



Kartverket

FACTSHEET

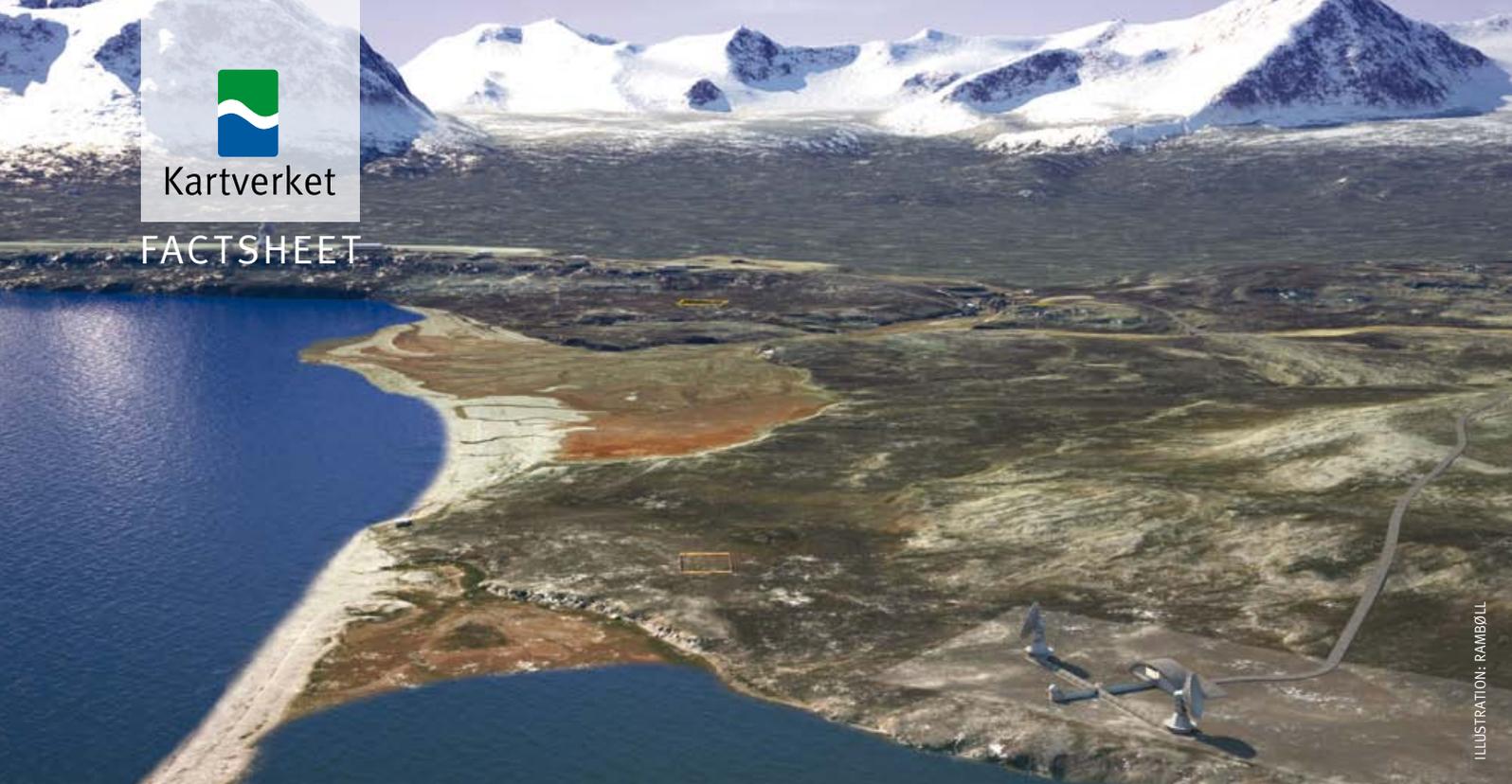


ILLUSTRATION: RAMBØLL

The Norwegian Mapping Authority's Geodetic Observatory - Ny-Ålesund, Svalbard

NEW OBSERVATORY ON THE WAY

The Norwegian Mapping Authority (NMA) will be able to measure changes to and motion of the Earth with an accuracy of millimetres from its new geodetic observatory at Ny-Ålesund in Svalbard.

THIS FACILITY FORMS part of a global network which is crucial for society's satellite-based infrastructure and provides the basis for accurate climate monitoring in the high north.

The Norwegian government appropriated funds for a new geodetic observatory in its revised national planning budget for 2012, while the environmental impact assessment has been approved and planning permission granted. The NMA is now fully engaged in the detailed design of the new observatory.

Five years to build

Construction is expected to begin in 2013 and will be divided into several phases. The first involves building a new access road to the observatory site.

Plans then call for work on the foundations for the instruments and associated buildings to be carried out in 2014-15. The whole construction process will take five years, with the observatory scheduled for completion in 2018.

This will be followed by three years of overlap with the existing geodetic observatory in Ny-Ålesund to safeguard time series before the NMA shuts down the old infrastructure.

Core network station

The NMA will use the new facility to gauge the Earth's motion and position through the deployment of several measuring techniques in one and the same place.

That will give it the status of a complete geodetic Earth observatory, with equipment which includes twin telescopes, very long baseline interferometry (VLBI) and a satellite laser ranging (SLR) instrument. ■

■ FACTS:

The NMA's geodetic observatory at Ny-Ålesund

- Maps movements in the Earth's surface, planetary rotation, and the Earth's position in space.
- Is the northernmost facility of its kind, and forms part of a global network for observation and research
- Is being upgraded with new technology, and will combine several geodetic measuring techniques – very long baseline interferometry (VLBI), satellite laser ranging (SLR), global navigation satellite systems (GNSS) – including GPS – and doppler orbitography and radio positioning integrated by satellite (Doris), based on the standard set by the GGOS.
- Is due to be completed in 2018.

Climate monitoring

THE GLOBAL GEODETIC observing system (GGOS) aims to establish 30 installations of this kind on a world basis in order to secure a more accurate and stable basis for monitoring climate, sea level, floods, landslides, earthquakes and melting ice.

Even though Norway and a few other countries are already working to upgrade their geodetic observatories, however, these efforts will not be sufficient to secure global coverage.

UN mandate

The UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) is accordingly paying growing attention to geodetic observation.

Work in this committee could now lead to a UN resolution on a global geodetic collaboration “to work with all

stakeholders to improve a sustained operational global geodetic reference frame and infrastructure, to support the increasing demand for positioning and monitoring applications with associated societal and economic benefits” (from the Doha Declaration, UN-GGIM, 2013).

A UN mandate could encourage a number of other countries to make a commitment to geodetic observation, in the same way that Norway and the NMA are now doing at Ny-Ålesund. ■

■ FACTS:

Geodesy

- The basis for Earth observation
- The science of the Earth’s shape, motion, gravitational field and changes to these
- Fundamental for monitoring climate change and for all mapping

PHOTO: BJØRN-OWE HOLMBERG.



“The measurements from this station will significantly contribute to the study of our changing planet, particularly in our understudying of sea level rise.

Stephen Merkowitz
NASA

Environmental conditions

A NUMBER OF environmental requirements have been set by the governor of Svalbard for the construction and operation of the NMA’s new geodetic observatory at Ny-Ålesund.

The NMA must conduct various monitoring programmes for such aspects as bird life and drainage in the area. Cultural heritage concerns are also covered. The NMA will be drawing on specialist expertise in areas like landscaping, restoration ecology and hydrology.

These requirements have been set by the governor as a condition for giving the NMA planning permission in an environmentally sensitive area, which lies outside the zones allocated for permanent research activity in the local area plan.

The choice of the site has been dictated by the need for stable ground conditions, a satisfactory horizon and an acceptable distance from other infrastructure, radio interference and vibration. ■

Fibreoptic link

NORWAY’S UNINETT GROUP is now preparing to lay fibreoptic cables along the seabed between Longyearbyen and Ny-Ålesund. This link will be important for the research community at the latter site.

Plans call for cable to be laid in the summer of 2014 along a route on the outer side of the Prince Charles Foreland island.

The Norwegian government appropriated funds in May 2010 for laying this cable. Uninett has been given a mandate to negotiate the laying of two cables, which are needed to avoid downtime in the event of faults or breaks.

With this fibreoptic link, the NMA will be able to transmit real-time data from its new observatory to such recipients as NASA in the USA and the international geodetic research network. ■



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