instruments are located within the danger zone. The Gruvebadet Atmosphere Laboratory in field F4 is located on the boundary of the danger zone. No new measures/activities can be permitted within the danger zone unless the risk of landslides/avalanches/rockfalls has been investigated more thoroughly and relevant safety measures have been

implemented. In addition, it is emphasised that all traffic and intervention/activity within the danger zone must be executed with extra care.

Spring tides/sea level rises have been assessed by reference to terrain conditions (including land elevation) and on a general basis as not posing any particular risk to buildings and structures in Ny-Ålesund. There are no caution zones for flooding in Svalbard. Flooding in river courses in the land-use planning area has been assessed on a general basis not to pose any particular risk to existing buildings and structures. This is with the exception of the Bayelva river, which is prone to flooding and where the existing road/bridge to Brandal may be at risk of severe damage. The land-use plan presumes that new measures in connection with rivers and river plains are to be avoided unless necessary considerations have been documented to have been addressed. Glacial flood plains in the area between glaciers and the coastline are constantly changing as a result of sediments transported from the glaciers during the melting season, and are therefore exposed to general risk.

Increasing volumes of rainfall in general throughout the year and periods of high temperatures plus rapid snowmelt in the winter months pose increasing challenges, including with regard to under-dimensioned culverts/pipeline networks and generally controlled handling and drainage of stormwater in order to avoid damage to foundations of buildings and facilities. The planning provisions establish requirements for documented safe handling and drainage/retention of stormwater for all new measures/activities in the land-use planning area. Special permission has been incorporated for ditching and controlled drainage of stormwater (field N3) from the Service building, which currently accumulates in large quantities under the building and has to be pumped out.

Ever-deeper thawing of the permafrost poses a risk of slips, settlement damage, rotting problems, lack of stability and the rupture/destruction of existing foundations for buildings and technical infrastructure/pipeline networks. A large proportion of the buildings in Ny-Ålesund mainly have shallow piles, wooden blocks as foundations or curtain walls, all of which are exposed to a risk of settlement damage and need their foundations relaid/secured during the planning period. The planning provisions require documentation that foundations are adapted to future temperature rises/climate change.

The planning provisions provide general authorisation within the entire land-use planning area for the prioritisation of measures and relaying of foundations to secure existing buildings and facilities as a result of reduced permafrost/unstable building ground. This includes mitigating measures for the handling/diversion of stormwater from building structures and technical facilities/infrastructure.

It is assumed that as part of the planning and design of new measures, a decision will be made regarding accepted deformations during the life of the building/facility. Future ground temperature rises must be taken into account, and the construction/foundation method and level of operation/maintenance must be dimensioned/adapted to climate change. The foundations must be deeper than the active layer during the life of the building.

Measures to reduce energy use and greenhouse gas emissions must be continuously assessed and implemented for all activity and development in Ny-Ålesund. Environmental accounts should preferably be prepared for major measures in order to document direct and indirect greenhouse gas emissions.

The risk of natural hazards such as landslides/avalanches/rockfalls, reduced permafrost/unstable building ground and stormwater/flooding is considered to be sufficiently incorporated into the land-use plan and supplementary provisions.

4.6 Cultural heritage and cultural environment

Chapter V of the Svalbard Environmental Protection Act establishes that measures/interventions in cultural heritage sites with a protection zone are not permitted, regardless of the objective and provisions of the land-use plan. This means that all measures/interventions must be individually clarified with the Governor of Svalbard and subject to separate application processing with the Norwegian Directorate for Cultural Heritage as the decision-making authority.

The Norwegian government has assigned Kings Bay AS special responsibility for safeguarding the cultural heritage in Ny-Ålesund as a national environmental goal. Protected buildings are managed and maintained in accordance with the Management Plan for Protected Buildings in Ny-Ålesund (2008). The Management Plan provides guidance on the type of maintenance/repair work and measures that can be carried out under the owner's supervision without special permission under the Svalbard Environmental Protection Act.

The 2008 Management Plan is being revised based on an updated condition assessment of the buildings and updated knowledge about the impact of climate change on cultural heritage sites. This includes an increasing need for securing/relaying of foundations due to increasing rotting problems and reduced permafrost. Revision and updating of the Management Plan for Protected Buildings in Ny-Ålesund is being carried out in close collaboration with the protection authority, relevant personnel and experts and ongoing research projects in the cultural heritage field in the Arctic. The goal is a uniform, predictable basis for control and management, with acceptable solutions from a protection perspective for contemporary use and proper protection.

An updated survey of protected cultural heritage sites in the land-use planning area was carried out in 2022. In addition to existing records in the Norwegian Directorate for Cultural Heritage's database of cultural heritage sites (Askeladden), this is secured in accordance with the requirements of the Svalbard Environmental Protection Act. Eleven buildings worthy of conservation have been continued from the 2009 plan, now with the addition of the Mining Workshop (F4) from the second mining period. The building is set aside in the plan map and subject to special requirements in the supplementary provisions to safeguard the cultural heritage values.

Former construction areas with protected buildings have been set aside as cultural heritage areas with specific requirements for protection and management in order to clarify management responsibility and to highlight cultural heritage protection as the basis for new measures in the settlement. The purpose of the former research area (between F2 and F3) has been changed to cultural heritage, and the former construction area (between the hotel and the Yellow House) has been changed to a cultural heritage area/area of natural habitat to ensure necessary consideration of protected cultural heritage.

The mining area north of the construction zone has been set aside for cultural heritage purposes. Inspections and mapping during planning did not reveal any particular risk to public safety linked to closed mines and mine entrances. The Norwegian Directorate of Mining carried out an inspection in 2012 and concluded that none of the registered mine entrances presented a risk to public safety.

The land-use plan's consistent incorporation of consideration for cultural heritage and the cultural environment as a premise for all activity and land use within the land-use planning area is assessed to have positive consequences/impacts for safeguarding and management of cultural heritage. This applies to the purpose, zones requiring special consideration and reserved zones, and the requirements of the supplementary provisions.

4.7 Local community – research, settlement and operational/service functions

The dimensioning basis for development and land use during the planning period is not expected to differ greatly from the current situation (overnight accommodation for up to 200 people, including approximately 45 year-round residents). The land-use plan facilitates the maintenance of settlement and research activity by allowing for the necessary securing/upgrading of existing buildings and technical and research infrastructure. The plan does not facilitate increased accommodation capacity but ensures land-use objectives and authorisation for known development/expansion projects for social and research purposes during the planning period. The purpose is to ensure the necessary standards and public safety, and to contribute to the objective of increased occupancy and activity in the low season/winter period.

The planning provisions establish general authority for measures required for operation of both the airport and public services and infrastructure. The same applies to research activity and the deployment of research instruments, which may be permitted within the entire planning area, provided that this does not conflict with the operation and maintenance of Ny-Ålesund or the preservation of cultural heritage, or harm vulnerable flora and fauna. The land-use plan has set aside the necessary land for the airport, harbour and road system, while stipulating that activities and measures that hinder the operation of public services and infrastructure may not be permitted.

Sequencing requirements require satisfactory capacity, technical standards/environmental quality and operational reliability of power lines and other technical infrastructure (power generation, water supply and treatment plants) to be safeguarded before permits can be issued for new measures/activities. Implementation of the necessary upgrading of technical infrastructure is safeguarded in the purpose and provisions. This includes pipeline networks (district heating, water supply, sewage), replacement of transformer substations, refurbishment of tank installations, stormwater measures and relaying/securing of foundations for existing and any new buildings and facilities.

Power generation in the settlement is extremely vulnerable due to the lack of a backup solution. The existing construction area has been extended to allow for the establishment of a planned new emergency heating centre in field I/L4. An investigation into a new sustainable energy solution for the settlement is in progress. The land-use requirements for a new energy solution have not been clarified. However, construction areas set aside for operational, research and logistics purposes in the I/L fields establish general permission for energy facilities and thereby land reserve for any new buildings/facilities linked to new energy supplies.

To better meet the requirements of the current Regulations on Pollution and Waste in Svalbard (ref. FOR-2020-07-03-1517), a purpose-defined area for an environmental station (field RA) to handle and sort waste from the settlement, and designated zones requiring special consideration including requirements for an action plan for cleaning up contaminated land (H390), have been set aside.

The route for the new road to the shooting range has been set aside for the purpose of safeguarding safety/emergency preparedness and year-round use and operation of the shooting range. Consideration of traffic and outdoor activities is safeguarded by means of a secured route for pedestrian and snowmobile traffic and generally good access to the surrounding outlying areas.

The land-use plan allows for new construction over existing drainage basins within the cultural heritage area in field K1. Waste water from the settlement is currently treated in a container-based aerobic treatment plant located in the Ironworks (automatically protected), which does not have sufficient collection capacity in the event of acute discharges. For reasons of operational safety and to avoid further intervention in protected cultural heritage sites, relocating treatment plants to new buildings above the drainage basins is considered the most appropriate measure.

The planned new building in K1 is situated within protection zones for several particularly valuable cultural heritage sites, and therefore requires a dispensation from the Norwegian Directorate for Cultural Heritage and close cooperation with the conservation authority with regard to design and materials use.

New construction over existing drainage basins is prioritised for reasons of operational safety, working environment/HSE requirements and to meet the conditions in the discharge permit (GoS, 15 September 2022) concerning adequate collection capacity.



Figure 26. New building, wastewater treatment plant, field K1

New areas have been set aside for research purposes where the plan's supplementary provisions establish requirements for size and execution in order to provide greater predictability in case processing and processing permit applications in accordance with Section 58 of the Svalbard Environmental Protection Act. The land-use plan allows the construction of a new magnetic observatory (F10), replacement/relocation of the Gruvebadet Atmosphere Research building (fields F4/F6) and land-use-clarified purpose for replacing Kullkaia as a research pier (field VAA). The design and foundation/anchoring of the research pier has not been clarified. It is therefore assumed that further investigation must be carried out as a basis for an application in accordance with Section

58 of the Svalbard Environmental Protection Act. Zones with traffic restrictions have been set aside to safeguard sensitive research instruments (H190).

For reasons of research, public services and infrastructure and emergency preparedness, the land-use plan allows for permanent permission to be granted for the temporary extension of Kongsfjordhallen in field I/L6. The extension is considered to take sufficient account of the surroundings, provided that the plan's requirements for mitigating measures are incorporated. Impacts/consequences are separately assessed in a special memorandum as a background document for the land-use plan.



Figure 27. Extension of Kongsfjordhallen, field I/L6 (LPO, 2022)

There are insufficient acceptably modernised buildings available in the settlement, either for all-year residents responsible for day-to-day and critical public services and operations, or for researchers/visitors to the Ny-Ålesund Research Station, who stay for differing periods of time. Space- and energy-efficient upgrading and use of existing buildings will be prioritised ahead of the construction of new buildings. The existing buildings offer significant potential for upgrading and use for both residential purposes and the settlement's other functional needs in accordance with contemporary specifications. Several of the protected buildings have been empty for a long time, and do not meet current usage requirements either in terms of functionality or building technology/energy efficiency. Uncertainty regarding the extent of this land reserve is linked to considerations of how much upgrading/modification the buildings can take without compromising the statutory conservation value. The ongoing revision of the management plan for protected buildings is expected to help clarify the buildings' use potential.



Figure 28. New construction field BA4

The land-use plan permits the construction of a new building in the existing construction area (field BA4) as a replacement for a condemnable research building/laboratory (Vaskerilab), and as a land reserve for needs-based housing/service functions.

The planning provisions require documented adaptation to the existing built-up/cultural environment and establish requirements for distinct building volumes to safeguard the east–west line of sight.

Light pollution and unnecessary outdoor lighting must be avoided. Outdoor signage is not permitted unless justified on particular safety-related grounds or due to general considerations/restrictions. The preparation of a signage plan and lighting plan for Ny-Ålesund is anticipated, and will be used as a basis for granting permission for signs and illuminated areas.

Use of colours outside must be in accordance with local tradition and the prevailing colour plan for Ny-Ålesund. The Norwegian Institute for Cultural Heritage Research's colour scheme from 2004 is currently being revised.

Consideration of the local community – research, settlement and operational/service functions have been assessed as sufficiently incorporated into the land-use plan and supplementary provisions.

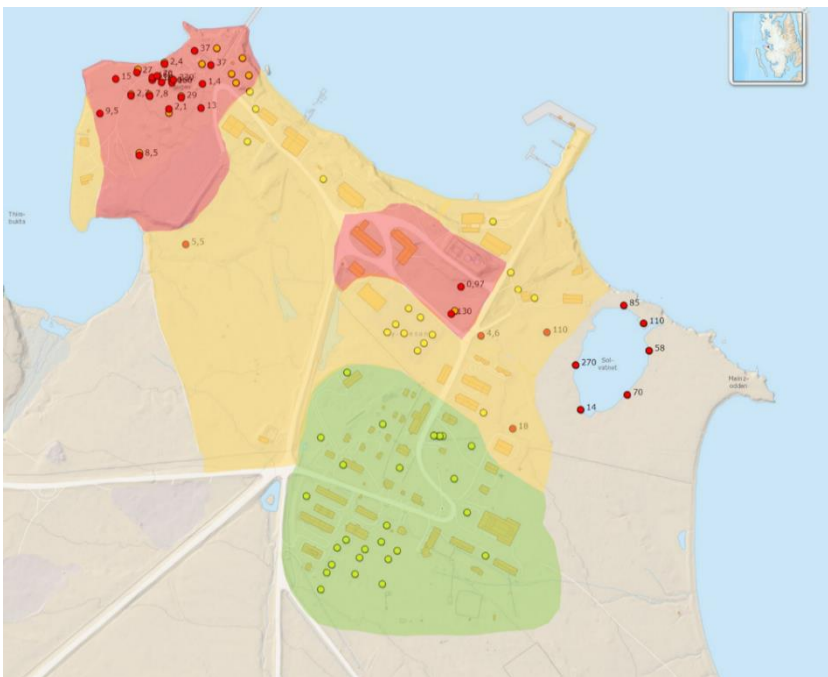
4.8 Ground pollution

In accordance with the Regulations relating to Pollution and Waste in Svalbard (FOR-2020-07-03-1517), and as a basis for the land-use planning work, in the period 2019–2022 the Norwegian Geotechnical Institute carried out a survey of ground pollution in the central area of Ny-Ålesund. The pollution levels in the surveyed areas were found to be generally low and to originate mainly from coal dust. The levels of PAH and BTEX detected were deemed not to pose a problem for future development of the infrastructure in the central area.

However, significant ground pollution from the environmental toxin PFAS was detected at four locations, and found to have spread to the aquatic environment and to have accumulated in moss and Notostraca crustaceans. It is likely that extinguishing foam is the main source of most of the contamination. It is known that extinguishing foam containing PFAS has been used on the wastewater treatment plant's fire training field. In addition, it is suspected that extinguishing foam containing PFAS was used to deal with a leak from the tank installation in the 1980s. The results show that PFAS contamination from the fire training field has spread over a relatively large area.

The contamination is mainly in surface soil (0–0.3 m). In the centre of the fire training field, the pollution has penetrated to a depth of approximately 0.8 m. The ground was frozen from this depth and the risk of further spreading in uncompacted materials is deemed to be limited. The spread of pollution is considered to be well mapped. Samples of meltwater taken in the area indicate minor spreading potential. An environmental survey (Norwegian Geotechnical Institute) carried out on the site where an environmental station is planned (field RA) indicates that sufficient consideration of pollution can be safeguarded.

Mapped areas with ground pollution have been incorporated as zones requiring special consideration (H390) with requirements for an environmental survey and action plan for handling/cleaning up contaminated materials.



Red and yellow zones:
areas with ground pollution and requirements for further environmental survey/action plan (H390_1)

Green zone:
areas with a lower probability of ground pollution (H390_2)

(Norwegian Geotechnical Institute, 2022)

Figure 29. Pollution zones

The Governor of Svalbard has instructed Kings Bay to prepare a risk and action needs assessment of PFAS contamination in Ny-Ålesund (GoS 5 September 2022). Kings Bay has further been instructed to assess the need for measures to reduce the risk caused by the pollution. The deadline for the report is 1 October 2023.

The report will provide a basis for updated management of requirements for environmental surveys and action plans in zones requiring special consideration of ground pollution.

Consideration of ground pollution is assessed to have been sufficiently incorporated into the land-use plan and supplementary provisions.

4.9 Risk and vulnerability land-use plan

A risk and vulnerability analysis (RVA) has been carried out for the Ny-Ålesund Land-Use Plan 2023–2033. The RVA is used as the basis for the design of a land-use plan and supplementary provisions and guidelines. The purpose of the RVA is to prevent existing and planned land use, measures and public services and infrastructure from causing an increased risk of undesired events with a risk to life and health, stability and asset values.

The Svalbard Environmental Protection Act does not establish a requirement for a risk and vulnerability assessment. The planning guide for Svalbard (Norwegian Ministry of Climate and Environment, 1 April 2019) refers to Sections 48 and 49 of the Svalbard Environmental Protection Act and the instance responsible for planning's responsibility to incorporate public safety into its land-use plan, and recommends that an RVA for the land-use plan be prepared in accordance with [guidance](#) from the Norwegian Directorate for Civil Protection (DSB).

The following comprehensive RVAs should be viewed in the context of the RVA for the Ny-Ålesund land-use plan:

- Svalbard RVA 2022–2026, the Governor of Svalbard
- RVA Ny-Ålesund May 2022, Kings Bay AS (reviewed regularly)

These RVAs encompass the entire risk spectrum, including incidents and societal risks linked to technical operations, communication/transport, psychosocial incidents etc., and incidents that require crisis management and emergency resources.

The RVA for the Ny-Ålesund Land-Use Plan 2023–2033 is limited to the topic of public safety. The analysis focuses on the risk of events that result in land-use restrictions and that can be prevented and handled through land-use objectives and supplementary provisions in the land-use plan. The analysis method and scope are adapted to the known knowledge base (ref section 4.1), and the special conditions in the land-use planning area/Svalbard relating to the climate and location/distance. As a basis for mapping danger zones linked to the tank facility in the construction zone, including the landing facility at the port, a risk analysis has been carried out in accordance with DSB's guidelines (Safetec, 13.06.23). The danger zone analysis is included as background document g) to the spatial plan.

With reference to the known knowledge base and the plan description's assessment of impacts/consequences, the following topics have been analysed with regard to risk and vulnerability, with necessary mitigating measures described for acceptable risk levels:

- Landslides/avalanches/rockfalls
- Unstable building ground/reduced permafrost
- Extreme weather – uncontrolled stormwater
- Flooding in rivers and watercourses
- Spring tides/sea-level rise and erosion
- Failure of critical societal functions/infrastructure
- Shooting range – critical incident/accident
- Fire/explosion at tank installation
- Fires in buildings and facilities
- Ground pollution

Consideration of public safety in the land-use plan is assessed to be sufficiently incorporated through mitigating measures in the plan map and provisions for acceptable levels of vulnerability and risk.