WISA
Water Innovation System Amplifier

Interreg
South Baltic

EUROPEAN UNION
European
Regional
Development
Fund

Document 3.2

Project WISA

Stormwater drainage maps

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PROJECT WISA

The purpose of this document is to identify the areas with potential adverse effects on storm water quality in partners identified study sites. Detailed description is available in *3.1 Report on the existing stormwater management practices in South Baltic region seaports*.

This document includes stormwater drainage maps from WISA project partner's ports; Port of Åhus in Sweden, Port of Gdynia in Poland and Port of Klaipeda in Lithuania. Drainage plans highlights mostly affected areas. This information provides the project with a good idea of the current stormwater status and an extensive basis for future work.

STORMWATER DRAINAGE AREAS, PORT OF ÅHUS, SWEDEN

Picture shows an overview of the drainage plan, and which area is connected to the outlets. The outlets are numbered, and the connected area is coloured. There are 19 outlets in total and 17 of them ends in the harbour basin. Number 1-17 from left to right, 18 east and 19 north of the port area. Measurement is made in outlet 8, 11, 13, 17 and 19, close to the end-pipe. The area connected to outlets 8-13 cover almost all bulk handling in the harbour.

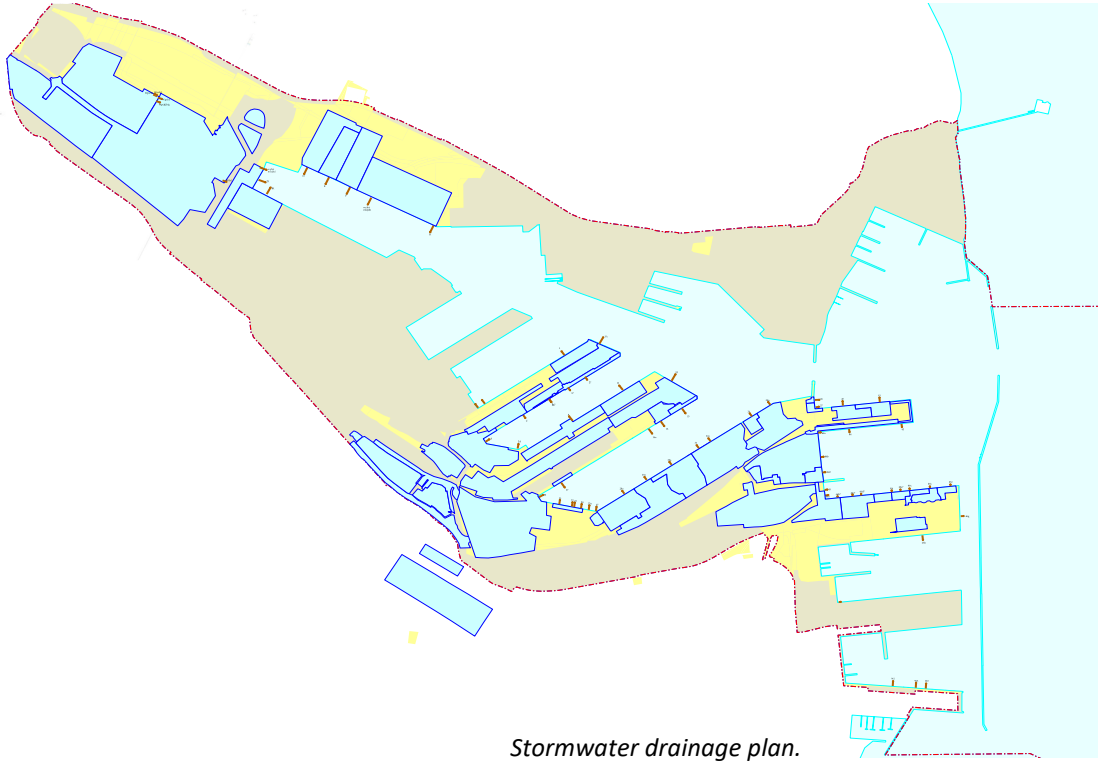
Stormwater drainage area plan.

MOSTLY AFFECTED AREA

The calculation shows that orange area O8 (outlet 8) and O13 are the hotspots regarding fertilisers. Regarding metals are O8 and O19 the biggest polluters. O19 has moderate or low concentrations of pollutions but since the area is the biggest, the amount of pollutants will be rather significant. The opposite is true for O17, high concentrations for metal but a small area means that the pollution is still limited.

STORMWATER DRAINAGE AREAS, PORT OF GDYNIA, POLAND

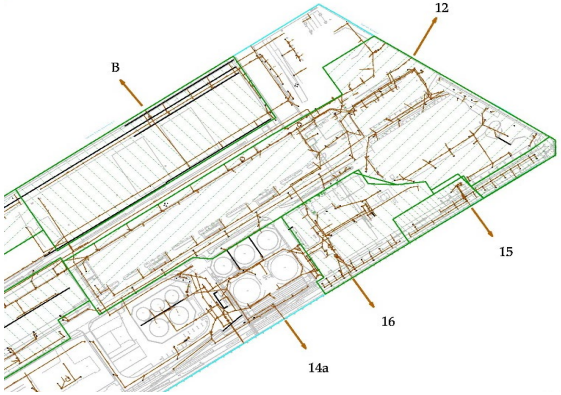
The areas are divided by rainwater flows, with drain water from roofs, parking lots, paved squares and green areas. The flows are collected in water basins. Usually, rainwater collects pollutants for further release in the natural environment. In Port Gdynia there are 64 catchment areas with 64 outlets. To each of them Port Gdynia has water permits issued by Polish State Water Enterprise.



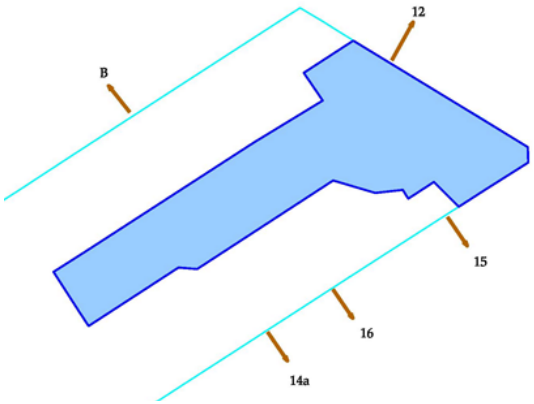
Stormwater drainage plan.

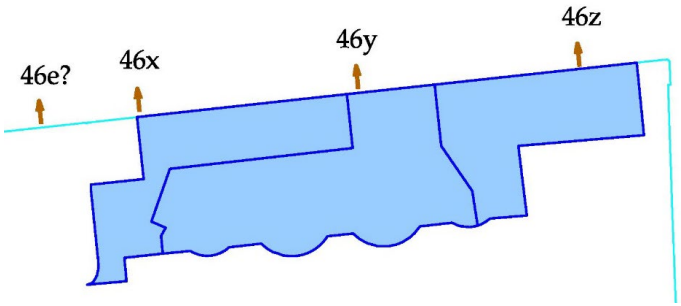
MOSTLY AFFECTED AREA

The most polluted areas of Port of Gdynia are the areas with organic loading called Baltic Grain Terminal and Baltic Bulk Terminal. Baltic Grain Terminal offers transhipment and temporary storage of grains, oilseeds and soybean meal.



Baltic Grain Terminal.





Baltic Bulk Terminal.

STORMWATER DRAINAGE AREAS, PORT OF KLAIPEDA, LITHUANIA

Stormwater generated from all three company's territory in Port of Klaipeda is drained with separate underground pipes that collect the drainage area runoff and discharge wastewater mainly treated on-site local treatment plants (mostly equipped with oil separators with integrated sand traps) into the Klaipėda Strait (Curonian Lagoon). Part of the stormwater runoff from Bulk Cargo Terminal and Stevedoring Company BEGA drainage areas is discharged into the Klaipėda city-operated stormwater sewerage networks.

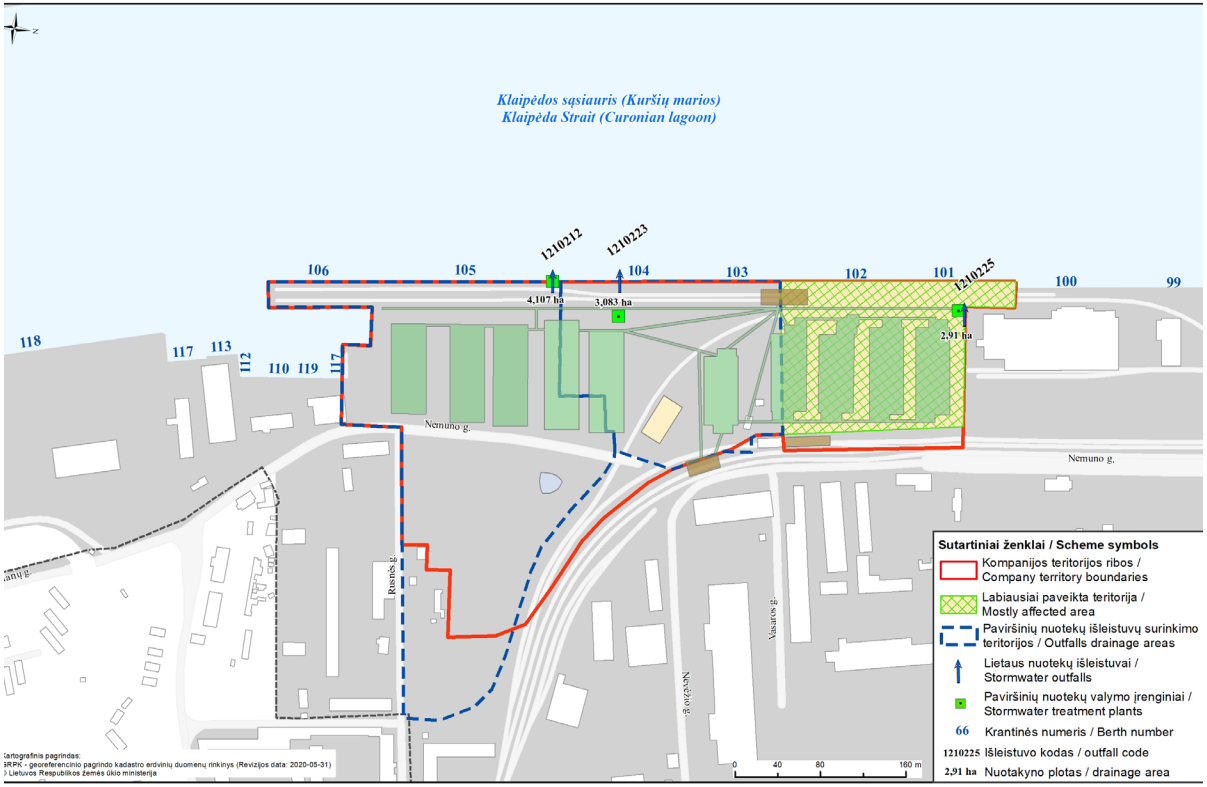
STORMWATER DRAINAGE PLAN
KLAIPEDA BULK CARGO TERMINAL

The total area of the Klaipėda Bulk Cargo Terminal company's territory is 18.96 ha, of which the perspective areas occupy 3.82 ha and the stormwater runoff from 9.77 ha area is collected in three drainage areas and treated in the local stormwater treatment plants (SWTP). Stormwater collected from the area of almost 6.3 ha is discharged into the Klaipėda Strait through two outlets (outlet No. 1210223 with 3.083 ha and No. 1210212 with 3.2103 ha of drainage areas) with installed wastewater treatment facilities - oil separators EuroPEK Roo Superkombi with integrated sand traps.

Klaipėdos Birių krovinių terminalo paviršinių nuotekų schema
Klaipėda Bulk Cargo Terminal stormwater runoff scheme

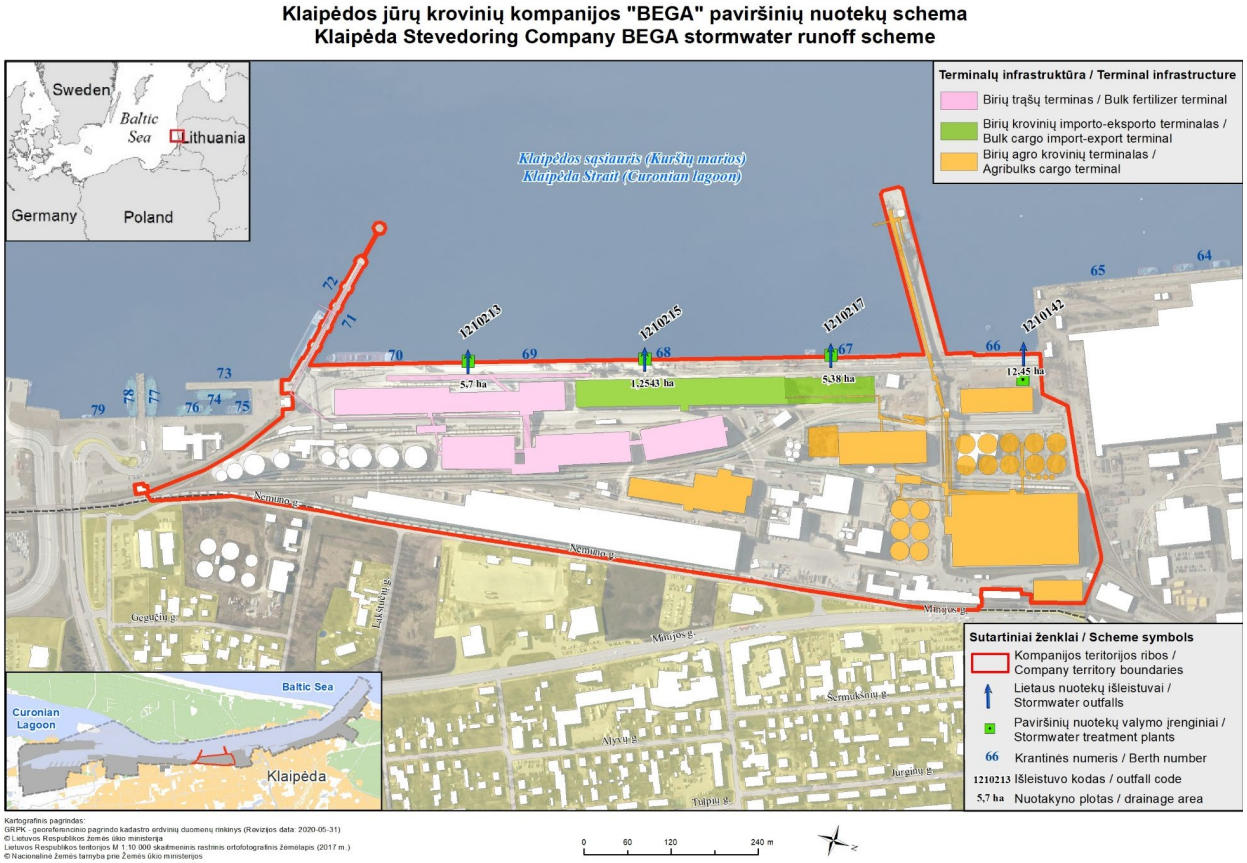
MOSTLY AFFECTED AREA
KLAIPEDA BULK CARGO TERMINAL

Labiausiai paveikta Klaipėdos Birių krovinių terminalo teritorja
Mostly affected area of Klaipėda Bulk Cargo Terminal

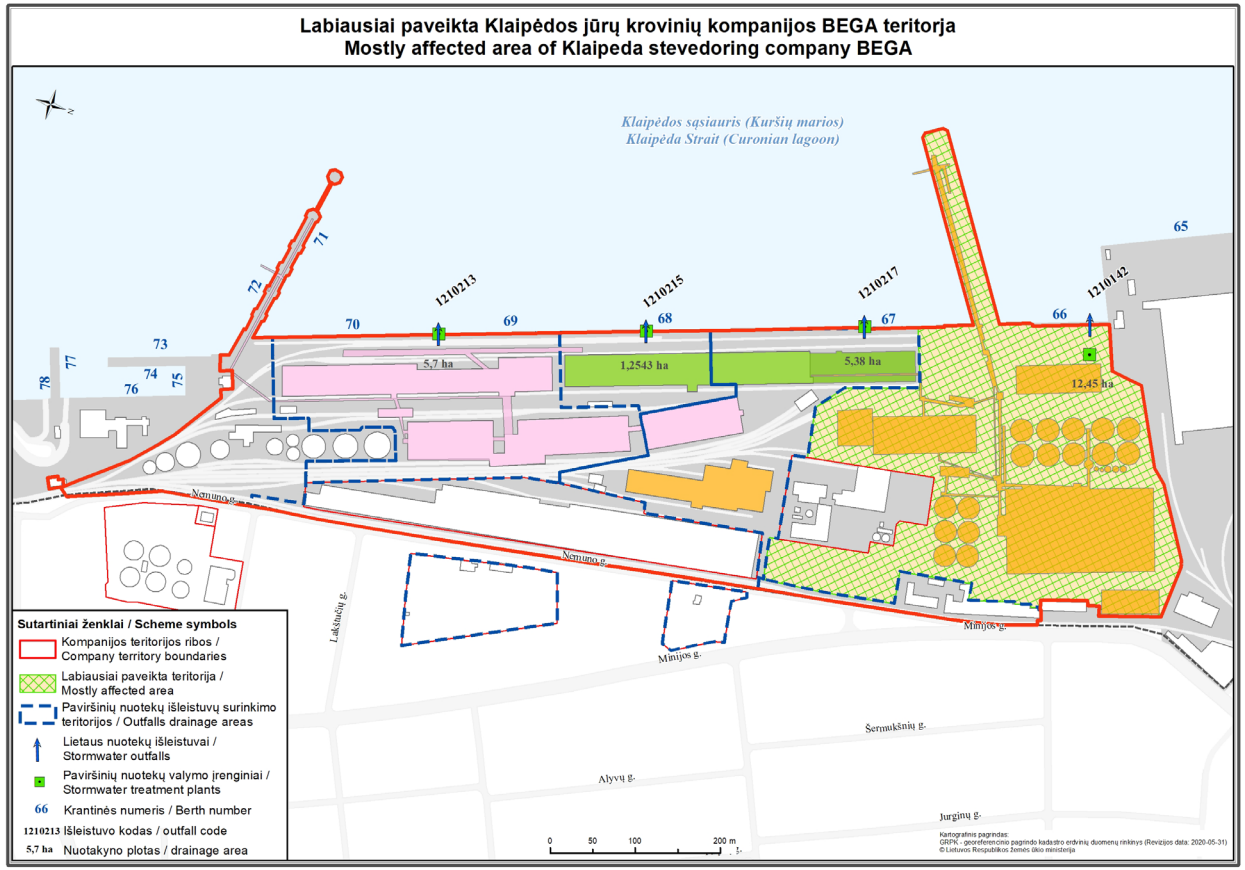


STORMWATER DRAINAGE PLAN STEVEDORING COMPANY BEGA

The entire operational loading area of 27.1843 ha is covered with a hard surface, the area drained into the Klaipėda Strait is 24.7843 ha. Before discharging to the Klaipėda Strait through four outlets: No. 1210213, 1210215, 1210217 and 1210142, the stormwater is treated in four SWTP. Part of the stormwater from 4.76 ha area is discharged into the city stormwater sewerage networks according to the agreements with the Klaipėda city water supply and wastewater network operator.

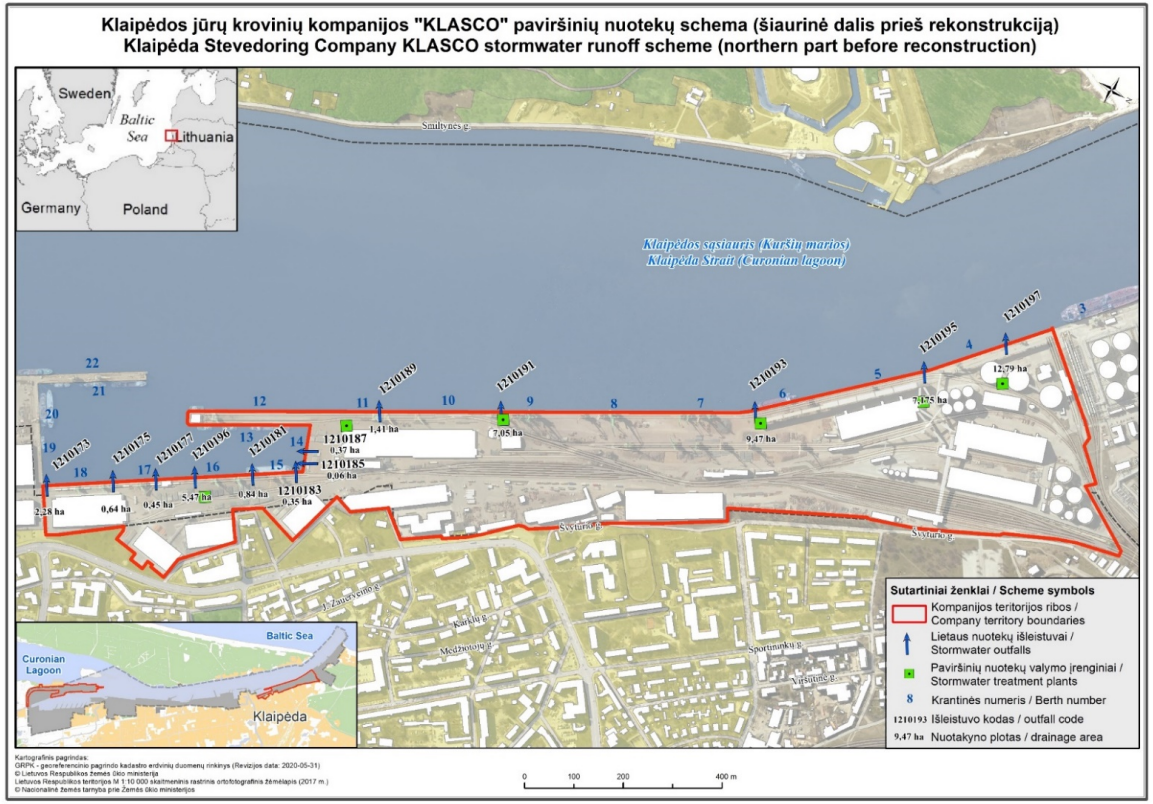


MOSTLY AFFECTED AREA
STEVEDORING COMPANY BEGA

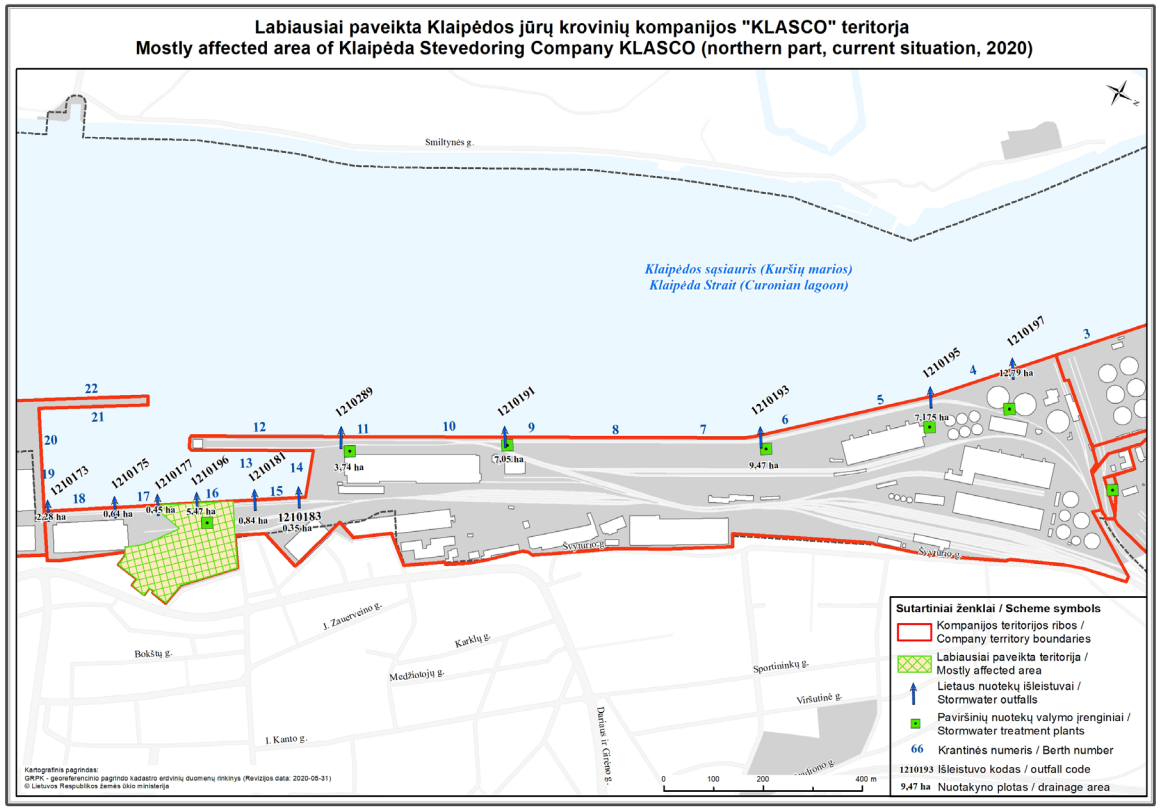


STORMWATER DRAINAGE PLAN STEVEDORING COMPANY KLASCO

The company has started and plans to continue the reconstruction of stormwater networks and treatment plants in the northern site. Planned full reconstruction measures have been scheduled for implementation by 2022. One of the measures was implemented in 2019: outlets No. 1210185, 1210187 and 1210189 were removed and the drainage area pipelines connected to new outlet No. 1210289 with new stormwater treatment plant at quay No. 11. After the implementation of the mentioned measure, stormwater from 50.255 ha of the northern part of the company is collected by 7 drainage areas and discharged through 7 stormwater outlets. The company currently operates 11 catchment areas with the same number of outlets, including six equipped with SWTP.



MOSTLY AFFECTED AREA
STEVEDORING COMPANY KLASCO



Project WISA
WISA (Water Innovation System Amplifier) is a 3-year project that will contribute to a cleaner Baltic Sea by developing and testing new green technologies to reduce pollution by stormwater from ports and other large hard surfaces.

The Baltic Sea is one of the world's most polluted seas. More than 45 million tonnes of fertilizer pass through the ports of the Baltic Sea annually, and the handling contributes to the release of fertilizers and nutrients into the stormwater. This leads to eutrophication with extensive algal blooms and dead seabed.