

A person is rowing a red boat on a large body of water. In the background, there is a long bridge with a green metal structure. The water is a deep blue color.

Identity code: KAROSTA CANAL

Cultural, historical and nature heritage

*Working together for **green** Europe!*

The Project is financed as part of the Norwegian Financial Mechanism 2014–2021 programme "Climate Change Mitigation, Adaptation and Environment". Total cost of the project is 5 117 647,05 EUR, 4 350 000,00 EUR of which is the Norwegian Financial Mechanism financing.

The Karosta Canal is a man-made water reservoir. It was one of the first structures built within the Karosta complex, construction of which began in the late 19th century.

The Karosta Canal is 2150 meters long. It connects the Outport of Liepāja in the Liepāja Port with the naval supply and repair area located further inland, supplemented by two basins connected at a right angle.

During the excavation of the canal, around 5000 workers were employed daily, and floating dredgers were also used. In 1901, the canal was completed and it received its first ships.

Karosta Canal :

Canal digging works were completed in 1901
Karosta Canal length – 2150 m
Karosta Canal gross area is ~ 87 ha

Two basins:

Vessel docking basin – 852 x 256 m
Repair basin – 873 x 213 m





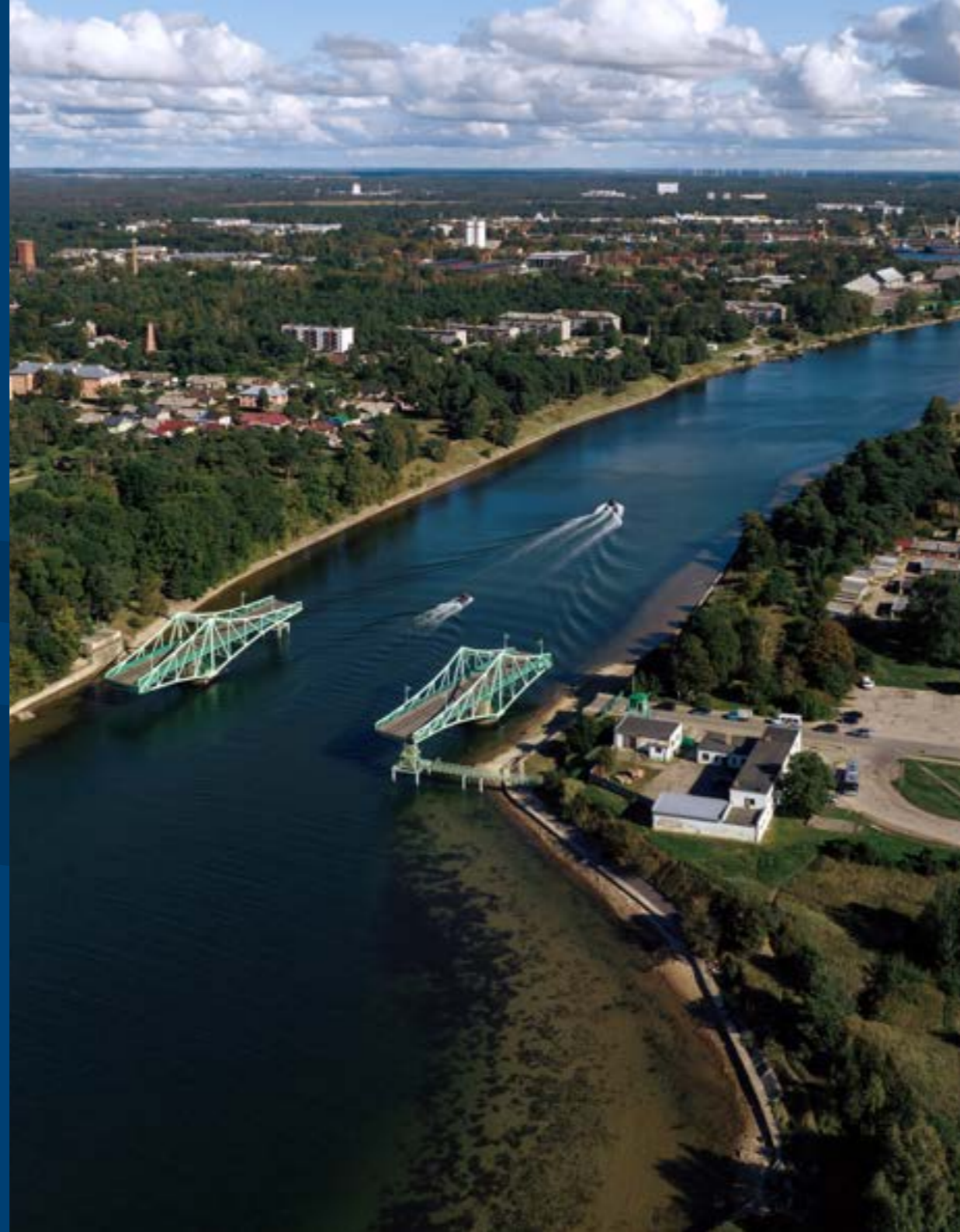
JURIS RAKIS
historian

The origins of Karosta can be traced back to 1890 when Imperial Russia decided to build a new naval base near Liepāja. In less than 17 years, a practically new autonomous city was built. At that time, it was one of the most modern complexes of its kind in Europe.

Everything we now refer to as Karosta was once a military city and a naval base with an outpost and adjacent hydrotechnical structures such as canals, bridges, ship repair factories, naval barracks, a cathedral, and officer residences, all under the control of the Admiralty.

Due to its infrastructure built for military purposes, Karosta has served as a military base under various regimes for over a century. Meanwhile, the Karosta Canal has always acted as a boundary between military and civilian life.

Both the Karosta Canal and Karosta itself are no longer military facilities and are gradually transforming into attractive places for business, active recreation, culture, and art. The remaining task is remediation to cleanup of environmental pollution left behind by the Soviet army.



Special machinery equipped with buckets was used in digging the Karosta Canal.

Stones used for consolidation of the banks of Karosta and breakwalls were collected in the vicinity of Pāvilosta, afterwards transported to the port by horse-drawn railway, then in open-bottomed barges they were taken to the construction site.



Around 5000 people who responded to a special call and came from far away were involved in digging and construction of the Karosta Canal on a daily basis.



There still is a submarine hangar in the Karosta Canal docking basin, and it is likely that this is the place where the super-secret submarines called Piranhas were assembled. The adventures shown in the movie *Peculiarities of the National Fishing* take place on this type of submarine.

One of the integral parts of the Karosta Canal is one of its basins, which was intended for docking navy vessels. During the Free State of Latvia both Latvian navy submarines bearing the names of Ronis and Spīdola were located here.



The USSR militarists controlled the Karosta Canal until 31 August 1994, and unfortunately even a little longer, as a matter of fact, at that time there were only half-sunk submarines and navy vessels that had to be removed and cut into scrap.



The submarine hangar currently is used by the trolling enthusiast society. These are men who love fishing salmon, besides, the hangar is a good place to leave their fishing boats in.



OSKARS MORS
fisherman

We have quite a lot of equipment, if we had to remove it every time that would be a very boring hobby. With the permission of the Liepaja Special Economic Zone Authority, we were shown a hangar where the Russian army's sabotage submarines had been assembled. Some say that they had even assembled two. Then we slowly built pontoons so that we had somewhere to step on, somewhere to tie our boats. So, it has been six, seven years since we are here in this hangar. We are very thankful.

Whenever water comes in from the sea, it goes and flushes slowly, slowly. Heavy metals and other heavy compounds remain on the bottom. Of course, after some big winds or when a bigger ship comes in, this dirty sludge is stirred up. That is why this sludge should be removed, and hopefully it will actually be done someday.

Pollution

From 1945 to 1994, the Karosta Canal was a restricted military territory, where the submarine base of the USSR Navy, and later on, since 1991, of the Russian Federation Navy, was deployed. The Russian Navy left Liepaja on 31 August 1994.

The military base operation has left a long-term impact on the territory, which the Helsinki Commission (HELCOM) has identified as one of the nine most polluted territories in the Republic of Latvia – "hot spot" No. 48, Liepaja City and the port.

Hg

Amount of mercury ug/kg:

In Liepaja Lake perch (13cm).



In Klaipeda perch (18,5cm).

When heavy metals accumulate in fish that people consume, they can also get into the human body and affect metabolism, cause changes in tissues and physiological processes.

Contaminated area – 78 ha

The estimated amount of contaminated soil – 690 000 m³

The research conducted so far indicates that the main bulk of the pollution has resulted from the activities of the armed forces of the Soviet Union, and approximately 650,000 m³ of sediment deposits have been contaminated with oil products and heavy metals (Hg, As, Pb, Zn, Cu, Cd, Se).

The canal bed of the Karosta Canal contains sediment deposits of silt and sand. The thickness of the polluted sediment in the Karosta Canal varies between 0.2 and 2.2 meters, with an average thickness of 0.6 meters. The concentration of pollution and the thickness of the sediment layer are higher in the eastern part of the canal.

As a result of pollution, the observed biodiversity of plant and animal species in the Karosta Canal and its immediate vicinity is very low, indicating that the biological balance has been disrupted and the self-regeneration capacity of the ecosystems is low. The pollution in the Karosta Canal does not naturally dissipate but accumulates in the sediment deposits and living organisms, significantly impacting the environment and human health.

Oil products are toxic to aquatic organisms, causing mutagenic and carcinogenic effects. The overall effect is also important because although some oil products are weakly carcinogenic, their presence in mixtures of various substances can enhance the carcinogenic activity of other compounds. Furthermore, as a result of global warming, water acidification occurs, which in turn affects the increased toxicity of heavy metals to the surrounding environment.

The concentration of oil product pollution in the sediment deposits of the Karosta Canal has decreased at least 8 times since 1993. However, it should be noted that dispersion of pollution cannot be achieved solely through dilution by waves, and the exchange of water between the Karosta Canal and the outerport is not intensive.



There still is a shipyard on the banks of the Karosta Canal and it is still working despite all the difficulties.

Construction of the Liepaja shipyard in Tosmare was started together with the extensive works throughout Karosta. The place where two large ship repair docks are still located was completed in August 1896.



The biggest dock – 94 thousand displacement tonnes – was intended for repairing armoured cruisers, but the smallest one – 83 thousand displacement tonnes – for gunboats and marine transport vehicles. Five years later, on 12 August 1901, the shipyard was dedicated.

After the declaration of independence of Latvia, the Tosmare shipyard was renamed into the Liepaja Navy Port Workshop. Everything was manufactured here, starting from milk churns to trains, ships, and even planes.



Georgs Ptičkins has worked at the shipyard for 35 years plus two summer school holidays. He started as a turner's apprentice, and ended up as the last general director of the shipyard before it was privatised, and an interesting fact is that his grandfather was one of the men that responded to the call to go dig the Karosta Canal and build Karosta in the late 19th century.



The sheet pile wall was built here in 2001, to launch the clean-up project in the Karosta Canal. Several years ago, as a part of a pilot project, a portion of the Canal soil was removed and deposited behind the wall.



Karosta has always been a military base with all the necessary infrastructure. For example, the 2nd battery has been an explosives warehouse right until 2022, but the majority of locals learned about it only when it was finally opened for visitors as a branch of the Latvian War Museum.

There are many such objects in Karosta. Some are better known than others. There are several hills in the forest at the end of Laboratorijas Street. Initially, one might think they are just hills, but upon closer inspection, it can be seen that they have entrances through which one can enter inside. These are well-hidden ammunition depots. It is said that during the Soviet era, nuclear warheads for missiles were stored there.



Vitālijs Jeļcovs
served in Karosta

"As far as I know from what people tell, this is where nuclear warheads were kept and then they were attached to missiles and torpedoes and afterwards placed on vessels and submarines by the other army unit. There were six barbed wire lanes, and zones. Impossible to access. It used to be a very well-protected territory. It was the only such place in Liepaja, and the only one in the entire Baltic fleet."



Karosta was built as a separate urban environment with a separate green zone, which included an area intended for recreation. The greenery planted a long time ago is an important nature heritage in Karosta even nowadays, since it promotes biodiversity in the city and provides locals with ecosystem services like microclimate regulation, protection against wind, providing the opportunity to enjoy the park's natural and cultural landscape for recreation and relaxation.



Even today in Karosta there are spacious green zones with rich flora and fauna, for example, the nice nature oasis Beberlini Park which has held the Blue Flag certification for several years now. This is positive evidence of the fact that everything changes and Karosta is becoming more accessible, interesting and diverse.

Karosta is no longer a military object. Step by step it is becoming a place for active leisure, culture and art. Turning from the Navy port into a Culture port?

The visually appealing gilded domes of the Naval Cathedral Church of Saint Nicholas, which is the highest dome building in the Baltics and is still operational, can be noticed from afar.



Egons Peršēvics
artist

"In Karosta, as soon as the military left, artists were in. Nature does not like emptiness. Now, when Karosta has turned from a military object to a civil one, it requires a soul, and the soul could be the art that is born and grows here, and comes in on a more professional level. The environment evolves and demands fulfillment for the well-being of humans. Karosta is a very, very good place for creating art, for developing art. I see a bright future for Karosta as a place or centre for art, especially if we consider that Liepaja is going to be the European Capital of Culture in 2027. It would be a beautiful starting point."

The Karosta Canal, which was dug more than a hundred years ago by thousands of workers who worked hard here day by day, now combines economic, recreational, and environmental diversity. There is still another very important job to be done: the Karosta Canal soil must be remediated, and the contaminated sediments must be removed so that we can breathe and live more freely.

The Liepaja Special Economic Zone Authority, as part of the Norwegian Financial Mechanism 2014–2021 programme "Climate Change Mitigation, Adaptation and Environment", has removed 164 403 m³ of sediment, which contains 334 tonnes of contaminated substances that do not comply with the statutory requirements, from the Canal bed during remediation works.

It is the Norwegian Financial Mechanism that significantly contributes to reducing the pollution in the Karosta Canal by using Norwegian experience, competence and modern technologies. It will promote implementation of the most efficient remediation process and improvement of the environmental quality, thus reducing the negative impact of the historical pollution in Liepaja Karosta Canal on people's health, environment, and biodiversity.

Remediation works will provide an essential contribution to studying the cultural, historical and natural heritage of the Karosta Canal and promoting it both on the national and international level.

The long-term objective of the project is to reduce the negative impact of the historically polluted sediments of the Karosta Canal on the environment, human health and the ecological state of the Baltic Sea.





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Ministerstvo životného prostredia
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