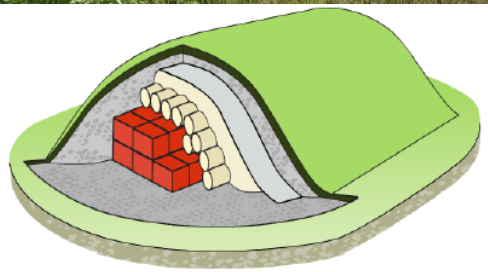
SE Ignalina NPP

Radioactive waste packages disposal to the B19-2 repository

15 September 2020

Decommissioning of Ignalina NPP is co-financed by the European Union

Repository for short-lived very low-level radioactive waste



The main part of the repository is the base slab on which the radioactive waste is placed.

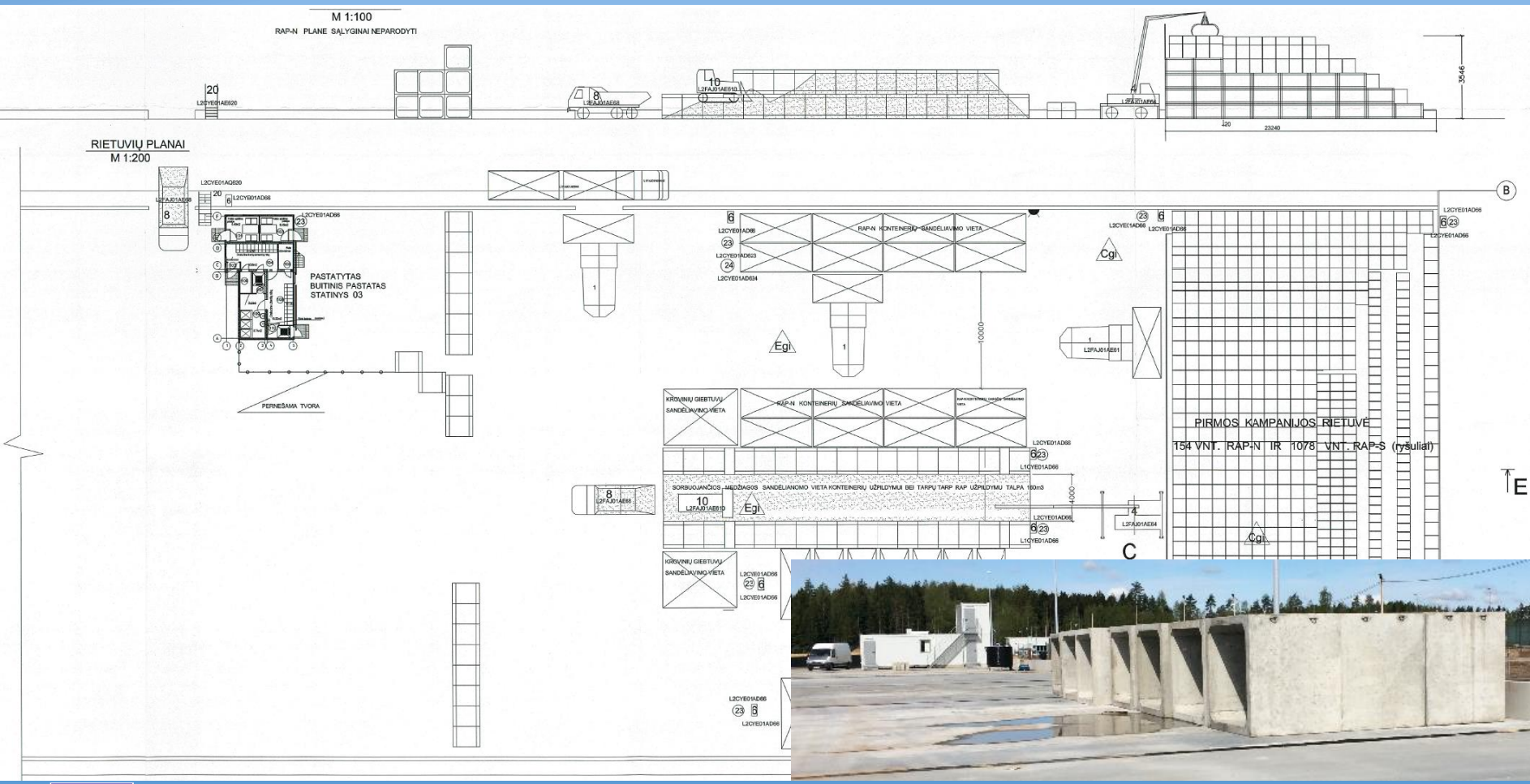
Repository for short-lived very low-level radioactive waste

- The repository is intended for the disposal of short-lived very low-level radioactive waste
- According to Nuclear Safety Requirements (BSR-3.1.2-2017), very low-level radioactive waste is defined as waste with a surface dose rate <0.2 mSv/h
- Activity is limited by the acceptance criteria of a particular repository. Currently, the dose rate from the radioactive waste package in the repository is <0.08 mSv/h.

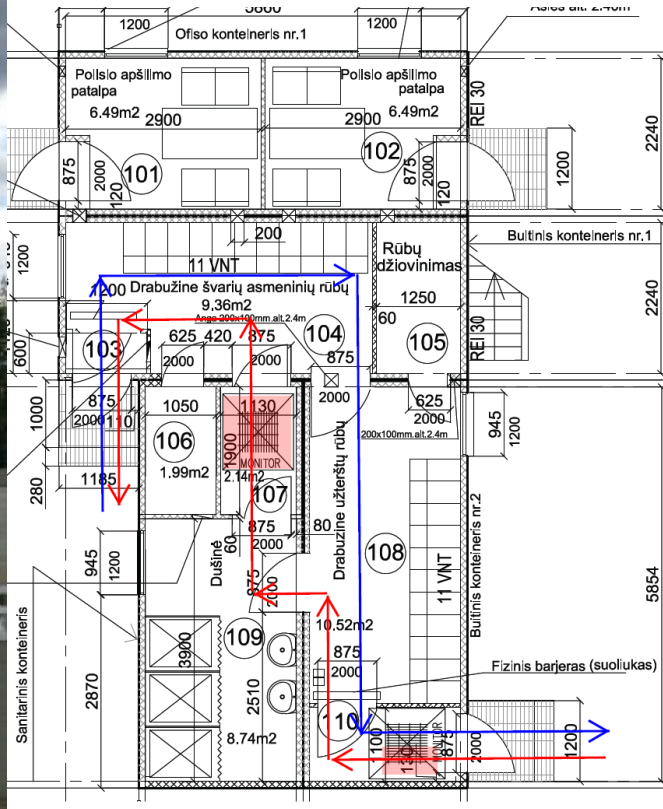
For comparison:

- Natural background – 0.1 mkSv/h
- The average annual dose of an employee working under ionizing radiation conditions is 20 mSv

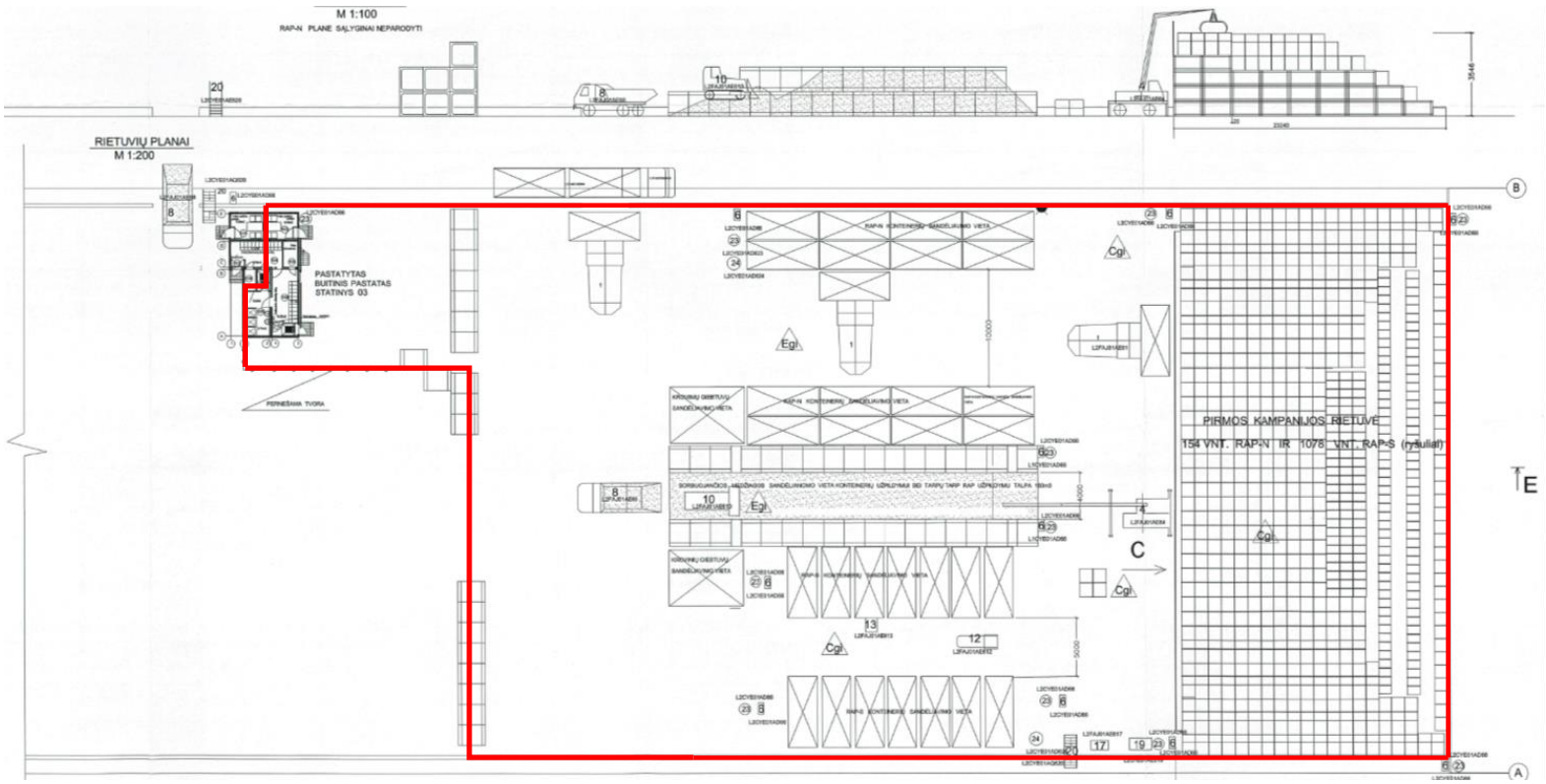
VLLW REPOSITORY



VLLW REPOSITORY

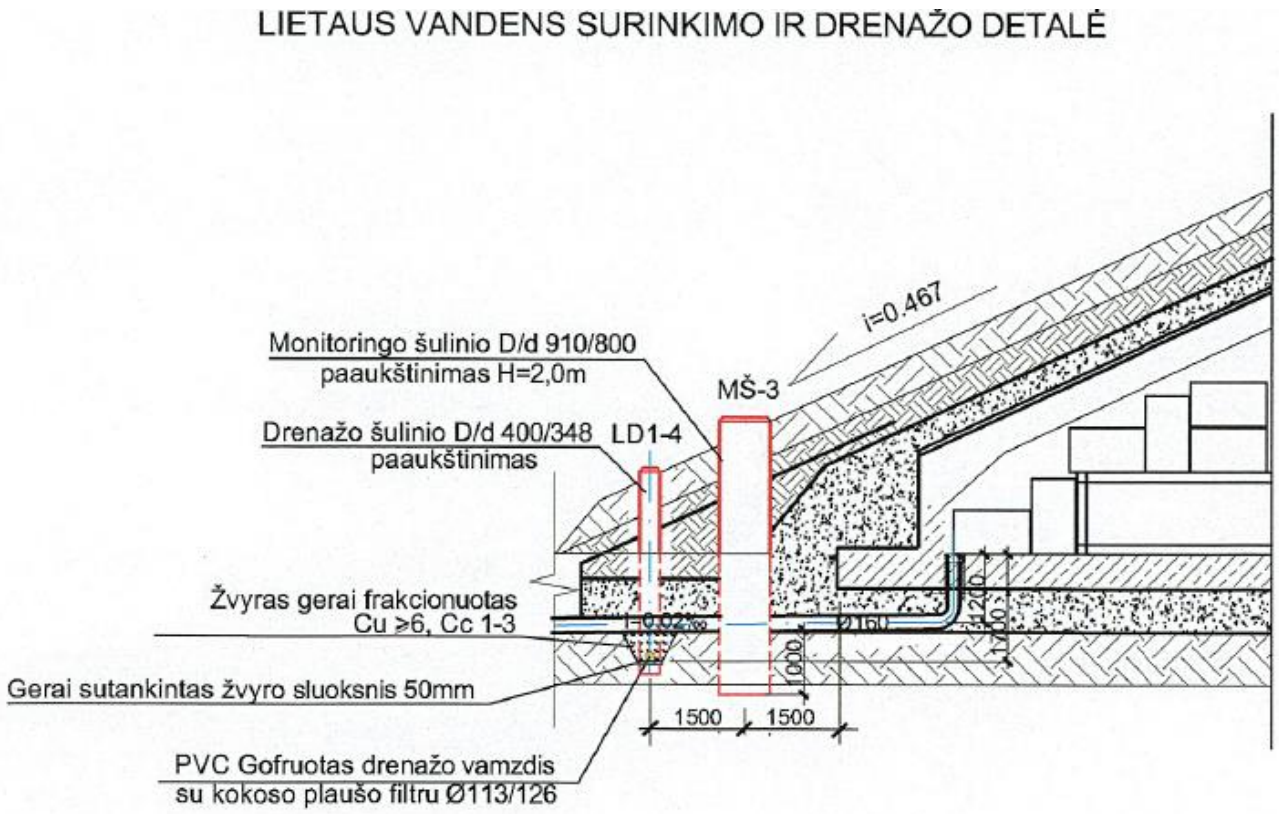


SCOPE OF WORK
Workplace arrangement



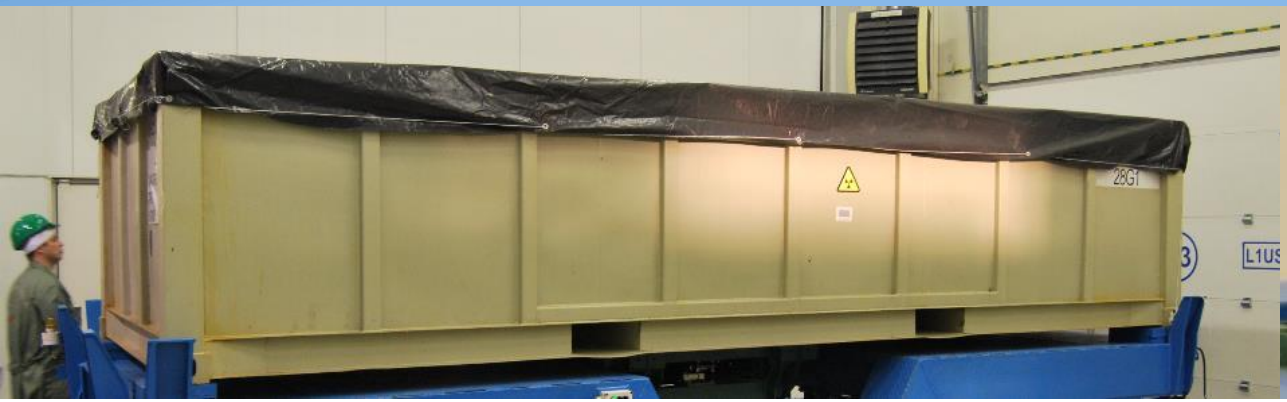
- Installation of the barrier in the controlled area (the area where exposure to ionizing radiation is possible) in the form of protective wall blocks and fence sections

SCOPE OF WORK
Workplace arrangement



Installation of a plug into the monitoring well, as well as monitoring and drainage wells raising during the performing of work

SCOPE OF WORK
Waste transportation



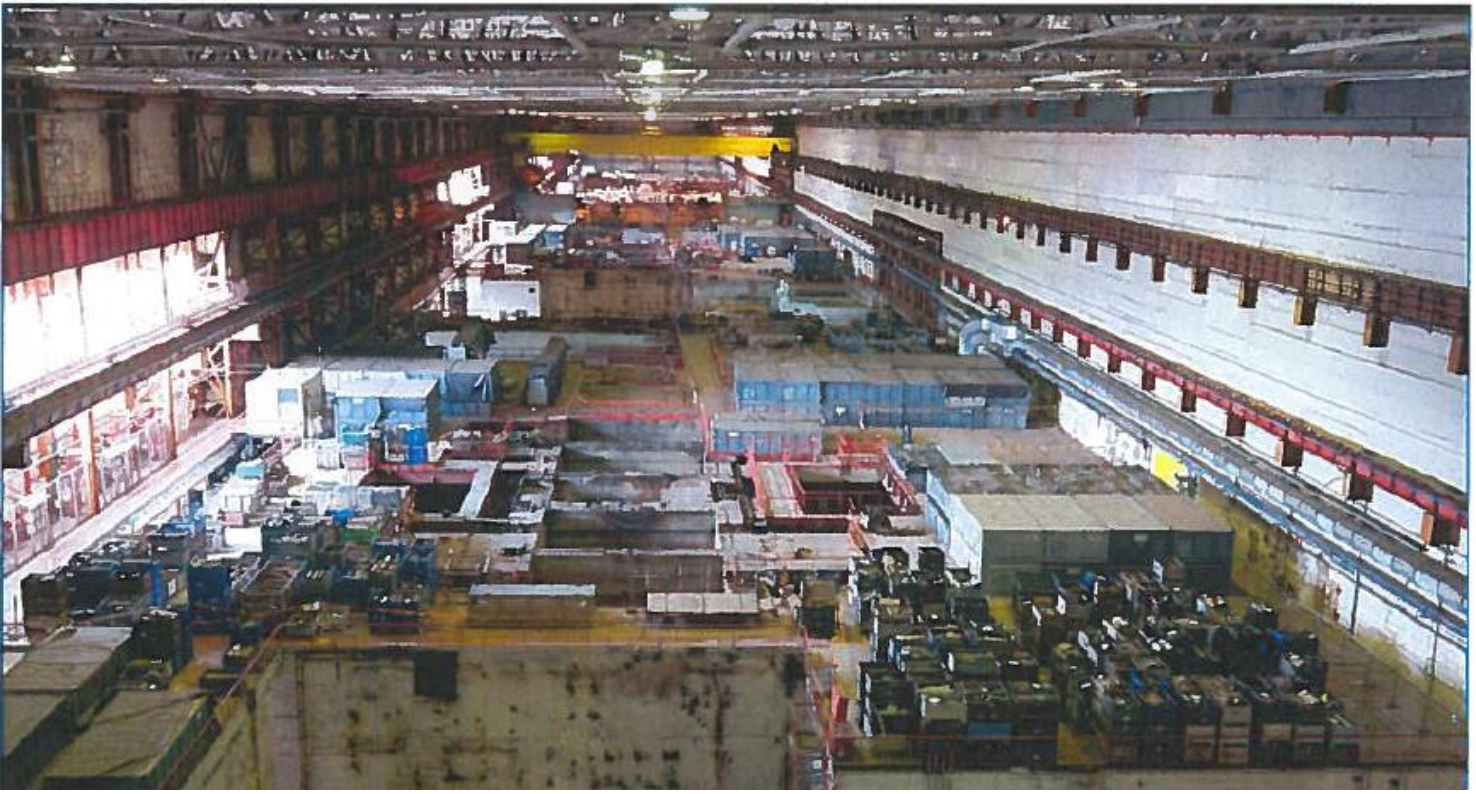
The volume of one campaign:

- 154 standard 20-foot half-height ISO containers
- 1200 “small” packages – bundles and/or FIBC containers

Scope of work
Waste transportation

- “Small” packages are stored and transported in ISO containers. The half-height container holds 12 packages, the full-size container – up to 24 packages.
- Storage places:
- Buffer storage,
- Temporary storage sites in the turbine hall

Scope of work
Waste transportation



Temporary storage sites in the turbine hall

SCOPE OF WORK
Waste transportation

The project assumes that the containers will be transported using semi-trailers for containers.

The semi-trailers may contain 1 or 2 – 20-foot half-height ISO containers.

The semi-trailers must have standard fixation units to avoid the container falling during the transportation.

SCOPE OF WORK
Waste transportation

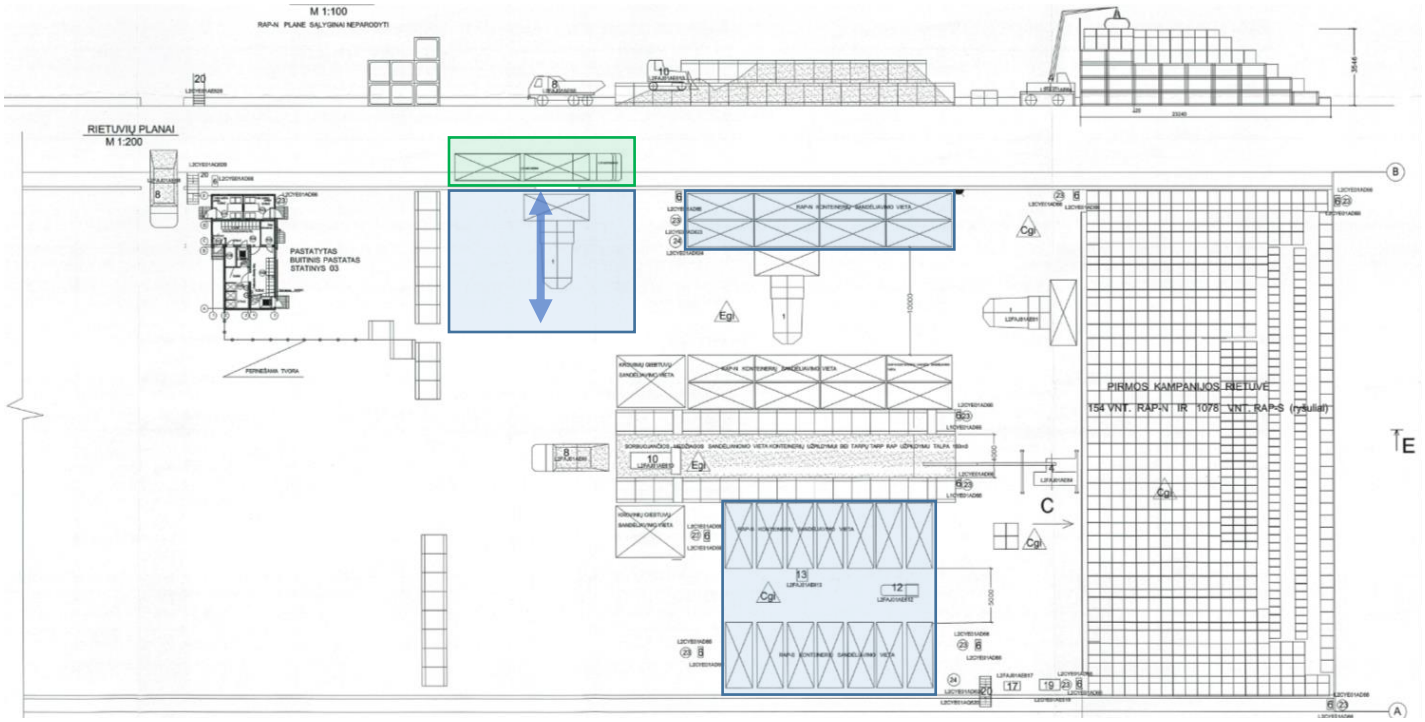
- To avoid contamination, the truck with containers does not enter the radioactive waste management zone, and the forklift does not leave it.

SCOPE OF WORK
Waste transportation

The waste is transported by a special “technological” road, i.e. there is the transportation within the INPP territory. The license for the transportation of radioactive waste is not required for such transportation.

During the transportation, traffic on the crossed public roads is closed.

SCOPE OF WORK
Waste transportation



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SCOPE OF WORK
Stack formation

The following are photographs of the waste disposal process at the Oskarshamn NPP, Sweden

Placing of the first container and the removing of the lid

SCOPE OF WORK
Stack formation

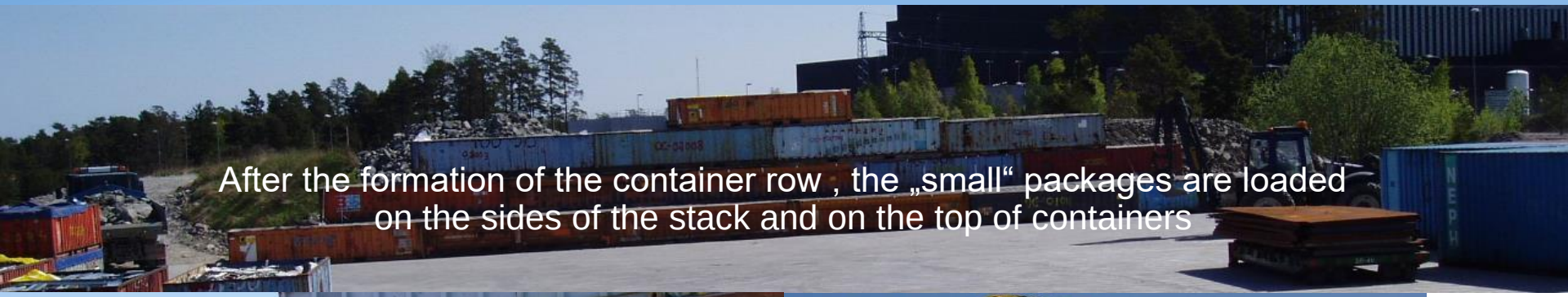
The lids are removed, and the self-adhesive tape of impregnated polyurethane foam between the containers
is fixed

SCOPE OF WORK
Stack formation

The container is filled with sand.
Sand is levelled and compacted

After filling, the container is covered with a film for the protection of rain – water must not enter the waste

SCOPE OF WORK
Stack formation



After the formation of the container row , the „small“ packages are loaded on the sides of the stack and on the top of containers

SCOPE OF WORK
Stack formation

The spaces between the “small” packages are also filled with sand

SCOPE OF WORK
Stack formation

After the forming of the stack, a levelling layer is formed which is the basis for the insulating layers

SCOPE OF WORK
Stack formation

Installation of vertical insulation - bentonite clay carpet

SCOPE OF WORK
Stack formation

Installation of the protective wall from concrete blocks

SCOPE OF WORK
Stack formation

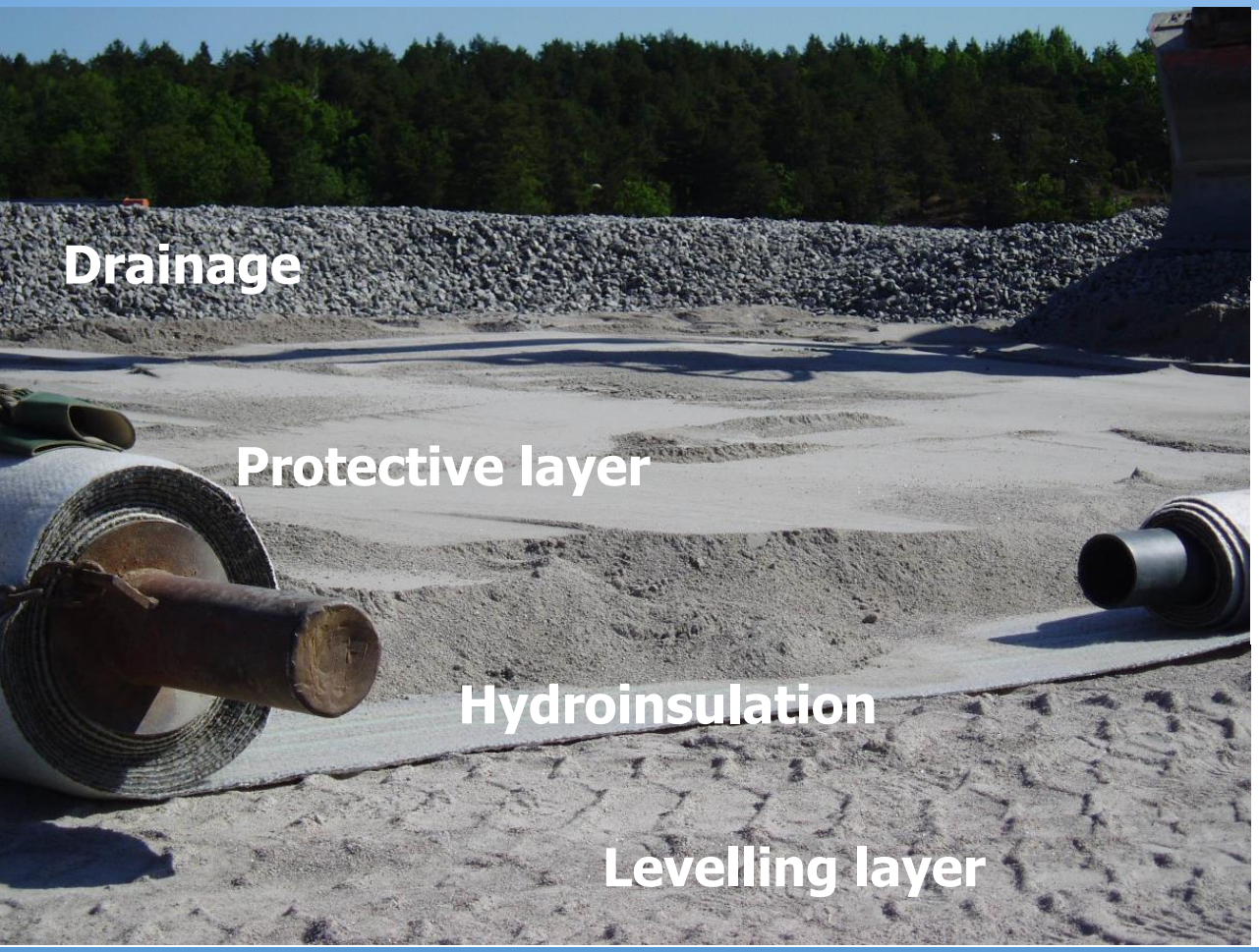
Installation of the temporary protective wall

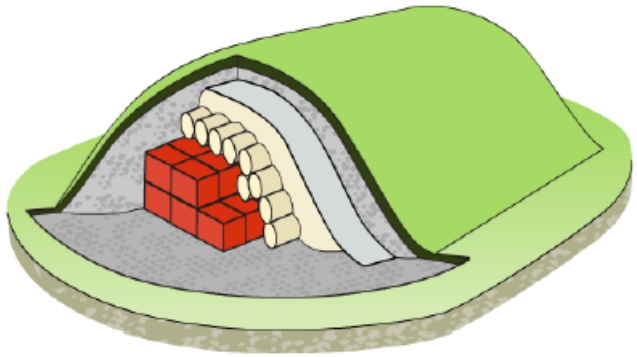
SCOPE OF WORK
Stack formation

The levelling layer is covered with insulation layers – bentonite carpet and HDPE geomembrane

Bentonite carpet joints are sanded with bentonite powder, the membrane is welded

SCOPE OF WORK
Stack formation

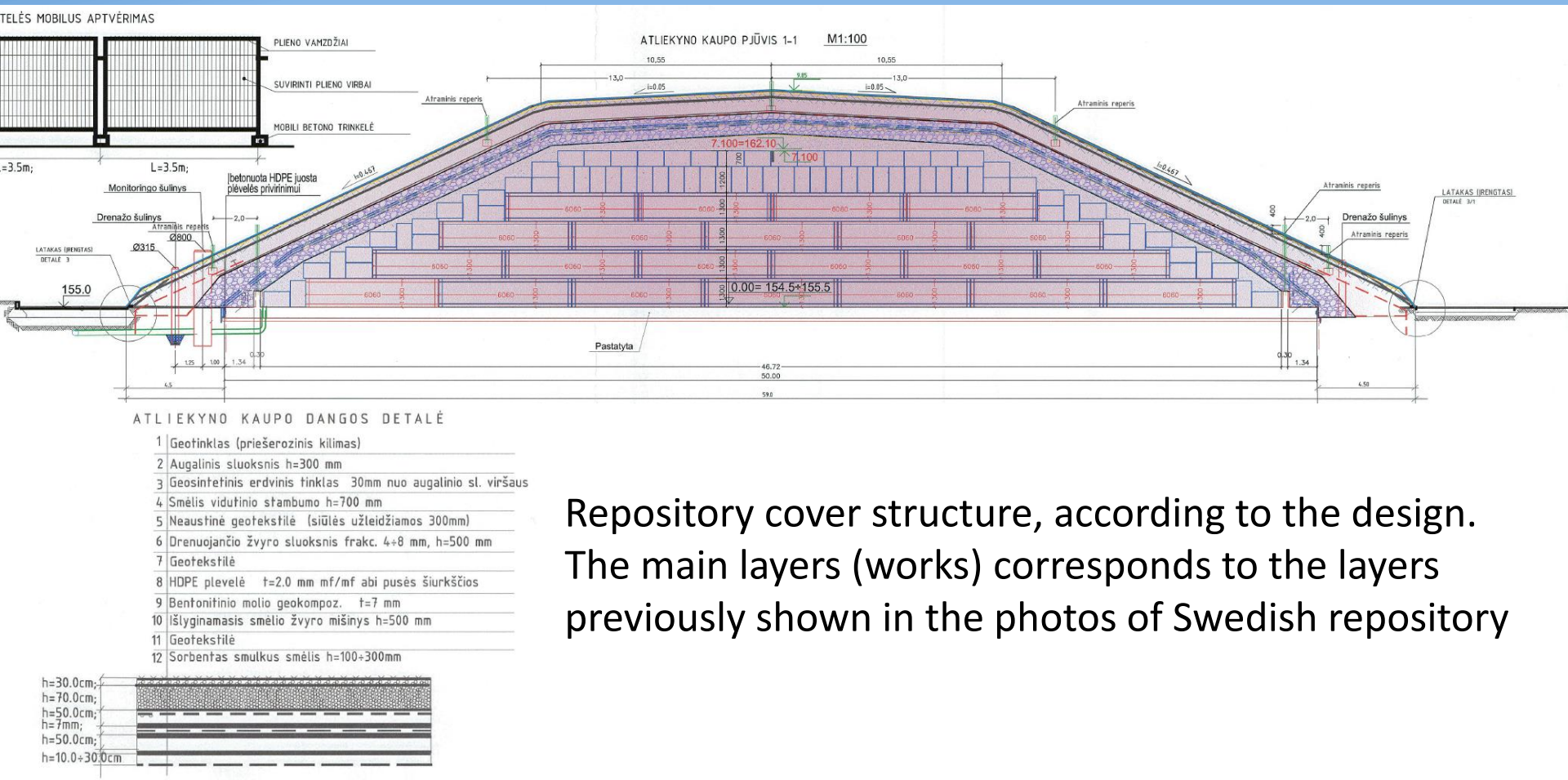




SCOPE OF WORK
Stack formation

Drainage is covered with a top protective layer

SCOPE OF WORK
Stack formation



ATLIEKYNO KAUPO DANGOS DETALĖ

1	Geotinklas (priešerozinis kilimas)
2	Augalinis sluoksnis h=300 mm
3	Geosintetinis erdvinis tinklas 30mm nuo augalinio sl. viršaus
4	Smėlis vidutinio stambumo h=700 mm
5	Neaustinė geotekstilė (siūlės užleidžiamos 300mm)
6	Drenuojančio žvyro sluoksnis frakc. 4÷8 mm, h=500 mm
7	Geotekstilė
8	HDPE plevelė t=2.0 mm mf/mf abi pusės šiurkščios
9	Bentonitinio molio geokompoz. t=7 mm
10	Išlyginamasis smėlio žvyro mišinys h=500 mm
11	Geotekstilė
12	Sorbentas smulkus smėlis h=100÷300mm

Repository cover structure, according to the design. The main layers (works) corresponds to the layers previously shown in the photos of Swedish repository

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Challenges today. Responsibility for ages

Decommissioning of Ignalina NPP is co-financed by the European Union