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## Central Baltic Programme

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# StoPWa

**Contracting authority:** Union of Harju County Municipalities  
Sirge 2, 10618  
Tallinn, Harjumaa  
  
Phone: + 372 615 0352  
e-mail: [info@hol.ee](mailto:info@hol.ee)

**Design and construction contractor:**

Schöttli Keskkonnaatehnika Ltd.  
Mustamäe tee 50, 10621  
Tallinn, Harjumaa  
Phone: + 372 6706 873  
e-mail: [info@schottli.ee](mailto:info@schottli.ee)

## Design and construction of the stormwater filtration system at Tähnase tee T5, Peetri Township, Rae Municipality

Work project



Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

Table of contents

1. GENERAL INFORMATION .....	3
1.1 Client of the Project.....	3
1.2 Project Location.....	3
1.3 List of Materials Forming the Basis for Design.....	4
1.3.1 Client’s Technical Description .....	4
1.3.2 Studies .....	4
1.3.3 Normative Documents .....	5
2. PROJECT DESCRIPTION .....	6
2.1 Situation .....	6
2.2 Designed Solution .....	6
2.2.1 Stormwater Pumps and Pumping Stations .....	8
2.2.1.1 Pump Control.....	8
2.2.1.2 Pumping Station Alarms .....	9
2.3 Designed Materials and Installation Methods .....	9
2.4 Pavements and Fence .....	11
2.4.1 Material Requirements.....	11
2.4.2 Concrete Block Foundations.....	11
2.4.4 Landscaping Restoration.....	11
2.4.5 Fence .....	11
3. GENERAL REQUIREMENTS FOR CONSTRUCTION WORKS .....	12
3.1 Time Schedule for Execution of Works and Reporting.....	12
3.2 Organization of Construction Works .....	12
3.3 Ensuring Safety and Traffic Management .....	12
3.4 Consideration of Existing Buildings and Structures.....	13
3.5 Demolition of Existing Structures.....	14
3.6 Preparatory Works .....	14
3.6.1 Notification – Project Information Board .....	15
3.7 Handling, Transport, and Storage of Pipes.....	15
3.8 Excavation Works .....	16
3.9 Handover of Construction Works.....	18
3.9.1 Acknowledgement Boards.....	18
3.10 ENVIRONMENTAL PROTECTION .....	18
General Environmental Protection Requirements.....	18

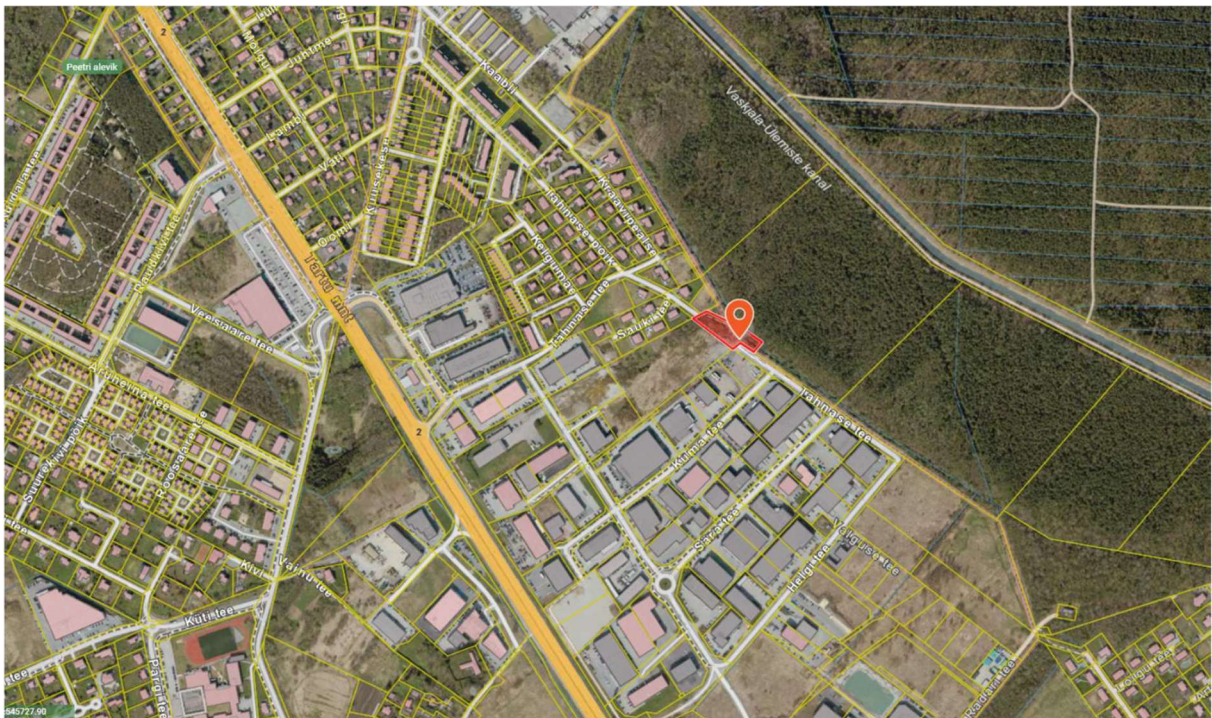
# 1. GENERAL INFORMATION

## 1.1 Client of the Project

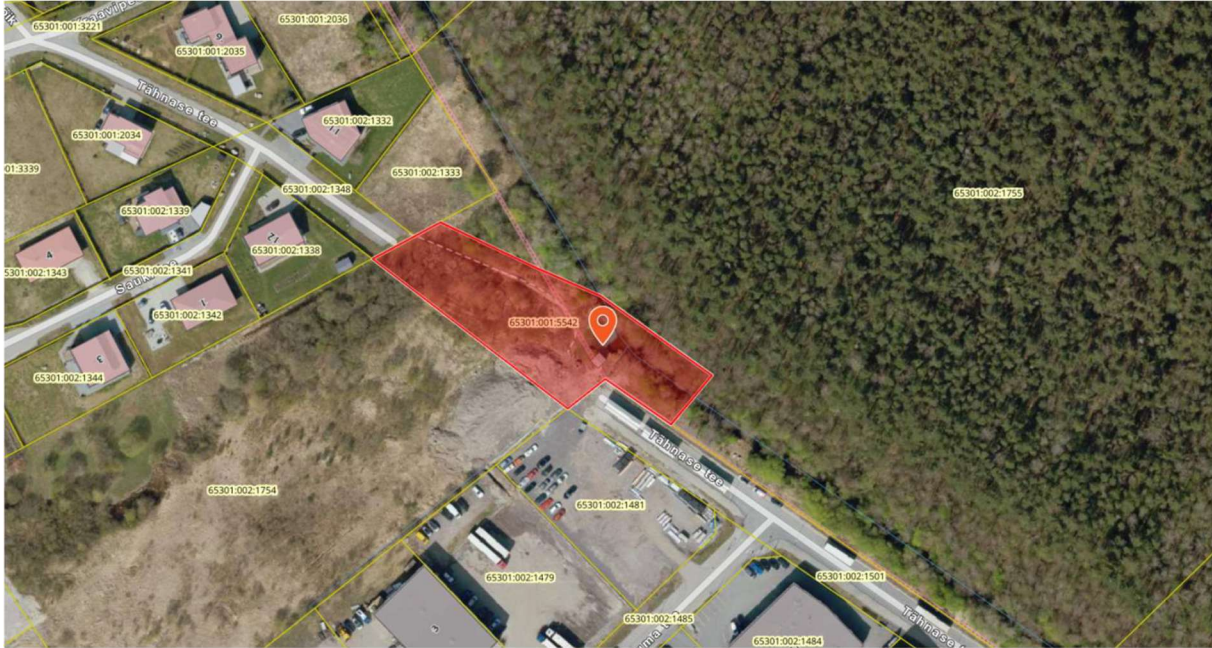
Union of Harju County Municipalities  
Sirge Street 2, 10618 Tallinn, Harju County  
Telephone: +372 615 0352  
E-mail: info@hol.ee

## 1.2 Project Location

The project covers the property **Tähnase Road T5** with cadastral number **65301:001:5542**, located in **Peetri Township, Rae Rural Municipality, Harju County, Estonia**.



# Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality



## 1.3 List of Materials Forming the Basis for Design

The preparation of the project has been based on the following documents:

### 1.3.1 Client's Technical Description

The basis for the design is the technical description prepared by the Client, Union of Harju County of Municipalities, entitled: "Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Borough, Rae Rural Municipality."

### 1.3.2 Studies

Prior to the design phase, the following construction geodetic and geological surveys and investigations have been carried out:

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

- G.E.O Grupp OÜ, job No. G25010. The work was performed in July 2025, coordinates in the L-EST 97 coordinate system and elevations in the EH2000 height system.
- Three trial pits carried out on the site by Schöttli Keskkonnatehnika AS on 07 August 2025.

In addition to construction investigations, a study of filter material prepared by **TalTech** has been taken into account:

- Project No. **CB0100091**, *Stormwater purification with construction and demolition waste*.

### 1.3.3 Normative Documents

The design and construction works for the stormwater filtration system at the Tähnase Road T5 property have been carried out in accordance with the following documents:

All construction works shall also comply with the documents listed below (the list is not exhaustive):

- Laws of the Republic of Estonia, government regulations, and resolutions;
- Decisions of local authorities;
- Decisions and instructions of supervisory and inspection authorities.

The following laws, regulations, norms, and standards have been followed during design and construction (the list is not exhaustive):

- Regulation No. 97 of the Minister of Economic Affairs and Communications of 17 July 2015, "Requirements for a Construction Project";
- Building Code of Estonia;
- Act on the Application of the Building Code and the Planning Act;
- Waste Act;
- Water Act;
- Public Water Supply and Sewerage Act;
- Regulation No. 31 of the Minister of the Environment of 31 July 2019, "Requirements for the Planning, Construction and Use of Sewerage Facilities and the Specified Extent of Protection Zones of Sewerage Facilities";
- Regulation No. 73 of the Minister of Economic Affairs and Infrastructure of 25 June 2015, "Extent of Protection Zones of Structures, Operating Rules in Protection Zones and Requirements for Marking of Protection Zones";
- Regulation No. 17 of the Minister of the Interior of 30 March 2017, "Fire Safety Requirements for Buildings";
- EVS 932:2017 – Construction Design;
- EVS 921:2022 – External Water Supply Network;
- EVS 848:2021 – External Sewerage Network;

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

- Regulation No. 60 of Rae Rural Municipal Council of 17 November 2020, “Rae Rural Municipality Public Order Regulations”;
- Regulation No. 41 of Rae Rural Municipal Council of 30 November 2010, “Rae Rural Municipality Excavation Works Regulation”;
- Regulation No. 73 of Rae Rural Municipal Council of 15 June 2021, “Rae Rural Municipality Waste Management Regulation”;
- Good construction practice.

Quality requirements (the list is not exhaustive):

- RIL 77-1990, 2005, 2013, *Plastic pipes installed in soil and water. Installation instructions* (original language version);
- MAARYL 2010, *General quality requirements for construction works. Earthworks for building construction*;
- EVS-EN 1610:2015, *Construction and testing of drains and sewers*;
- Other applicable quality requirements.

## 2. PROJECT DESCRIPTION

### 2.1 Situation

At present, the property includes the **AS Elveso Sauki stormwater pumping station** and an existing electrical cabinet. Both of these can be utilized within the scope of the present project.

### 2.2 Designed Solution

Within the scope of this work, a **cost-efficient stormwater filtration system** complying with the Client’s requirements and applicable legislation is designed and constructed at the **Tähnase Road T5 property**, located in **Peetri Township, Rae Rural Municipality**.

In the stormwater filtration system to be constructed, two different filter materials are used for stormwater treatment:

- In one filter, **construction and demolition waste (CDW)** is used as filter material, more specifically **crushed concrete aggregate** with a fraction of **16–32 mm**;
- In the second filter, a **commercial filter material** is used, namely **Estonian-origin limestone aggregate** with a fraction of **16–32 mm**.

Two different filter materials are used in order to enable, after completion of the project, the **assessment and comparison of the effectiveness of different materials**.

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

The purpose of constructing the stormwater filtration system is to **improve stormwater quality** by reducing the pollutant load in stormwater through the use of a filtration system employing construction and demolition waste.

The design of the facility is associated with the **Interreg Central Baltic Programme project StoPWa (Stormwater purification with construction and demolition waste)**. Within the framework of this project, **TalTech, the University of Lahti, and the University of Helsinki** studied, at laboratory scale, an agglomerate produced from demolition waste in Finland in order to assess the suitability and environmentally sustainable use of this demolition material as a stormwater filtration material.

Additionally, **TalTech** carried out a laboratory test on demolition waste originating from the **Väo treatment facility operated by ATI Grupp OÜ** in Estonia, in order to assess the feasibility of using this material in a stormwater filtration system.

The studies conducted by TalTech on demolition waste materials from the Väo treatment facility demonstrated that **demolition waste produced in Estonia can be used as filter material in stormwater filtration systems**, provided that the recommended fraction size of **16–32 mm** is followed.

The filters are designed to be housed in **multilift containers**:

- **Filter I** with dimensions **2530 × 6000 × H 2000 mm**, with a **double bottom**, enabling gravity flow to Filter II;
- **Filter II** with dimensions **2530 × 6000 × H 1000 mm**.

Stormwater is pumped to the filtration system from both a **newly installed pumping station (IWS, ID700)** and the **existing Sauki stormwater pumping station**.

Stormwater reaches the **IWS plastic pumping station** by **gravity flow** (PVC De160) from a nearby ditch. Water in the Sauki pumping station originates from paved asphalt areas within Peetri Township. New pumps from the KSB product range are installed in **both pumping stations** for conveying stormwater to the new filtration system.

The filtration system itself consists of two multilift containers, one filled with construction and demolition waste meeting the above-mentioned requirements (e.g. crushed concrete aggregate, fraction 16–32 mm) and the other filled with a commercial filter material (e.g. Estonian-origin limestone aggregate, fraction 16–32 mm). A **distribution pipeline** is installed on top of the containers in the form of a frame in order to ensure that the stormwater passes through the filter material as evenly as possible. The filters can be operated **either in parallel or in series**. After passing through the filtration system, the stormwater is directed back into the nearby ditch.

**For replacing the filter material**, the distribution pipeline located on top of the container must first be disconnected using **quick couplings** and removed. Thereafter, the multilift container

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

together with its contents (e.g. crushed concrete aggregate) can be transported by truck (equipped with a multilift hook) to the nearest licensed waste handling facility. At the waste handling facility, the container is emptied. Thereafter, the container is transported for refilling, for example to the ATI Grupp Vão treatment facility or an equivalent facility. Once refilled, the container is transported back to the service area at the Tähnase Road T5 property. The distribution pipeline is then lifted back onto the container and the pipe connections are re-attached. Following this, the system can be put back into operation.

The access road and service area of the filtration system are constructed using **milled asphalt material**, and the area beneath the containers is constructed from **recycled concrete**.

This container-based solution was selected in order to ensure that **filter material replacement is as convenient and efficient as possible**.

### 2.2.1 Stormwater Pumps and Pumping Stations

One new pumping station from the **IWS product range, model ID700**, equipped with a **KSB AmaPorter 500ND pump** ( $H_{\max} = 9.7 \text{ m}$ ,  $Q_{\max} = 20 \text{ m}^3/\text{h}$ ), will be installed.

A second additional pump, **KSB AmaPorter 501ND** ( $H_{\max} = 12 \text{ m}$ ,  $Q_{\max} = 22 \text{ m}^3/\text{h}$ ), used within this project, will be installed in the **existing Sauki stormwater pumping station** owned by AS Elveso.

The operation of the stormwater pumping stations will be controlled by a **Siemens LOGO 24CE controller**, using the LOGO Soft Comfort V8.0 programming environment. The automation control cabinet is designed for controlling two stormwater pumps and is installed in the existing Sauki pumping station. Using the controller display and buttons, it is possible to monitor all parameters and modify them if necessary.

#### 2.2.1.1 Pump Control

The pump control selector switch has the following positions:

- P1
- P1 & P2
- P2

In position **P1 & P2**, both pumps operate in accordance with the duty cycles (operation and pause) programmed into the controller. Different operation and pause times can be set separately for each pump.

In positions **P1** or **P2**, only the selected pump operates and the other pump is blocked.

In positions **Manual P1** and **Manual P2**, the selected pump operates continuously. The „**Manual mode**“ allows pumps to be operated in the event of controller failure.

### 2.2.1.2 Pumping Station Alarms

When the pump control selector switch is set to **P1 & P2**, the motor protection switches **1QF1** and **2QF1** of both pumps are monitored. If either protection switch is triggered, an alarm is activated via a **red alarm indicator** located on the pumping station control panel.

When the selector switch is set to **P1** or **P2**, only the motor protection switch of the selected pump is monitored.

## 2.3 Designed Materials and Installation Methods

Pressure pipelines and container-mounted pipelines on the frame are designed using PE water pipes PE100 PN16 with diameters De63 and De90.

The pipeline from the filters back to the ditch will be constructed from PVC plastic pipe with ring stiffness SN8 and diameter De110, and from the ditch to the IWS ID700 pumping station with diameter De160. Pipes used for gravity sewer systems must comply with standard EN 1401-1 or an equivalent standard. All pipes must bear markings in accordance with applicable standards.

### Pipeline Installation

The layout of the pipelines is shown in drawing 552\_TP\_AS-4-01\_v01\_Asendiplaan.pdf. During installation, the manufacturer's guidelines and instructions must also be followed.

### Pressure Pipes

PE plastic water pipes may be used. The pressure class must be at least PN10 and ring stiffness at least 10 kN/m<sup>2</sup>. Compliance must be certified according to the following standard:

- PE pipes: EN 12201-2:2011 + A1:2013.

Pipeline connections along the route and at nodes shall be made using welded joints, either by electrofusion couplers or butt welding. The pressure class of electrofusion fittings must be at least equal to that of the pipes. At branching points, electrofusion saddles and tees shall be used. A warning tape must be installed along the pipe axis at a height of 40 cm above the pipeline.

Bends of 30°, 45°, and 90° shall be installed using electrofusion bends. For smaller pipe diameters, bends (less than 30°) shall be formed by smooth bending of the pipe, with a minimum bending radius of  $R = 40 \times De$  (for diameters 20–63 mm). Required clearance distances between utility networks must be ensured.

### **Valves and Fittings**

Valves and fittings connected to the pipeline must match the pipeline in terms of pressure resistance, material, and surface treatment, and comply with general material requirements. Special attention must be paid to avoid corrosion or damage at material connection points.

### **Sewer Pipelines**

Gravity sewer pipes shall be made of PVC (polyvinyl chloride) with class SN8 (ring stiffness 8 kN/m<sup>2</sup>).

The following pipes shall be used:

- De110 and De160 PVC pipes compliant with EN 1401-1.

### **Fasteners, Seals, and Lubricants**

All fasteners (bolts, nuts, washers, etc.) must be made of hot-dip galvanized steel. Bolts must be long enough so that, when fully tightened, the nut is completely engaged. Bolts must be equipped with two washers.

Seals used in gravity pipeline joints: NBR seals must comply with SS 367612 and SBR seals must comply with SS 367611.

Lubricants used in joints must not damage pipes, seals, or connections, nor be affected by the transported fluid. Only manufacturer-recommended lubricants shall be used.

### **Thermal Insulation of Pipelines**

Pipelines are not insulated, as the filtration system operates seasonally and is not in use during winter; therefore, there is no risk of freezing.

### **Pipeline Marking on Site**

A warning tape must be installed above pipelines (approx. 300–400 mm above the pipe crown). For pressure pipelines, an insulated copper wire with a minimum cross-section of 1.5 mm<sup>2</sup> must be attached for location detection. Underground cable joints must be watertight.

### **Unforeseen Circumstances and Modifications**

Pipeline depth and alignment must follow the drawings; however, the Contractor must consider that unforeseen conditions and obstacles may arise during construction.

Actual site conditions identified during construction may require deviations from the design in both depth and alignment.

## 2.4 Pavements and Fence

### 2.4.1 Material Requirements

Compliance must be verified by a declaration of conformity from the manufacturer or authorized representative.

Drainage layer: sand with filtration coefficient  $K_f > 0.5$  m/day. Crushed concrete layer must be compacted to a compaction factor  $K_t \geq 0.96$ . The elastic modulus of the milled asphalt surface must be at least 170 MPa. Measurements must be performed using LOADMAN or INSPECTOR-type equipment (or equivalent, calibrated accordingly).

### 2.4.2 Concrete Block Foundations

Reusable concrete blocks will be installed under the multilift containers of the filtration system. Block dimensions:  $2500 \times 750 \times H = 120$  mm. Each container will rest on 8 blocks in a row.

### 2.4.3 Pavement Structure

The designed access and service road structure:

- Milled asphalt layer:  $H = 10$  cm
- Crushed concrete:  $H \geq 40$  cm
- Drainage layer (sand):  $H \geq 20$  cm (filtration 0.5 m/day)

### 2.4.4 Landscaping Restoration

After construction, all damaged green areas must be restored. The site must be cleared of debris and materials, restoring its original condition.

Slopes must be directed away from structures to prevent water accumulation near concrete block foundations.

Topsoil must be spread and grass seeded ( $20\text{--}30$  g/m<sup>2</sup>; shade-tolerant mix). Minimum topsoil thickness after compaction: 10 cm.

Restored areas must be level with surrounding ground and suitable for mowing.

Manhole covers must be installed flush with ground level.

### 2.4.5 Fence

A wooden board fence (treated brown color) will be installed around the service area of the filtration system.

Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

- Maximum height: 2000 mm
- Total length: approx. 34 m
- Includes a vehicle gate

## 3. GENERAL REQUIREMENTS FOR CONSTRUCTION WORKS

### 3.1 Time Schedule for Execution of Works and Reporting

The time schedule and sequence of construction works shall be agreed upon in a contract between the Client and the Contractor.

The Contractor shall take into account work stoppages caused by weather conditions and the costs arising therefrom.

When planning the works, the Contractor shall allow sufficient time for ongoing reporting and the holding of site meetings, as well as the associated costs.

### 3.2 Organization of Construction Works

When planning the timing of different types of work, the Contractor shall take into account restrictions applicable in densely populated areas regarding noise, dust, and similar disturbances.

The execution of construction works and the supply of materials shall be planned in such a way that the period during which the construction trench remains open is minimized.

Material excavated from the construction trench that is not suitable for backfilling, as well as materials from demolished structures, shall, where possible, be removed immediately or stored in a location agreed upon with the Client.

### 3.3 Ensuring Safety and Traffic Management

The area affected by construction works shall be marked and, if necessary, illuminated for the entire duration of the works so that the execution of works does not endanger the life, health, or property of persons passing through the area or working there.

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

Full or partial closure of streets to vehicular traffic is permitted only in accordance with the procedures in force in the municipality and the traffic arrangement plan applicable during construction.

The Contractor shall bear all costs related to traffic closures, detours, and restoration of the original traffic situation required for the execution of the project (e.g. removal of existing traffic signs, installation of temporary traffic signs, etc.).

The form and installation of traffic signs used shall comply with applicable regulations.

The Contractor shall bear all costs related to marking the work area as required for the execution of the project.

The construction trench shall be fenced with a continuous fence at least **1 m in height**, capable of withstanding a load of **0.5 kN/m**.

Other types of barriers (tape, posts, etc.) may be used for warning purposes only, for example to mark storage areas.

Temporary removal of fencing during construction works is permitted to allow passage of construction machinery, while simultaneously preventing access by unauthorized persons.

If access to a property or other facility is obstructed, the owner or operator shall be notified in writing at least **three (3) days** in advance.

The Contractor is responsible for the preservation of temporary markings, barriers, and traffic signs, and for compensating any damages resulting from their absence.

Construction machinery temporarily out of use and materials awaiting use shall be placed so that they do not disrupt traffic or obstruct access to buildings or other facilities.

### 3.4 Consideration of Existing Buildings and Structures

Before commencing works, the Contractor shall, in cooperation with the owners of existing underground utilities, *уточely* determine and mark the locations of such utilities (e.g. Elektrilevi).

Based on the nature of existing structures (the existing Sauki stormwater pumping station, electrical cables and cabinet, concrete manhole rings), suitable technology and equipment shall be selected for carrying out works in their vicinity in order to avoid damage, including damage caused by vibration.

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

Upon discovery of damage, the owner of the structure shall be notified immediately in writing. The usability of the structure shall be restored as soon as possible.

All costs required to restore damaged structures to their original condition, as well as compensation for damages caused by non-functionality, shall be borne by the Contractor.

In some cases, the exact elevation and diameter of existing underground utilities may not be known even to their owners (e.g. existing electrical cables). The Contractor shall take into account costs arising from possible relocation of such unknown utilities.

Geodetic network points that are removed or damaged during construction shall be restored after completion of the works. Costs related to restoration shall be borne by the Contractor.

Covers of existing manholes to be preserved shall be reinstalled depending on the designed ground level. The Contractor shall take into account the costs arising from reconstruction.

### 3.5 Demolition of Existing Structures

The property includes an old electrical cabinet and two stormwater manholes.

The old electrical cabinet and one stormwater manhole shall be demolished in accordance with the drawings.

Demolition of the second existing manhole (see drawing OL-1) shall be decided during construction based on the actual situation.

In the case of manholes, the upper manhole elements shall be removed and the manholes filled with soil. The ends of pipes shall be sealed.

Generated waste may be handed over only to licensed waste management companies authorized to handle the relevant type of waste.

The ground surface above demolished structures shall be leveled and restored. The ground level at the location of demolished structures shall remain at the same elevation as the surrounding ground.

### 3.6 Preparatory Works

Commencement of works is permitted only after **obtaining the required permit**, in accordance with the procedures applicable within the local municipality.

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

Setting out of the structure shall be performed by a person holding a valid license for construction geodetic works, using digital measuring instruments (except for the building-side ends of service connection pipelines, whose location shall be specified in cooperation with the property owner or their representative).

### 3.6.1 Notification – Project Information Board

The Contractor shall be responsible for manufacturing and installing information signs and the construction-phase project information board.

The design of the information board shall be prepared by the Contractor in cooperation with the Client and the final solution shall be approved by the Client.

The information board shall be installed in a clearly visible location (or locations, if required by the size or location of the construction site), shall remain continuously visible (illuminated during hours of darkness), and shall be maintained in good condition throughout the construction period.

The Contractor shall procure, install, maintain during the construction period, and remove the information board after completion of the works.

The estimated dimensions of the information board are approximately **2.0 m × 1.3 m**.

## 3.7 Handling, Transport, and Storage of Pipes

Pipes shall be handled with due care. Dropping or throwing pipes may cause damage.

Dragging pipes or pipe coils along the ground shall be avoided, as this may cause damaging scratches on the outer surface of the pipes.

During transport and storage on site, care shall be taken to avoid permanent bending of pipes. The ends of pipes shall be protected during transport and storage.

Pipes shall be transported on straight transport supports free of sharp edges or other objects that could damage the pipes.

Shifting of pipes during transport shall be prevented, for example by using nets.

When pipes are lifted using mechanical lifting equipment, only lifting slings and equipment that do not damage the pipes shall be used.

Pipe storage areas shall be level. Pipes should preferably be stored in their transport packaging and protected from direct sunlight.

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

Pipe fittings shall be transported and stored in accordance with the manufacturer's instructions. At low temperatures, the impact resistance of plastic pipes decreases. If pipes are transported at temperatures below  $-15\text{ }^{\circ}\text{C}$ , the manufacturer's special instructions shall be followed.

Storage time shall be kept as short as possible. Immediately upon delivery to the site, accessories shall be inspected and any damaged or unsuitable items shall be clearly marked and removed from the site without delay.

### 3.8 Excavation Works

When storing excavated soil, situations that block existing stormwater flow channels, causing water accumulation or erosion of excavated soil, shall be avoided.

Work within the protection zones of existing cables and pipelines shall be carried out only after obtaining permission from their owners.

When planning the works, it shall be taken into account that uncovering underground utilities and excavation works in their immediate vicinity generally must be carried out manually.

The machinery used and the selected construction technologies shall prevent damage to existing mature trees and vegetation.

Excavation of Trenches  
The extent of trench excavation depends on pipe diameter and soil conditions. The minimum trench width shall be 600 mm. At manholes, trenches shall be excavated wider so that the edge of the trench is at least 200 mm from the manhole wall. Unjustified widening of trenches shall be avoided, as it may reduce lateral support of plastic pipes.

In winter conditions, the trench bottom shall be kept free of frost. Where possible, the trench bottom shall be insulated. Frozen soil shall be removed and replaced with compacted dry sand. Special care shall be taken to prevent freezing of water in the trench.

The trench alignment and depth shall be fixed by control measurements carried out during construction prior to installation of the bedding layer. Loose stones shall be removed from completed trenches.

Manual excavation shall be carried out within 1 m of crossing utilities and within 0.5 m of parallel utilities. The Contractor shall account for the required manual excavation works.

All other utilities uncovered during excavation shall be properly supported and protected against damage. The support solution shall be coordinated in writing with the utility owner.

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

The Contractor is responsible for protecting all existing structures and buildings and for any damage that may occur during construction.

### Trench Backfilling

#### Bedding Layer

In traffic areas, a bedding layer with a minimum thickness of 150 mm measured beneath the pipe shall be installed. The material used shall be sand or gravel with a maximum particle size of 20 mm. The subsoil and bedding material shall not be frozen.

The degree of compaction of the bedding layer shall be at least 95% and compaction shall be carried out mechanically. The pipe shall rest evenly on the bedding along its entire length. Recesses shall be made under pipe joints to prevent the pipe from resting on the joints.

#### Initial Backfill

Initial backfill material shall meet the same requirements as bedding material and shall extend at least 300 mm above the crown of the pipe.

In traffic areas, sand or gravel meeting the specified fraction requirements shall be used for all pipes. Outside traffic areas, such material shall be used for pipes with pressure class < PN10.

Outside traffic areas, for pressure pipes > PN10, moraine sand or gravel, clayey sand, or clay may also be used.

In traffic areas, the compaction degree of the initial backfill shall be at least 95%. Mechanical compaction around pipes is permitted only when the thickness of the soil layer above the pipe is at least 300 mm. When using alternative compaction methods, the minimum layer thickness shall be 150 mm.

#### Final Backfill

Final backfilling may commence only after the required tests have been carried out and approved.

Final backfill shall be performed using backfill soil. The trench shall be filled to a level such that after compaction the surface corresponds to the designed elevation or is level with the surrounding ground.

Trench shoring shall be dismantled and removed as far as possible while maintaining occupational safety and without jeopardizing the stability of trench walls.

The shoring shall be removed in such a way that it does not cause voids in the backfill or displacement of installed pipelines.

Around manholes, valves, and gate valves, final backfill shall be carried out using loose, non-frost-susceptible soil at least 0.5 m from the external surface of structures.

## Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

### Dewatering of Construction Trenches

The need for and duration of dewatering works depend on groundwater level during construction and soil properties in the specific trench section. Dewatering shall ensure that the water level remains below the trench bottom, enabling proper installation of structures and compaction of backfill.

Discharge of pumped water into existing pipelines shall be coordinated with the pipeline owner. When discharging into open channels, Estonian legislation regulating discharge of effluent into the natural environment shall be followed.

All associated costs shall be borne by the Contractor.

## 3.9 Handover of Construction Works

The Contractor shall document construction works in accordance with the Building Code of Estonia.

After completion of construction works, construction documentation shall be handed over to the Client. The number of copies shall be agreed with the Client.

The Client shall issue an acceptance certificate after the Contractor has fulfilled the following obligations:

- submitted an application for issuance of the acceptance certificate;
- carried out equipment testing;
- handed over as-built documentation to the Client;
- handed over operation and maintenance manuals;
- trained and instructed personnel designated by the Client.

### 3.9.1 Acknowledgement Boards

Within **two (2) months** from the issuance of the acceptance certificate, the Contractor shall remove the project information board and install **an acknowledgement board** on the site. The locations of the acknowledgement boards shall be agreed between the Client and the Contractor. The text and design of the acknowledgement boards shall be approved by the Client in advance.

## 3.10 ENVIRONMENTAL PROTECTION

### General Environmental Protection Requirements

Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri  
Township, Rae Rural Municipality

The work area shall be cleared of construction debris, materials, excavated soil, and similar items, restoring the area to its former appearance and quality.

The Contractor shall use **environmentally sustainable materials, tools, and work methods** and shall prevent environmental pollution. All waste shall be handled and disposed of in an appropriate manner, in accordance with the properties of the waste. **Hazardous waste** shall be collected and handled separately.

Without a permit, trees shall not be felled or otherwise damaged on the construction site, nor shall the natural elements of the construction site be damaged in any other way. All material generated from tree felling or pruning shall be disposed of in accordance with the waste management procedures established by the local municipality. Surrounding trees and structures located outside the work area shall be protected using approved methods. Excavation works carried out closer than **2 m** to trees shall be performed manually. Roots with a diameter greater than **4 cm** shall not be cut. After setting out the route and prior to commencing excavation works, the route corridor shall be jointly inspected together with the Client. In order to protect trees and landscaping, construction works shall be carried out to the greatest possible extent using **closed construction methods**. During the construction period, **trunk protection measures** shall be used to protect mature trees. Valuable trees located within the work area shall be fenced, and soil compaction caused by construction machinery around the root zone shall be avoided. Pruning of tree branches obstructing construction machinery within the work area shall be carried out by a **certified arborist**.

All materials or waste transported outside the construction site as a result of wind, water, vehicle wheels, or other factors shall be removed immediately by the Contractor, and the affected area shall be cleaned in a manner satisfactory to the Client and the relevant landowner. During excavation and backfilling works, all roads, sidewalks, and other areas located adjacent to the work area shall be kept clean. The Contractor shall prevent soil or waste from spilling onto streets from fully loaded vehicles leaving the work area, and any pollution caused in such a manner shall be removed immediately. Excavated soil unsuitable for backfilling shall be removed from the construction site without delay and handled in a **legal manner**.

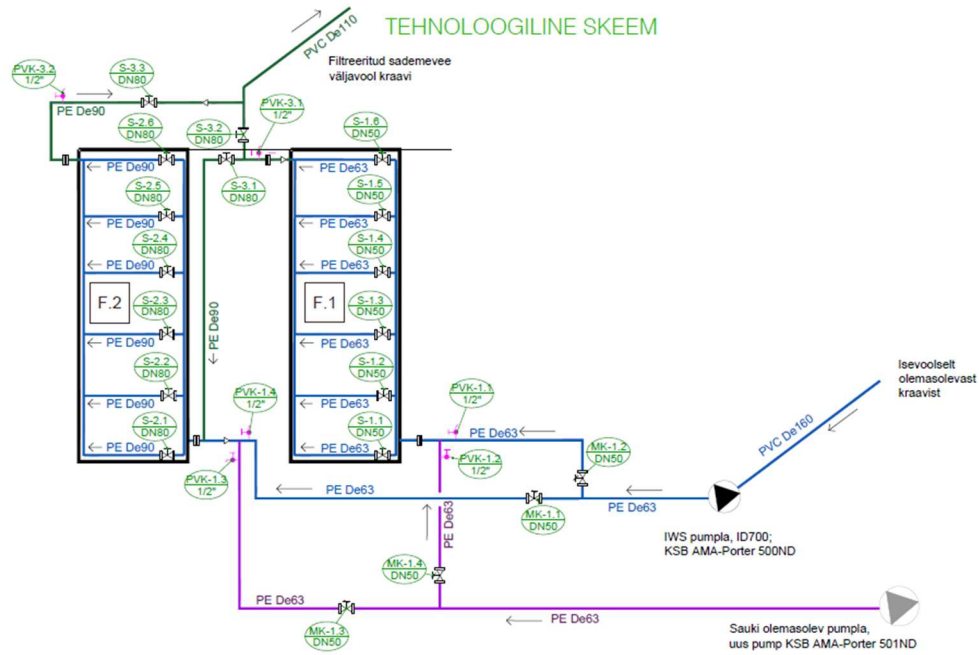
All materials generated from demolition works shall be separated and stored by material category and handled in accordance with the waste management procedures established by the local municipality. Documentation proving the proper and legal handling of hazardous waste shall be **available at all times** at the Contractor's site office for inspection.

The Contractor shall continuously maintain access roads and sidewalks to the construction site in good condition. Mud or construction waste shall not be stored on the site, roads, or sidewalks and shall be transported immediately to designated locations. Until final surface restoration is completed, the Contractor shall, if necessary, **water the excavation track** in order to reduce dust emissions.



# Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

## Process flow diagramm

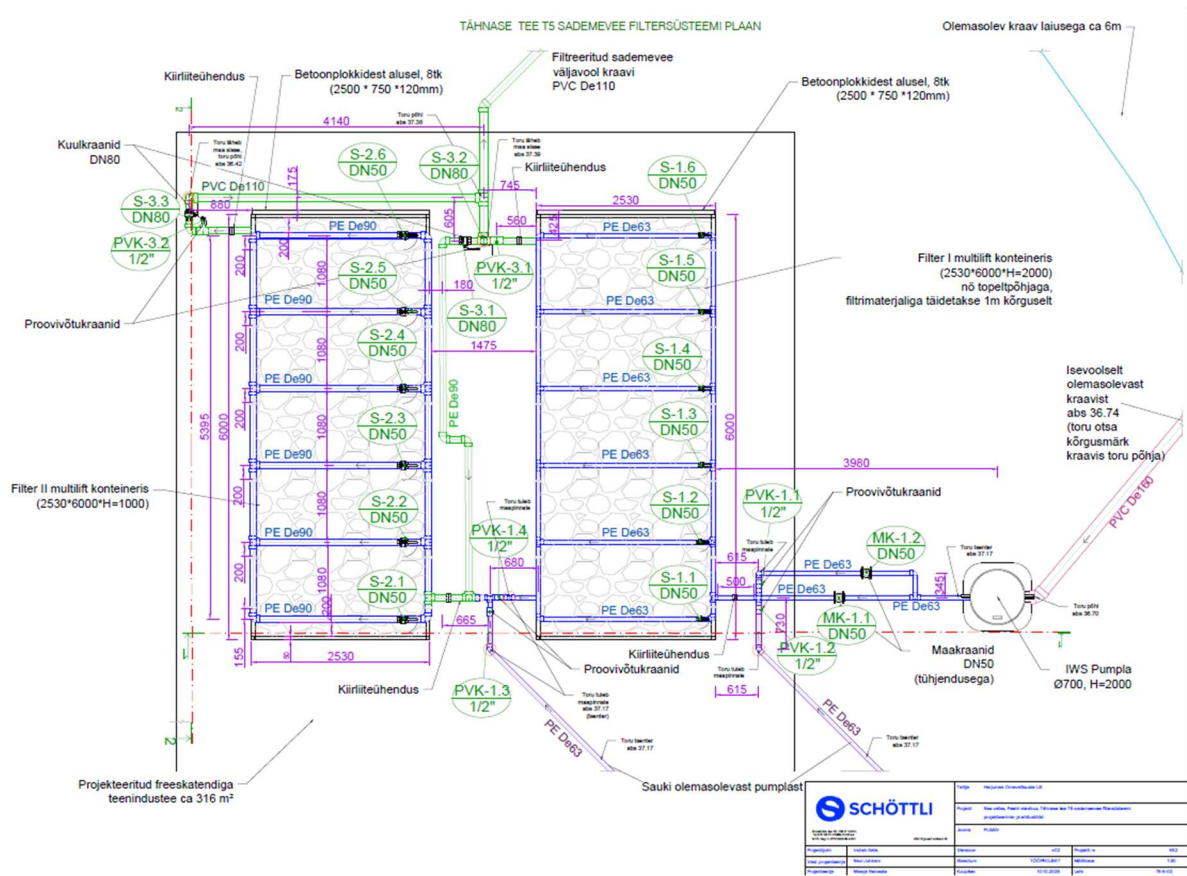


- TINGMÄRGID:**
- Sademeveetoru kraavist süsteemi
  - Sademeveetoru olemasolevast pumplast süsteemi
  - Filtri(d) läbinud sademevee väljavoolutoru
  - ▲ Pumbad
  - ⊕ Maakraanid
  - ⊕ Kulkraanid
  - ⊕ Proovivõtukraanid
  - ⊕ Kiirliiteühendus
  - ▷ Toru läbimõõdu muutus

		Tähtis! Peeturi Olemasoleva LK	
		Projekt: Ise-veel, Peetri tänaval Tähnase tee T5 sademevee filtriühendi projekteerimise- ja ehitustööd	
Projektija: Interreg Baltic		Vastutav: v02	
Vast-projektant: Sten Jankam		Stadium: TOORIOBJEKT	
Projektant: Määrja Rannaste		Keskajad: 10.10.2025	
		Lahend: 15-4-01	

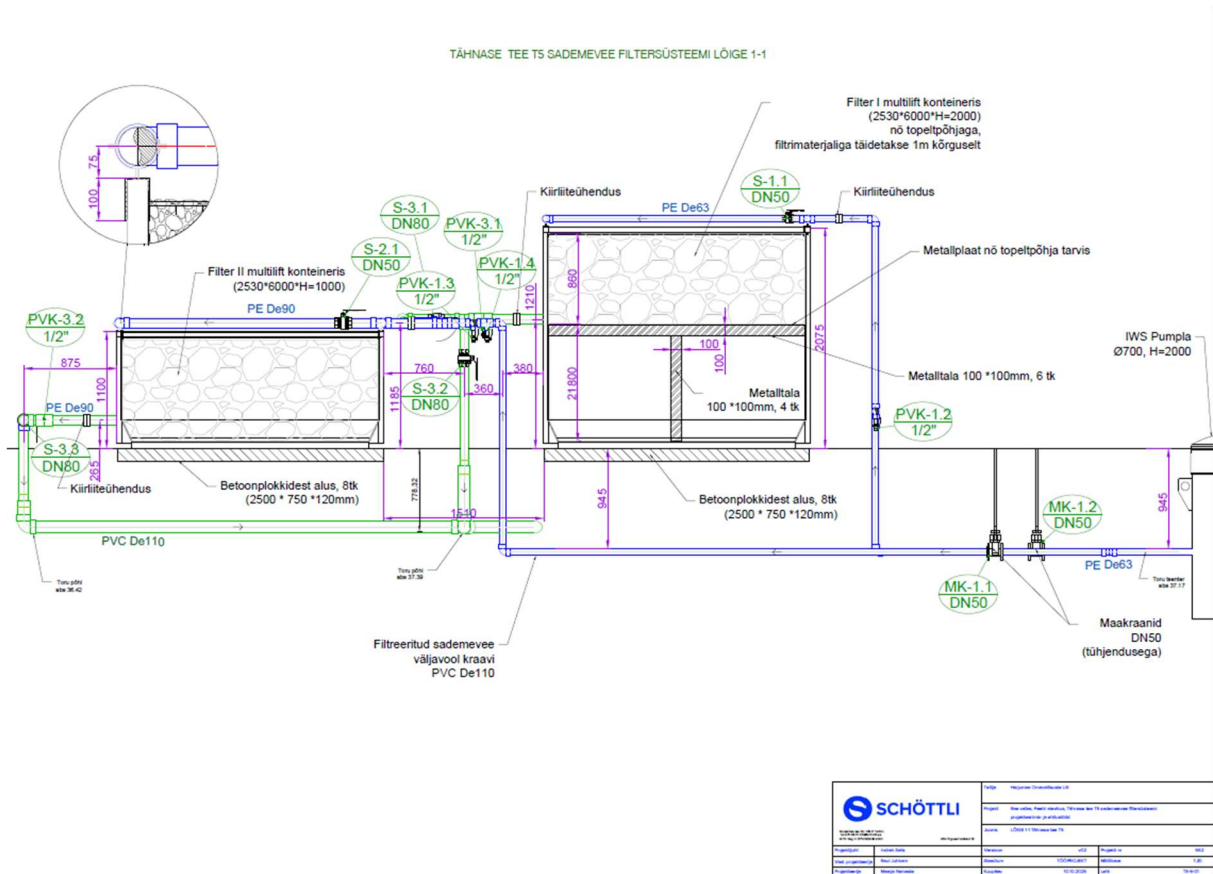
# Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

## Layout plan of the stormwater filtration system at Tähnase tee T5



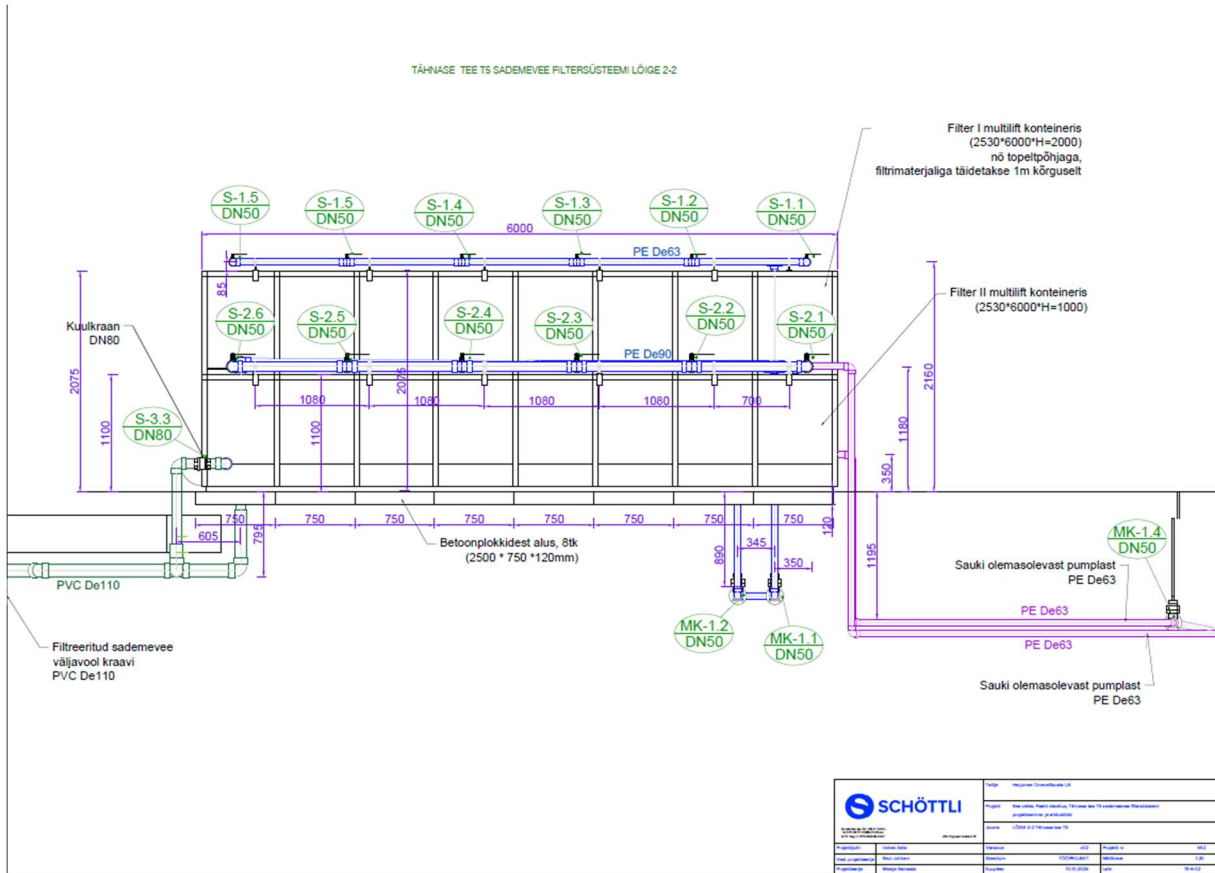
# Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

## Cross-section 1-1 of the stormwater filtration system plan at Tähnase tee T5.



Design and Construction Works for the Stormwater Filtration System at Tähnase Road T5, Peetri Township, Rae Rural Municipality

**Cross-section 2-2 of the stormwater filtration system plan at Tähnase tee T5.**



**An acknowledgement board**

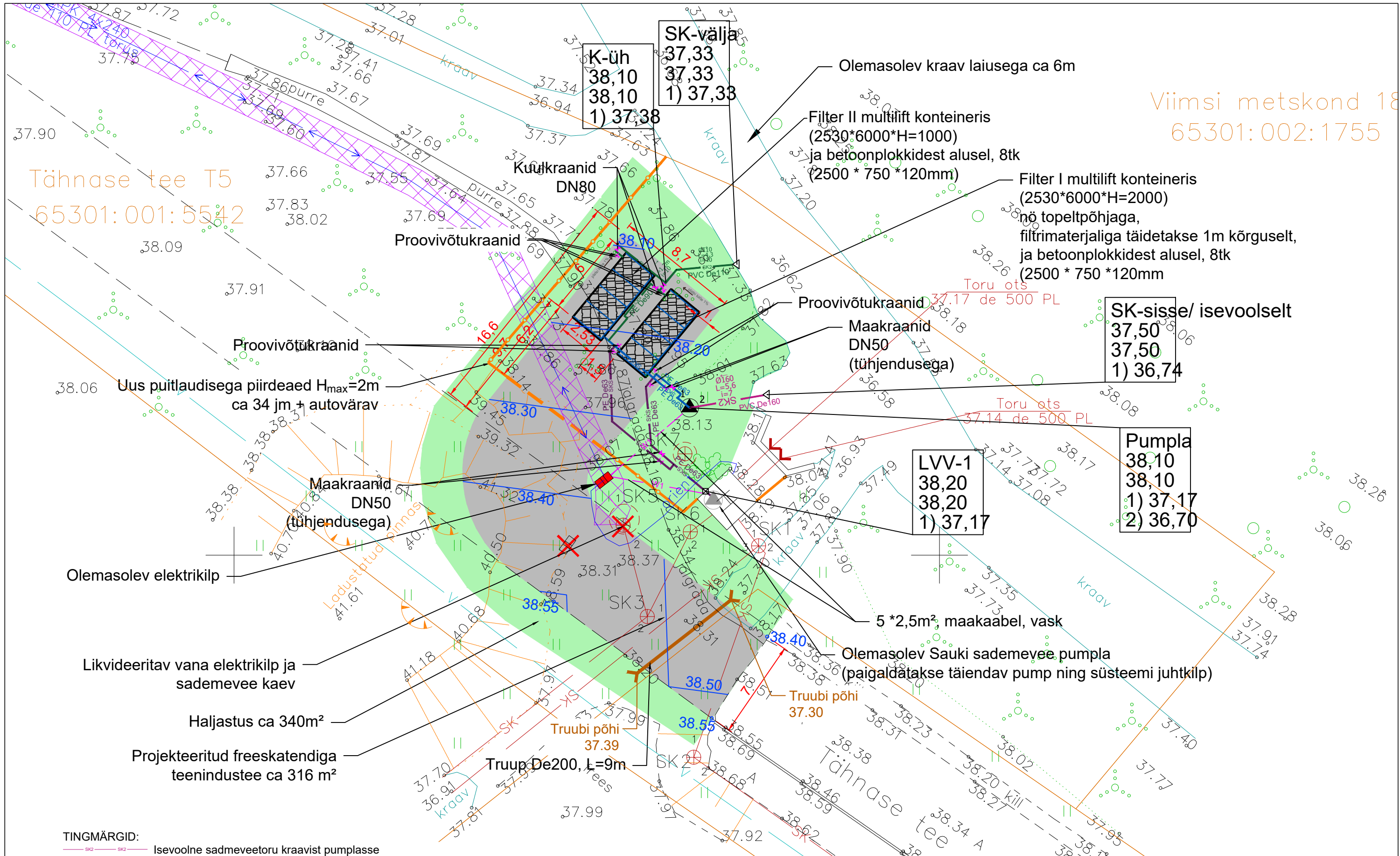


### Terminology

sademevesi	stormwater (mitte rainwater)
sademevee puhastamine	stormwater treatment / purification
filtersüsteem	filtration system
filtermaterjal	filter material
lammutusjäätmed	construction and demolition waste (CDW)
purustatud betoon	crushed concrete aggregate
fraktsioon 16–32	fraction 16–32 mm
isevoolne	gravity flow
pumpla	pumping station
keskkonnasäästlik	environmentally sustainable
taaskasutatav	reusable / recycled
saasteainete koormus	pollutant load
veekvaliteedi parandamine	improvement of water quality
mõju keskkonnale	environmental impact

Viimsi metskond 18  
65301:002:1755

Tähnase tee T5  
65301:001:5542



TINGMÄRGID:

- SK2 Isevoolne sademeveetoru kraavist pumplasse
- SKS Surveline sademeveetoru pumplast ID700 süsteemi
- SKS Surveline sademeveetoru olemasolevast Sauki pumplast süsteemi
- SK2 Filtri(d) läbinud sademevee väljavoolutoru (isevoolne)
- Piirdeaed
- Sademevee filter
- Freeskattega teenindustee
- Haljastatud ala
- Maakaabli kaitsevöönd
- Sademevee väikepumpla
- Sulgventiilid
- Proovivõtukraanid



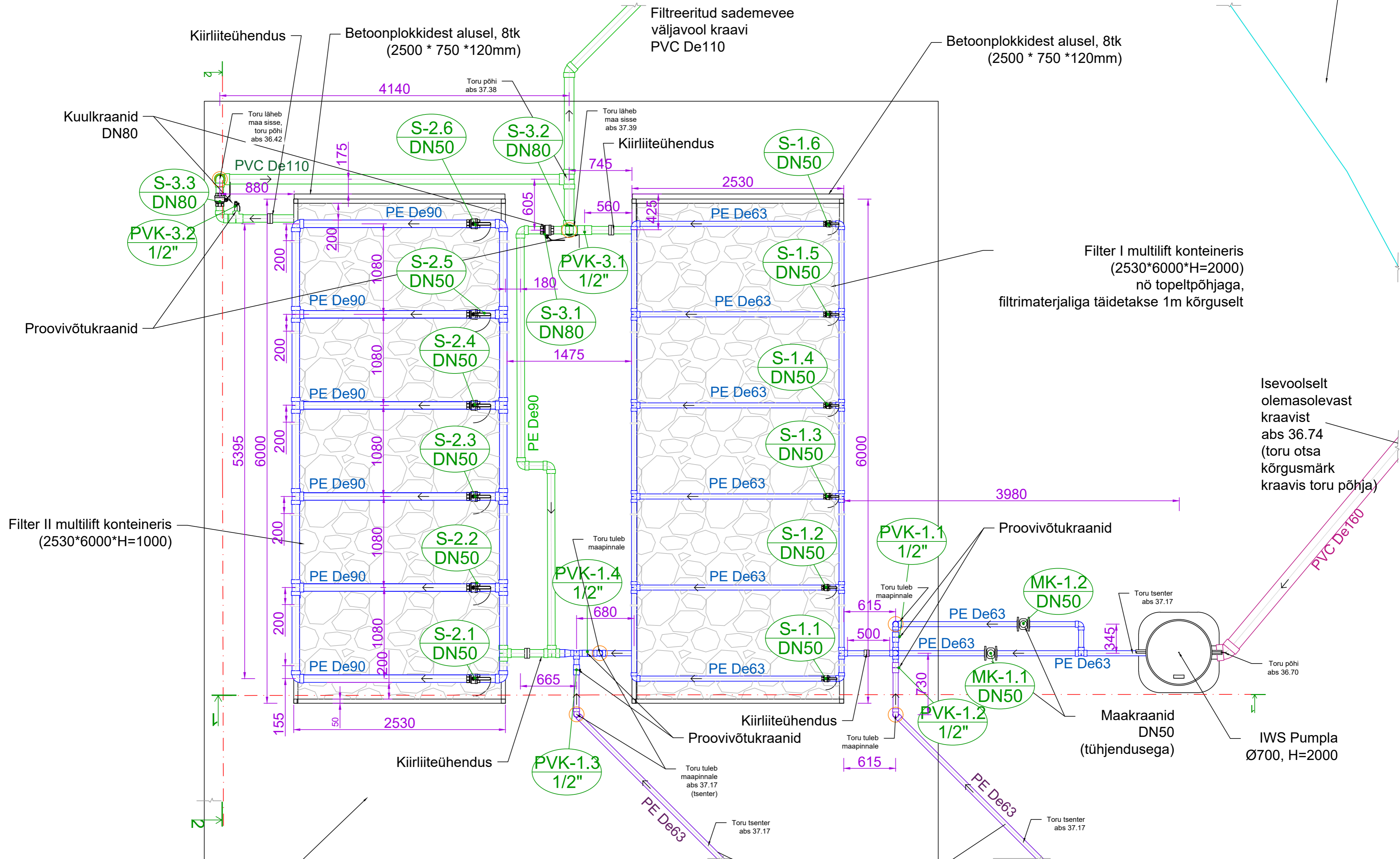
Mustamäe tee 50, 10621 Tallinn.  
Tel 670 6873 info@schottli.ee  
MTR: Reg nr EP10165908-0001

Kõik õigused kaitstud ©

Tellija	Harjumaa Omavalitsuste Liit		
Projekt	Rae valla, Peetri aleviku, Tähnase tee T5 sademevee filtersüsteemi projekteerimis- ja ehitustööd		
Joonis	Asendiplaan Tähnase tee T5		
Projekti juht	Indrek Salls	Versioon	v02
Vast. projekteerija	Raul Juhkam	Projekti nr	552
Projekteerija	Maarja Reinaste	Staadium	TÖÖPROJEKT
		Möötkava	1:250
		Kuupäev	10.10.2025
		Leht	AS-4-01

TÄHNASE TEE T5 SADEMEVEE FILTERSÜSTEEMI PLAAN

Olemasolev kraav laiussega ca 6m



Projekteeritud freeskatendiga teenindustee ca 316 m<sup>2</sup>

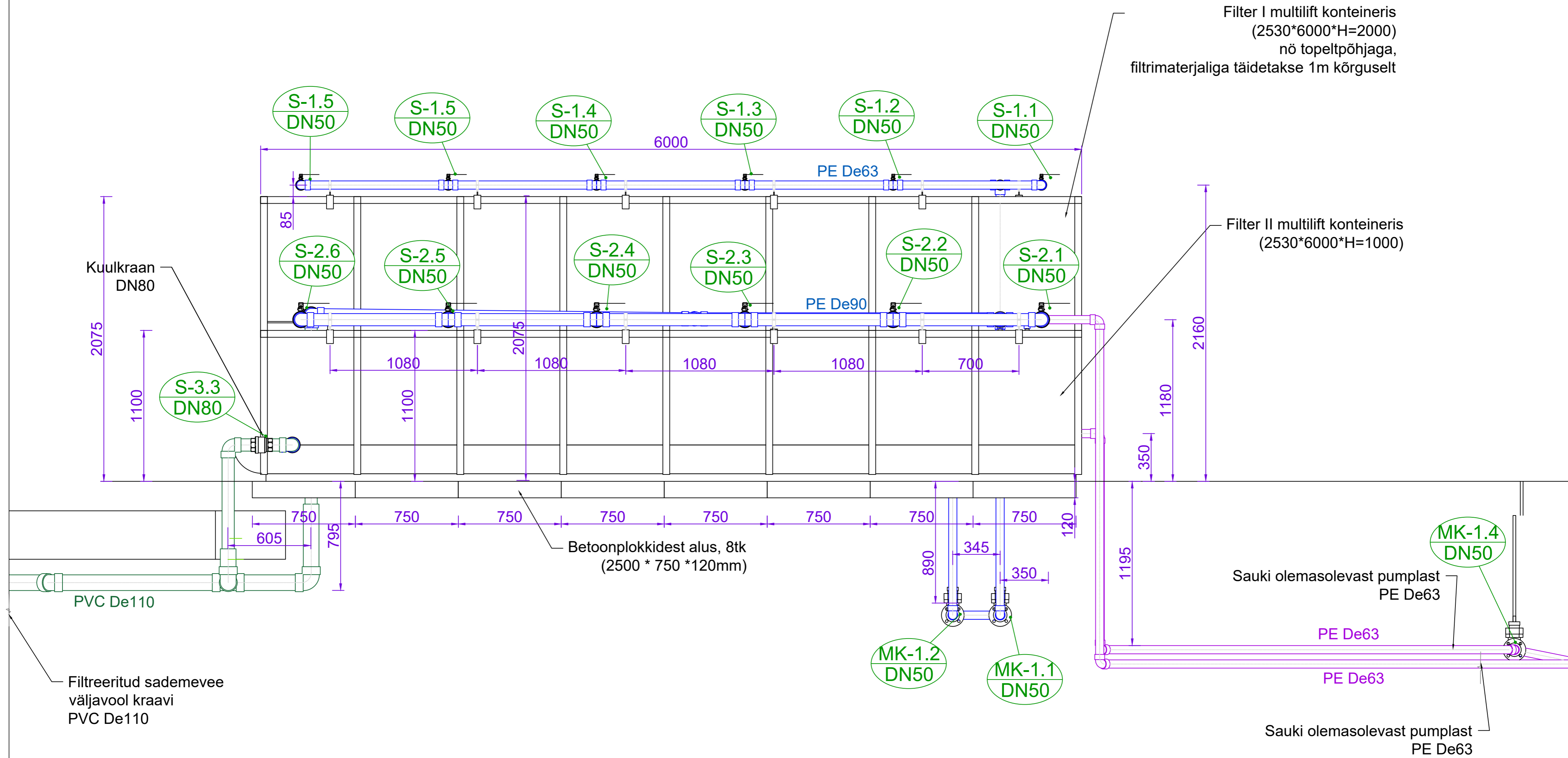


Muutmine lehe 50, 10621 Tallinn, Tel 670 6873 info@schottli.ee, MTR: Riig nr EP0165908-0001

Tellija	Harjumaa Omavalitsuste Liit		
Projekt	Rae vallas, Peetri alevikus, Tähnase tee T5 sademevee filtersüsteemi projekteerimis- ja ehitustööd		
Joonis	PLAAN		
Projekti juht	Indrek Salis	Versioon	v02
Vast. projekteerija	Raul Juhkam	Stadium	TÖÖPROJEKT
Projekteerija	Maarja Reinaste	Kuupäev	10.10.2025
		Projekt nr	552
		Mootkava	1:30
		Leht	TE-5-02



TÄHNASE TEE T5 SADEMEVEE FILTERSÜSTEEMI LÕIGE 2-2



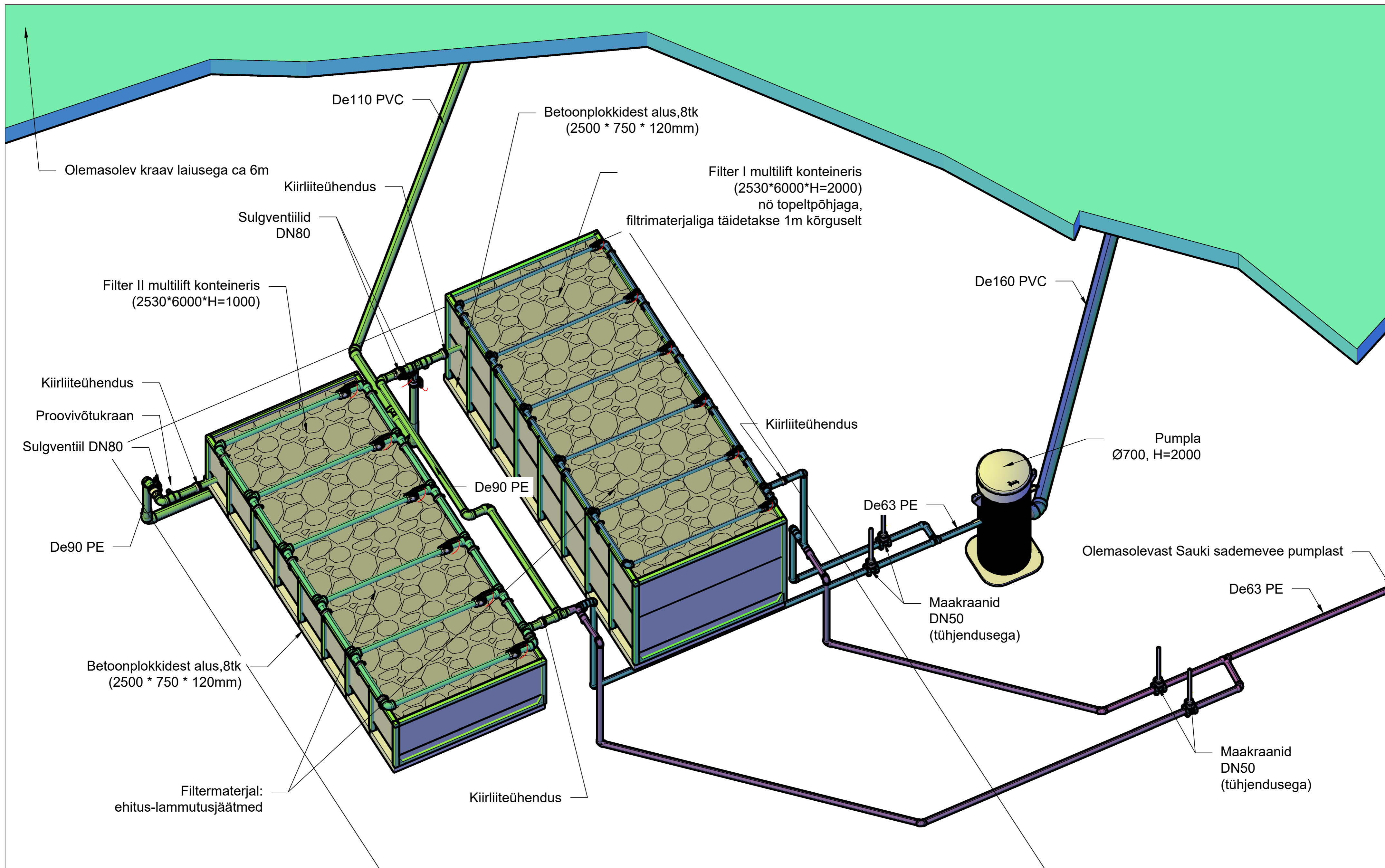
Filter I multilift konteineris  
(2530\*6000\*H=2000)  
nõ topeltpõhjaga,  
filtrimaterjaliga täidetakse 1m kõrguselt

Filter II multilift konteineris  
(2530\*6000\*H=1000)

Sauki olemasolevast pumplast  
PE De63

Sauki olemasolevast pumplast  
PE De63

<p>Muutmisala tee 50, 10621 Tallinn. Tel 670 6873 info@schottli.ee MTR: Riig nr EP0165908-0001</p>		Tellija		Harjumaa Omavalitsuste Liit	
		Projekt		Rae vallas, Peetri alevikus, Tähnase tee T5 sademeevee filtersüsteemi projekteerimis- ja ehitustööd	
Joonis		LÕIGE 2-2 Tähnase tee T5			
Projekti juht	Indrek Sallis	Versioon	v02	Projekti nr	552
Vast. projekteerija	Raul Juhkam	Stadium	TÖÖPROJEKT	Mootkava	1:20
Projekteerija	Maarja Reinaste	Kuupäev	10.10.2025	Leht	TE-6-02



		Tellija		Harjumaa Omavalitsuste Liit	
		Projekt		Rae vallas, Peetri alevikus, Tahnase tee T5 sademevee filtersüsteemi projekteerimis- ja ehitustööd	
<small>Muutmisala tee 50, 10621 Tallinn, Tel 670 6873 info@schottli.ee MTR: Riig nr EP0165908-0001</small>		Joonis		3D VAADE	
Projekti juht	Indrek Salis	Versioon	v02	Projekti nr	552
Vast. projekteerija	Raul Juhkam	Stadium	TÖÖPROJEKT	Mootkava	-
Projekteerija	Maarja Reinaste	Kuupäev	10.10.2025	Leht	TE-6-03