USER'S MANUAL

KeyHeat 2024.3

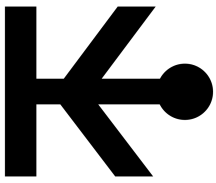


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INTRODUCTION

This user manual describes the functions of the browser-based **KeyHeat** software. The software is designed for the **documentation and management of district heating networks**. The software is used to maintain up-to-date information on network objects, customers and maintenance. The generated network model can be utilized for network maintenance, planning and renovation.

Software overview

The software is used with Internet browsers and requires no additional software installation on the user's workstation. The network data that is used is stored **in an online database** from where the browser receives the data.

You can handle the network data through **object-specific forms for various types of network objects**. In other words, you use object forms to create and update information on both properties and location. The functions available to you, meaning the actions that users can take, depend on your **access rights**.

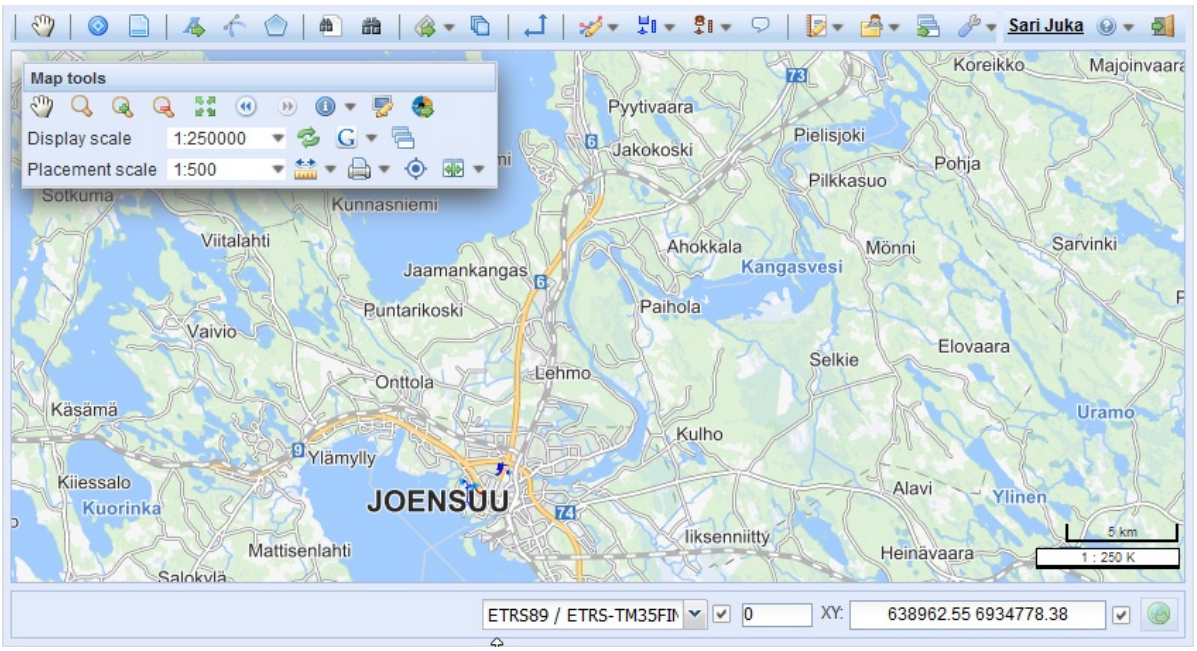
3D compatibility

KeyHeat 2024.3 includes a 3D-compatible database as a default, and it enables basic 3D functions through the user interface. In addition to X and Y coordinates, you can also use the elevation coordinate Z. Please note that addresses, print series, and diagrams are still saved in 2D format.

User interface

The user interface can be divided into three sections. The **toolbar** is displayed at the top of the screen, and you can use it to open object forms to view and edit objects. The toolbar also includes other tools, such as tools for searching addresses and reading survey files.

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The user interface consists of a toolbar, map view, and coordinate section.

The **map view** is the largest displayed section, which also includes a floating map toolbar. **Map tools** allow you, for example, to zoom in and out in the map view, measure distances, and print the maps you need.

The bottom of the screen contains the **coordinate section**, displaying the position coordinates of the mouse pointer as you move the mouse pointer over the map area. With the coordinate section, you can also move to the desired coordinates. In addition, the **instructions bar** at the bottom displays instructions while various buttons and tools are used.

Hardware requirements

You use KeyHeat via your web browser, so the minimum requirements and recommended equipment greatly depend on the browser you use:

1. **Browser:** Microsoft Edge or Google Chrome with the latest updates. Firefox is also supported but require the fastest possible CPU (i7, i9). You must also enable cookies in the browser.
2. **Operating system:** Should be in accordance with the browser's requirements. Keypro Oy tests the system functionalities with Windows-based equipment. Linux Ubuntu 18 or newer is recommended.
3. **Processor:** The minimum CPU is Intel Core i3. Intel Core i5 or i7 are recommended (or some equivalent from the AMD).

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4. **Display:** Minimum resolution of 1366 x 768 pixels (1920 x 1080 pixels recommended).
5. **RAM:** Minimum 8 GB (16 GB recommended, with browser requirements considered).

User roles

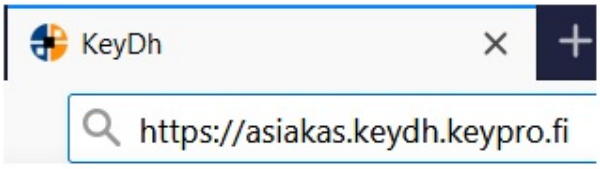
Users are assigned a role in the system, and the **user privileges** specified for that role determine the functions available. **Read-only users** can view both the properties and location information of objects, but they cannot edit or add objects in the system. The buttons required for these functions are not visible to read-only users. If a user has **read and write access** to properties or location information, the related buttons are visible. In addition to the above, an **Admin user** can, for example, modify default values. The tools and functions available to the user are determined based on user rights.

The system also allows the configuration of so-called **area-specific user privileges** that provide users with the right to view and handle objects within a certain area only. Limitations can also be set based on, for example, the **owners of objects**.

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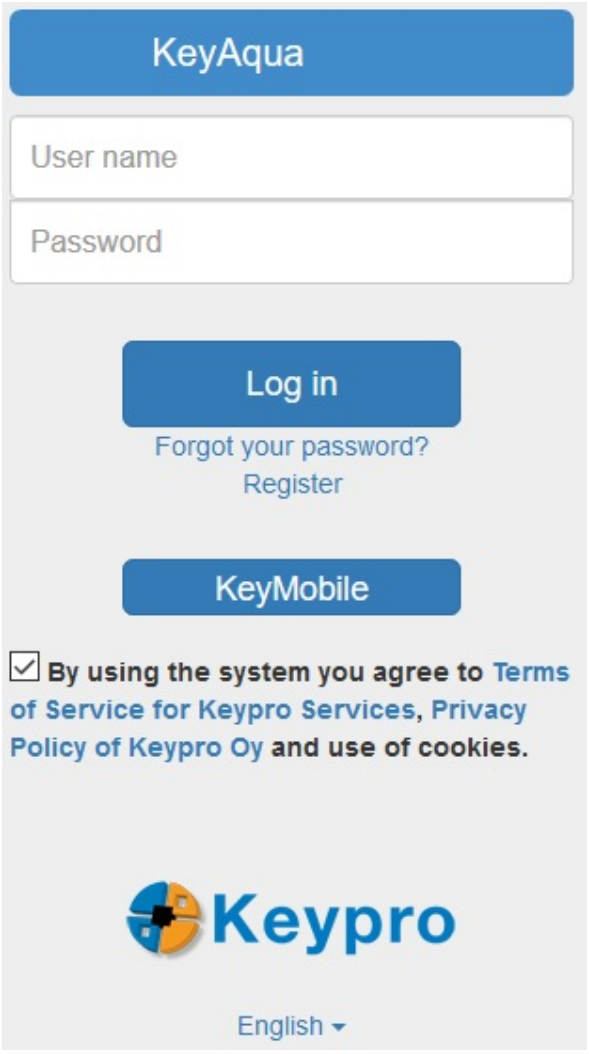
LOGGING IN AND ACCESSING HELP

Logging into the system



Enter the URL of the KeyHeat application in the browser's address bar.

When the login form is displayed in the browser, enter your personal KeyHeat **username** and **password** in their fields. Your session will start when you click **Log in**. Remember to accept the terms of service, privacy policy and cookies by ticking the appropriate checkbox!



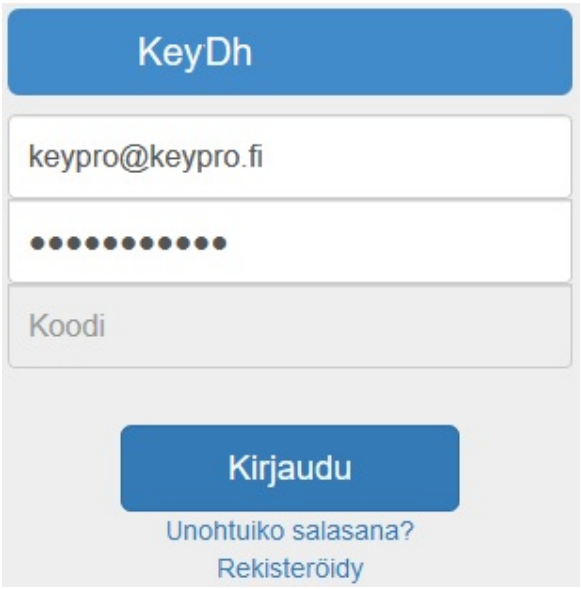
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Log into the KeyHeat system. You can also select the mobile version for smart devices by clicking the KeyMobile button.

Two-factor authentication (This function is subject to a separate order.)

Two-factor authentication is a feature that can be ordered separately. When enabled, the KeyHeat application requires a separate passcode in addition to a valid username and password.

In two-factor authentication, first, enter your **username** and **password** in the active fields. Then, click **Log-in** and wait for an SMS to be sent to you. The code you must enter into the **Code** field is provided in the SMS. After this, click the **Log in** button again to open the KeyHeat application.



The login page for the KeyHeat environment in which two-factor authentication has been enabled.

Forgotten username and/or password

If you receive the notification **Please enter a correct username and password** (note that the fields are case sensitive), you have entered either a wrong username or a wrong password. Enter the correct information and try again. If you have forgotten your password, click the **Forgot password?** link. Instructions on how to change your password are then displayed. Contact your system administrator if necessary.

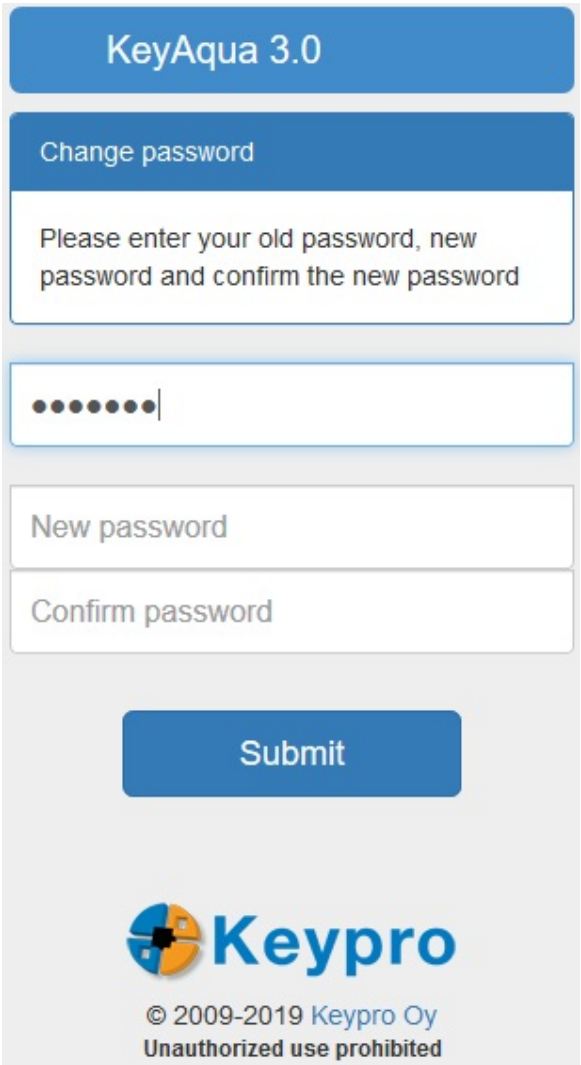
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User registration

When you open the KeyHeat system for the first time, you can click **Register** and provide your details and other information in the **Register new user** window to register as a KeyHeat user. You must accept the terms and conditions of use before you can register. Your information is saved in the system when you click **Register**. After this, you can log into the system.

Changing your password

You can **change your password** by clicking your name on the toolbar in the top-right corner. **First, enter your old password** in the field in the displayed form, and then enter your **new password twice**. Click **Submit**. After you receive a notification that the password has been successfully changed, you can continue working in the KeyHeat environment.



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User guides, information, and support

A **Help** button is located in the top-right corner of the main toolbar, and its drop-down menu includes links to user guides and information on the application. (The content of the drop-down menu may vary depending on the installation.)

In the **User guides** drop-down menu, select **KeyHeat User Manual** to open this document in PDF format. The **KeyMobile User Manual** is available in the same menu.



The **About** item in the **Help** menu displays general information on the application, such as the version number and coordinate system that is being used.

Select **Support** to open a pre-configured email message in an email application. You can complete this draft message and submit a support request. The pre-completed information on the application version and settings is useful information for the application support service.

You can access the Keypro website by selecting **Keypro** from the menu.

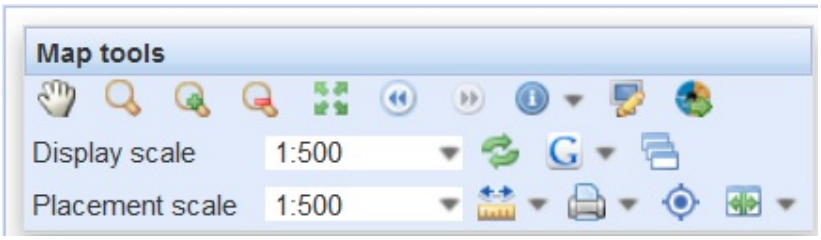
TIP: When you communicate with Keypro's application support service, please be prepared to provide the exact version number of the application. Go to the **Help** menu and click **About** to find this information. The easiest way to create a support request is via the **Support** link.

Logging out of KeyHeat

You can end your KeyHeat session by clicking **Logout** in the main menu.

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MAP VIEW

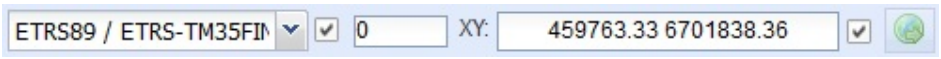


Panning the map

You can pan the map by clicking **Pan** in map tools. Hold down the left button of your mouse and move the mouse pointer across the map to pan the map. This enables you to move the map in the background, for example, when you are drawing a new duct.

Coordinates

The coordinate section displayed in the bottom right corner shows the map coordinates for the **location of the mouse pointer** if **Coordinate reading on/off** to the right of the coordinates is selected. Coordinates are displayed in the **XY** field in the order east-north and are separated by a single space. The **elevation value Z** to the left of the coordinate field defines the object elevation when objects are created.



Centering map on given coordinates

1. Enter (or paste from the clipboard) the coordinate values in the coordinate field. Note that the east and north coordinates are separated by a single space.
2. Deselect the **Coordinate reading on/off** checkbox to prevent the coordinate values from being updated when you move your mouse pointer on the map.
3. Click **Center map on the given coordinates** .

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Placing an object at the given coordinates

1. Deselect the **Coordinate reading on/off** checkbox.
2. Enter (or paste from the clipboard) the coordinate values in the coordinate field.
3. You can now place any point-type object at these coordinates in the following way:
4. On the object form that is created, click **Create** or **Modify** .
5. Click **Center map on given coordinates** .

Picking the coordinates of an object

You can pick the exact coordinates of an object in the following way:

1. Select **Coordinate reading on/off** .
2. Position the mouse pointer over the object. The exact object coordinates are displayed in the coordinate field.
3. Press the space bar on your keyboard to deselect **Coordinate reading on/off** .
4. This prevents changes to the coordinate values and you can copy the values to your clipboard.

Changing between coordinate systems

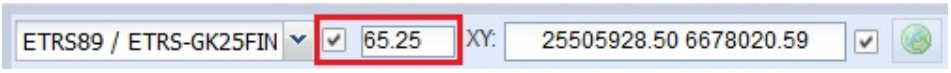
Have the coordinate section display the desired coordinate system by selecting the correct coordinate system from the drop-down menu. The selected coordinate system is used for all functions.

KeyDH uses a default coordinate system that is displayed in **boldface font in the Coordinate system drop-down menu**.

Coordinate elevation value (Z coordinate)

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The **value in the coordinate elevation field** to the left of the coordinate field defines the object elevation when objects are created. If the **Active Z lock** checkbox to the left of the elevation field is selected, the field value also defines the coordinate of the new point when snapping to objects. If you want to retain the existing elevation of an object when you edit its location, or if you want to use the elevation of the object you snap to when creating a new one, deselect the **Active Z lock** checkbox. The **Export** function also supports Z coordinates.



Elevation coordinate.

You can find further information on snapping to objects and following in the chapter Snapping and following (settings for drawing and modifying).

Snapping and following (settings for drawing and modifying)

When you create a new object or modify the geometry of an existing object, you can snap to or follow an existing object. When you do that, either the **Drawing options** or **Modification settings** form is displayed. When you modify an existing geometry or create a new one and press the SHIFT key on your keyboard, the mouse pointer will display the snap radius . When you hold down the left mouse button while pressing the SHIFT key, the system will search for objects within the snapping radius. If multiple objects are found, a pop-up window for object selection is displayed. You can highlight an object on the map by selecting it from the list in the pop-up window. The object is highlighted on the map in a green colour. Snap to the object by double-clicking it on the list.

The **Length** value displays the length of the line object that is drawn or modified.

The **Snapping** selection list includes two options: **Point** and **Nearest**. If you select **Point**, you can only snap to the existing points of objects. If you select **Nearest**, you can snap to the nearest point on the next object.

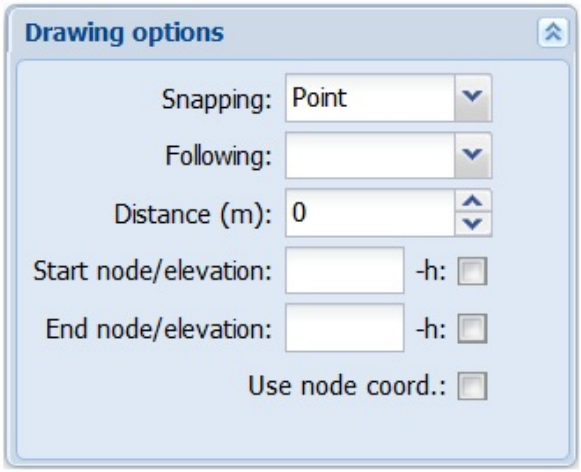
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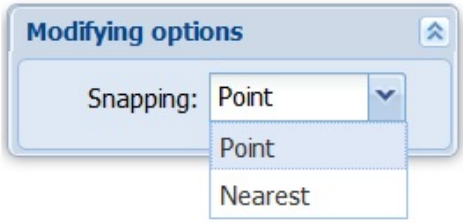
When you digitize a new line object, you can follow the route of another line object if you select either **Completely** or **Partially** from the drop-down menu for **Following**. You can follow an object by double-clicking it in the Object selection pop-up window.

If you selected **Completely**, all vertices of the followed object are included in your new object. If you selected **Partially**, you can follow the object for as long as you want. Click on the map to define the point where you want to stop following.

Change the **Distance (m)** value to follow the route of a line object for the distance you choose. The default distance is 0 meters.

For example, you can specify the **maximum length or segment length** for a conduit you want to draw.





Changing the scale

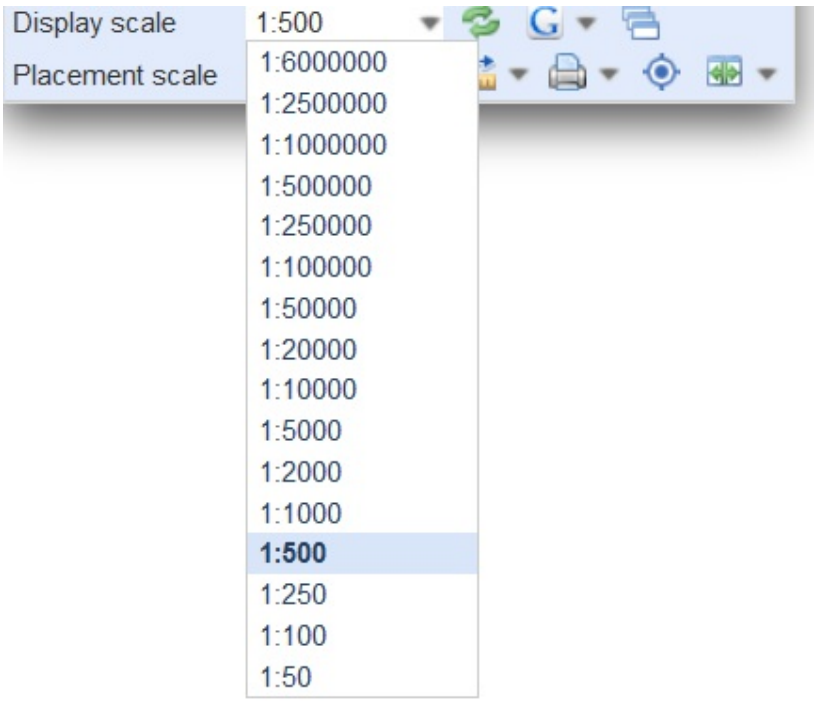
You can zoom the map by clicking Zoom in . This zooms the map in while the map center remains the same. Zooming in is carried out one scale level at a time. You can also change the map scale using your **mouse wheel**. When you scroll the mouse wheel away from yourself, the map zooms in, and the map center is the mouse pointer's position on the map.

You can zoom the map out by clicking **Zoom out** . This zooms the map out while the map center remains the same. Zooming out is carried out one scale level at a time. You can also zoom out by scrolling the **mouse wheel** towards you. The mouse pointer's position on the map is used as the map center.

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You can restore the map view to the default view by clicking **Zoom to max extent** . Click **Zoom to area** to define the area that is used for zooming in. Use the left mouse button to define the area on the map. The map is zoomed in when you release the mouse button.

You can select the desired scale from the **Display scale** menu. The selected scale is displayed in bold letters. The map is automatically updated to the selected scale.



TIP: You can zoom the map in by holding down the **SHIFT** key and using the left mouse button to select the map area to zoom in. The map is zoomed in when you release the left mouse button. This is a fast way to zoom in to a larger scale.

Using the placement scale for new objects

If you know, when creating an object, that the **printouts** for the area **will be created using a specific scale**, you can use the placement scale when creating the object. For sparsely populated areas, for example, printouts may be created using a smaller scale than the one used for city areas, and, consequently, individual objects may not be clearly visible on the printouts. You can ensure the visibility of objects by using the correct placement scale.

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In the **Placement scale menu**, select the scale that will be used for creating printouts. New objects will be created at a size proportional to this scale, and individual objects will thus be visible, for example, in a printout with a 1:2000 scale.



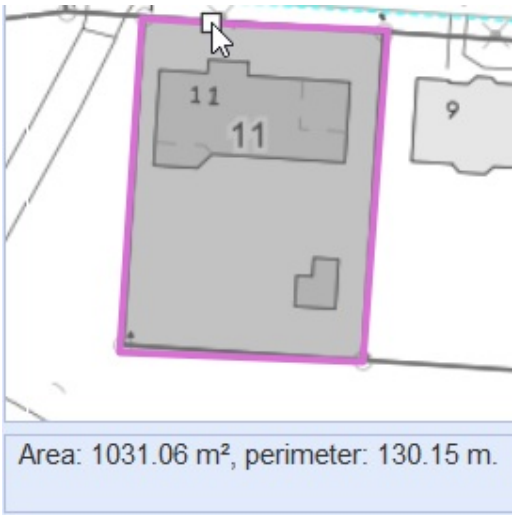
A splice on a 1:2000 scale, drawn on a placement scale of 500, 1000, 2000, 5000, 10,000, and 20,000.

Measuring distance, area size, and perimeter

You can measure distances using the **Distance** tool. Click **Distance** and position the mouse pointer over the starting point on the map to start measuring. Click the **left mouse button** and move your pointer on the map. Enter **points** by clicking the left mouse button. Distance is displayed in the bottom left corner of the screen. The distance information is updated after adding each point. **End** the measuring by **first clicking the left mouse button and then the right mouse button**. Check the total distance.

Measure the area size and perimeter by selecting **Area size and perimeter** on the **Distance** drop-down menu. Add points on the map to view the area and perimeter information for the polygon formed by the points and the mouse pointer. This area information is displayed in the bottom left corner of the screen. Stop drawing by clicking the right mouse button and check the complete area size and perimeter information. Click the left mouse button or **Pan** in **Map tools** to start a new measurement.

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Info tool

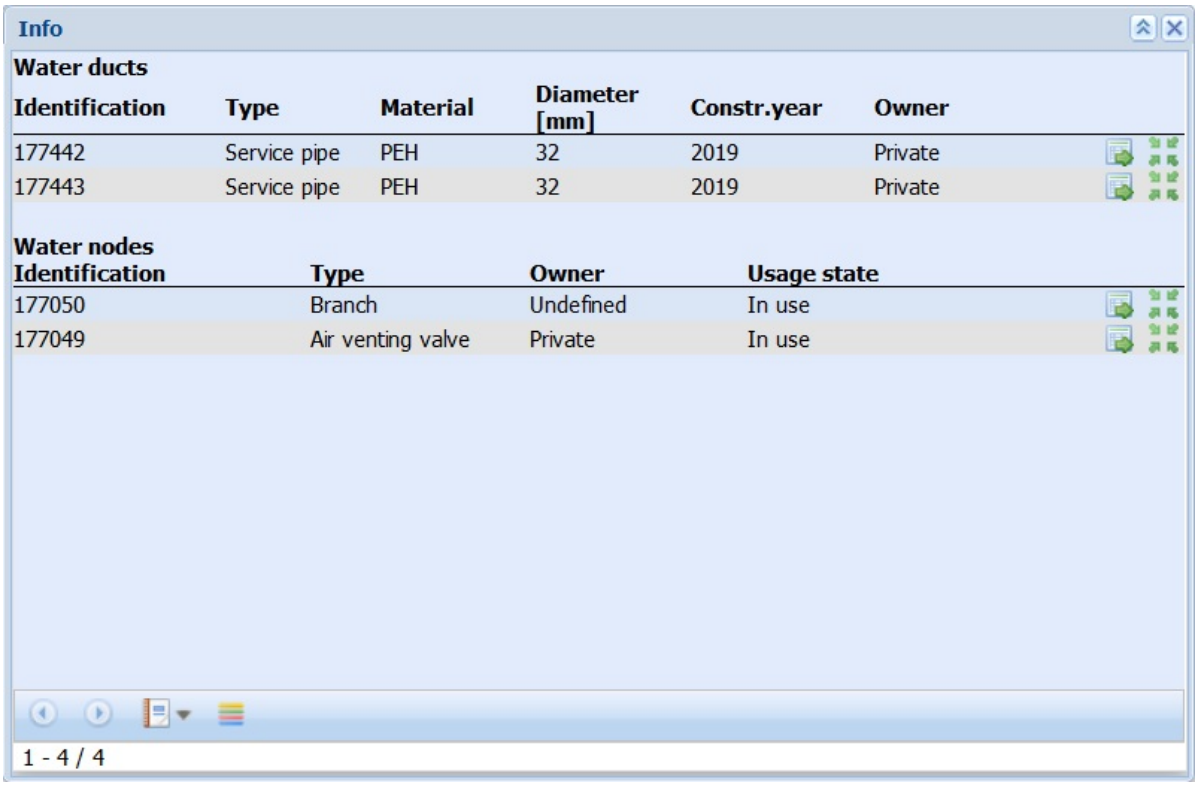
You can use the **Info** tool to view information on map objects. Click **Info** and then use the left mouse button to click the selected **object shown on the map**. You can only select objects that are visible on the map; in other words, only the activated object layers are available. You can retrieve information on more than one object at the same time. There are several possible ways of retrieving information on multiple objects. You can define a rectangular area by selecting the area you want by holding down the left mouse button.

TIP: You can double-click an object on the map using the left mouse button to view the object's information. The application then displays a separate object form on which the object's information is displayed. If there are multiple objects in the area you double-clicked, they are listed, and you can choose the object you want to view.

From the drop-down menu next to the **Info** tool, you can select one of the following three functions: *Map view area*, *Free area*, or *Existing area*. When you select **Map view area**, the software retrieves information on all objects currently displayed on the screen. You can use the **Free area** function to define a free-form area on the map. You can use the **Existing area** function to select an area that has been saved in the system, such as a plan or service area, and to retrieve the objects in that area.

The query returns an **Info** list in which the **search results are grouped** according to their object type, such as telecom premises and conduits. The information displayed is **basic information** on the network objects, such as such as ID, type, owner and usage state. The number of results is displayed at the bottom of the window. If the number of results is large, use the arrow buttons at the bottom of the window to **browse** through them.

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Click **Show** to center the map around an object of your choosing and to highlight the object on the map. Click **Modify** to modify the object's information on an object form.

TIP: You can limit your search to specific objects by using object layer selection. For example, in the **Layers** tool, select only the **Conduits** layer to limit your search to conduits.

Exporting data and reports on map objects

1. Select objects on the map as described above.
2. Click **Export** to create a **Bill of materials** for the selected objects. You can also create external file formats using the export function.

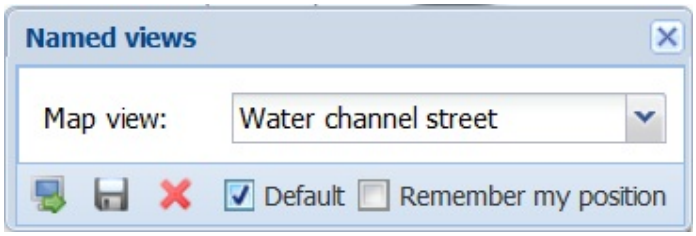
Viewing the results of the Info query in a Group display

1. Select objects on the map as described above.
2. Click **Show in group display** to view the selected group of objects as **a group of Info tool objects**. The chapter Group display provides further information on the group display.

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Map views

You can save the current map view by clicking **Map views** . You can create a new map view using the **Map views** form. You can edit, name, and save map views as necessary, and then return to the map view that you want to view by clicking **Restore view** . You can save several map views and select the map view you need from the drop-down menu. The view you select is then displayed. Select the **Default** checkbox to define a default map view. The map selected as the default map will be displayed as the initial view the next time you log into the system. When **Remember my position** is selected, the KeyDH application saves the map location, zoom level, and open map layers. The next time you log in, you can continue from where you were the previous time.

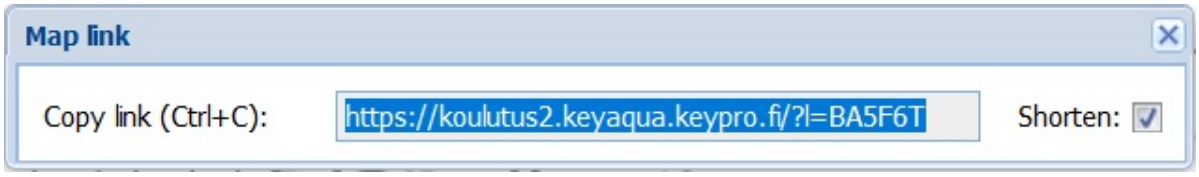


You can also click **Previous view** to return the previous view on the map tools. This always takes you back to the previous view, one view at a time. Click **Next view** to go to the next view.

Map link

Copy the current map view and send the URL to, for example, your colleague or co-operation partner.

1. Click **Map link** in Map tools.
2. Either select the long form or shorten it by selecting the **Shorten** checkbox.
3. Copy the address.
4. Paste it into an email or add it as a browser bookmark.



Copy the address to your browser's address bar or use the bookmark you saved to return to the view later.

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Refreshing the map

You can view the changes made to a map by clicking **Refresh map** . This function is useful, for example, when the map data is being updated at the same time **on another workstation**, in which case changes are not necessarily immediately visible in the area that you are viewing.

Google Maps

View the current **map view area** in the Google Maps™ service:

1. Click **Google Maps** to open a new browser tab to view the current KeyCom map view on the Google Maps website.

You can view a **street view** through the Google Maps Street View™ service:

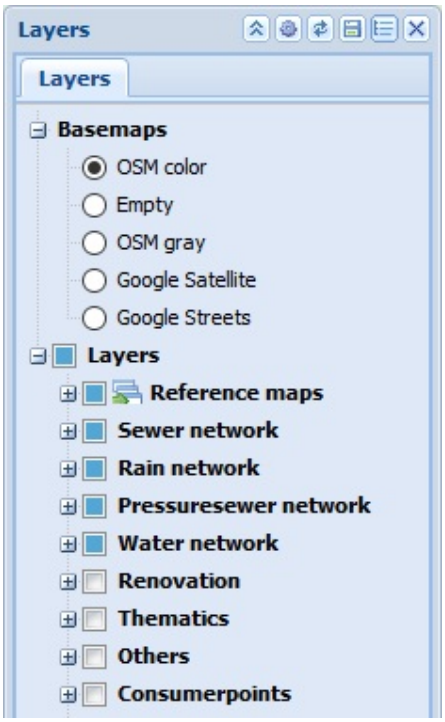
1. In the **Google Maps** drop-down menu, select **Google Maps Street View**.
2. Point to the road/street location that you want to view and click to open the view in question in Google Maps Street View.

These services are provided by Google.

Layers (Layer selection)

You can select the background map and network object layers using the **Layers** tool. Click **Layers** to view the list of objects. The available map layers vary according to what has been agreed.

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You can minimise or maximise the **Layers** tool by clicking the arrow at the top of the form. You can close the form by clicking the cross. You can hide the lists of background maps and lists of object layers by clicking ▭ in front of the row, and you can expand them by clicking ⊞.

Selecting the background map

The default map is one of the available maps. You can also select some other map as the **default map,** or you can select the option **Empty**, in which case no background map is displayed. Only **one map at a time** can be selected as the background map. The background map helps users understand where the network objects are located, and this map cannot be modified.

Object layers

The **network object layers** available for selection are listed under object layers. You can select **multiple** layers to be shown **at the same time**. If an object layer is not selected, its objects are not displayed on the map and you therefore cannot pick them from the map for forms. **You should select, as a minimum, those layers that have objects you want to view or edit.**

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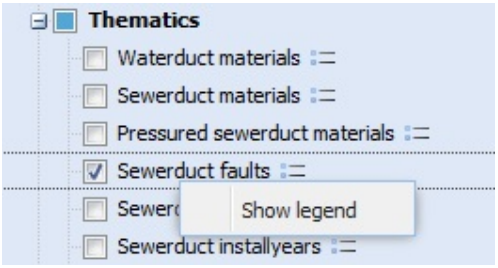
The network objects are layers that are available for selection. In addition, you can show addresses, mapping items, places of use, plans, documents, annotations, and free texts and lines, for example. Some network objects **cannot be selected if the scale is too small**, that is, if the map is zoomed out too much. Examples of such objects are manholes, valves, and annotations.

The **checkbox** ☑ to the left of an object's name indicates whether the object has been selected. You can remove or add an object by clicking its checkbox. You do not need to refresh the map afterwards as your selections will be applied automatically. If you want to activate all layers at once, select the checkbox for the highest layer (**Layers**).

TIP: The number of objects visible on the map is proportional to the speed with which the map is refreshed. For this reason, we recommend that you only select the layers you need to view on the map.

Sub-layers of the layer hierarchy (a function subject to a separate order)

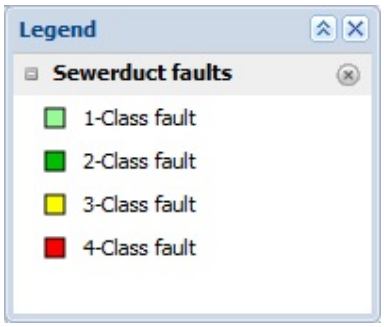
Sub-layers can be added to the layer hierarchy, for example, based on the operating state of the conduit. Sub-layers are available as a function that is ordered separately.



Layer legend and information

The **Legend** of a layer uses symbols and words to describe the type and status of the map objects. To view the **Legend** for a layer, click **Show legend** ⁝= or use the right mouse button to select **Show legend** from the menu that is displayed. If a legend is not available, the button and the menu item are hidden.

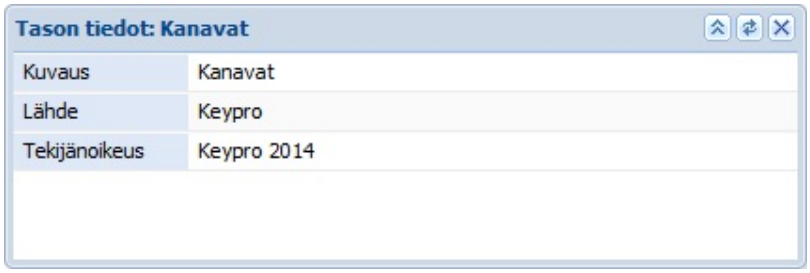
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The **Legend** list functions in a manner similar to stacks: when a new legend or theme is selected in the layer selection, a new group is added on top of the list. You can expand or minimize groups by clicking and or by double-clicking the group header. You can hide a group by clicking .

A group is automatically hidden if its layer is not active in the layer selection.

Click **Show details** or select **Show details** in the context menu, which you can open by clicking the right mouse button. As is the case with legends, the button and menu item are hidden if no detailed information is available for the layer.

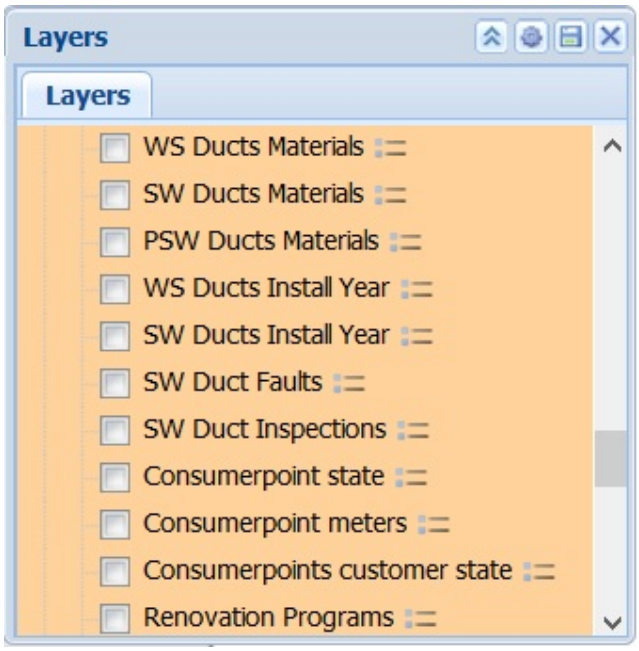


Configuring object layers

You can configure the layers into separate groups via the application user interface. You can group similar layers into one group, for example, group all KeyDH objects under one layer, thus making it possible to show or hide them with a single click. Only users with administrator rights can configure the layers using **Configure** .

On the **Layers** form, click **Configure** at the top to group object layers. You can move layers when the background color of the form is orange.

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Use your mouse to drag layers to a new location on the list. For example, you can move the **Supply interruption** layer to the **District heating** group by grabbing the **Supply interruption** layer with the left mouse button and dragging it onto the **District heating** group.

You can move layers that you do not use and hide them in the **Ungrouped layers** group. This **Ungrouped layers** group appears at the end of the list when the layer configuration function is activated.

Layer configurations

You can save a **Layer configuration**, that is, the selected background map and the active layers, by clicking **Save** in the top-right corner of the **Layers** tool. **Layer configurations** are saved in the browser cache of the browser that was used, and they are therefore not available on other computers.

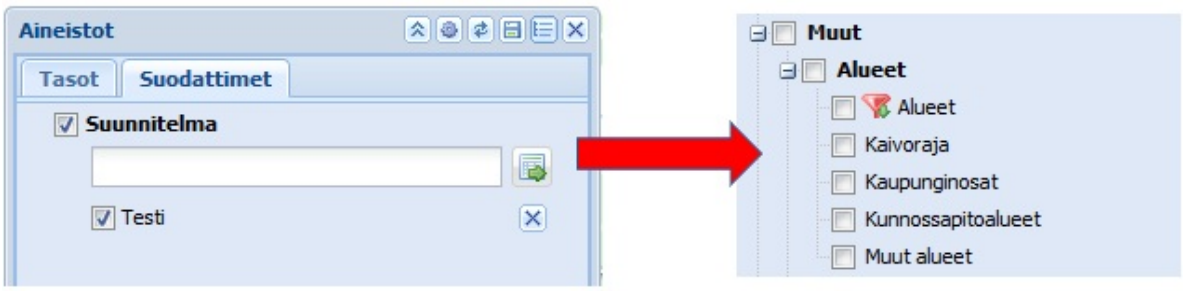
Layer configurations can also be saved in a **database** with a user name, in which case the layer configuration is user-specific instead of browser-specific. Save a layer configuration in a database by clicking **Configure** , and wait for the background colour to change to orange. Click **Save** to save the layer configuration in a database.

Upload the saved layer configuration to the **Layers** form by clicking **Reload** . You can restore the original layer configuration settings by clicking **Reset to defaults** .

Layer filters

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Layer filters are used for limiting the number of objects shown on the map. Objects can be filtered, for example, based on **technology**, **usage state**, and **plan**. When filters are used, only the objects selected on the filter form are visible on the map.



Test plan selected as the filter. An icon appears on the filtered level.

Active filters are marked in the layer selection list: A filtered layer is marked with a highlighted filter symbol . When a filter is not selected, the icon is not colored .

Printing

Use the **Print** tool for **print series** and **quick print**. **Print series** refers to printouts that consist of one or several parts, whereas **quick print** allows you to quickly create a printout of the map.

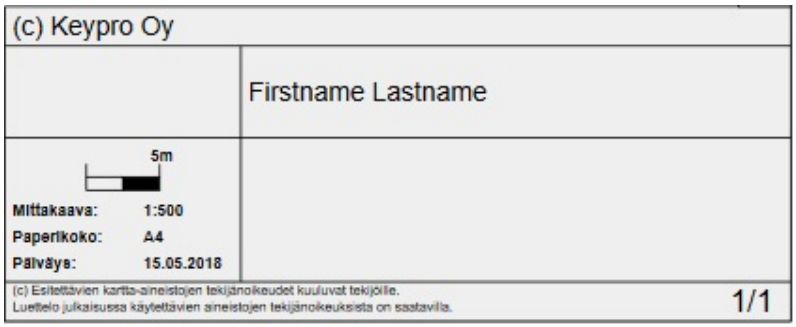
Quick print

In the Map tools bar, click **Quick print** to access the **Quick print** function. In print settings, you can define settings related to paper size and the display settings for the detailed information to be included in the printout.

Start quick print by filling in the form. The form fields **Paper size** and **DPI** must be completed in accordance with the paper and printer you are going to use. **Paper size** means the physical size of the printing paper. **Scale 1:** enter the size of the print area as a scale proportion. When the display scale is 1:500, and the same scale is applied to the printout, the printout proportions are the same as in the map view. In addition, you can include a print legend (**Legend**) and a **Theme legend** on the printout. You can also define their **location** on the printout.

The **Print legend** refers to the map legend, which includes information on the paper type, scale, person creating the printout, and date of printing. You can add your own text in the **Note** field.

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You can include a **Theme legend** on the printout by going to the **Layers** list and activating those theme levels that you want to include. In the drop-down menu for the theme legend, select the location of the legend. The **Theme legend** on the printout will include the same information as the **Themes** – **Show legend** window.

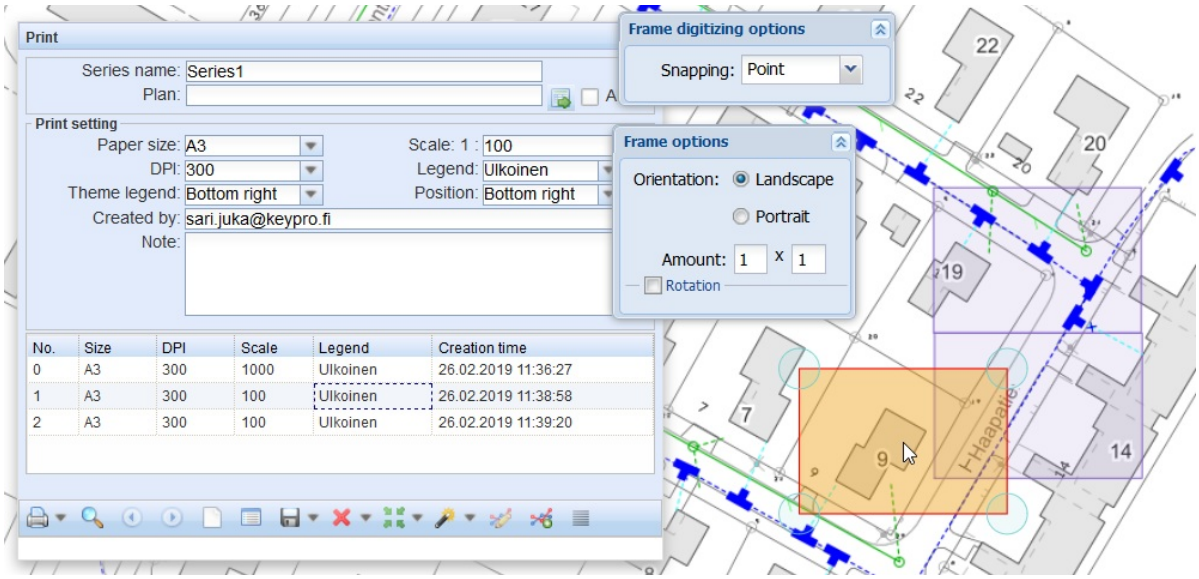
The borders of the print area (the frame limits) move with the mouse pointer. When you click Quick print, the **Frame digitizing options** and **Frame options** selections are displayed. In **Frame digitizing options**, you can select the snapping point of the movable printing frame by moving it while holding down the SHIFT key. Select **Point** for snapping if you want to move the point to the same location as an existing point. Select **Nearest** for snapping if you want to position the point on top of a line object. This moves the point to the nearest snapping point on the closest line object.

In the **Frame options** window, you can modify the orientation and rotation of the print area on the page. The changes you make are applied immediately to the frame shown on the map. Use the left mouse button to select the desired location of the frame and print it using the right mouse button, or click **Print** on the form to have the browser provide the file in PDF format for downloading. To relocate the frame, use your left mouse button to point at the red square in the middle of the frame and, while holding the button down, drag the frame to the location you want. Click **Print** to print.

Print series

The difference between **print series** and quick print is that a print series consists of several map printouts (frames). The first page of a **print series** includes an index map showing all the map printouts, and it provides an overview of the individual frames with their numbers and locations. This feature helps to locate the various series printouts on the map. Activate the **Print series** function in the **Print** drop-down menu .

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The number 0 in the No. field refers to an index map, while the other rows are the created printouts.

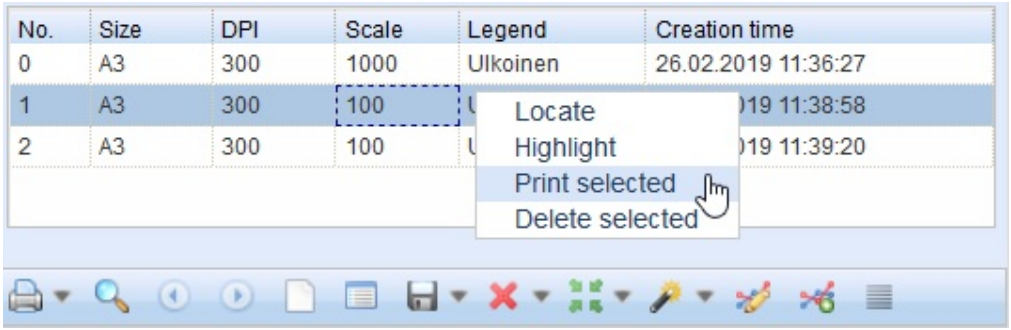
The **Print series** form includes fields for settings and a field for the printouts (frames). The first row of the **list of frames** is always the title page, and the actual frames are listed below it. The settings information displayed in the form's fields is related to the frame that is active in the list of frames. You can edit and save printout-specific information. You can also create printouts of single frames.

Fill in the form fields as described for Quick print. After this, click **Save form** to activate the creation of frames. Click **Create** to start creating map frames. The borders of the print area (frame) move along with the mouse until you select the map location you want by clicking the left mouse button. When you create a print series, the **Frame options** and **Frame digitizing options** are also displayed. Please see the chapter **Quick print** for more details on these.

Click the right mouse button to accept a frame. A new printout line is added to the list of frames on the form. The number of frames is not limited. You can also edit the settings for each frame, for example, modify the scale of the printout.

You can download the **Print series** in PDF format by clicking the **Print** button on the form. The browser will provide a PDF file for download, and this file includes the entire print series. **Print a single frame** by selecting **Print selected** in the drop-down menu for the **Print** button. The frame selected in the list of frames is printed. Alternatively, you can print a frame by clicking a frame on the Print form using the right mouse button and selecting **Print selected**. The menu also includes options for locating, highlighting, and deleting a frame.

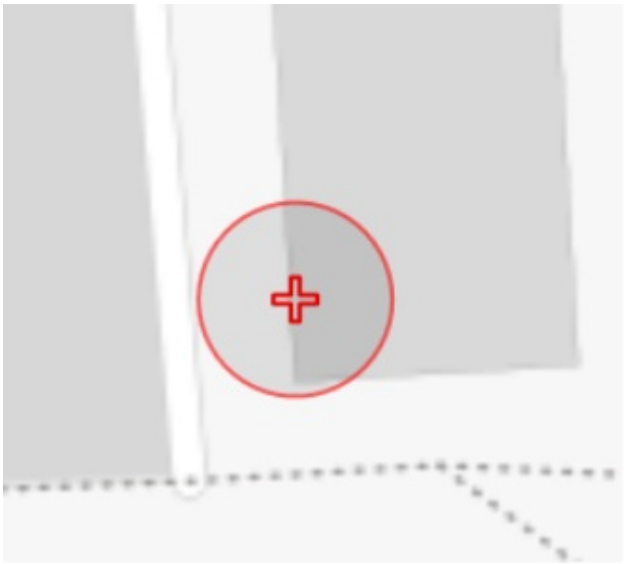
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You can also use the **Quick print** function on the **Print series** form. The drop-down menu for the **Print** button includes the option **Quick print**.

Locating yourself

The **Locate** tool enables you to center the map based on the location of your equipment. Depending on the functions of your equipment, your location can be based on, for example, GPS coordinates or the location information obtained from a wireless or fixed network. Please note that the network location information may be extremely inaccurate.

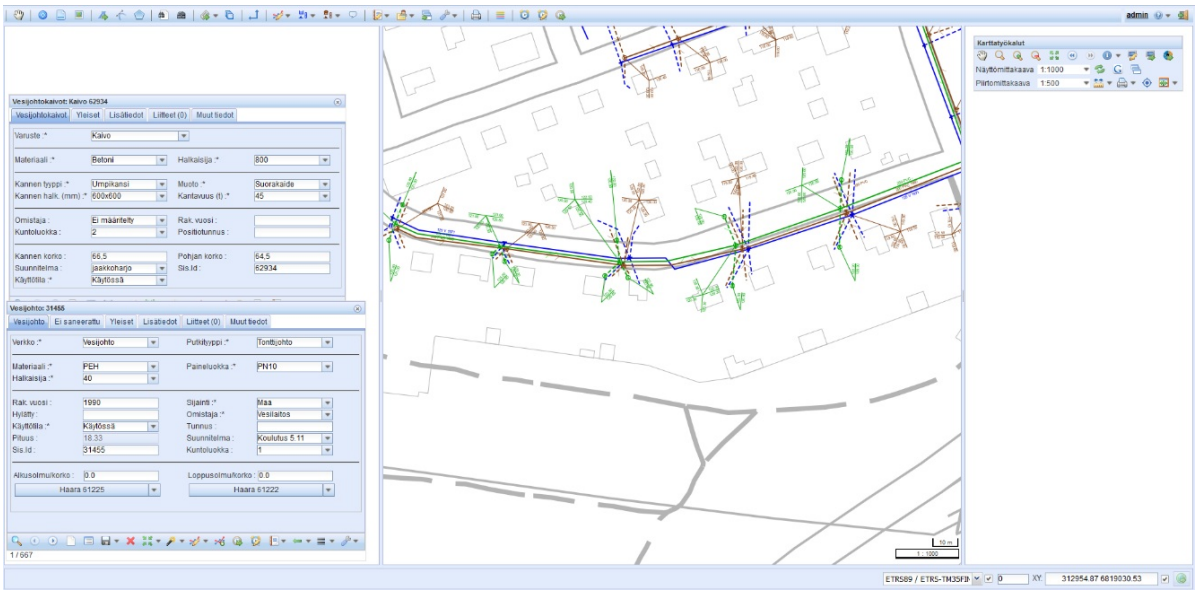


A cross symbolising the location and a circle representing the margin of error are shown on the map.

Splitting your display

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With the **Split map** tool, you can split your display into two or three sections to view the map in one section and the forms in others, so that they are not on top of the map. Use the tool options to select whether you want to have the new display section on the left or right side of the map view, or on both sides. You can deactivate the Split map function using the **Cancel** command in the tool.



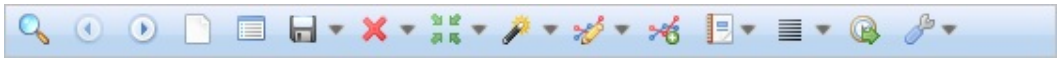
TIP: This is a very useful tool if you are using more than one monitor. For example, you can view the forms on one monitor and the map on another.

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BUTTONS ON OBJECT FORMS

All object forms used for managing objects and events have the **same structure and functions**. Only the **information included** on the object forms varies somewhat depending on the object form. For this reason, each object form can only be used for managing the specific object related to the object form. For example, the Splice form is used for splices and the Telecom premises form is used for telecom premises.

The functions of the buttons displayed at the bottom of object forms are always the same even though the information content of the forms may vary. In other words, the **buttons always function in the same way** for all network objects and on all forms. The buttons that are displayed **depend on the user's privileges**. For example, read-only users cannot update information. If the button is dimmed, it is not available. The button functions are introduced in the next chapters.



In addition to the buttons displayed on an object form, some object forms contain **additional functions** that are used in the same way on all forms. Additional functions are used, for example, for adding dates or address information. These functions are discussed in the chapters Entering a date and Managing address and apartment information on object forms. **The functions of buttons that are not introduced in this chapter are discussed in connection with the relevant object forms.**

Retrieving information to a form

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To retrieve data on all objects to the form, first click to clear the form and then click **Search** . If you want to retrieve data on some specific object types, you can specify the **search criteria** that are applied to your search. If, for example, you want all conduits with the surface material Plastic on the form, select **Plastic** in the Surface material field of the **District heating conduit** form and click the **Search** button. **The number of search results** is displayed in the bottom left corner of the object form. If there is more than one result, you can **browse** through them with the arrows . You can enter values in any fields on the form or use a combination of fields to search for objects. If you want to browse through a large number of search results and update information related to an individual search result, the easiest way to do this is to use the **List** function. This function is discussed in more detail in the chapter List.

TIP: You can use **%** as a wildcard character to substitute text when carrying out a search. For example, instead of Kirkkotie, enter **Kir%** in the **Address** field to include all addresses starting with **Kir** in the search results. If you enter the character **!** in a field, the search returns objects with that field empty.

There is an **Identifier/Int. ID** field on each object form. Identification refers to the ID of each object. These IDs are automatically generated for each new object. Users can also choose to enter an ID manually. You can use **Identifier/Int. ID** as a search criterion when you search for an object.

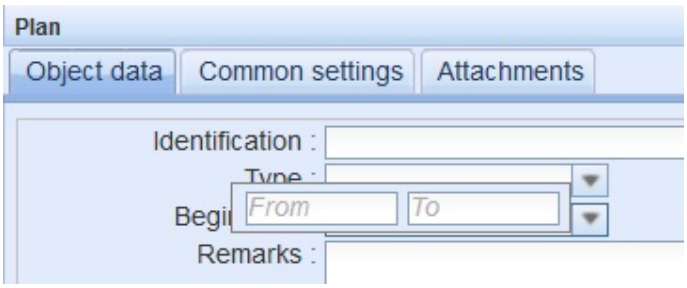
Selecting multiple items

Some forms provide the option to select multiple items for searching. For example, the **Plan** form allows searching for multiple items based on values defined in the **Type** field. Hold the **Ctrl** key down and use the right mouse button to select the values in the **Type** field menu that you want to use as search criteria.

Searching by a date or number range

On some forms, you can search by a date or number range by double-clicking the field for a date or numeric value (e.g., Installation year). When this function is activated, the original date field (or the field for a numeric value) is replaced with two new fields: the start (min.) and end (max.) values. Enter the relevant values in these fields. When you click **Search** on the object form, all objects that coincide within the entered start and end values (including the values themselves) are returned as search results.

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Picking objects from the map

To pick objects from the map , first click **Pick** and then use the **left mouse button to point at the object**. The object's information is displayed on the form. You can only pick **objects relevant for the form in question**, that is, if you try to pick a cable to a form for conduits, the following text is displayed at the bottom of the form: **No matches found.** If you are not sure which object is in question, you can use the **Info** tool to define the object and then open the correct form for that object from the list of results.

TIP: If you want to view the information related to an object whose type you do not know, you can use the **Info** tool. In the **Info** list that is displayed, click **Edit** to access the object's form. The use of the **Info** tool is discussed in more detail in the Info tool chapter.

Area searches

You can also pick the **data for multiple objects** at once. Click **Pick** . Use the left mouse button to point at the starting point and hold down the mouse button until you have marked the area you want by drawing a rectangular. When you release the left mouse button, the information in the selected area is displayed on the form.

You can also select an area using the functions available in the drop-down menu for **Pick** . **Map view area** retrieves the information on all objects in the map view. You can use the **Free area** function to select the **required free-form area** by placing **points** in required locations using the left mouse button. End the area selection by first clicking the left mouse button and then the right one. The search area is the area within the points you marked on the map.

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With the **Existing area** function, you can select a map area that has been created with the **Area** tool (Area, Plan), in which case the search will be carried out within the selected area.

If the object form fields are empty when the search is carried out, the search results will include all the objects for the form type. You can use **search criteria** to limit the search results. Enter the search criteria in the fields of the form and click **Pick** . You can then select the **Pick from map** checkbox in the dialogue window that is displayed. Carry out a search as described above for area search functions.

For example, if you want to view the information on all cables installed in 2019 in a specific area, enter the search criteria on the **District heating conduit** form, that is, enter 2019 in the **Install year** field. After you have specified the search area on the map, the number of search results is displayed in the bottom left corner of the object form. Use the arrow buttons to browse through the search results.

Clearing an object form’s fields

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You can clear the data in object form fields by clicking Clear . This function clears the data in the fields, but it **does not delete the data from the system**. Clear the object form fields before conducting a new search, for example. When you click **Clear**, data on all searched objects for that form is deleted, not only the data related to the object that was displayed on the form. Any highlighting on the map is also removed.

Default form values

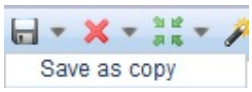
You can view the default values for the object form fields by clicking Defaults . Values are displayed if they have been entered in the system. Default values can include, for example, the most common property data for an object. Admin users can modify default values. When you add a new object, you can use the **Default** function to speed up the process of entering property values. You can also apply default values when you search a database.

Updating object data

You can edit an object's information on the form and update the information by clicking **Save form** . For example, if you want to modify the usage state of a conduit and add information about the installation year, take the following steps: Open the required conduit on the **District heating conduit** form, go to the **Usage state** menu, and select **In use**. Then enter, for example, **2018** in the **Install year** field. Click **Save** .

Copying an object as a new object

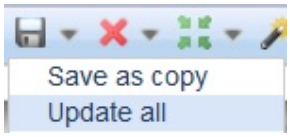
You can copy an object with the **Save as copy** function. This function creates a new object by using the same property values and location. We recommend using this function, for example, when the intention is to digitize several similar objects in the same place.



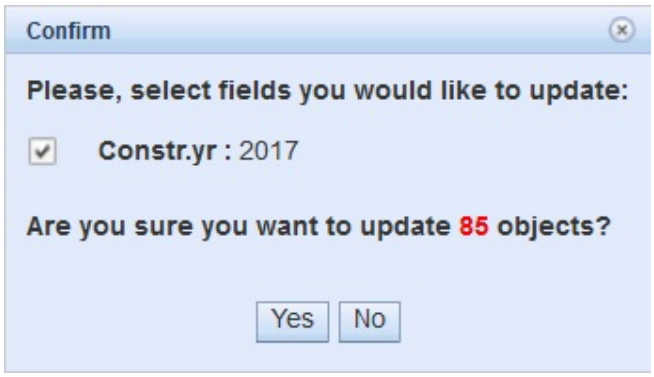
Mass update (Update all tool)

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With Mass update, you can update data for multiple objects at one go. This function is useful in many situations when multiple objects need to be modified simultaneously. The Update all function is available in the drop-down menu for Save.



For example, if you want to update the year 2016 as the installation year for all conduits in the area, first retrieve information on all the conduits in the area (area search) to the District heating conduit form and enter 2016 as the value in the **Install year** field. Then, in the drop-down menu for **Save form**, click **Update all**. On the **Confirm** form, select the information that is to be updated for the objects if you have modified more than one form field. Click Yes to confirm the mass update.



Mass update of addresses

For **point objects**, you can update addresses to match the nearest address in the search results. First, in the Address section, select the **Autom.** checkbox, then go to the drop-down menu for **Save form** and click **Update all**. The program asks you to confirm the fields that are updated. Click **Yes** to accept changes. You can do this, for example, in order to update incorrect or incomplete addresses of manholes.



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Deleting objects and mass deletion

To **delete objects from the system**, retrieve an object through the form and click **Delete** to open the **Confirm** dialogue box. The following dialogue box is displayed: **Are you sure you want to delete this object?** Click **Yes** to delete the object. This deletes both the property and location data of the object from the system. In other words, the object is no longer visible on the map and its information is deleted from the database.

You can find an object for deletion by defining search criteria and by clicking **Search** if you have knowledge of some key property value, such as **Identification**. If you know the location of the object, you can pick the object data from the map with the **Pick** function.

A **Delete all** function used by a specific user group may be available to you. This function is form-specific, and you can use it to delete more than one object at the same time. The **Delete all** tool is available in the drop-down menu for **Delete**. **Delete all** is available for objects that have no related dependencies to other KeyHeat objects that would cause problems at the database level. The **Delete all** function will notify the user if an object group includes objects that cannot be deleted.



Locating and highlighting an object

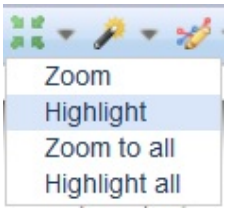
Objects on the form can be **located on the map** by clicking **Locate** . The map is centered on the object that is **highlighted** on the map. Objects can be located if an object's geometry has been stored in the system and it is within the permitted coordinates.

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The drop-down menu for **Locate** also includes the following options: **Zoom**, **Highlight**, **Zoom to all**, **Highlight all**. These functions are introduced next.

- The **Zoom** selection centers the map on the active object on the form. (Displayed only for objects that have a location.)
- The **Highlight** selection highlights the active object on the map, but the map view does not change. (Displayed only for objects that have a location.)
- The **Zoom to all** selection centers the map so that all objects retrieved to the form fit the map view.
- The **Highlight all** selection highlights all objects downloaded on the form, without changing the map view.



Modifying the geometry of an object

You can modify the geometry of the object on the form, that is, you can edit its location and form by clicking **Modify** . A **Modifying dialogue** is displayed, in which you can select various settings related to modifying the object's geometry. Click **Save form** to update the modified geometry and other form fields.

Modification settings

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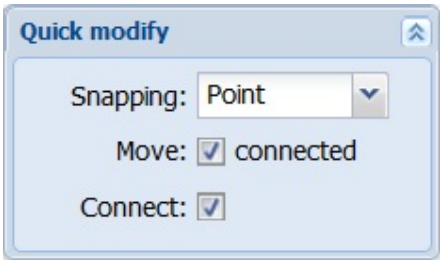
In the settings for geometry, you can select the snapping point applied to a point that is moved while holding down the **Shift** key. Select **Point** for snapping if you want to move the point to the same location as some other point. Use **Nearest** if you want to position a point on top of the line of a line object, meaning the point moves to the nearest point on the nearest straight line.

Modifying the geometry of a line object

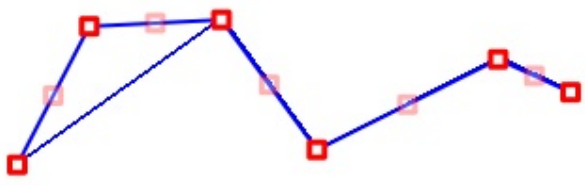
Line objects can be modified on the **District heating cable**, **District heating conduit** and **Line** forms. Select a line object on the map and open its form. Select **Modify** to activate the function for modifying the geometry of the object. Alternatively, you can click on a line object on the map to use the **Quick modify** function.

Quick modify function of a line object

1. Point at the required line object on the map and click the **right mouse button** while holding down the **Control** key. If the map object includes multiple objects, the Object selection window will be displayed. Click the required object with the right mouse button and select **Modify** .
2. Select the required options in the displayed **Quick modify** dialogue box.



1. **Drag** the points highlighted in red to the required location or **remove** them with the **Delete** key. You can snap to another object by holding down the Shift key while releasing the left mouse button.
2. Click the right mouse button and click **Save** in the **Confirm the move** window to **Save** the changes. Cancel the changes by using the **Cancel** function.

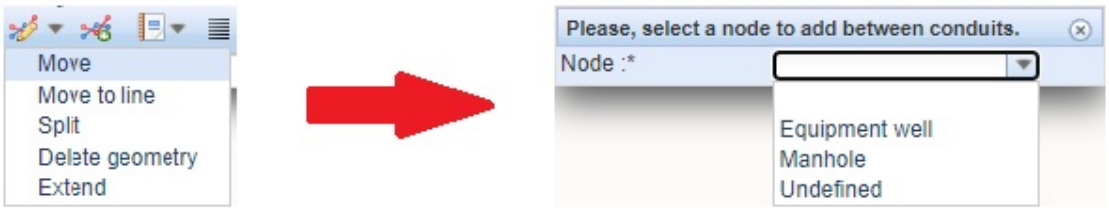


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You can use the pink squares to add points. You can move the squares in the same way as the existing points. Position your mouse pointer over a square, grab it while holding the left mouse button down and relocate the square. When you release the left mouse button, the square becomes a **new** point. In addition, new pink squares appear on the line between the new and existing points. These can be used to create further new points.

Splitting a line object

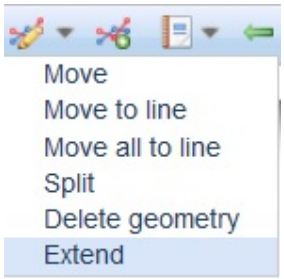
Line objects can be split using the **Split** function. This function highlights the selected object on the map and displays the **Splitting** menu. When a **conduit** is split, it is possible to place a **manhole or another node point** at the point of split. The Split tool is displayed in the drop-down menu for Modify when an object can be split.



Select the point on the map where you want to split the object and click the left mouse button to accept the split. Both objects created through splitting are now displayed on the form. Use the arrow buttons to browse through the objects.

Extending a line object

A line object (cables, conduits) can be extended from the end that has not been connected. Activate this function in the drop-down menu for **Modify** . The **Drawing options** dialogue is also displayed. The functions of the **Drawing options** dialogue are described in the chapter Snapping and following (settings for drawing and modifying).



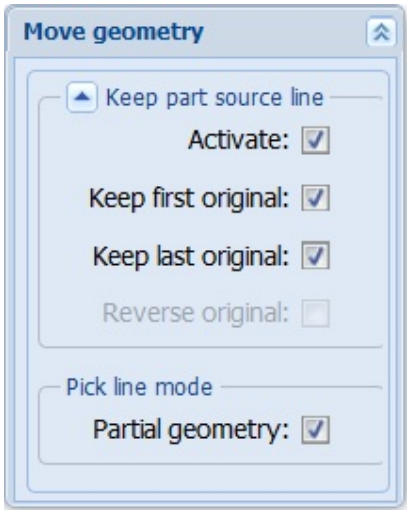
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To continue the digitization of the object from its start or end, create new **points** in required locations using the left mouse button. Create the **end point** of the object by **first clicking the left mouse button and then the right mouse button**. The object's location and property values are automatically saved in the database.

Moving a line object to a line

You can move a line object to match the location of a linear geometry, cable, conduit or any other line object.

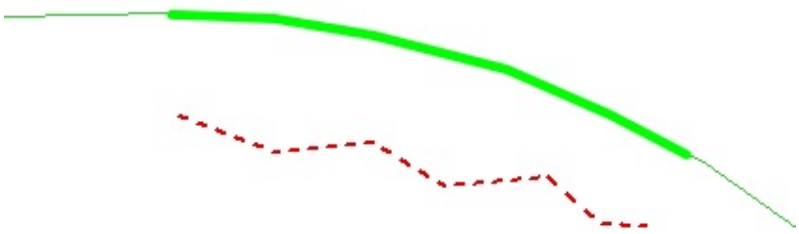
1. In the drop-down menu for the **Modify** function on the form, select **Move to line**.
2. Select the required options in the displayed **Move to line**dialogue box:
    a. **Activate**: With this option, you can maintain a part of the line's original location, while another part is moved to a new target line. Activate the additional functions for the line that is to be moved:
    b. **Keep first original**: Keeps the first part of the line unchanged up to the point where you click the line
    c. **Keep last original**: Keeps the last part of the line unchanged from the point where you click the line
    d. **Reverse original**: Reverses the order of the start and end points of the line to be moved
    e. **Pick line mode**: **Partial geometry**: You can choose a part of a route on both lines: the one you want to move and the target line



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1. With the left mouse button, **point** at the line to which you want to move an object.
2. **Stop** the line selection by clicking the right mouse button. The new location of the object to be moved is highlighted in green.
3. **Accept** the object move by clicking **Save** on the form, or cancel the move by clicking **Clear**.

Note! If you have selected functions that keep a part of the original line unchanged, the **Reverse original** function will not be activated before you have selected the start and end points for both the line to be moved and the target line.



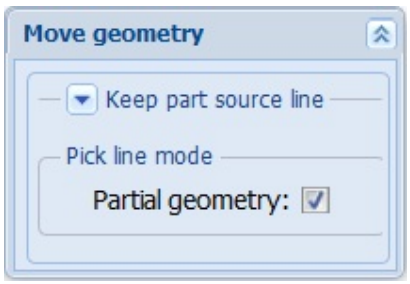
The Move to line function has been activated. The thin green line is the linear geometry. The thicker green line represents the new location of the object that is moved.



The move has been accepted.

Moving a line object partially to a line

1. In the drop-down menu for the **Modify** function on the form, select **Move to line**.
2. In the **Move to line** dialogue box, select the **Partial geometry** checkbox.



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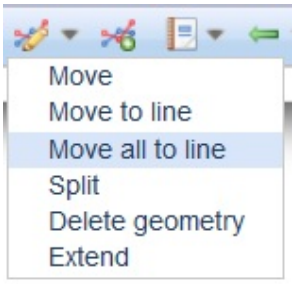
1. Point at the map object (line, conduit, cable) to which the line is moved.
2. Select the starting point on the target line.
3. Select the end point on the target line.
4. Repeat items 3–5 if you want the object to follow more than one line.
5. Right-click to end the line selection. The new location of the object to be moved is highlighted in green.
6. Accept the object's move by clicking **Save form** on the form or reject it with the **Clear** button.

The starting point is displayed as a blue square, while the real-time location is displayed as a light blue circle.



Mass movement of line objects

In the drop-down menu for the form's **Modify** function, select **Move all to line** to activate a mass transfer. Note that more than one line object must be retrieved to the form to make mass movement possible. Take same actions as when moving a line object, as explained in the chapters Moving a line object to a line and Moving a line object partially to a line.

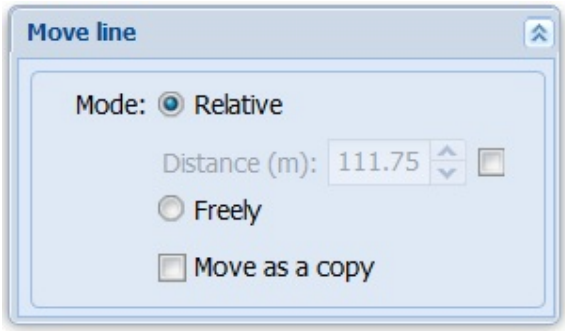


Moving a line object

You can move a line object on the map either freely by dragging it using the left mouse button or relatively by defining the distance from the original location.

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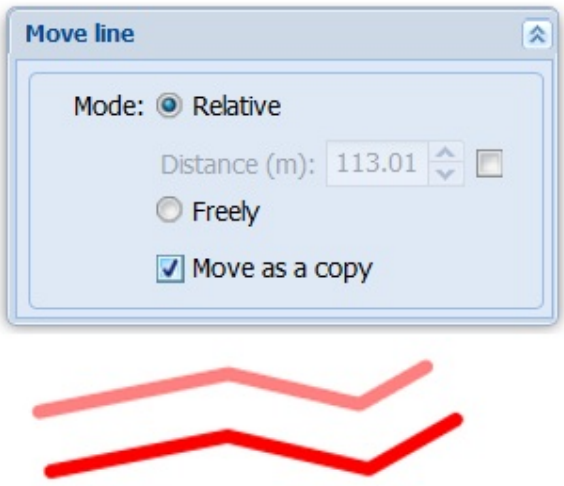
In the drop-down menu for the **Modify** function on the form, select **Move**. The object is highlighted on the map and a **Move** dialogue box is displayed, in which you can select the **Mode** of movement.



Select **Relative** to move an object horizontally or vertically the number of meters displayed in the **Distance** field from its original location. Click the left mouse button to accept the location, and click **Save form** to save it.

Select **Freely** to move an object by positioning your mouse pointer **over the red square** and **move** the object to a new location **while holding down the left mouse button**. Release the left mouse button. Click **Save form** on the form to save the new location information.

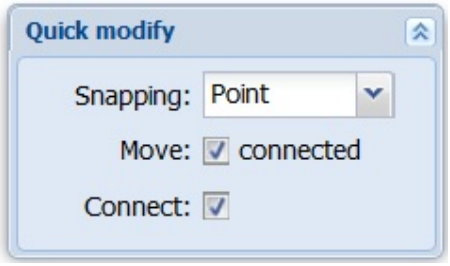
Selecting the **Move as a copy** checkbox makes it possible to copy the object to a new location.



Modifying the geometry of a point object

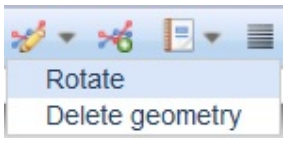
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Modifying the location of a **point object**, such as a manhole, is carried out in the same way as for line objects, the only difference being that there is only one point. Click **Modify** to highlight the modified object in red on the map. When you position your mouse **over the object**, the mouse pointer changes from an arrow to a cross. Click the object with the left mouse button and **hold the button down** while moving the object to a new location. Release the mouse button. Click **Save form** to save changes.



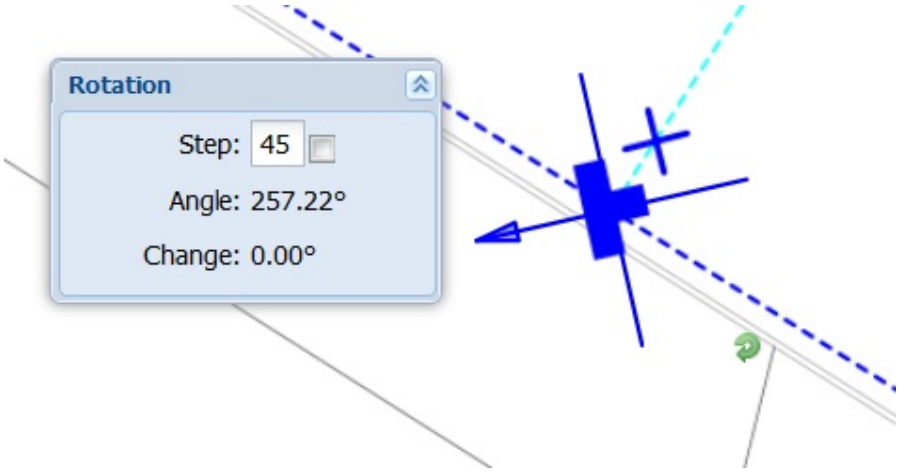
Rotating a point object

It is possible to rotate the symbol of point objects (manhole, valve, node and point object) on the map. You can select the rotation angle of an object by selecting **Rotate**. Click the **Save form** button to save the new rotation angle of the object.



When you click **Rotate**, a **Rotation** form is displayed. You can enter the required angle in the field on this form. You can use the form to define the **steps** as degrees. If Steps is selected, the rotation angle of the selected object changes in steps when you rotate the object. **Angle** displays the rotation angle of the object. You can rotate an object by grabbing the symbol next to the object on the map. Click **Save form** on the form to accept the rotation angle. If you do not want the object to have a rotation angle, cancel it with the right mouse button.

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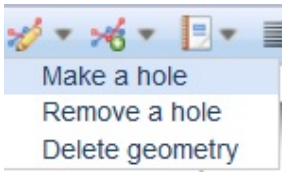


Modifying the geometry of an area

You can modify the geometry of an **Area** (Area, Plan) by clicking **Modify** on the object form. The points of the area are highlighted, and they can be dragged using the left mouse button. To create a new point, click the dimmed square in the middle of a straight line and drag it to a new location. Click **Save form** to save changes.

Digitizing a hole in an area object

1. In the drop-down menu for **Modify** , select **Make a hole**.



2. Within the area, draw a hole that has the required shape.



When you stop drawing, the form is saved and the hole has been created in the area.

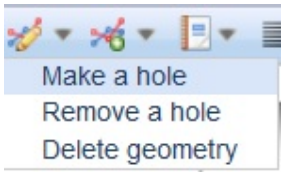
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Removing a hole in an area

1. In the drop-down menu for **Modify** , select **Remove a hole**.
2. Click the hole you want to remove.
3. Confirm the removal.

Deleting the geometry of an object

You can find the **Delete geometry** function in the drop-down menu next to **Modify** . This function deletes the geometry of the selected object making the object disappear from the map. The property data for the object is not changed.

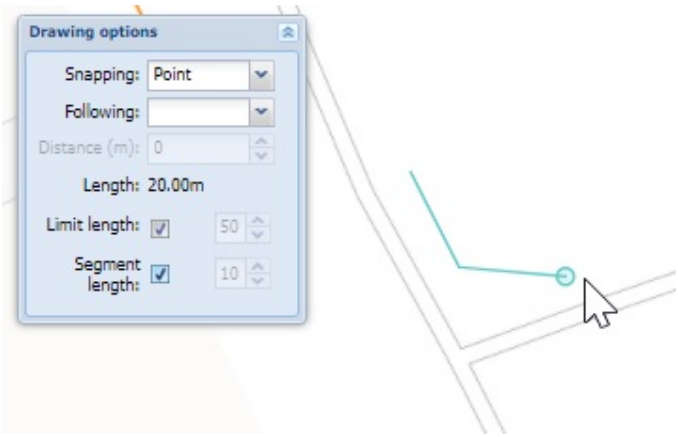


Creating a new object

Create a new object by specifying its location, that is its geometry. Click Create to do this. Always select the correct object form. For example, use the Conduit form to create a new conduit, and the Manhole form to create a new manhole. You are usually required to provide at least some **mandatory information** on the form before you can create an object. You can add other object data either before or after creating a new object. Save the object data by clicking **Save form** .

Click the **Create New** button to open the **Drawing options** form. This form lets you configure various settings related to drawing an object. The drawing settings of both **point objects** and **line objects** include **Snapping**, and you can choose whether the object you create snaps to another object's point or the nearest point. The settings for line objects also include **Following**. You can follow either Completely or Partially. Further information on following and snapping to objects is available in the Snapping and following (settings for drawing and modifying) chapter. The settings for **Drawing** vary, depending on the object that is drawn. In general, line objects have more setting options than point objects.

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Creating a new line object

The drawing settings for **line objects** include the option **Following**. You can use this function, for example, when you digitize a cable to go through a conduit. When you have selected the option **Completely** for **Following**, point at the starting point of the conduit to have the line object you create follow through all the points of the conduit and to continue digitization from the ending point of the conduit. However, if you want to follow the conduit only partly, you can select the Following option **Partially**. This lets you follow the conduit to the required point, after which you can continue digitizing freely. If you want to follow an object in parallel within a specific distance, specify **Distance** in the drawing settings.

Start creating the geometry of a **line object** by clicking the required starting point on the map using the **left mouse button**. Next, digitize the required **points** one by one by clicking the left mouse button at the relevant locations. Finally, end the digitization by **first clicking the left mouse button and then the right mouse button**. The object's location and property values are automatically saved in the database.



A new conduit can be connected to a manhole, for example, already when it is created. When digitizing a conduit, the **Snapping** function is used. That is, hold down the Shift key while clicking with the left mouse button at the manhole. This makes it possible to connect the conduit to the object, and a text is displayed in the bottom bar: **Snapping completed.** If the text **Snapping – not snapped** is displayed at the bottom of the display, you have tried to connect the conduit to an object it cannot be connected to.

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If a cable is created to an existing conduit, you can also snap to the points of the conduit. In this case, the conduit and cable are located in exactly the same place. When the **Snapping** function is active, the mouse pointer on the map is displayed as a light-blue circle. End digitizing the cable by first clicking the left mouse button and then the right mouse button at the location where the cable ends. The cable's location and property values are saved in the database.



Creating a new point object

Create a new **point object** by clicking the **left mouse button** at the required location on the map. The program automatically saves the geometry of the object in the database. If saving succeeds, the following text is displayed at the bottom of the object form: **Saved successfully**. The object's location and property values were saved in the database. The **rotation** function for a point object is activated immediately after the object has been created. A blue compass symbol appears over the object, indicating the rotation angle of the object. If you want to modify the object's rotation angle, grab the symbol using the left mouse button and rotate it to the required angle.

An object can also be placed on the map based on coordinates. First, deselect the **Coordinate reading on/off** checkbox in the bottom right corner of the map view and enter the coordinates for the required location. Then, click the button to create a new object on the map in the desired location. **Save form.**

Creating new objects by using existing objects

You can create new objects based on the location of and property information on existing objects. Retrieve an object's information to the form, for example, by picking an object from the map. After this, either

1. click **Create** to create a new object based on the object information retrieved to the form. The program calculates the length of a line object based on the geometry of the new object.

OR

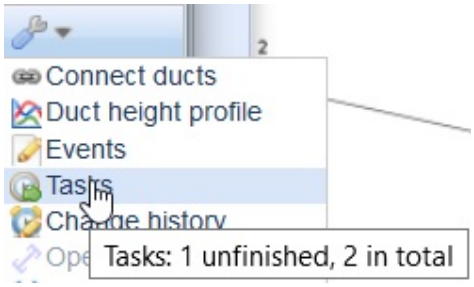
1. In the drop-down menu for **Save form** , click **Save as copy**. A copy of

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the active object is saved on top of the existing object. This is a useful function, for example, when the same location is used for saving several conduits.

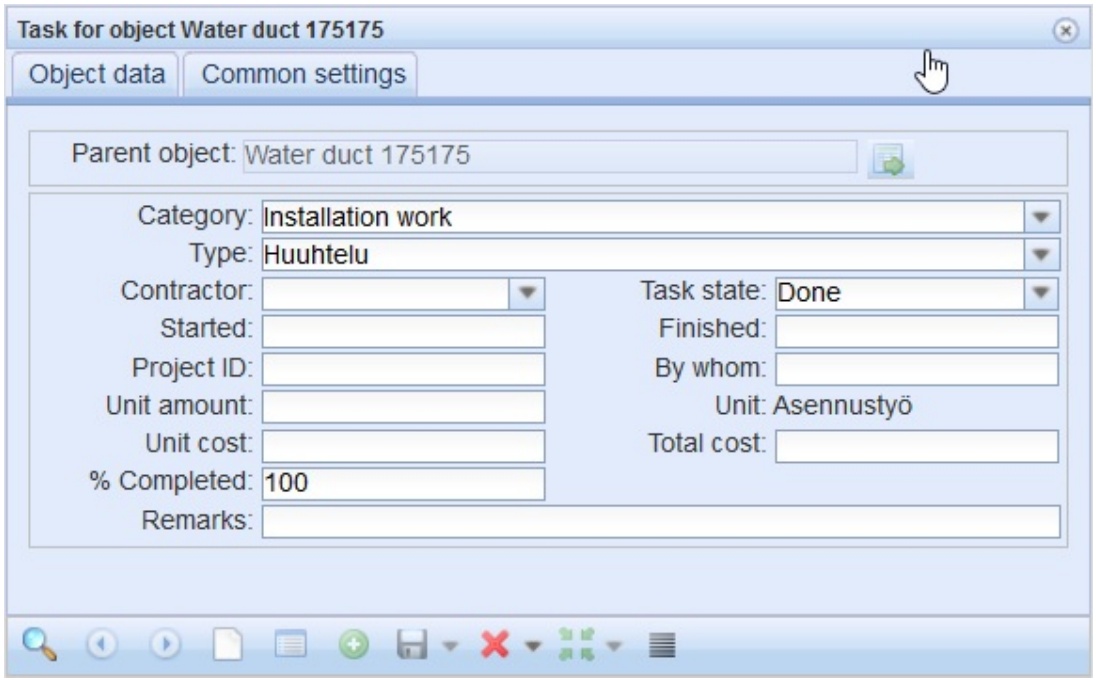
Related tasks

An object may have related **tasks**. Check the status of tasks by positioning your mouse pointer over **Tasks** . The tooltip indicates the number of tasks and the number of unfinished tasks. This button is included either in the toolbar or in the menu for the Tools button.



Adding a task for an object

1. Open the task list for an object by clicking **Tasks** .
2. Click **Add task** to open the **Task** form with the **Parent object** information pre-completed on the form.



1. Fill in the form fields. **Type**, **Task state**, and **Unit amount** are mandatory

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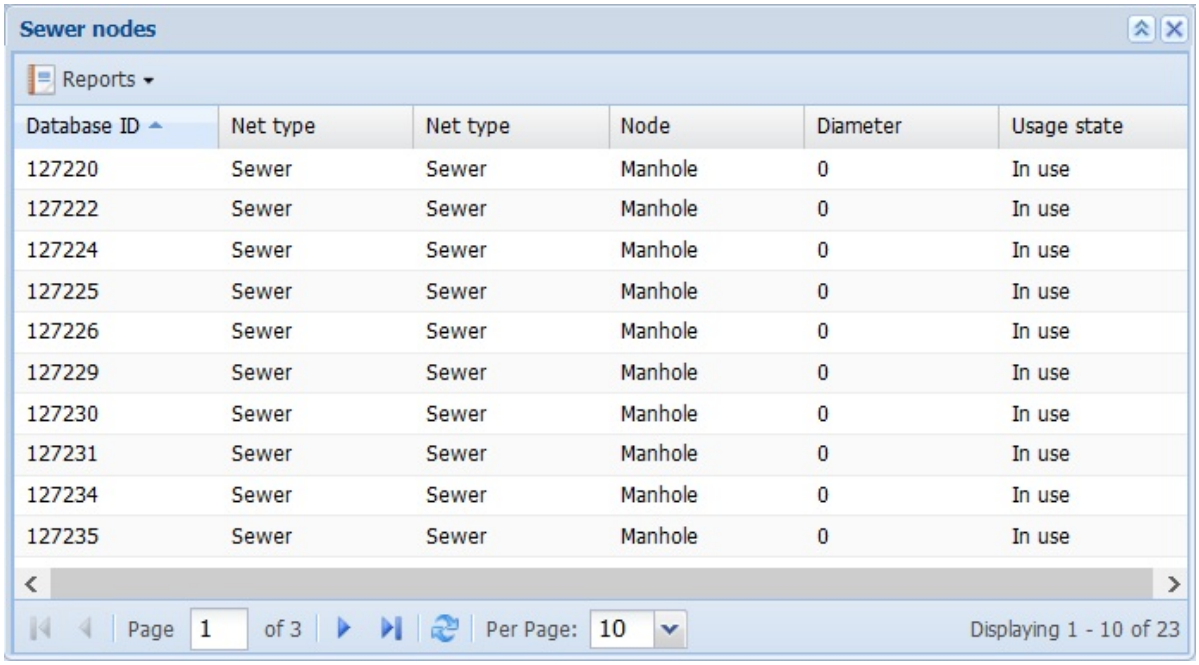
fields.

2. Click **Save form** on the object form to save tasks. The task list for the object is updated with the new task.

The **Task** form is discussed in the chapter Tasks.

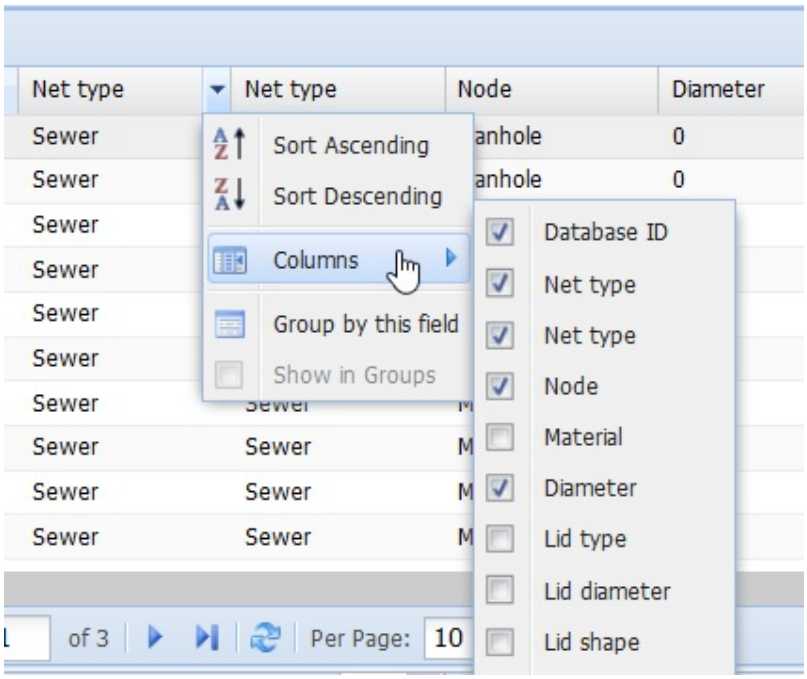
List

Many object forms include a **List** button. You can use it to view the search result objects in a list view. You can use this function to quickly browse through objects. The number of objects displayed on one page can be modified using the **Per page** selection. Use the arrow buttons to navigate the pages.



To view the tools related to the list, position your mouse pointer over the header field of a column. This displays a drop-down menu for the selected field . In this menu, select the fields you want to include in the list view.

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The menu includes an option for sorting the list based on the selected field either in ascending or descending order. The **Columns** function lets you select the columns that are displayed in the list view. The lists include the typical information for the object type as default data. The **Group by this field** function groups the list contents based on the selected field. The grouping can be cancelled by deselecting the **Show in groups** checkbox in the drop-down menu.

You can open a listed object displayed on the form by clicking the object with the right mouse button and selecting **Edit selected**. To select several objects, hold down the Shift or Ctrl key while selecting.

You can use the **Reports** function to create reports on the listed objects. The report includes the same information as the list.



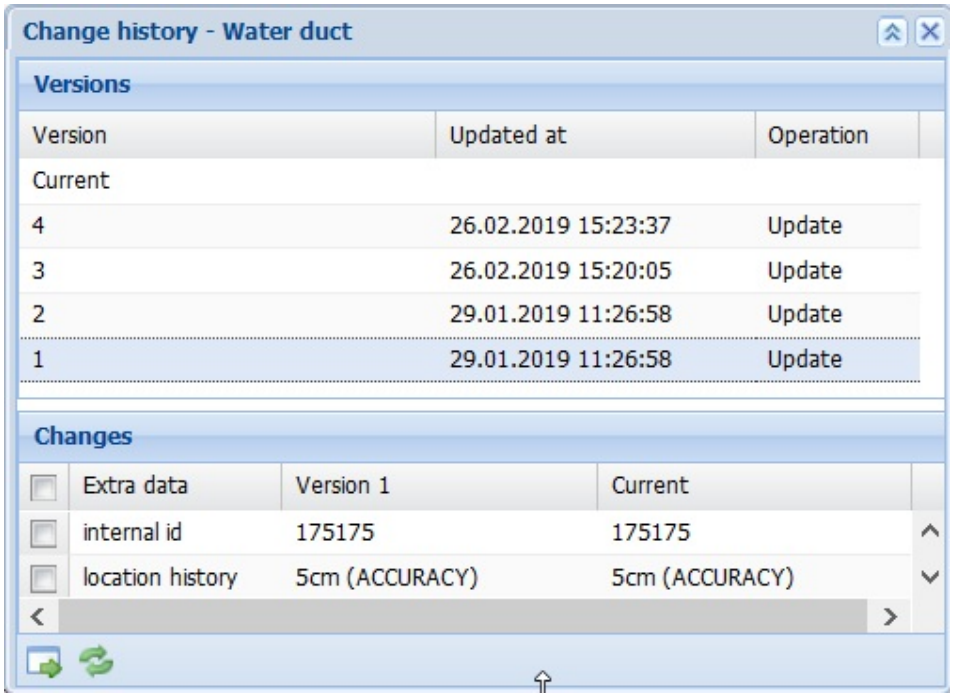
Show in group display

In the drop-down menu for **List** , select **Show in group display** to move the current search results from the form to a group display. Group displays are discussed in more detail in the chapter Group display.

Change history

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To view the change history of the object on the form, select **Change history** in the drop-down menu for Tools. The top section of the displayed form lists the various object versions, while the bottom section displays the changes made to the selected version.



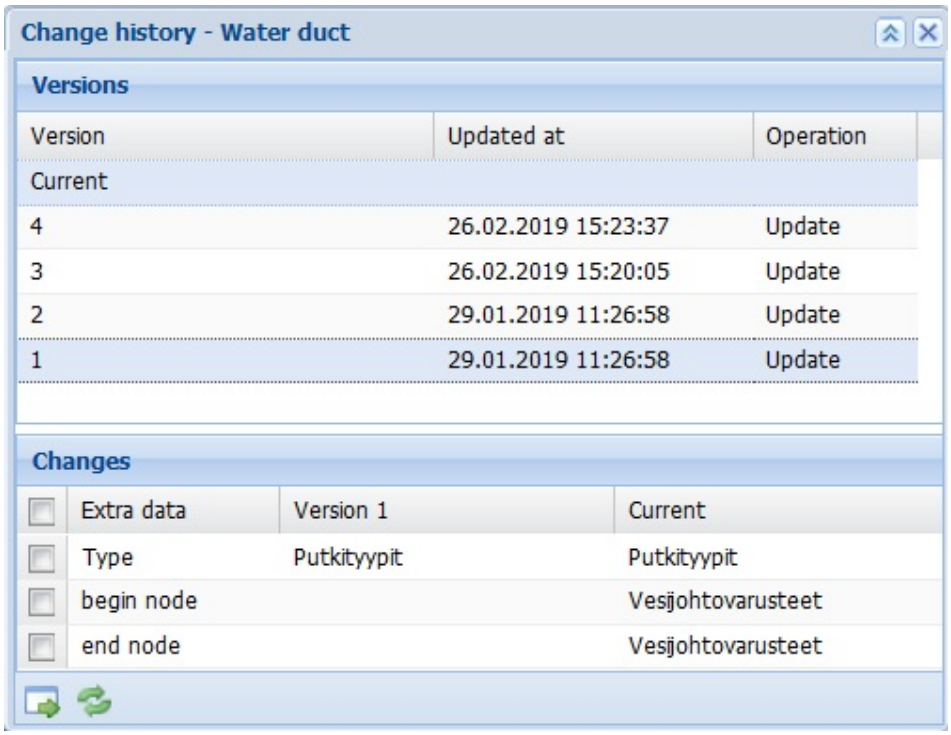
Restoring the values of an object

1. In the **Versions** section, select the row that you want to restore.
2. In the **Changes** section, select the checkboxes for the rows that you want to restore.
3. Click **Restore** to update the selected information on the object form.
4. Click **Save form** on the object form to confirm the changes.

Comparing object versions

In the **Versions** list, select the rows for comparison to see, in the **Changes** list, the current version in addition to the selected versions.

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Reports from object forms

Reports can be created from forms, lists, and the main toolbar. Creating a report on objects that are included in a list of search results is discussed in the List chapter. The reports related to the main toolbar are discussed in the chapter Reports. Click **Export** to open the **Reports** menu for object forms.

You can create various types of reports in the system. The information on the search results displayed on the form is used to create a report. For example, a **Bill of materials** can be generated from an Info form and is generated from search results. The report can also be created from the Plan form. You can save the report as a file or open it directly in Excel.



Entering a date

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Many object forms include date as a property attribute that can be used, for example, to define when a survey was carried out. Adding a date has been standardized using a calendar, so that the same format is always used when dates are entered in the database. This makes it possible to search the database with date as a search criterion, as search results are then not incomplete due to dates entered in various formats.

Position the mouse cursor over the **Date** field and click the left mouse button to open the calendar window. The current date is selected as default. You can browse through months using the arrow buttons at the top of the calendar window. You can browse through years by clicking the year on the right or left. To select a date, click the correct day using the **left mouse button**. The calendar window is closed, and the selected date is displayed in the **Date** field.





Managing address and apartment information on object forms

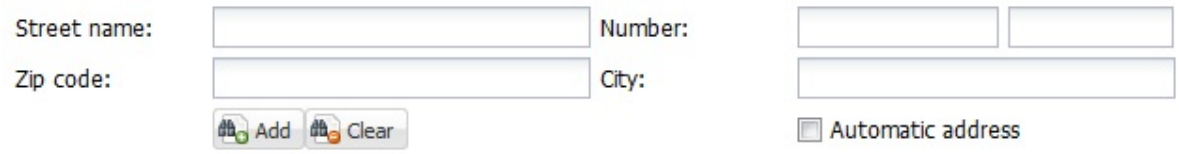
To add address information on an object form, retrieve the information from the database or use the **Autom.** option. When addresses are retrieved from a database, addresses contain no spelling errors and they can be used as one search criterion.

Click **Address** on the object form to open the Address form. If an address has already been added for the object, the Address form displayed includes that address as a default address. If an address has not been added for the object, the Address form displayed contains no information. When you **search for an address in the database**, you can use the following **search criteria**: street name, number, zip code, or parts thereof with **%** used as a wildcard character. Click **Search** to start your search. The search function has been described in more detail in the chapter Adding an address in the database.

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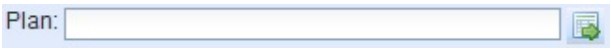
Use the arrow buttons to browse through the search results. When the correct address has been found, you can import it to the object form from which the Address form was opened. Click **Update to form** to do this. You can also locate an address on the map by clicking **Locate** to center the map on the address location.

Automatically adding an address works when the **Autom.** check box is checked and you click the **Save** button. The nearest address is used and the distance to the nearest address is displayed at the bottom of the display.



Using the predictive search field

Some forms have a predictive search field that is used for connecting one object to another object, such as to an **Area** or a **Plan**.



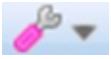
1. Enter in the predictive search field at least the first three characters of a name/identifier.
2. From the displayed search results, select an object or continue typing to limit the number of options.

If you do not know the name/identifier:

1. Click **Edit** to open the object form.
2. Retrieve the correct object to the form by clicking **Search** or **Pick** .
3. When the correct object is displayed on the form, click **Update to form** .

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DISTRICT HEATING NETWORK OBJECTS

The forms for managing the district heating network are opened by clicking the **KeyHeat**  button on the top bar.

District heating conduit

District heating manhole

District heating valve

District heating node

District heating cable

Network area

DH Annotations

Network follower

Observation

Node ducts and elevations

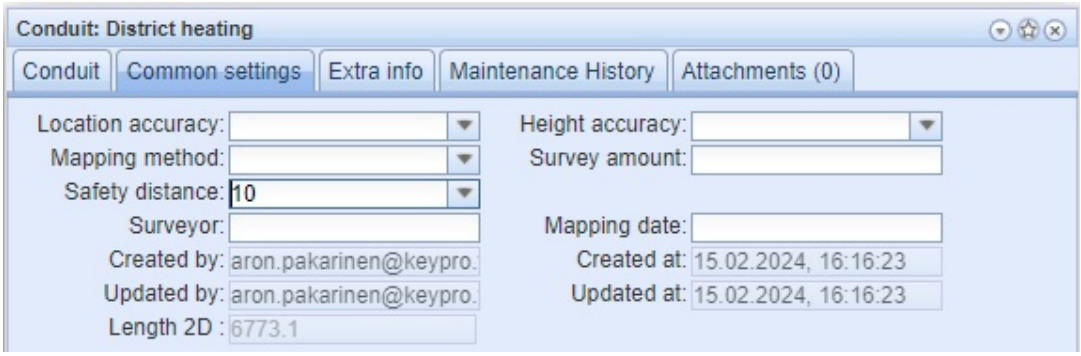
Form tabs

The first tab of the form for each network object (valve, manhole, node, cable, conduit) contains the object's property and location information that will be presented in the following paragraphs.

Common

On the **Common** tabyou can provide information about mapping and the accuracy of location and elevation. The tab automatically stores information about the saving and updating the object. The tab is the same for all network object forms.

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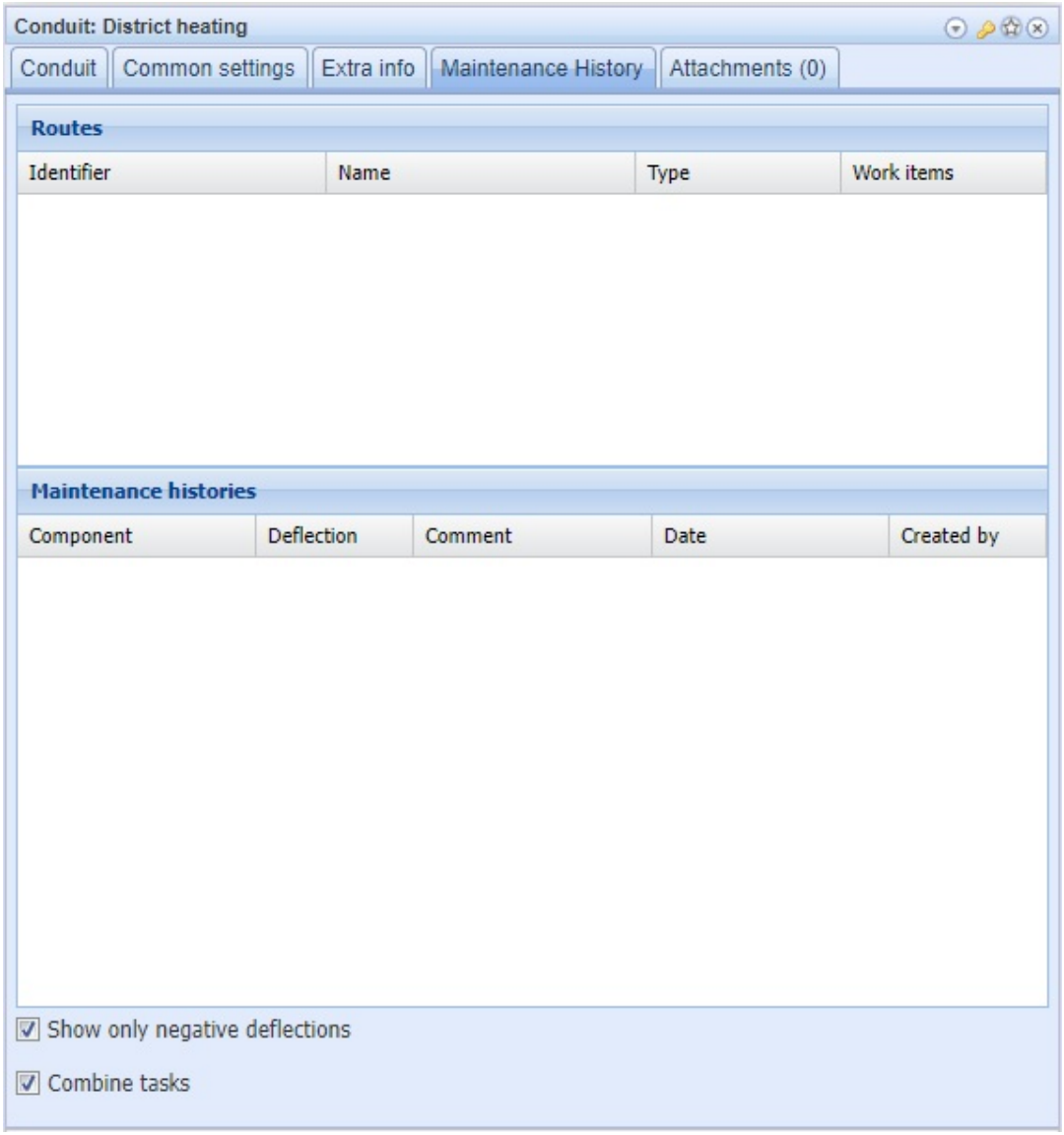
Maintenance history

The forms for district heating network objects have the **Maintenance history** tab showing the maintenance work performed on the object. If KeyHeat is integrated with the work management system, the work management routes and their data are shown in the **Routes** section of the Maintenance history tab.

The **Maintenance history** section presents information related to components, if they have been added to the network object in question in the work management system.

The **Show only negative deflections** dialog displays only observations in the Maintenance history section that are so-called fault entries. For example, if a **Manhole cover** observation is annotated with **Missing**, it is a fault entry. The **Show only negative deflections** dialog can be used to distinguish between observations that necessitate additional action.

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Other

The **Other** tab displays the so-called free-form property attributes. The following forms allow free-form property attributes to be added to objects:

- Conduit
- Cable
- Manhole, Valve, Node
- Network area

You can use the free-form property attributes when searching for objects, and they can be included in the **List** function and its report. The **system's admin user** can freely configure the free-form property attributes, name them, and select the data type to be applied (text, number, date).

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Attachments

On the **Attachments** tab, you can add or delete documents and photos associated with an object. On the tab, you can export the attached documents to a **Zip file** and edit them later with the **Modify** function, which takes you to the External documents form. For more information about attachments and external documents, see **KeyAqua** Help.

Extra data

On the **Extra data** tab, you can save free-form text. It is also possible to use the **Manhole** form to store the address of the manhole either automatically or by retrieving it from the Address form.

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District heating conduits

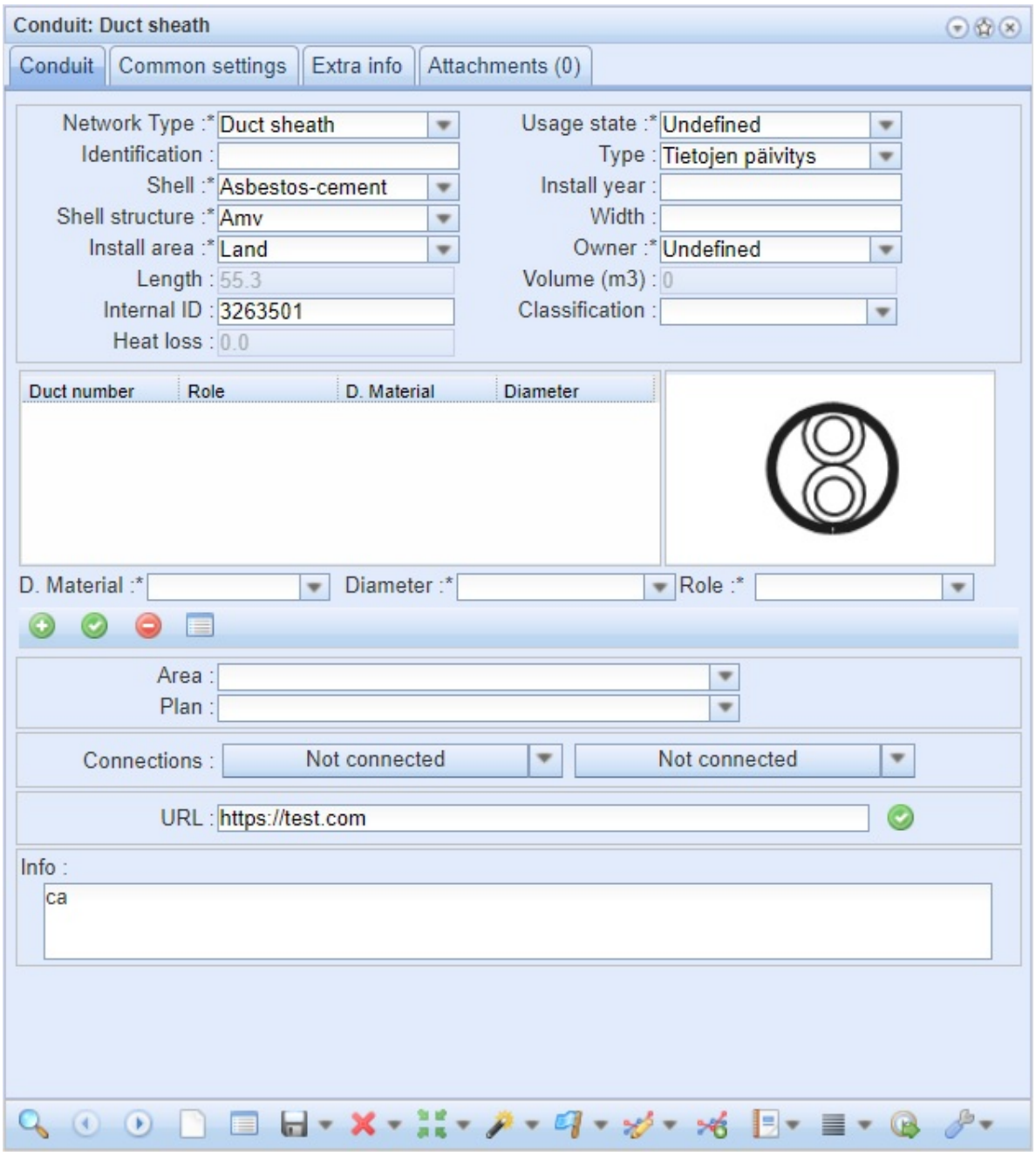
The form for managing district heating conduits is opened with the **District heating conduit** button.

The Conduit form

The District heating conduit form can be used to retrieve or update information about conduits and add new ones. When creating a new conduit, you must first fill out at least **the required property information** on the form. Required fields are marked with an asterisk (*) on the form. The **Shell structure** option is shown in a graphical format on the form. The value generated in the **Heat loss** field is based on the shell structure and the size of the duct.

You can add information such as accuracy of location on the **Common** tab, while the **Extra data** tab can host free-form text.

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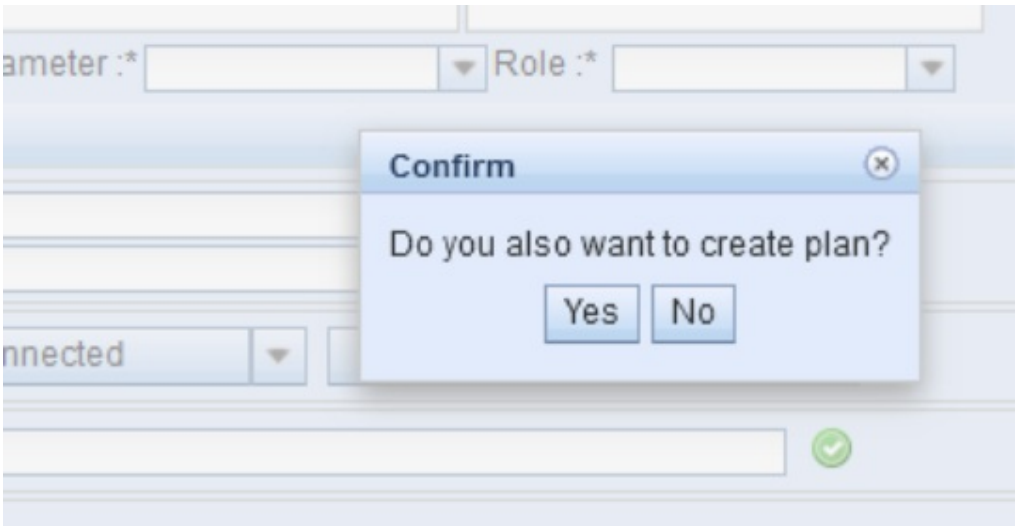


The system allows creating a new plan automatically when creating a new conduit. A buffer area of the plan is created around the conduit and is linked to that conduit. After saving or creating a geometry for the conduit the pop-up window will appear where you can decide whether to create the plan or not.

The new plan will copy **Identification**, **Network Type, Type, Usage state** and **Install year** from the **District heating** form. If you decide to **split** the conduit, the plan will be then linked to both new conduits.

NOTE! This function does not apply when updating an existing conduit!

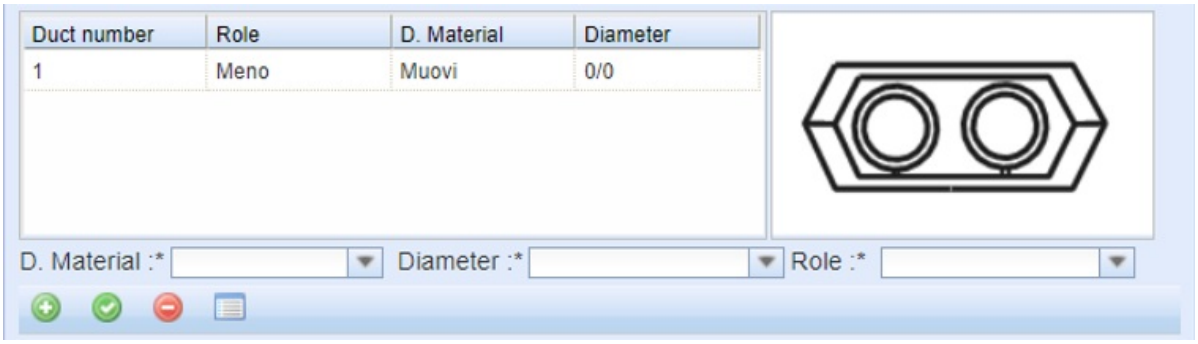
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Selecting outlet and inlet ducts

Outlet and inlet ducts must also be selected for the conduit before the conduit is placed anywhere. To do this, select **Material, Diameter,** and **Role** information from the drop-down menus. You can also search existing conduits by first choosing the options form the drop-down menus and then clicking **Search** button from the toolbar. The role refers to either an output, input, or protective duct. To store the selected data in the database, click the **Add duct** button. You can also select the data with the **Duct defaults** button, which will show the data of the default ducts on the form and save it in the database.

To change duct data, first select the data of the desired duct by left-clicking it and then select the desired data in the drop-down menu. Click the **Update duct** button to save the data in the database. To completely remove a duct from the database, select its data and then click the **Delete duct** button.



Digitizing conduits

When creating a new conduit, it is possible to snap to manholes, i.e., connect the conduit to them.

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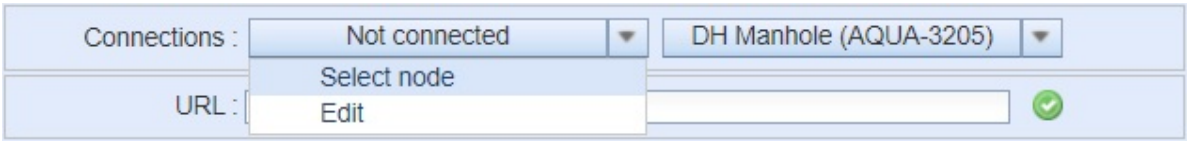
After filling in the required data, click **Create new** to create an object on the map. The **Drawing options** window appears. To automatically place the conduit start and end at the same location as existing objects, use the **Snapping** function in the **Drawing options** window. To do this, **hold down the Shift key on the keyboard** when clicking the left mouse button **on the manhole**. If snapping was successful, the bottom bar will read: **Snapping completed.** If the bottom bar reads: **Snapping failed**, it is not possible to snap to the object in question. When the Snapping function is active, the mouse pointer is shown as a light-blue circle.



You can also use the **Following** function in the Drawing options window to follow existing objects either partially or fully. Finally, end the conduit digitization by first **clicking the left mouse button** at the end point of the duct and then the **right mouse button**. If the end of the conduit is also placed in the same position as an existing manhole, hold down the Shift key, click the left mouse button, and then click the right button. The conduit's location and property values are saved in the database.

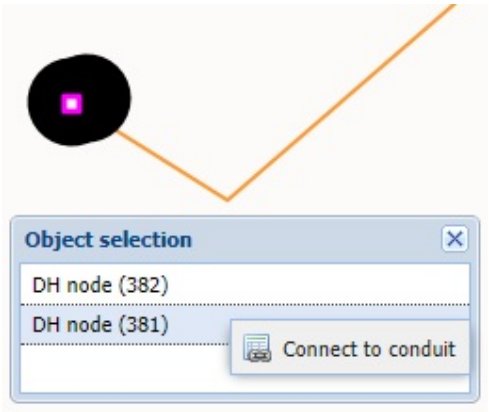
Connecting a conduit

A conduit's connections to manholes are displayed at the bottom of the form. A conduit can be connected to a manhole **at both ends or only at one end**. If the conduit is connected, the menu text shows the manhole and possibly its ID, otherwise the mode is **Not connected**. You can access the connections in the drop-down menus. Click **Disconnect** to disconnect a connection. When this has been successfully carried out, you can see the following text at the bottom of the form: **Conduit successfully disconnected**. Select **Modify** to **open the form for the manhole** in question. You can then view its information or locate it on the map.



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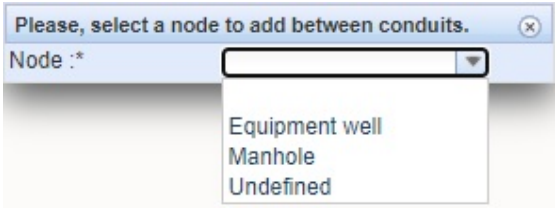
To connect a conduit, click the **Select node** option and then select the manhole to be connected **on the map**. If the selection is made from the first drop-down menu, the program automatically assigns the beginning of the conduit as the default object of the connection.



Correspondingly, if the selection is made from the second drop-down menu, the program automatically assigns the end of the conduit as the object of the connection. Confirm your selection by pointing at a location using the **left mouse button** or select another manhole. The selection can also be made by cropping the area with the left mouse button. Regardless of the method of selection, the **Object selection** window appears after selecting. Click a manhole with the left mouse button to select the manhole on the map. This makes it easier to select the correct manhole. Create a connection by clicking the node with the **right mouse button** and then select **Connect to conduit**. If the connection succeeds, the following text will be displayed on the form: **Conduit connected successfully**, and the details of the manhole appear in the **Connections** menu.

Splitting conduits

It is possible to split a conduit by using the **Split** function on the **Modify** menu. When you click the **Disconnect** button, a dialog opens where you select the node you want to add to the split.



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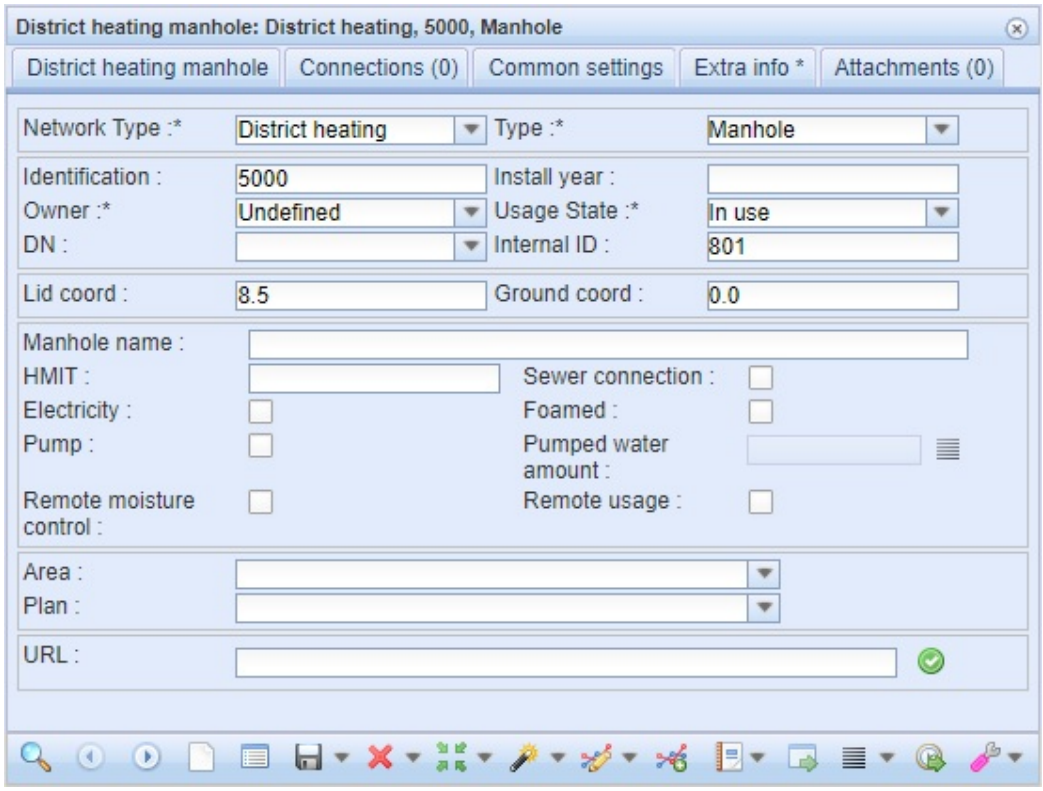
When the desired node is selected, the program asks you to indicate the conduit's split point. Splitting is done by taking the mouse pointer to the desired position on the conduit and then clicking with the left mouse button to accept the split. The program then performs the split and adds the previously configured node to the split point. The split conduit is automatically connected to the node, so it is not necessary to do the connection separately.

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District heating manholes

District heating manhole form

The form for managing district heating manholes is opened with the **District heating manhole** button. When creating a new manhole, you must first fill out at least **the required property information** on the form. Required fields are marked with an asterisk (*) on the form.



Digitizing manholes

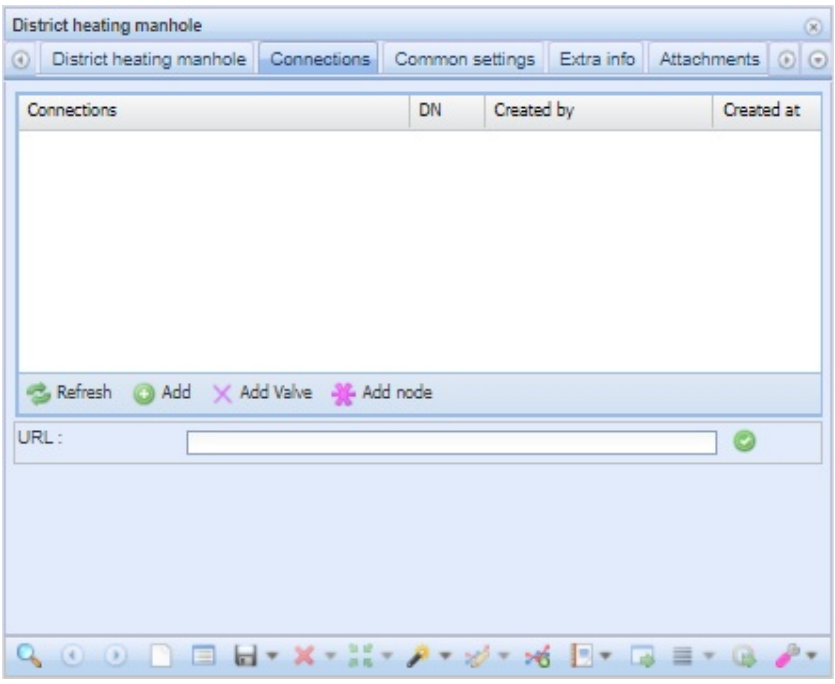
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After completing the required fields on the form, click **Create new** to create the object on the map. When you click the button, the **Drawing options** dialog is displayed. The manhole is created either by pointing its position on the map, or by using the **Snapping** function in the **Drawing options** window. The **Snapping function** is used to place the manhole at the same position as another existing point object or a point of a line object. To do this, **hold down Shift** when clicking the left mouse button **on the object or point**. When the Snapping function is active, the mouse pointer is shown as a light-blue circle. If snapping was successful, the bottom bar will read: **Snapping completed.** If **Snapping failed** is shown at the bottom bar, it is not possible to snap to the object in question. The manhole's location and property values are automatically saved in the database. You can then enter other property values for the object and update them in the system by clicking **Save**.

Tip: You can **connect the manhole to an address on the Extra data** tab. You can also record other information related to the object in the additional information.

Manhole connections

The **Connections** tab displays information about the connections of the manhole. On the tab, you can connect the manhole to a valve or node. The title of the **Connections** tab shows the number of connections made.



There are two ways to connect a valve or node, on the map or using a form:

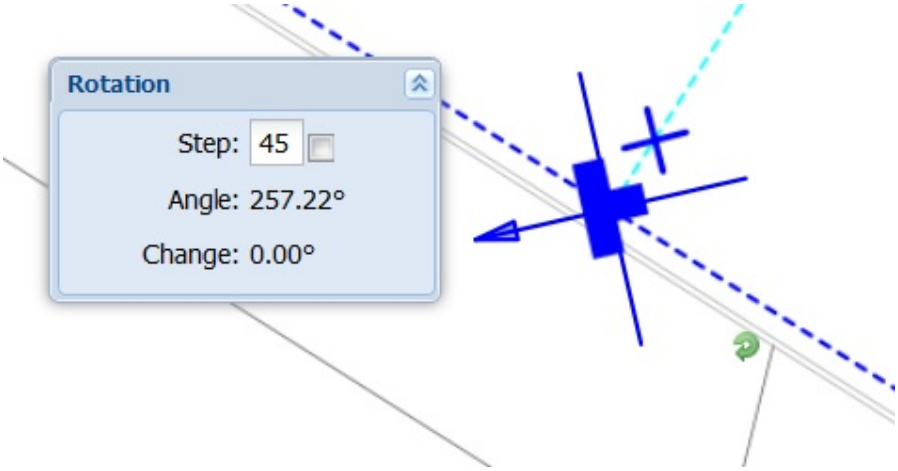
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1. Select **Add** to select a node or valve on the **map.** If more than one object resides in the area you are cropping, double-click to select the right object from the list box that opens.

Or:

1. Click **Add valve** or **Add Node** , to open the **form** for the selected object. Fetch the correct object to the form and, on the Other tools menu, click Connect manhole on form, as guided by the program.
2. If necessary, update the list with the **Refresh** function.
3. In the **URL** field, you can enter the network address associated with the connections. To open the URL, click the **Open URL** button.

Changing the rotation of an object



The rotation of a district heating manhole can be changed using the **Rotate** function. The Rotate window opens automatically when you create a new object and when using the **Rotate** function in the **Modify** tool's drop-down menu. A blue cross is shown on top of the object you are editing, illustrating the angle of rotation of the object. You can grab the rotating arrow and move it to the desired angle. Click **Save** on the form to save changes. In the **Rotate** dialog, you can turn on **Steps** by checking that checkbox. Use this feature if, for example, you want to rotate an object in exactly 45-degree steps.

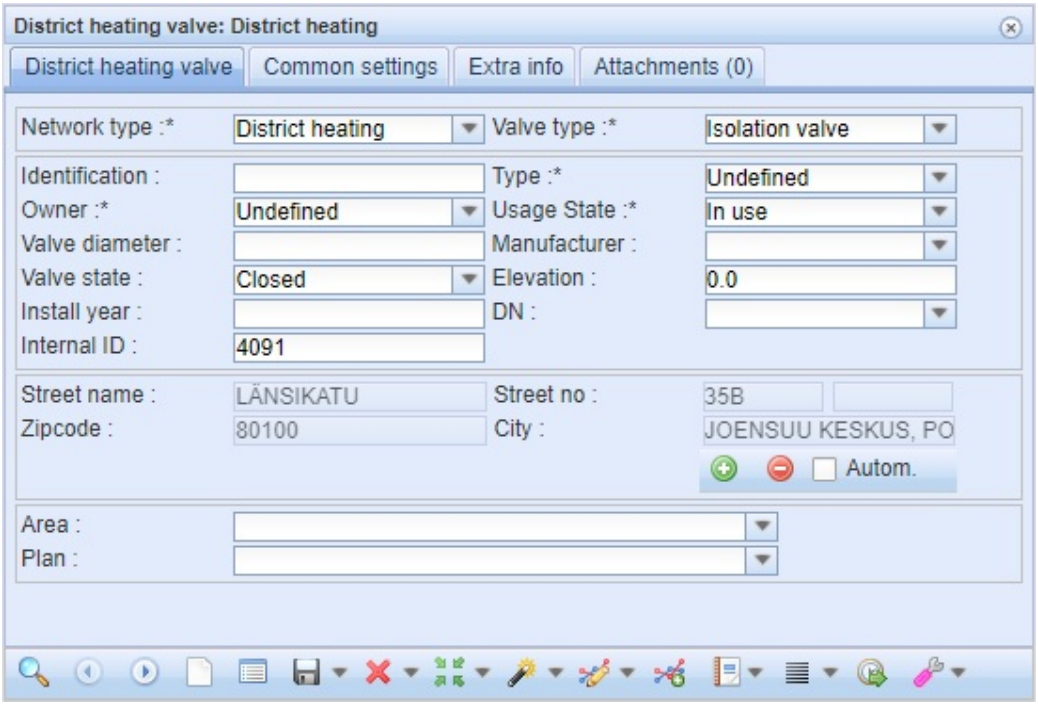
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District heating valves and nodes

District heating valves form

The **District heating valve** form can be used to retrieve or update information about valves and add new valves.

The form for managing district heating valves is opened with the **District heating valve** button. When creating a new valve, you must first fill out at least **the required property information** on the form. Required fields are marked with an asterisk (*) on the form. After completing the form, click **Create new** to create the object on the map. When you click the button, the **Drawing options** dialog is displayed.



Digitizing valves

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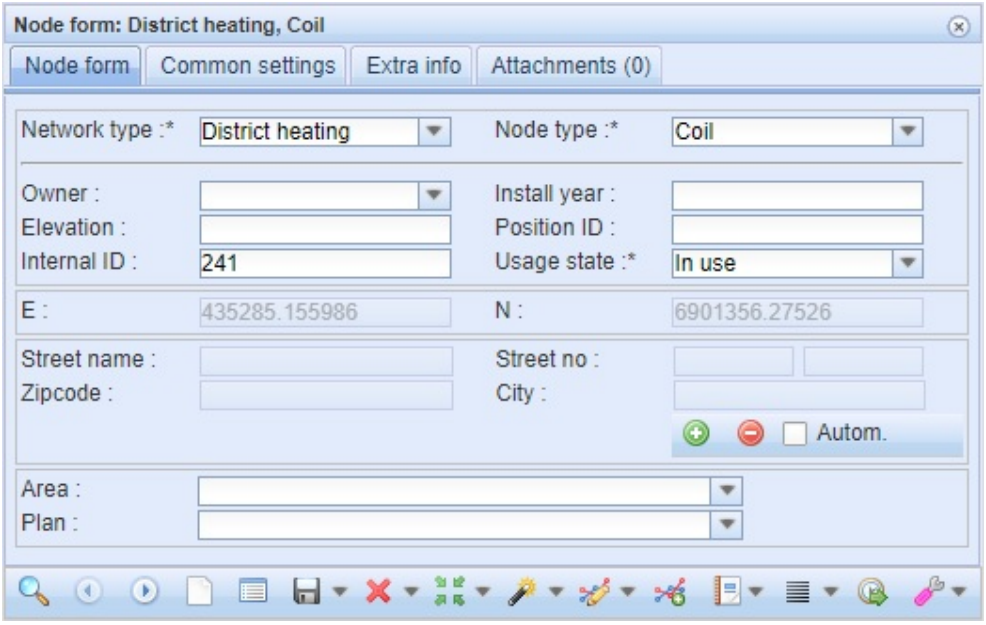
A new valve is created either by pointing its position on the map, or by using the **Snapping** function in the **Drawing options** window. The **Snapping function** is used to place the valve at the same position as another existing point object or a point of a line object. To do this, **hold down Shift** when clicking the left mouse button **on the object or point**. When the Snapping function is active, the mouse pointer is shown as a light-blue circle. If snapping was successful, the bottom bar will read: **Snapping completed.** If the bottom bar reads: **Snapping failed**, it is not possible to snap to the object in question. The manhole's location and property values are automatically saved in the database. You can then enter other property values for the object and update them in the system by clicking **Save**.

You can adjust the angle of rotation of district heating valves in the same way as with district heating manholes. This is done with the **Rotate** function. The **Rotate** window opens automatically when you create a new object and when using the **Rotate** button in the **Modify** tool's drop-down menu. The use of rotation is described in Changing the rotation of an object.

District heating nodes

Node form

The **District heating node** form is used to manage nodes in district heating or district cooling networks other than valves and manholes. The form can be used to digitize network nodes, such as reels, ground rods, and portals. The functionality of the form is consistent with the manhole and valve forms.



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Connecting and digitizing a node

You can connect a **node** to a manhole with the **Connect manhole on map** or **Connect manhole on form** options in the **Other tools** menu.

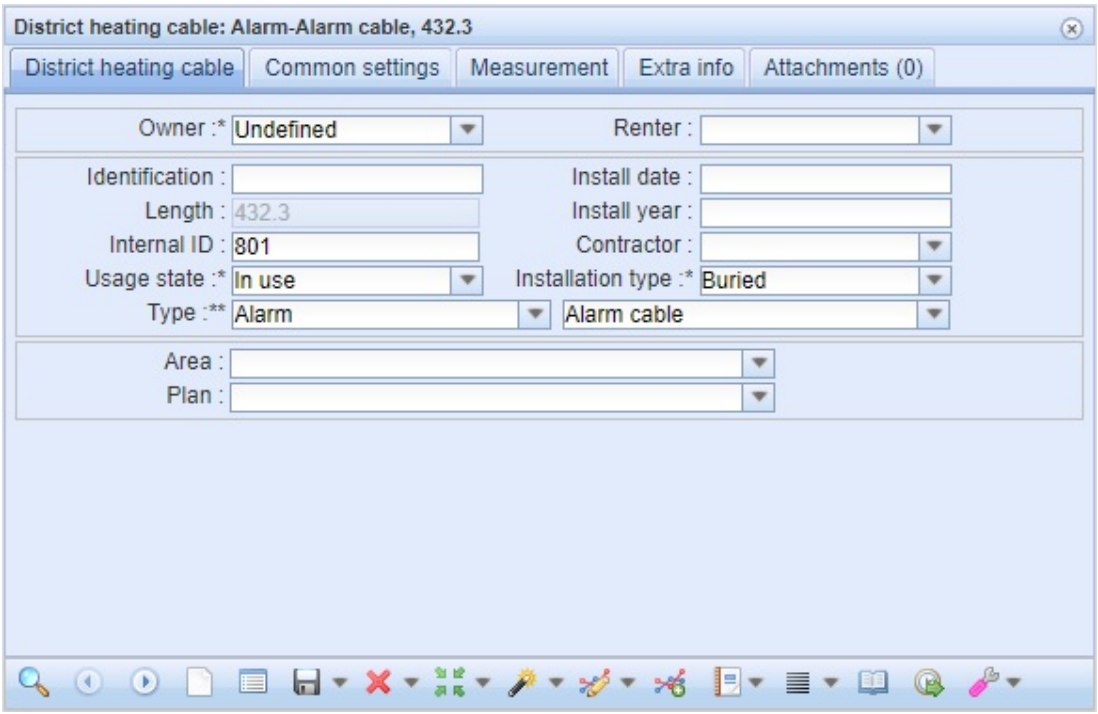
A node is digitized in the same way as other network point objects (Digitizing manholes, Digitizing valves).

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District heating cables

District heating cable form

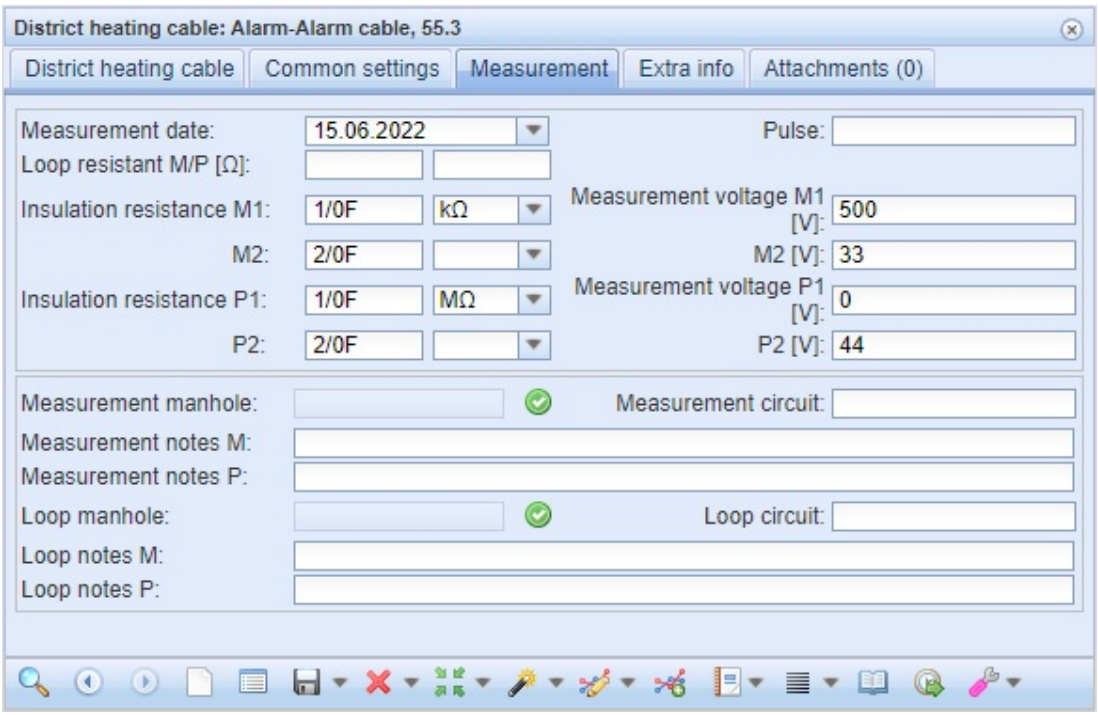
The **District heating cable** form can be used to retrieve or update information about cables and add new ones. The form for managing district heating network's alarm cables is opened with the **District heating cable** button. The creation of a new cable starts with filling in the required information on the form. Required fields are marked with an asterisk (*) on the form. After completing the fields on the form, click **Create new** to create the object on the map. The **Drawing options** window will appear.



Cable measurements

The **Measurements** tab displays information related to cable measurements.

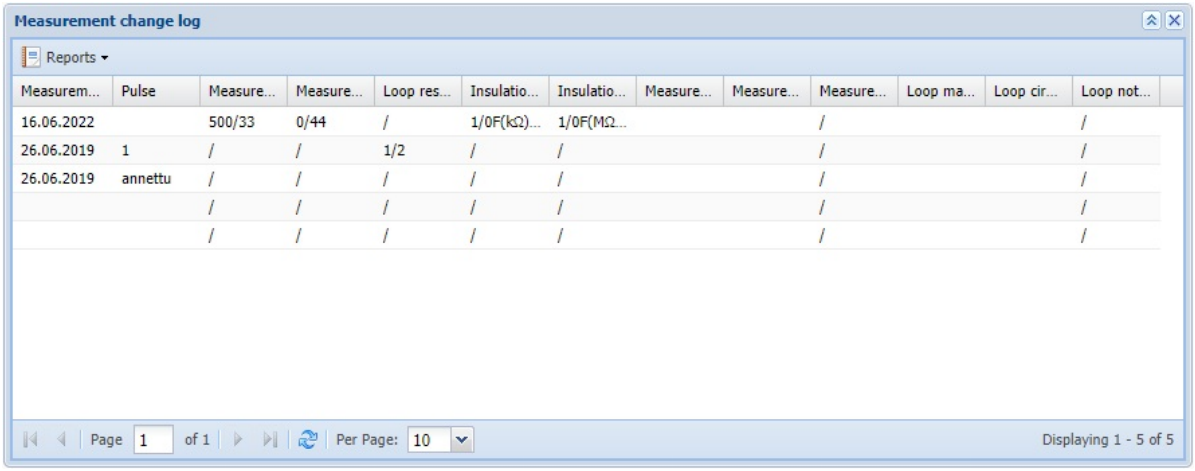
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To save measurement data, complete the required fields and click **Save**. You can use the **Open manhole** buttons to view information about the measurement and looping manholes.

Note! Whenever you save information on a tab and click **Save**, the information is stored in the **Change Log**.

Click the **Measurement log** button to open the **Measurement change log** form, which provides a list view of the measurements saved.



To generate an Excel report from the change log, click the **Reports** – **List Report** button.

Digitizing cables

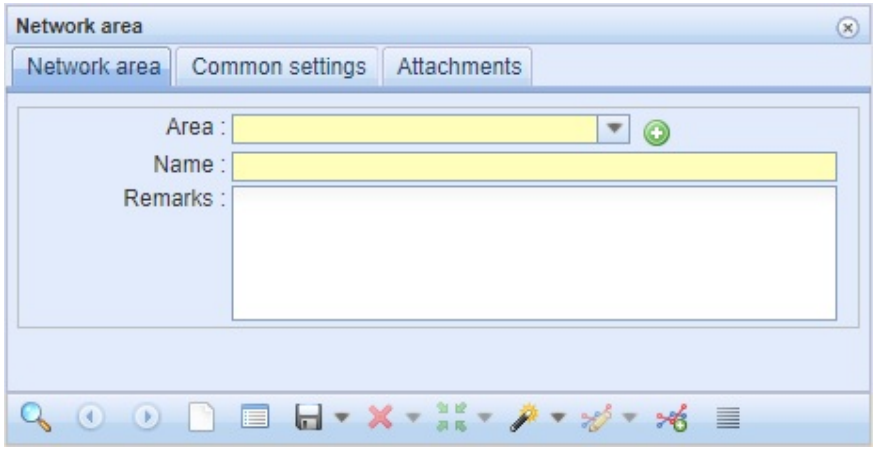
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Cable are digitized on the map in the same way as district heating conduits. To automatically place the cable start and end at the same location as existing objects, use the **Snapping** function in the **Drawing options** window. To do this, **hold down Shift** when clicking the left mouse button **on the desired object**. If snapping was successful, the bottom bar will read **Snapping completed**. If **Snapping failed** is shown at the bottom bar, it is not possible to snap to the object in question. You can also use the **Following** function in the **Drawing options** window to follow existing objects either partially or fully. Finally, end the cable digitization by first **clicking the left mouse button** at the end point of the duct and then the **right mouse button**. If the end of the cable is also placed in the same position as an existing object, hold down the **Shift** key, click the left mouse button, and then click the right button. The cable's location and property values are saved in the database.

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NETWORK AREA

Use the **Network area** form to divide your network into different areas and assign their map locations.



You can assign various network elements to a network area using their respective forms by filling in the details of the network area in the **Area** field.



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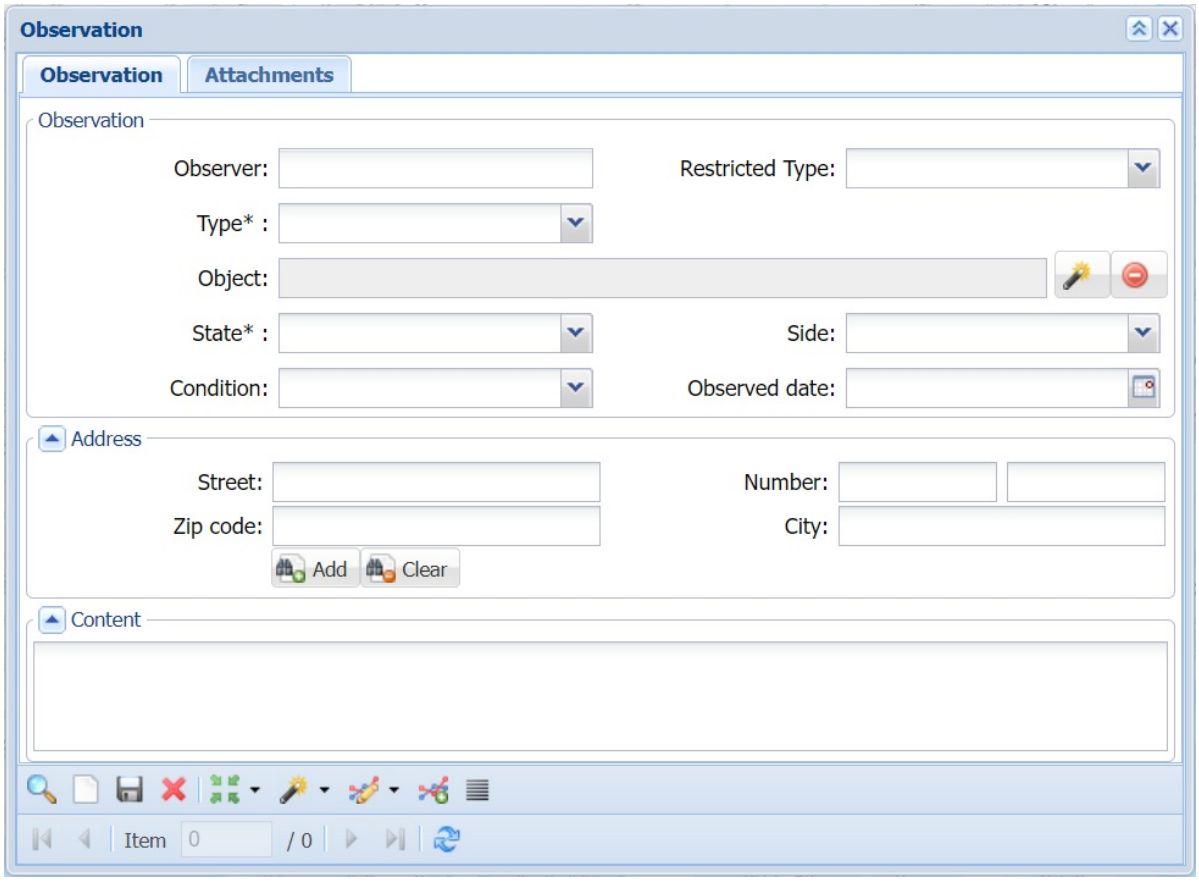
OBSERVATION

Observation form

On the **Observation** form, you can record observations about the status and condition of a network object. Use the **Pick from map** button to add an object related to the observation. Record observations related to the object and, if necessary, retrieve an address for it. To assign the observation a location on the map, click the **Create new** button. **Save** the observations.

Note! The **Done by** and **Address** fields are automatically completed on the blank form according to the user ID and the nearest address, if the item has been assigned a location.

To disconnect a network object from the form, click the **Remove connection to object** button.



Tip: You can use the **List** function to create a list view of all the observations that have been picked or retrieved to the form.

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Observation from the node form

You can also add an observation from node forms (district heating manhole, valve, and node). Retrieve or select the desired objects to the form and click **Observation** on the **Other tools** button's drop-down menu. On the form that opens, click the **Add observation** button to open the **Observation** form pre-filled with information about the node you selected.

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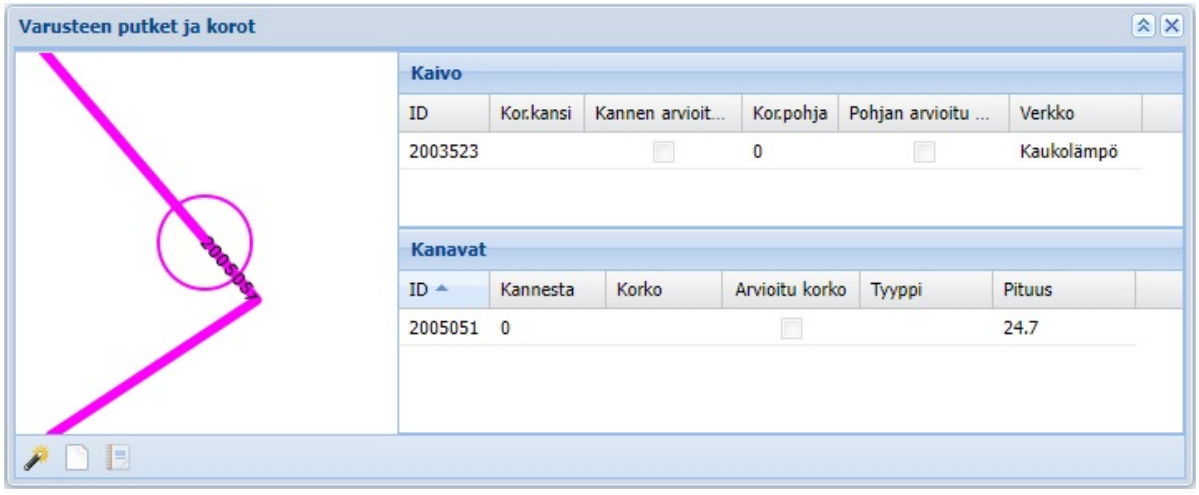
NODE DUCTS AND ELEVATIONS

On the **Node ducts and elevations** form, you can easily adjust the elevations of ducts and nodes in the district heating network.

To retrieve a node to the form, use the **Pick from map** tool. Crop the desired network object on the map. If the area you specify includes several nodes, a list of nodes will be displayed and you can choose the node that you want.

The **Node ducts and elevations** form consists of three sections: The **map window** and the **Manholes** and **Ducts** tables. The directions of the ducts connected to the manhole and the names of the ducts are displayed in the **Map window**. The **Manholes** and **Ducts** tables present the property attributes of the objects in question.

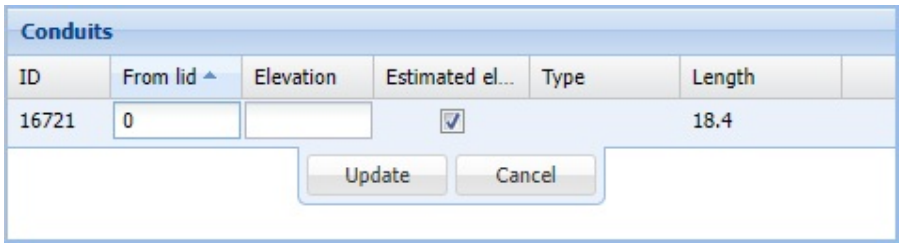
Manhole information retrieved to the Node ducts and elevations form. In the picture below, the first duct on the Ducts list has been selected and it is highlighted in the map section.



You can **edit the elevations of objects connected to the node** by double-clicking the object row. You can then edit the values on the selected line. Click **Update/Cancel** to update or cancel the changes you made.

If you change the **elevation of a manhole**, the program will ask if the Z coordinates of the connected ducts should be updated. Answer **Yes** to update the duct elevations at the endpoints to the same elevation as the manhole has.

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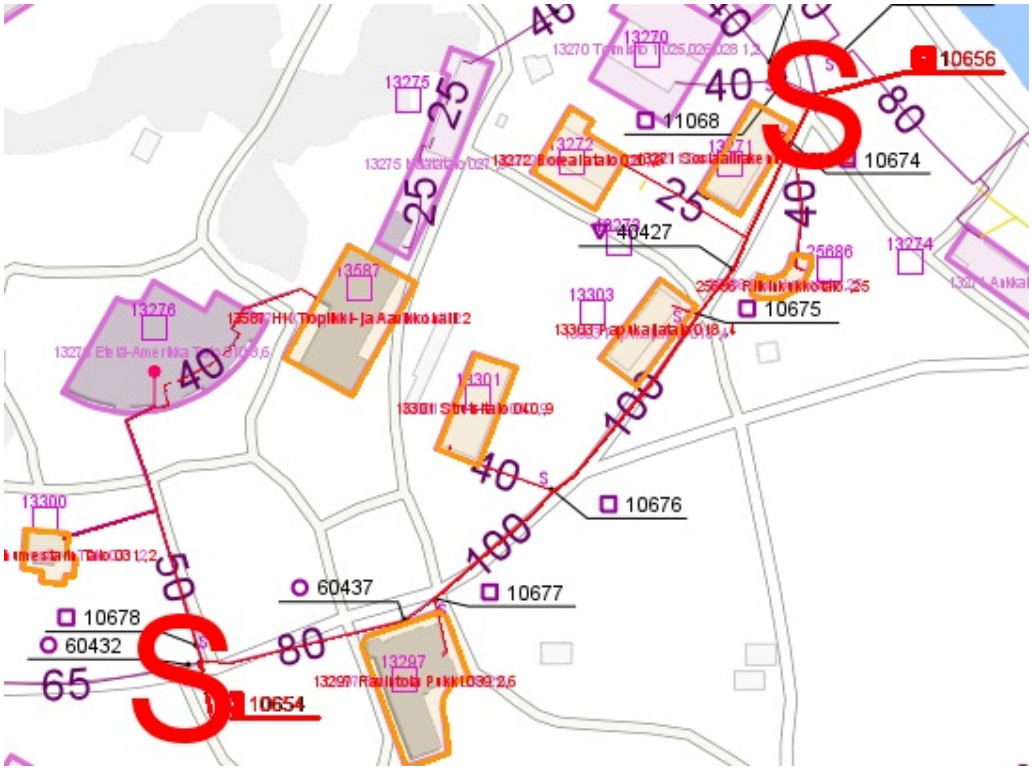
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SUPPLY INTERRUPTION

A district heating network may have supply interruptions from time to time. Use the **Supply interruption** form to calculate and view the scopes of the supply interruptions and their network objects. You can use the Supply interruption form to determine the customers affected if a conduit gets broken as well as the extent of the scope of the supply interruption. The **Supply interruption** form is also a useful tool for maintenance and modification work. The form also provides information on which valves need to be closed during the supply interruption.

Creating supply interruptions

To create a new supply interruption, use the **Object selection** button to select a **conduit or valve** on the Supply interruption form. Crop a valve or conduit in the desired area on the map. After the selection, the program automatically performs the calculation, and the supply interruption area and its consumer points and valves to be closed (**S**) are highlighted on the map.



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Note! When the **Supply interruption** layer is active, you can see supply interruptions created earlier. In such a case, use the **Select supply interruption** option.

Adding valves and conduits to a created supply interruption

It is possible to add new valves and conduits to a previously created, saved supply interruption.

In the drop-down menu in the **Add object** button, click **Add valve** or **Add conduit** . The option displays the **Valve** or **Conduit** form, to which the object to be added to the supply interruption is retrieved or picked. Use the **Update to form** function on the network object form to add the valve or conduit to the supply interruption. The added conduit or valve will then appear on the **Other objects** tab at the bottom of the Supply interruption form.

Details of supply interruption

An **Identifier** based on the nearest address is automatically generated on the **Supply interruption** form with the calculation performed. The identifier can be edited afterwards. In addition, the **Network subtype field is automatically completed** according to the information of the object selected on the map.

It is possible to add a person **In charge** and a **Designer** responsible for the supply interruption in the supply interruption section with the **Add** buttons. More information about the **Contact person** form that appears can be found under Contact persons.

In the **Task** field, you can select whether this supply interruption is planned or unplanned.

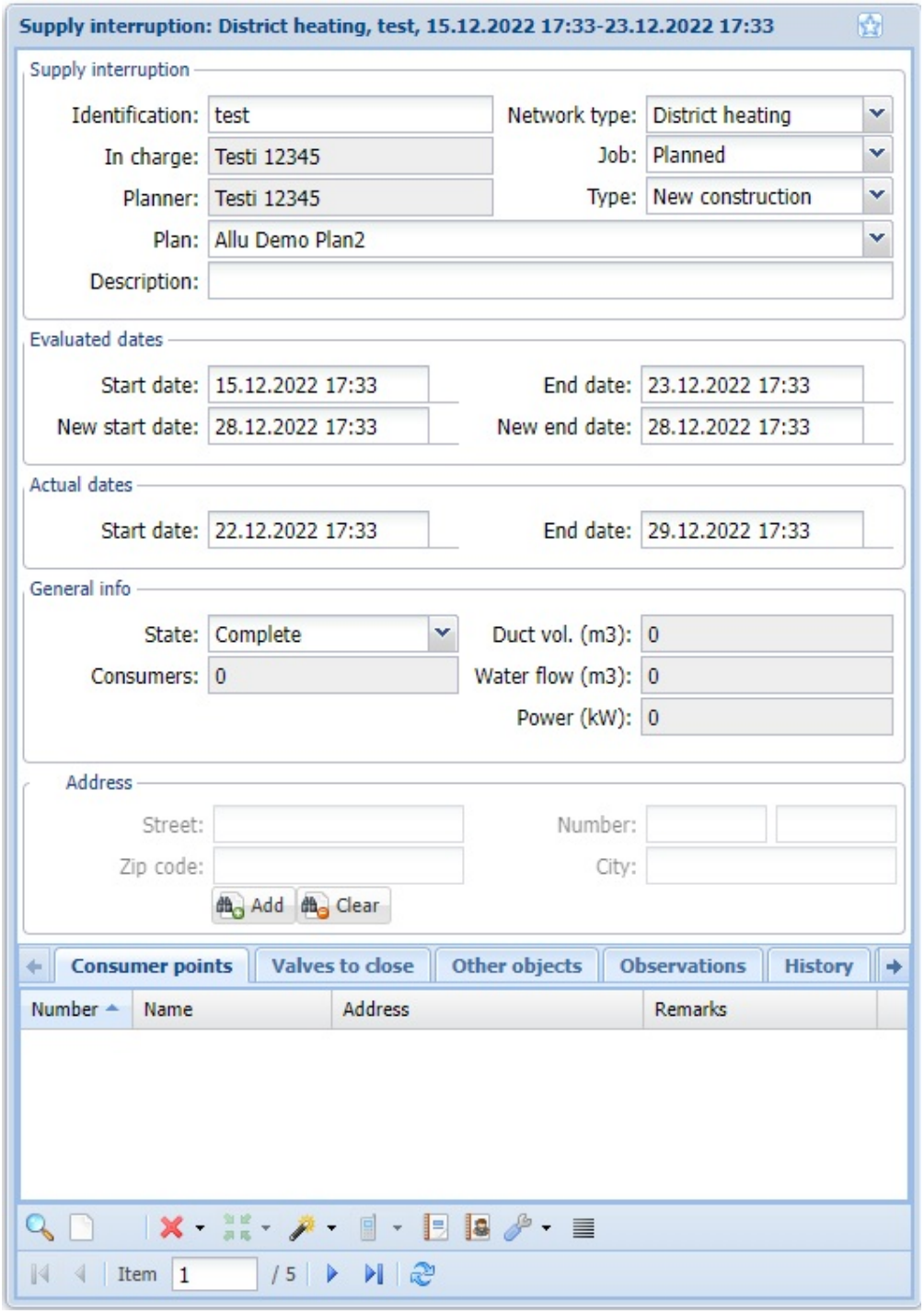
In the **Type** field, specify the type of the supply interruption task.

In the **Description** field, you can enter other information that describes the supply interruption.

At the bottom of the form, you can see the number of objects added to the supply interruption.

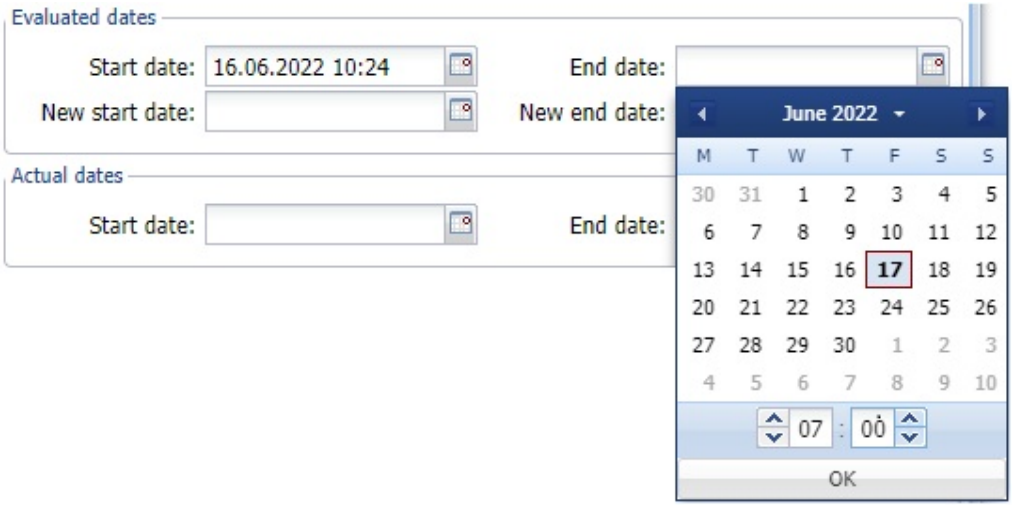
Note! Complete the required fields on the form to save the supply interruption.

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The **Estimated** section indicates the estimated time of the supply interruption. In the **Actual dates** section, fill in the actual time of the supply interruption. Both sections have the calendar feature, allowing you to select both a date and a time of day in the calendar that appears when you click the field. After making the selection, click **OK**. Double-click the field to select two dates between which an estimated start date, for example, can be.

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The **Details** section is automatically completed with the **consumers**, **duct volume**, **water flow** and **power** affected by the area of the supply interruption. The section also contains the **Status** field, where you can specify the status of the supply interruption. The **Address** section is automatically completed according to the address of the object selected to the form.

Tabs

The following tabs are created at the bottom of the **Supply interruption** form:

Consumer points Lists all the consumer points affected by the supply interruption

Valves to close Lists all manholes and their valves that must be shut off for the supply interruption

Other objects Other objects covered by the supply interruption

ObservationsObservations for objects covered by the supply interruption; the data is collected from the **Observation** form

HistoryThe **History** tab shows information about previous supply interruptions for the consumer points that are part of the supply interruption open on the form.

AttachmentsYou can attach attachments, such as photographs or documents, to a supply interruption.

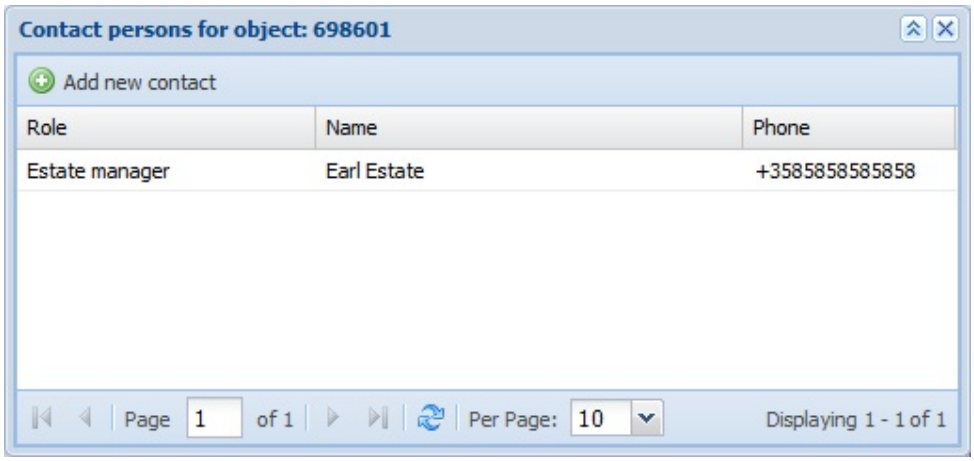
Contact persons

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You can add **Contact persons** to the Supply interruption form. In addition to an In charge and Designer person, the contact persons may be, for example, property managers or maintenance companies.

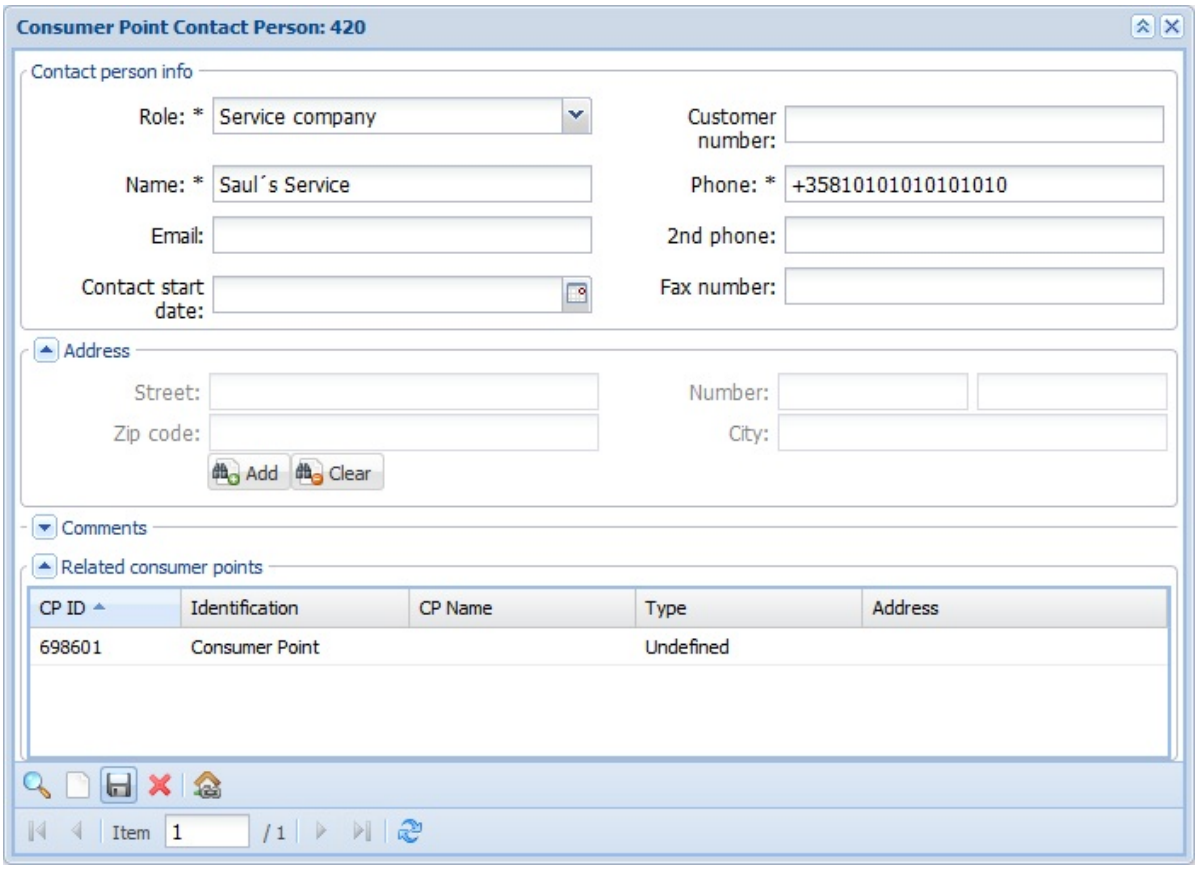
Adding a contact person

Use the **Contact** button at the bottom to add contact persons for the supply interruption. Use the **Contact persons for object** form that appears to view and add new contact persons.



Click **Add new contact** to add a new contact person to the object. On the **Contact person** form that appears, you can search for existing contact persons and save new ones.

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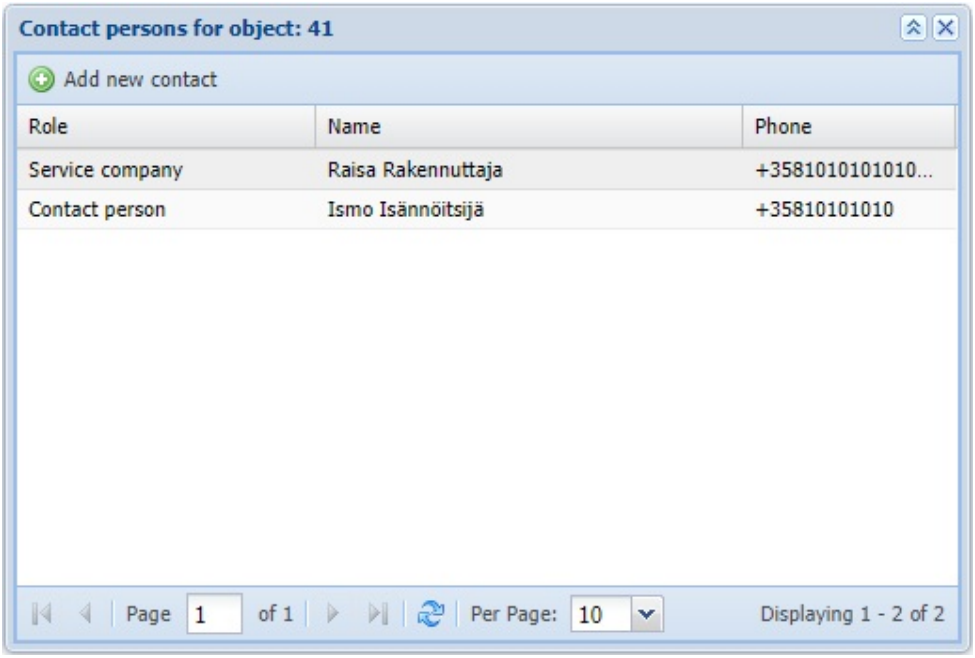


When adding a new person, fill in at least the required information on the form and click **Save**. You can also add an address for the contact person with the **Add** button.

At the bottom of the form, you can find the section **Related objects grid**, which shows the items that the contact person is associated with. To assign a contact person on the form to your object, click **Add this contact to the active object** . The program prompts you to confirm that you want to add a contact person to the object. By answering Yes, the contact is moved to list of contact persons for the supply interruption. Click **Refresh** to refresh the view in the **Contact persons for object** form.

You can edit the contact persons on the list on their designated forms and assign a contact person as a **manager** or a **designer**. These roles are discussed further under Details of supply interruption. Click the right mouse button on a contact's row, and then select the desired action.

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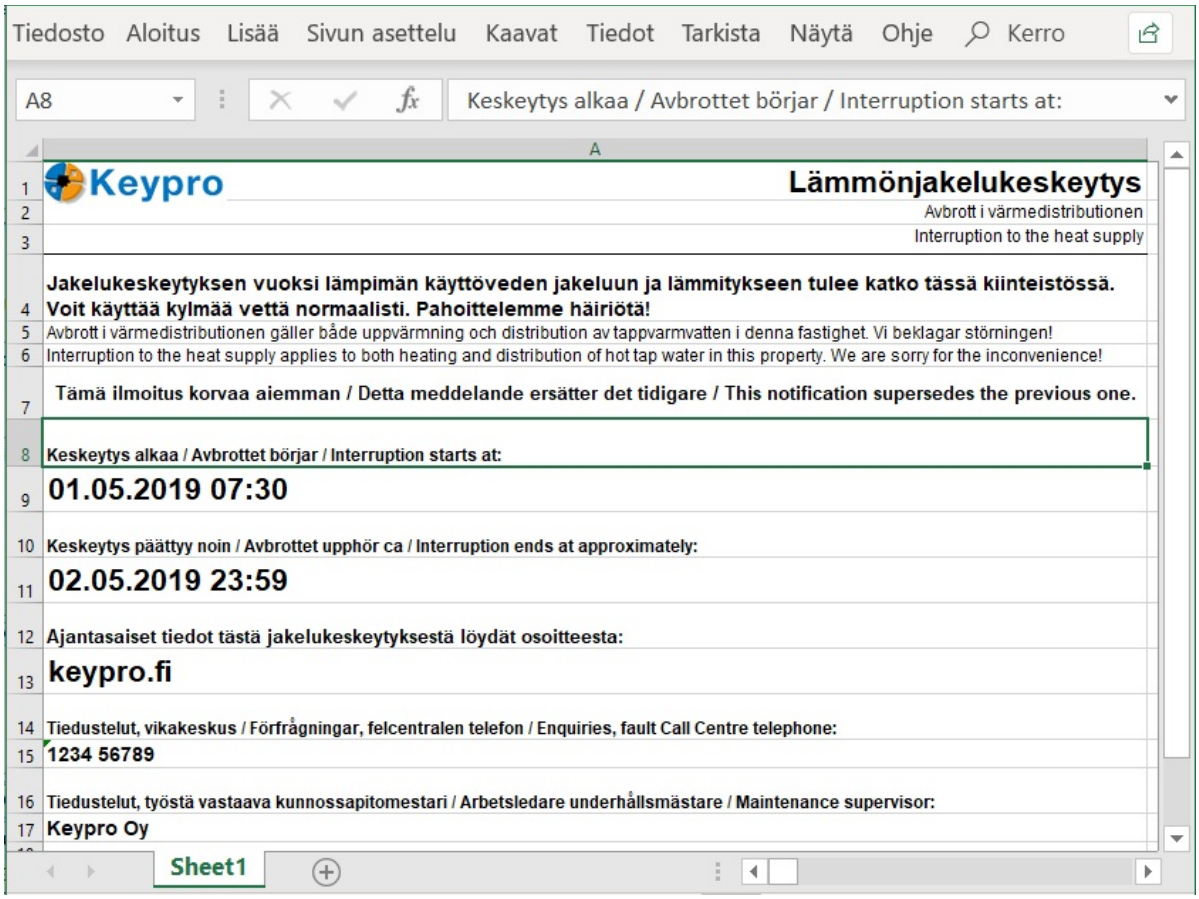
Communicating about the supply interruptions

Supply interruptions can be communicated in two ways to the customers: either on a paper bulletin or by text message. Both methods of communication are presented next.

Paper bulletin

Click the **Reports** button to create a bulletin based on the information in the Supply interruption form. The program creates a bulletin in Excel format, and you can edit the information in the bulletin and save and print the form.

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SMS service

It is also possible to send a text message to customers at the consumer points in the area of the supply interruption. In order for a text message to be sent successfully, a mobile phone number must be saved for the customer.

Retrieve the supply interruption(s) on the designated form(s) and click **SMS Sending** button. The **SMS Sending** form opens with information pre-filled with the contact information of the customers at the consumer points covered by the supply interruption.

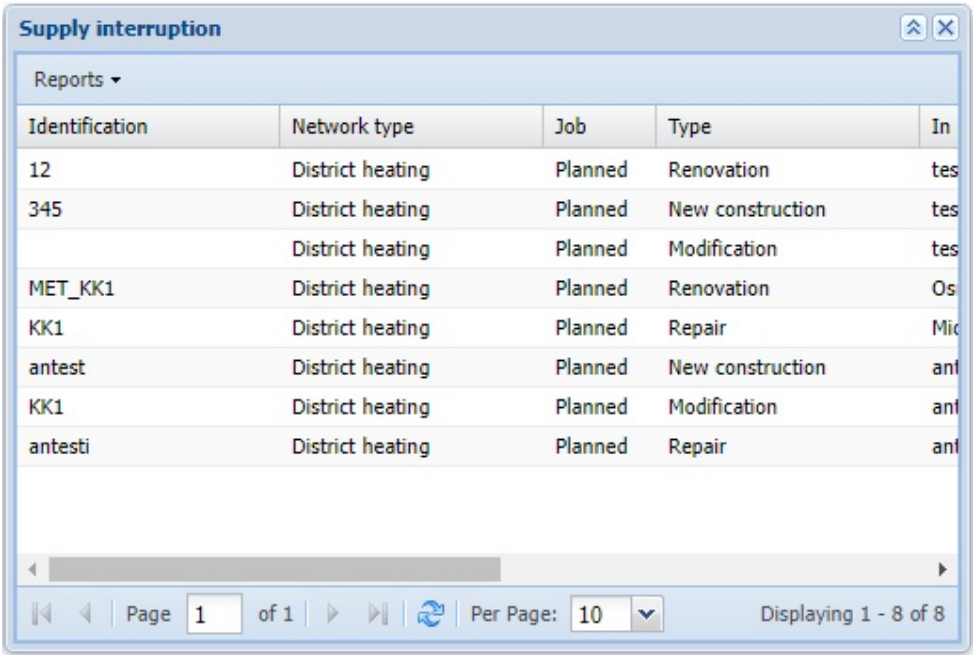
More information about the SMS service can be found in the **KeyAqua** guide.

Supply interruption report

It is possible to generate reports on supply interruption(s) with the **List** function.

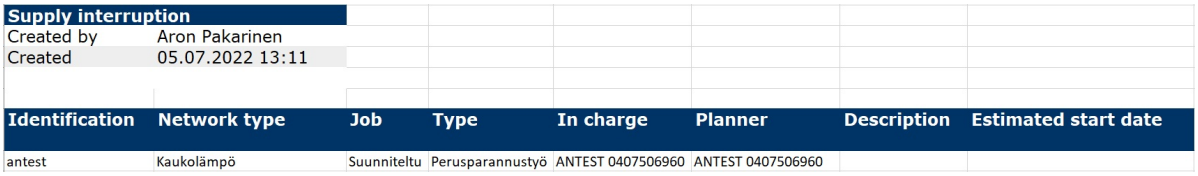
Click the **List** button on the form for a list view of the supply interruptions contained on the Supply interruption form.

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Tip: Right-click the desired supply interruption row, to edit its data. You can also press the Shift and Ctrl keys to select multiple supply interruption rows.

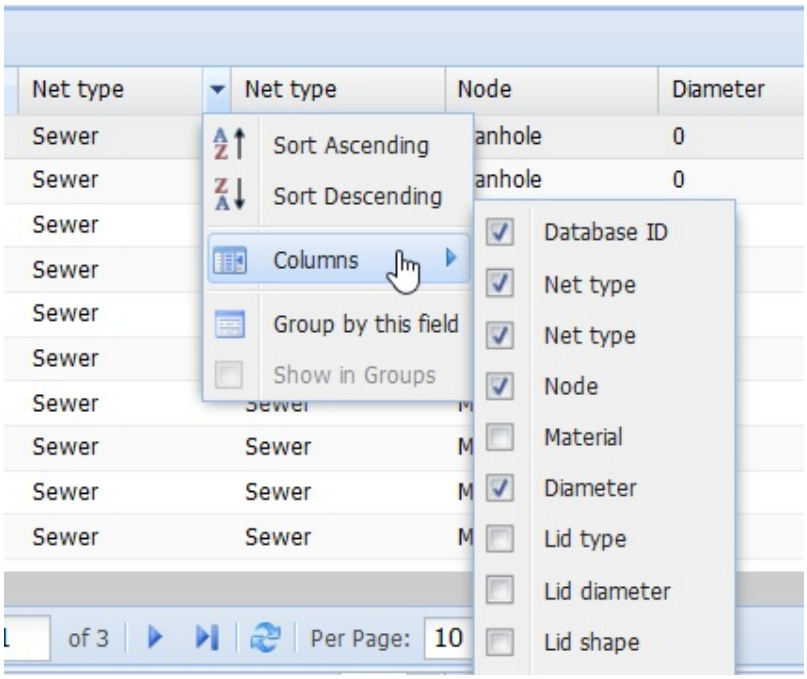
You can generate reports of the listed objects with the **List report** option under the **Reports** button at the top of the form. The program creates a report in Excel format, and you can edit the information in the report and save and print the form.



Supply interruption							
Created by	Aron Pakarinen						
Created	05.07.2022 13:11						
Identification	**Network type**	**Job**	**Type**	**In charge**	**Planner**	**Description**	**Estimated start date**
antest	Kaukolämpö	Suunniteltu	Perusparannustyö	ANTEST 0407506960	ANTEST 0407506960		

Note that the column options in the list view also determine the information displayed in the report. You can edit the column view with the arrow adjacent to the column.

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Start supply interruption calculation

The system calculates the network objects affected by the supply interruption already on the **Supply interruption** form. To speed up the calculation, the system automatically runs a nightly background job. If the connections of the objects in the network are changed and you want to see the change effected by these changes in the supply interruption area during the same day, you can start the supply interruption calculation manually (background run). Click the **Start supply interruption calculation** button to manually start the supply interruption calculation. The user receives an e-mail notification when the supply interruption calculation has been completed.

Please note that the **Start supply interruption calculation** feature can take several dozen minutes!

Supply interruption preview

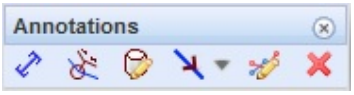
Supply interruption preview is a feature developed for quick visualization of supply interruption areas.

Click the **Supply interruption preview** button and click the **Object selection** button on the form that opens. Crop the object (conduit/valve) on the map. The map will highlight the network objects in the supply interruption area. Use the **Clear** button to erase the highlighting of the supply interruption area from the map.

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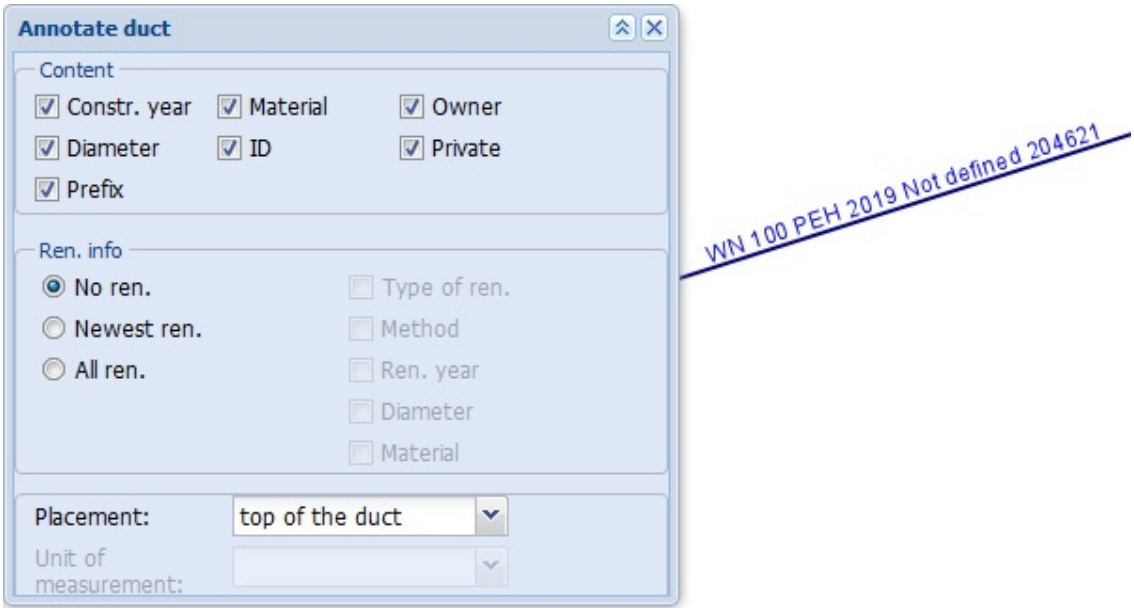
ANNOTATIONS

The **Annotations** menu can be opened in the District heating tools with the DH Annotations button. The annotation is placed on the map by first selecting the desired annotation tool, which will display a window in which you can select the information content for the annotation. Once the content has been selected, select the item on the map and place the annotation on the map.



Conduit annotations

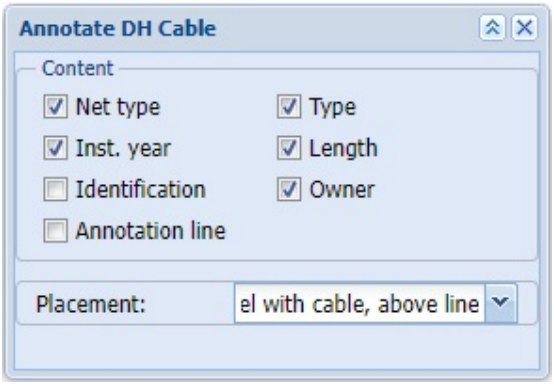
The **District heating conduit annotation** button opens the conduit annotation configuration window. To place the annotation the map, click the desired conduit and then specify the point of placement on the map, if prompted by the program.



Cable annotation

Click the **District heating cable annotation** button to display the annotation configuration window.

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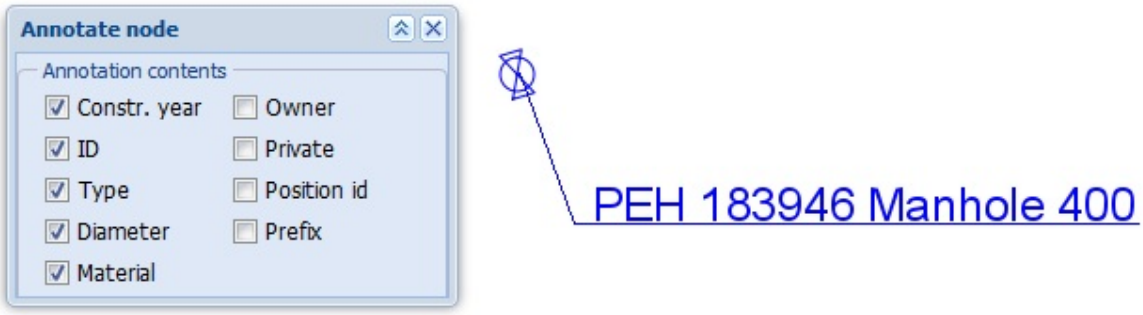


To place the annotation the map, click the desired cable and then specify the point of placement on the map, if prompted by the program.



District heating valve and node annotation

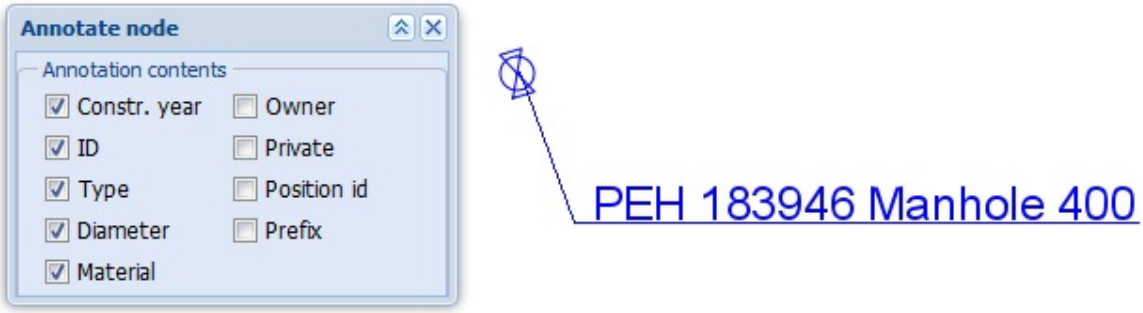
The information content and settings of node annotations are the same for both **District heating valves** and **Nodes** . To place the annotation the map, click the desired node and then specify the point of placement on the map, if prompted by the program.



District heating manhole annotation

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Click the **District heating manhole annotation** button to display the annotation configuration window. To place the annotation the map, click the desired manhole and then specify the point of placement on the map, if prompted by the program. The **Annotation symbol** option creates a symbol on the map in addition to the text annotation specified in the settings. The configuration is done by Keypro.



Deleting annotations

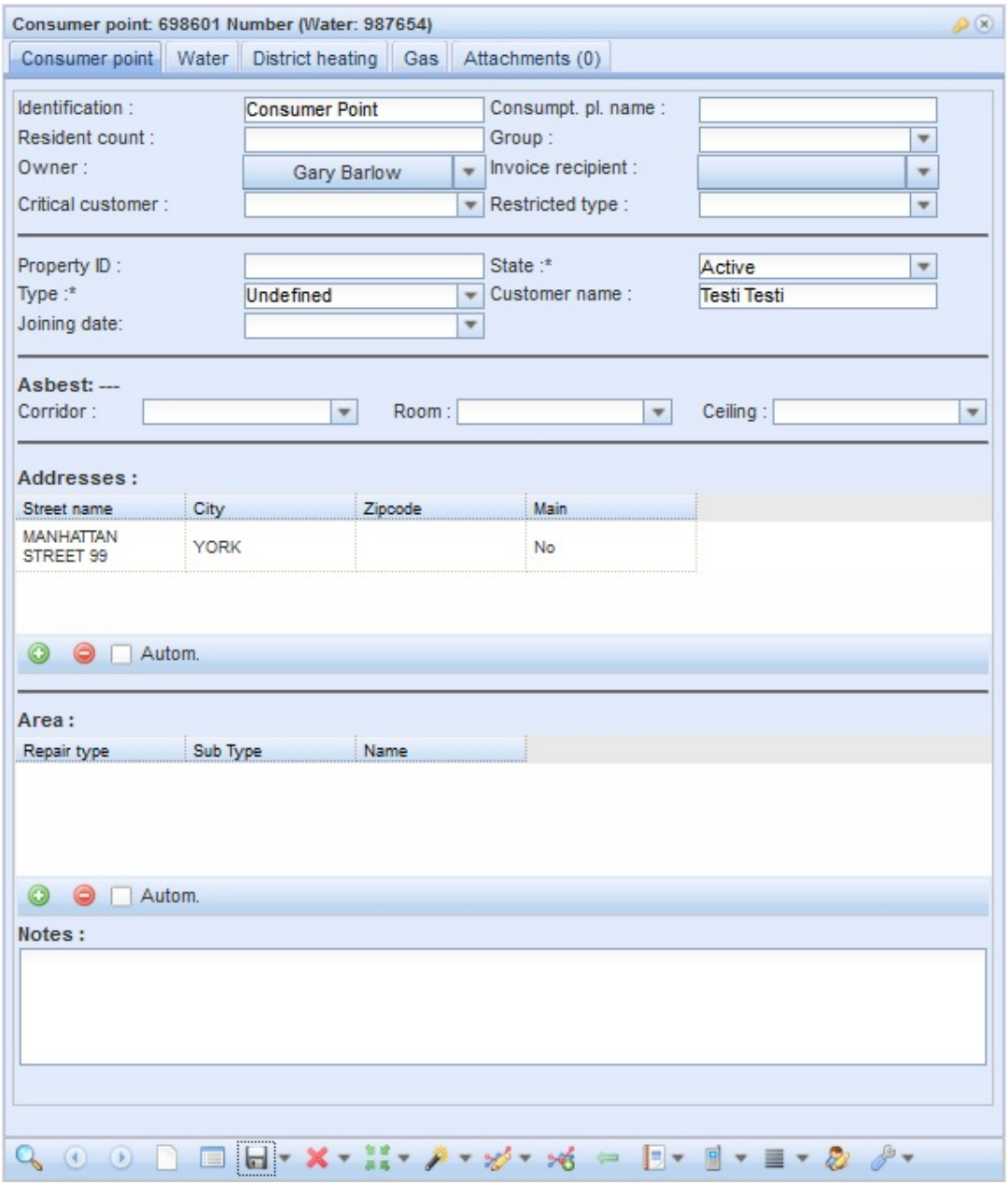
To delete annotations from the map, first click **Delete annotation** and then select the area on the map from which to remove the annotations.

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CONSUMER POINT

Creating a consumer point

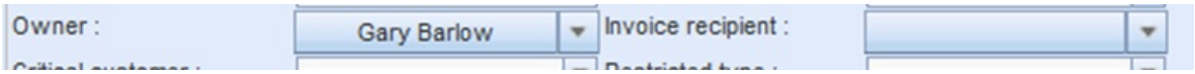
Complete the necessary fields on the **Consumer point** form and click **Create new** button to place the consumer point on the map. When the **Autom.** checkbox selected in the **Address** and **Regions** sections, the program automatically retrieves the address and areas for the consumer point placed on its location (after you enter the location of the consumer point on the map). **Save** form.



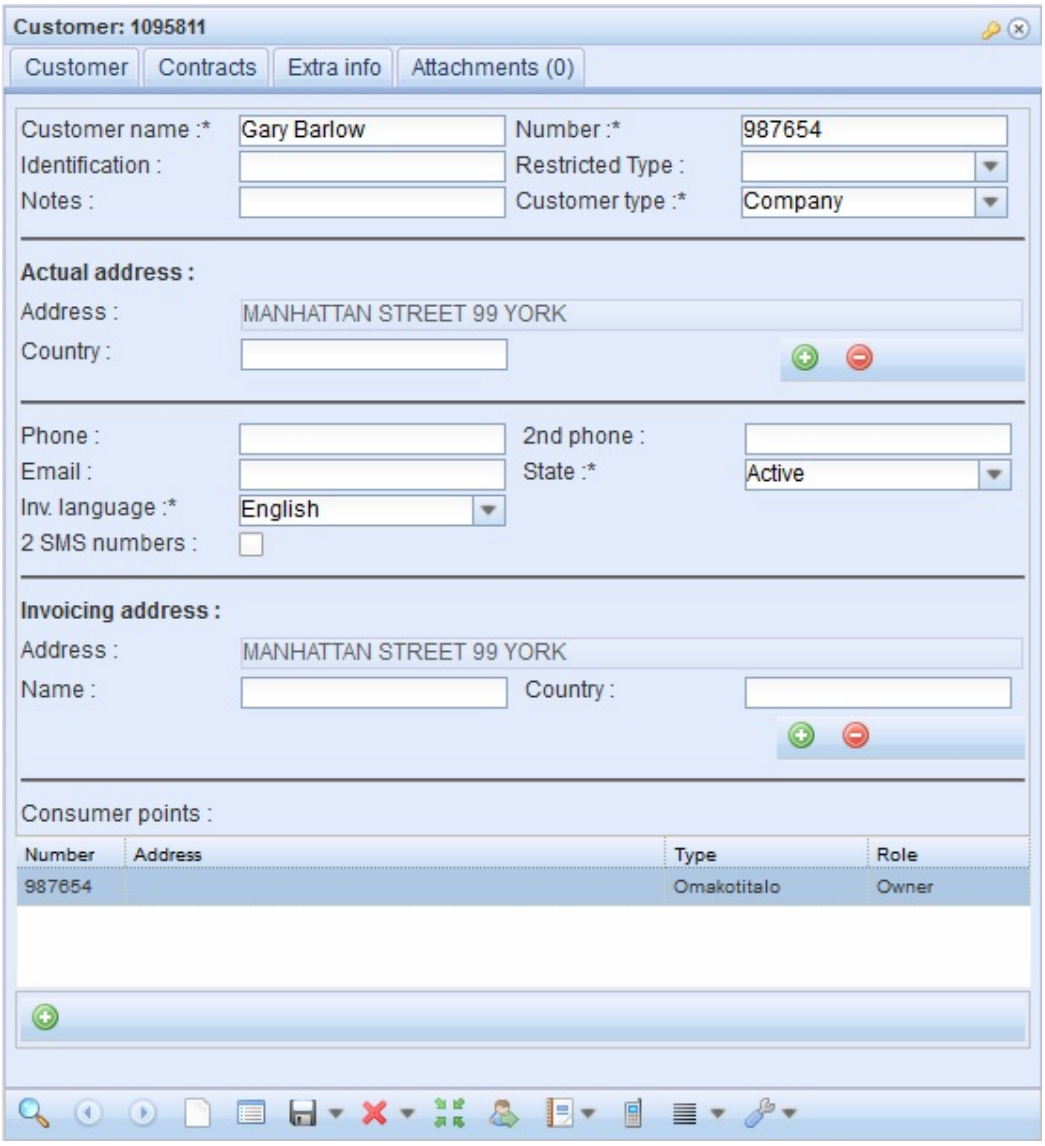
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Assigning a customer to a consumer point

The Consumer point form has the **Owner** and **Invoice recipient** fields.



You can select an owner or invoice recipient with the **Select owner/invoice recipient** button. The button will display the **Customer** form.



Retrieve customers to the form with the **Search** button. Before this, you can set the desired field(s) as the search criteria. To use partial words, truncate with the % character. You can also create a new customer by completing at least the required fields (indicated with an asterisk) and then clicking **Save**.

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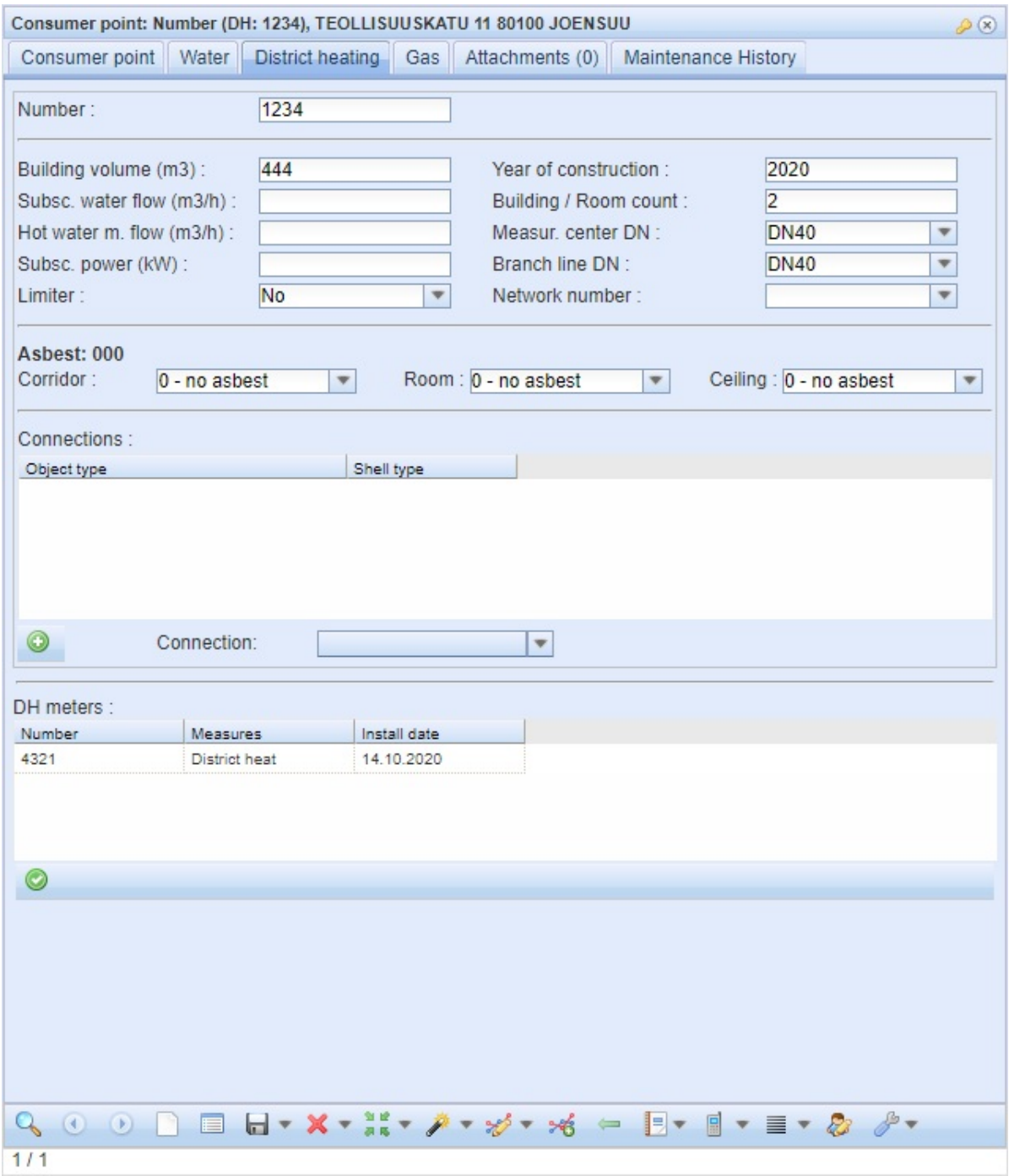
When the data of the desired customer is on the form, click the **Export customer** button. The program prompts for confirmation about adding the customer as the owner/invoice recipient for the **Consumer point**.

To delete an owner or invoice recipient from a **Consumer point** form, click the **Remove owner** or **Remove invoice recipient** button.

District heating

On the **District heating** tab on the **Consumer point** form, you can save and edit information related to district heating.

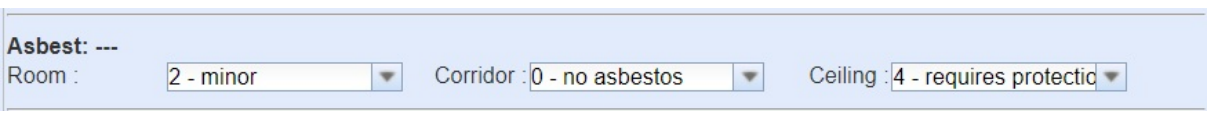
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In the **Connections** section, you can add a connection by clicking **Add new connection** and then selecting an object on the map.

Property attributes of the consumer point

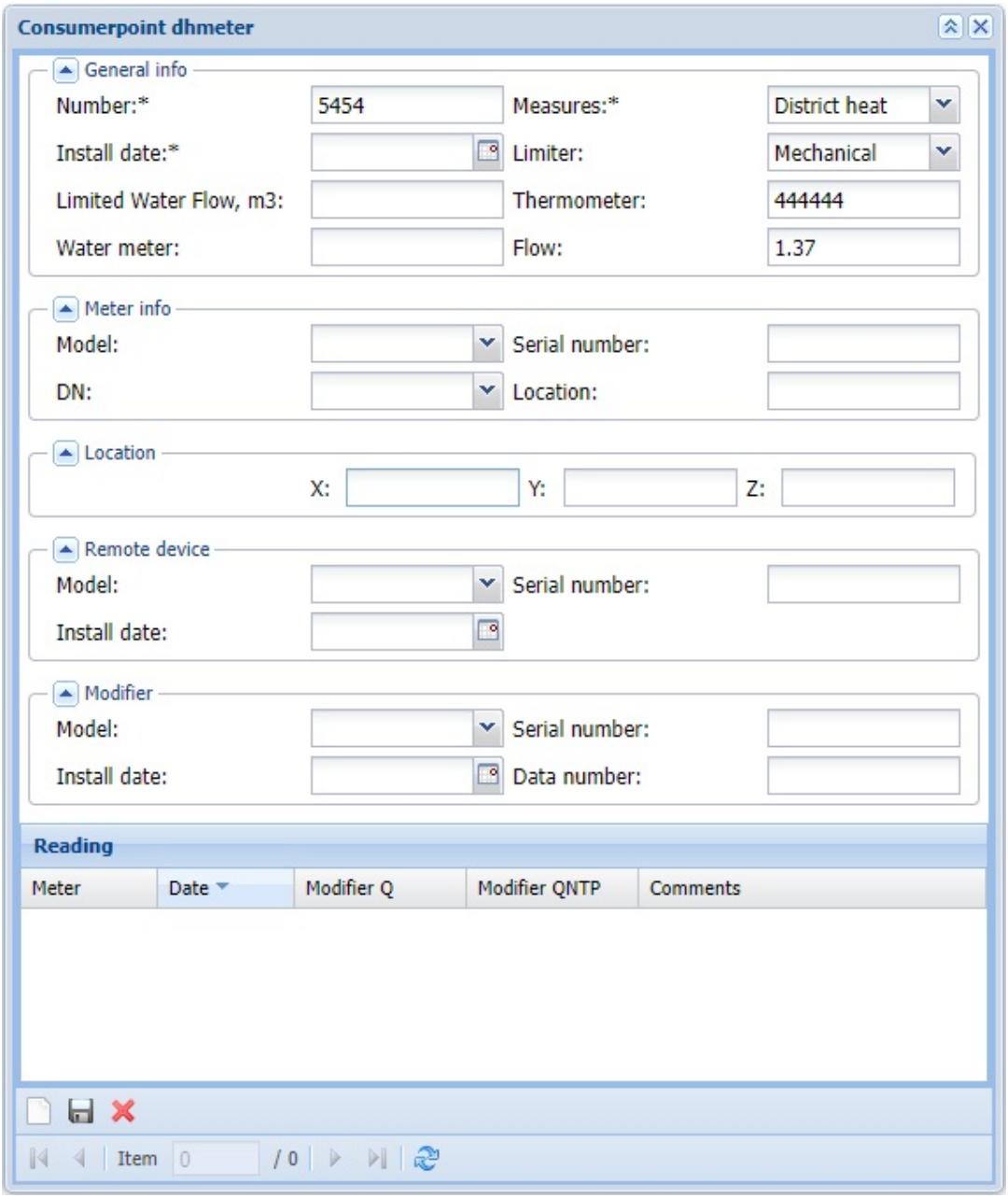
You can provide information on the presence of **asbestos** in a room, corridor, or ceiling.



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District heating meters for consumer point

The meter information is displayed at the bottom of the **District heating** tab. To edit the meter information, click **Edit meters** , which opens the **DH meters** form.



The actual meter readings displayed on the tab are often imported from an external system (such as customer data/invoicing systems). **Save** the required information.

Properties

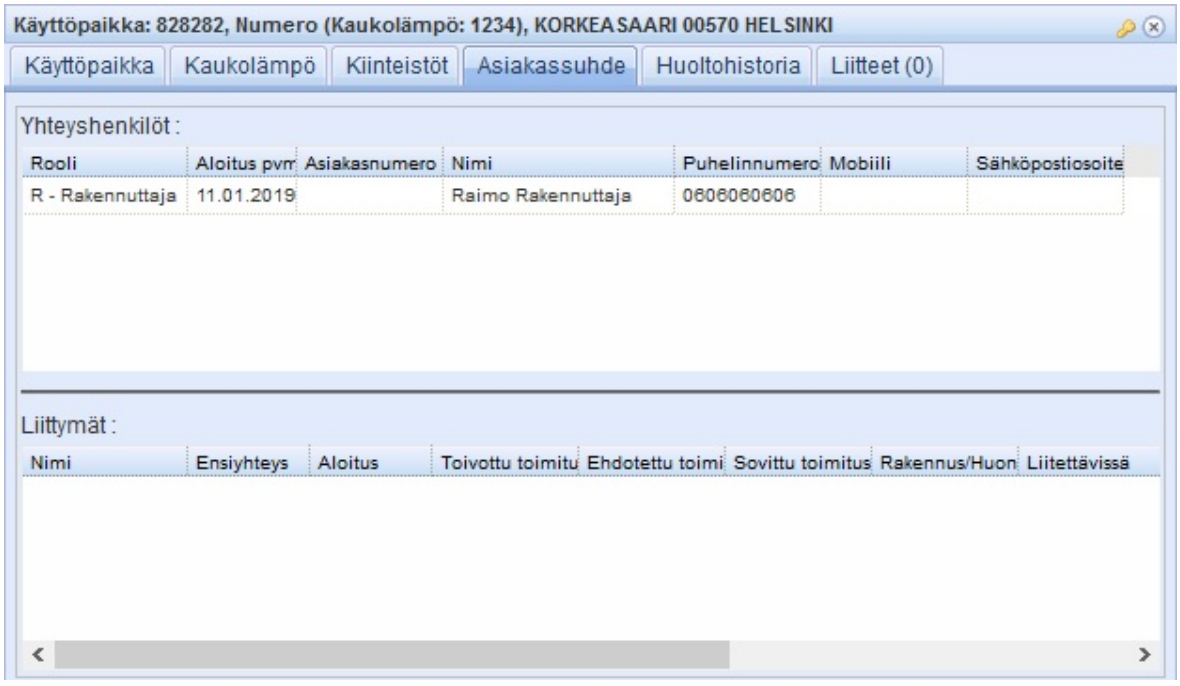
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On the **Properties** tab, you can store and edit information related to a property and its apartments.



Customer relationship

The **Customer relationship** tab lists the contact persons and junctions at the consumer point. The **Contact persons** section lists the information about the contact persons assigned to the consumer point. You can add contact persons with the **Show contact persons** action in the **Other tools** menu. For more information on the feature, see Adding a contact person.



The **Junctions** section provides information about the junctions at the consumer point. For the time being, the **Junctions** section is intended as conversion support.

Other tools

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There are several useful functions accessible via the form buttons at the bottom of the form.

Reports

The following Excel-format reports can be generated on the **Consumer point** form:

- Consumer points
- Consumer points without location
- Consumer points – customer – meters

Click **Export** – **Reports** and the type of report that you want.

SMS service

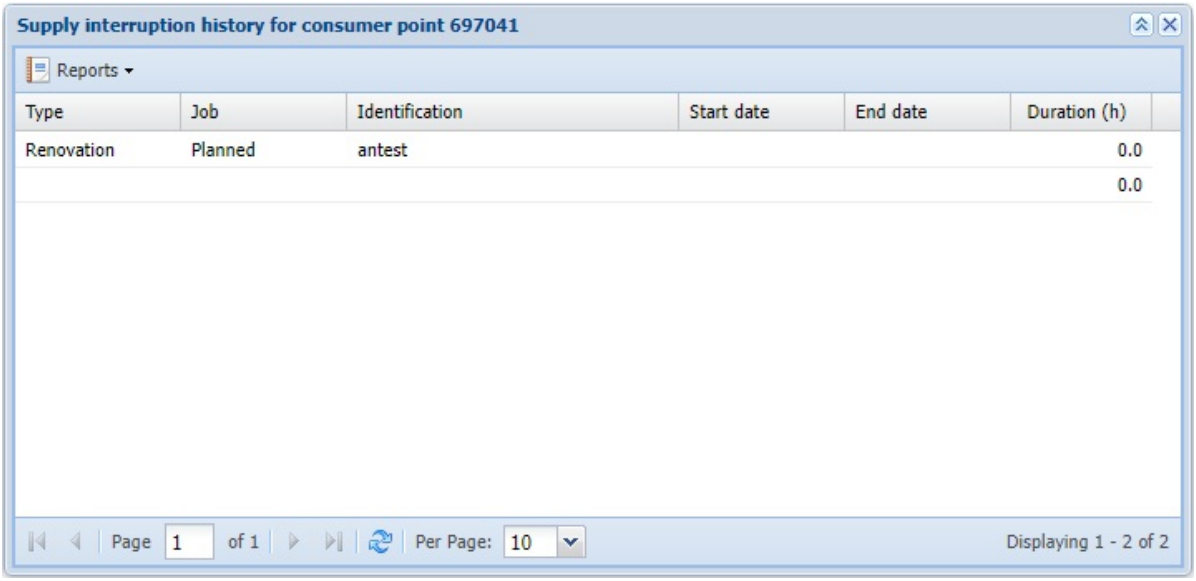
For more information on the **SMS service** , see SMS service.

List

For more information about the **List** feature, see Supply interruption report.

Supply interruption history

The **Supply interruption history** button in the **Other tools** menu displays the **Supply interruption history for consumer point** form. The form lists all supply interruptions for the consumer point. To generate an Excel-format report of these, click the **Reports** – **List Report** button.



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ADDRESS

Address search

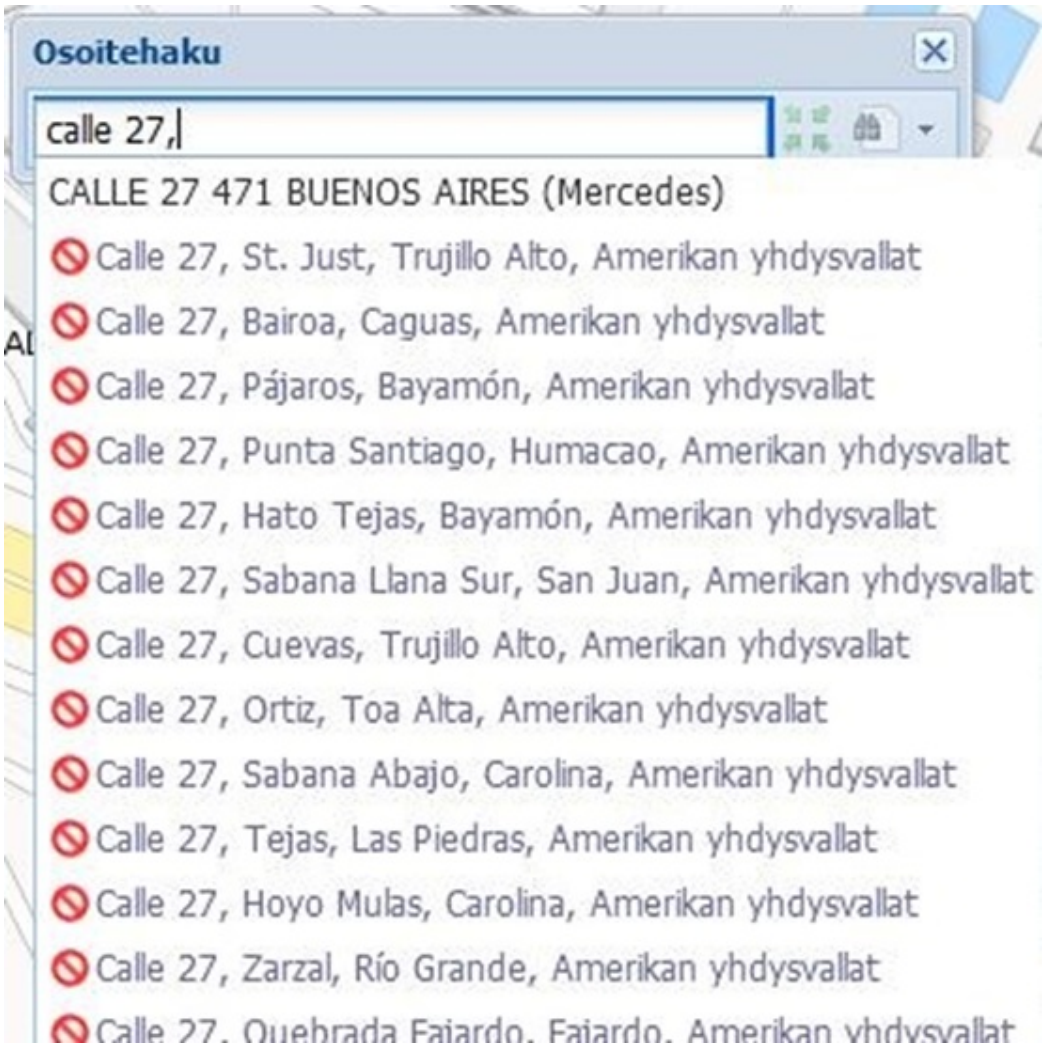
Use the **Quick address search** tool in the toolbar to **locate addresses on the map**. For example, if you want to view a cable located on a specific street, you can go to the location in question by using the quick address search and locate the address by clicking the **Locate** button. Enter the complete address in the text field or select it from the list of search results.

You can also update multiple objects at the same time by using object-specific forms. More information on mass updates is provided in the chapter Mass update of addresses.



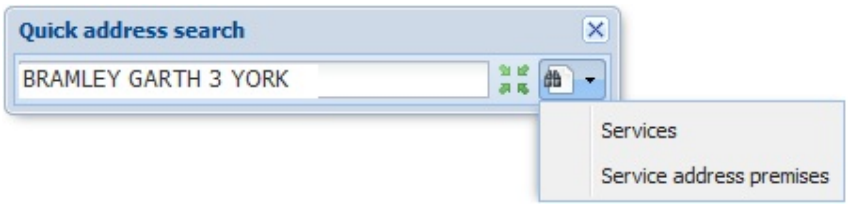
It is usually enough if you enter four characters in the text field, as the addresses matching the search criteria are listed below the search field. However, **Quick address search** supports **","** a comma when you need to separate the street name and the street number from each other. For example, the database might have an address named "Calle 27 471" with the street name "Calle 27" and the street number "471". If you only type "Calle 27" in the search box, address search will find you all the streets named "Calle" with a street number "27" like in a normal search.

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You can browse through the pages using the arrow buttons, go directly to the first or last page, or enter the page number in the **Page** field. Select the required address using the left mouse button. Click **Address** to open the form used for editing the address. Note that the **Address** tool does not list addresses that have no location attached. Such addresses can be searched on the actual address form (**Address**).

Click **Services** to view a list of the services related to the address with the following options:



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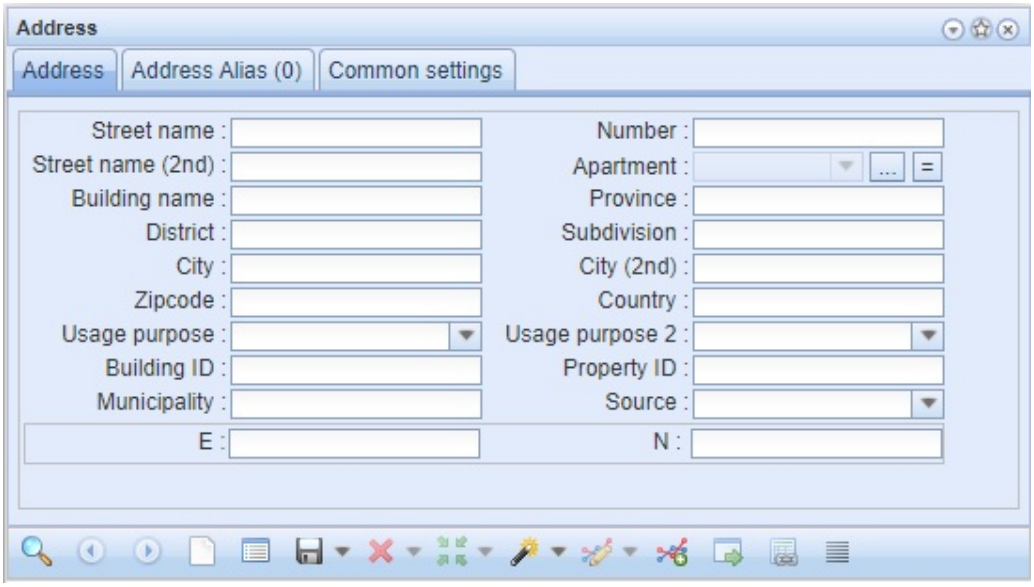
If an address belongs to some service area, the services provided by the area are listed. If an address is the address of telecom premises, the services provided by the telecom premises in question are listed. If an address is the installation address of a circuit, the services provided by all the telecom premises in the connection chain are listed. If an address is related to a service, the services are listed.

The **Service address premises** function retrieves all the telecom premises to the form with device services to which the address in question has been connected. Use the arrow buttons on the telecom premises form to browse through the results.

Address search in the database

In addition, you can use the **Address** tool to search, locate and update address information and add new addresses. When you click the button, the **Address** form is displayed. On this form, enter the address you want to search and click **Search** to have the program search the database for addresses matching the **search criteria**.

Alternatively, you can use the **Pick from map** tool and its functions to search for an address. Your application may include the **Existing area** option, which enables addresses to be searched in existing areas, such as a service area (maximum number of address lines is 100,000).



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You can use all the fields on the form as search criteria. For example, a search based on a city will return all the addresses in that city as search results. You can use **%** as a **wild card** character that replaces a part of a search term. In this case, the search results include all addresses matching the text that precedes the **%** character. You can limit the number of search results by selecting the **Exclude Digiroad** checkbox. The Digiroad material is then not available, and only addresses added in KeyCom are retrieved to the form. The number of results fulfilling the search criteria is displayed in the bottom left corner of the form. Use the **arrow buttons** to browse through the search results. Click **Locate** to center the map on the address you found.

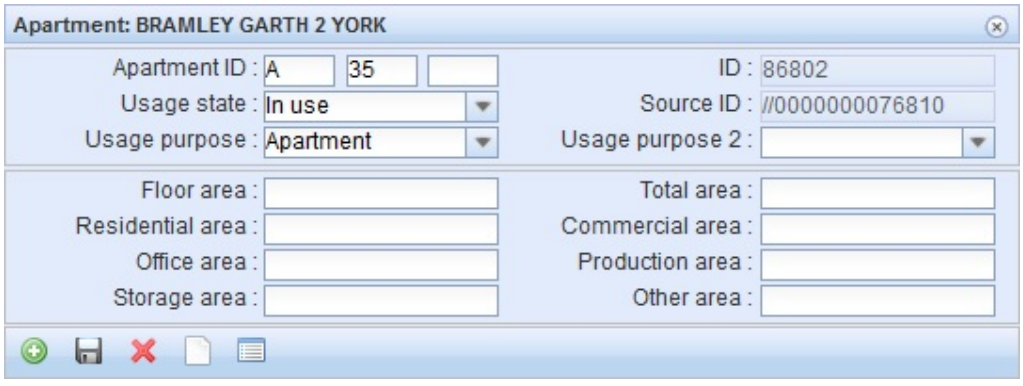
TIP: You can import the address you found to an object form that includes the **Update to form** button applicable to the Address form.

Adding an address to the database

If an address is not yet in the database, and you want to add it there, use the **Address** form to create an address. **Street** and **City** are **mandatory property attributes**. When you have entered this information on the form, click **Create** , and then click the left mouse button to create the location information on the map. Alternatively, you can click **Save** to create the address.

Apartment information for an address

The Address form includes a field for information on an apartment. Click **Apartment...** to add this information. On the **Apartment** form displayed, you can add and update information on the apartment identifier, purpose of use, and floor areas.



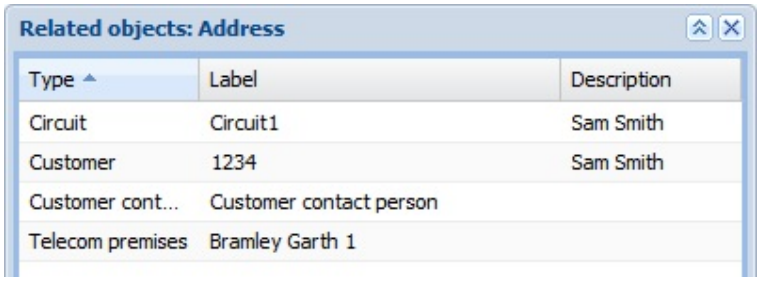
You can view the property values of an apartment on the Apartment form. No other information except the apartment ID is displayed on the Address form.

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The apartment ID displayed on the **Address** form is added, for example, in the following format: A and 1, that is A as the identifier for the entrance door of the building and 1 as the apartment number. When you have added the required information on the form, click **Add** to make the apartment information available for selection on the **Address** form and to simultaneously save the information in the database. The apartment ID you added can now be selected in the drop-down menu for **Apartment**. Click **Save** to save the **Apartment** information on the **Address** form. The example information is now displayed in the format A1. You can later update the information on the **Apartment** form by clicking **Update** **.** You can delete information by clicking **Delete** .

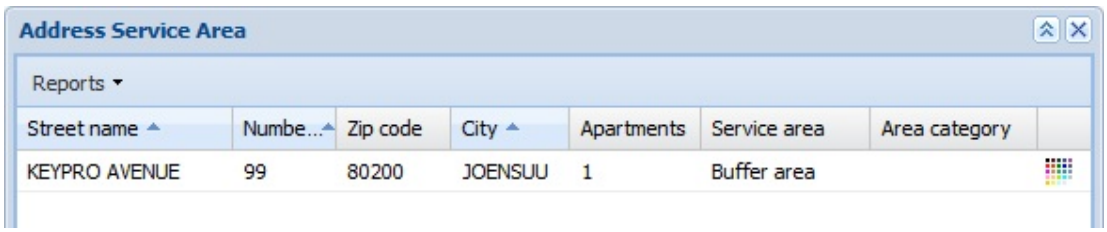
Objects related to an address

Click **List related objects** to view the **Related objects:** The **address** list listing objects **located at the address** in question. The list includes the following information on the objects: **type, object**, and **description**. Open the object form by first clicking the left mouse button and then the right button over the target row, and then select **Show on the form**.



Service areas for an address

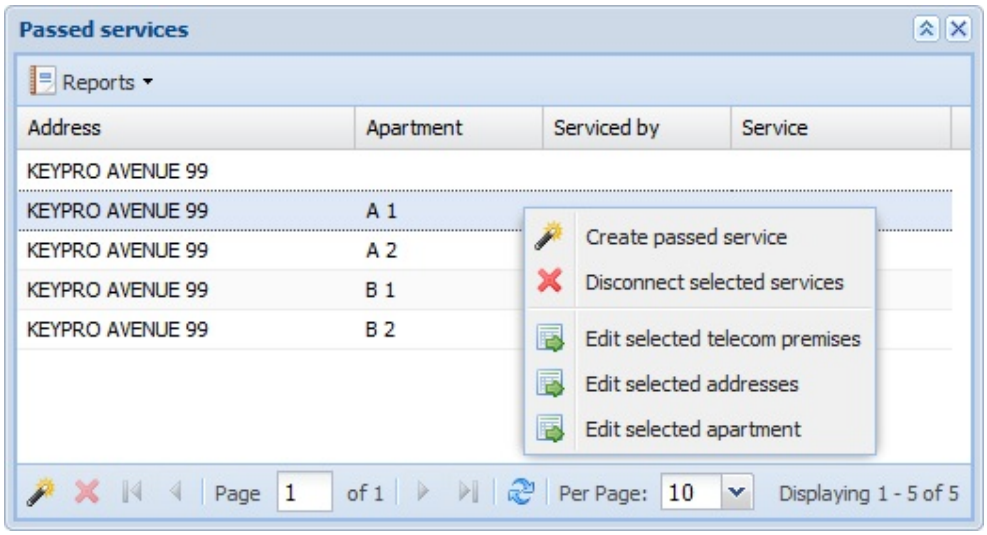
When you want to view the Service areas related to an address or addresses, go to the drop-down menu for **List** and click **Show service areas for all**. The displayed **Address service area** form includes all the service areas related to the address or addresses. Service areas are discussed in more detail in the chapter Service area.



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Passed services for an address

The address form includes the **Passed services** tool. With this tool, you can view the apartments, service providers and services for the selected address. The **Passed services** form also enables you to create new passed services and disconnect existing services.



Select rows from the list on the **Passed services** form and click the right mouse button to access the menu:

Create passed services – creates a new passed service, such as a broadband connection.

Disconnect passed services – disconnects existing services for the object.

Edit selected telecom premises – opens the Telecom premises form for the selected object group.

Edit selected addresses – opens the Address form.

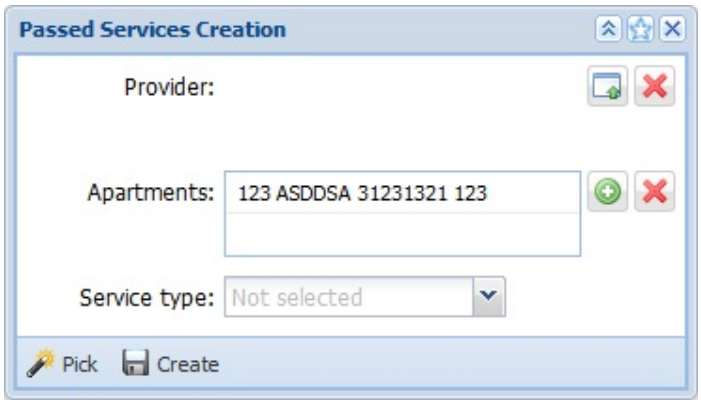
Edit selected apartment – opens the Apartment form.

Use **Passed services for all** function in the drop-down menu for **Passed services** to create passed services for all addresses that have been retrieved to the **Address** form.

Creating passed service

Click **Create passed service** to open the **Passed services creation** form.

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Click **Pick** to define the **provider** and pick the required telecom premises from the map. The telecom premises information will then be displayed in the **Provider** field.

Click **Pick apartments** to add new apartments to the list with the help of an Address-form. To remove apartments, click **Remove apartments** button.

In the drop-down menu, select the available **service type** and click **Create**. The program will display a notification of the successful creation of a passed service, and the new address and related services will be displayed on the **Passed services** list.

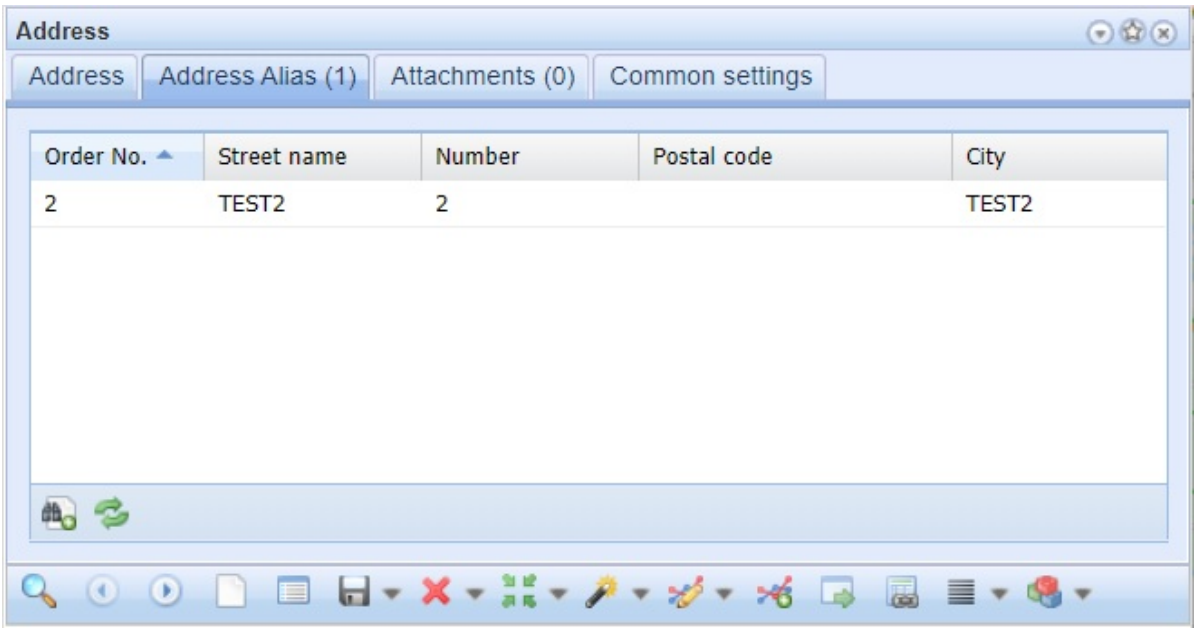
Disconnecting passed service

When you want to disconnect a service, use the **Disconnect selected services** function. The program will ask you to confirm that you want to disconnect the services. Click **Yes** to disconnect the passed service. The service will then no longer be included in the list on the **Passed services** form.

Address alias

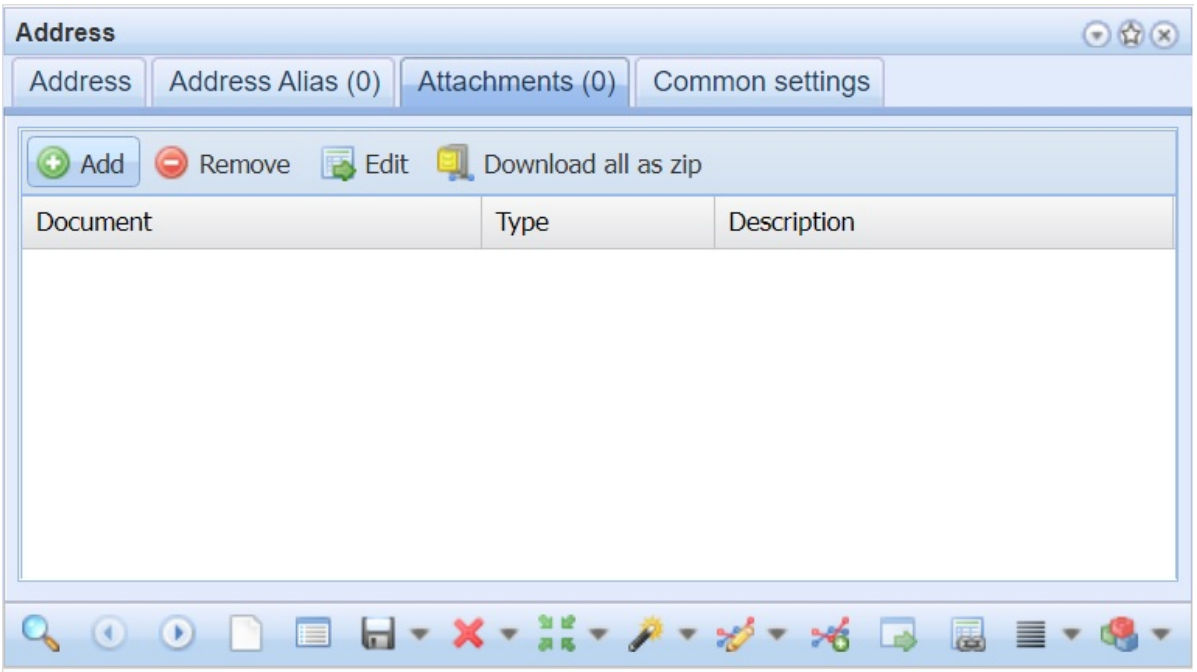
Sometimes there might be two different addresses for a street. In addition to **official address**, there might be an **Address alias**. You can add information about the **Address alias** to its own form. First, open the **Address** form via the toolbar. Open the **Address Alias** tab and click **Add Address alias** form (**Virhe. Viitteen lähdettä ei löytynyt.**). You can still change the details by right-clicking the section.

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Attached documents on the Address form

Via the **Attachments** tab, you can view documents attached to the **Address** form. The title of the tab indicates the number of attached documents for the object. The attachments can be **files** or **URL links**, and they are listed based on type. If the object form does not have any external documents, the **Attachments** tab includes no information. Click **Add External documents** - to open the **Add External documents** form , where you can download the documents. Read more about External documents.

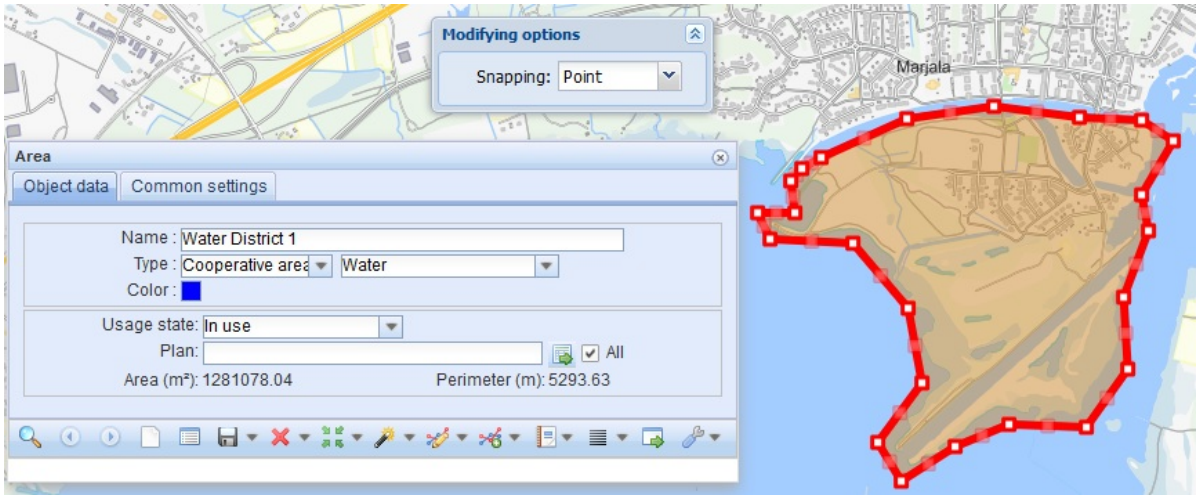


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ADDING AN AREA

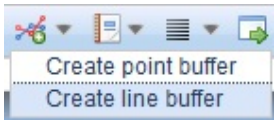
To add an area with the required shape on the map, go to the main tool bar at the top and click **Area** . You can add an area on the map, for example, for a print-out. You can define the **name**, **type**, **colour**,and **usage state** of an area, and you can attach it to a **plan**. To start the creation of an area, click **Create** . Move your mouse pointer across the map and click the left mouse button to enter **points** at appropriate locations. Enter the final point by first clicking the left mouse button and then the right mouse button. The area is automatically saved in the database.

The area in the illustration has been selected for modification. The points of the area have been highlighted.



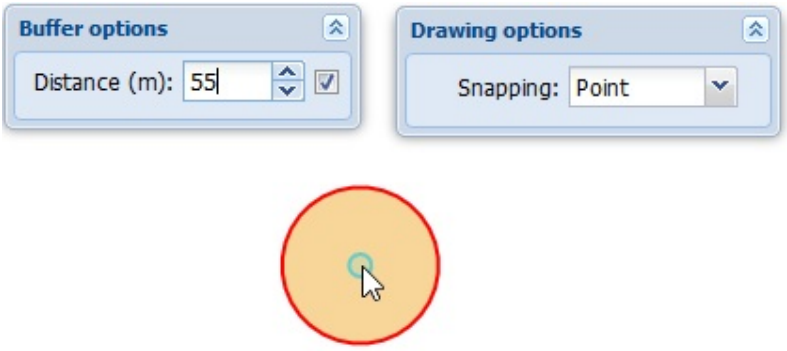
Adding a point buffer

1. In the drop-down menu for **Create** , select **Create point buffer**.



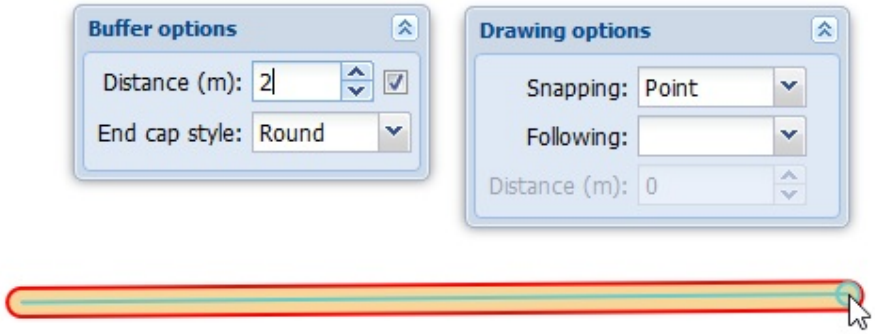
2. Position the center of the point buffer on the map. You can use the **Snapping** options Point and Nearest. Hold down the SHIFT key and click the left mouse button to snap.
3. Move the mouse pointer to define the distance.
4. Finalise by clicking the left mouse button. The area is now saved.

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Adding a line buffer

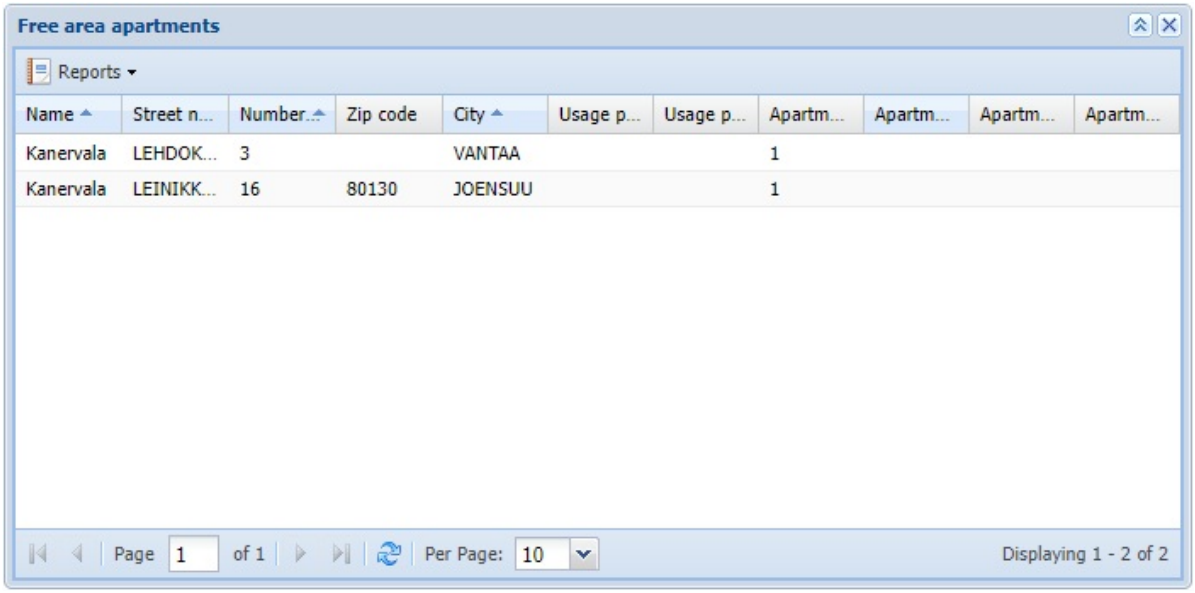
1. In the drop-down menu for **Create** , select **Create line buffer**.
2. Define the distance in metres, or deselect the checkbox next to the **Distance** field.
3. Select the **End cap style** for the line's end points: **round**, **flat**, or **square**.
4. Draw the line on the map.
5. If you cleared the checkbox for distance, define the distance by moving the mouse.



Addresses and apartments in an area

To list the addresses located in the area, go to the drop-down menu for **List** , and select **Free area addresses** or **Free area apartments**. The form type displayed is similar to the form in the List chapter. **The Free area apartments** form provides information on the number of apartments at the addresses. To create a list report on the apartments or addresses in the area, select **Reports – List report**. Right-click to edit an area, address, or apartment on the appropriate form.

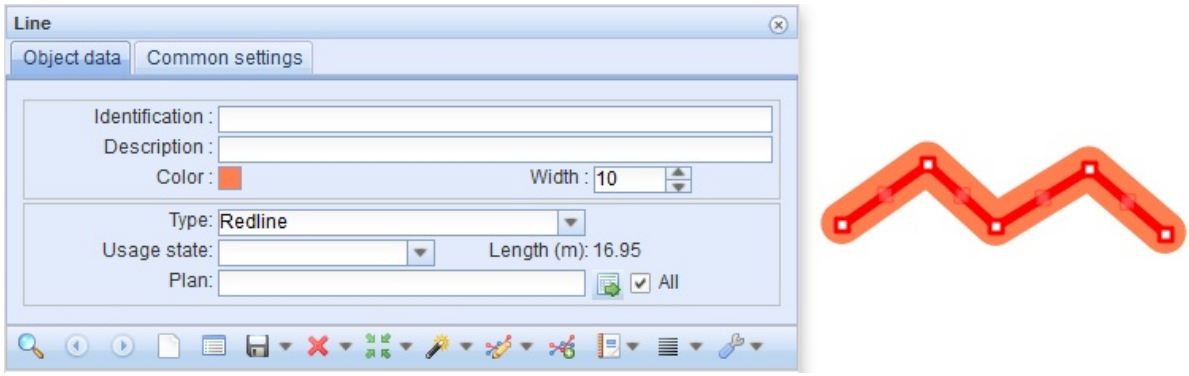
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Adding a line

You can freely add lines of various size and colour on the map, for example, for a print-out. To do this, click **Line** . The buttons on the **Line** form function like the buttons on other forms, as described in the chapter Buttons on object forms. For example, you can search existing lines on the map by clearing the form and clicking **Search** . You can also locate and highlight lines. You can **modify the colour or thickness of the lines** you searched and picked from the map. Click **Save form** to apply the changes to the map. The **Lines** layer is activated in the **Layers** selection when the **Create** and **Pick** tools are used.

The line in the illustration has been selected so that it can be modified. The points of the line are highlighted.



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If you want to create a new line, **first** select the **colour and thickness**. To start the creation of a line, click **Create** . Then move your mouse pointer across the map and click the left mouse button at the appropriate location to create the **starting point** of the line. To create the end point, first click the left mouse button and then the right one. The line is automatically saved in the database. When you click the **Create** button, the **Drawing options** dialogue box is displayed. The functions of this dialogue box have been described in the chapter Creating a new object.

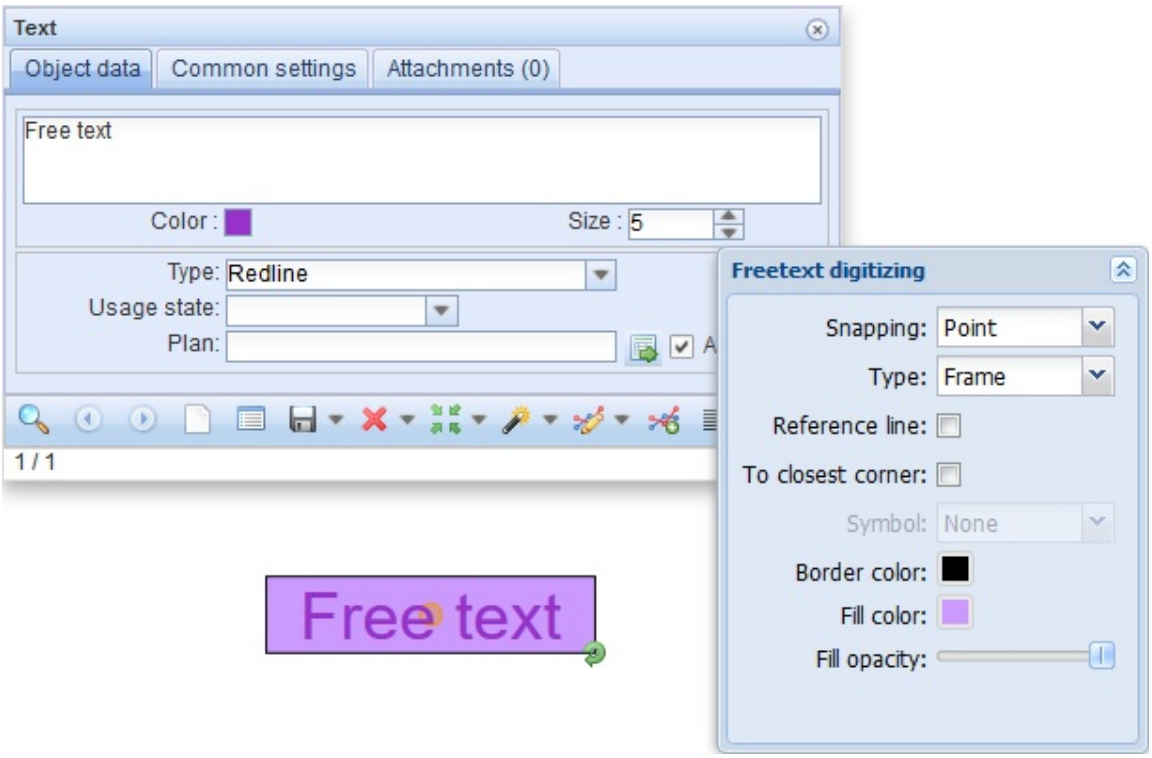
You can define the **usage state** of a line, and you can attach it to a **Plan**. Click **Save form** to save changes.

You can reposition the line by clicking **Modify** . The line in question is then highlighted on the map. When you **click the line using the left mouse button**, the line can be modified. You can move the line's **points** by **dragging** them while holding down the left mouse button. Create more points by dragging the dimmed squares that are located between the actual line points. When you move these squares, you create more points. When you modify a line, you can also use the **Snapping** functions **Point** and **Nearest**. Click **Save form** to save changes.

Adding text

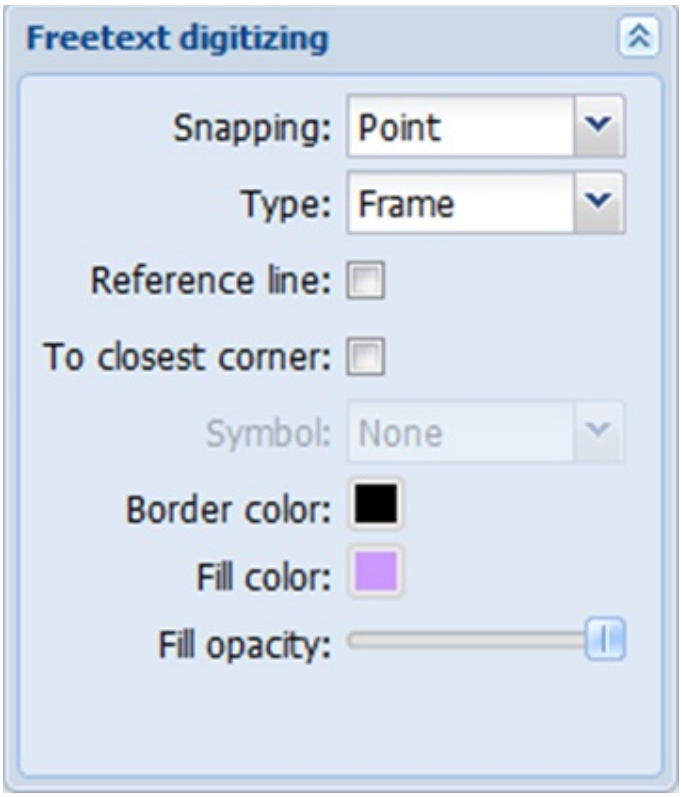
To add text on the map, such as comments or observations, use the **Text** tool in the toolbar at the top of the screen. Apart from the **Create** and **Modify** functions, the **Text** form functions as described in the chapter Buttons on object forms.

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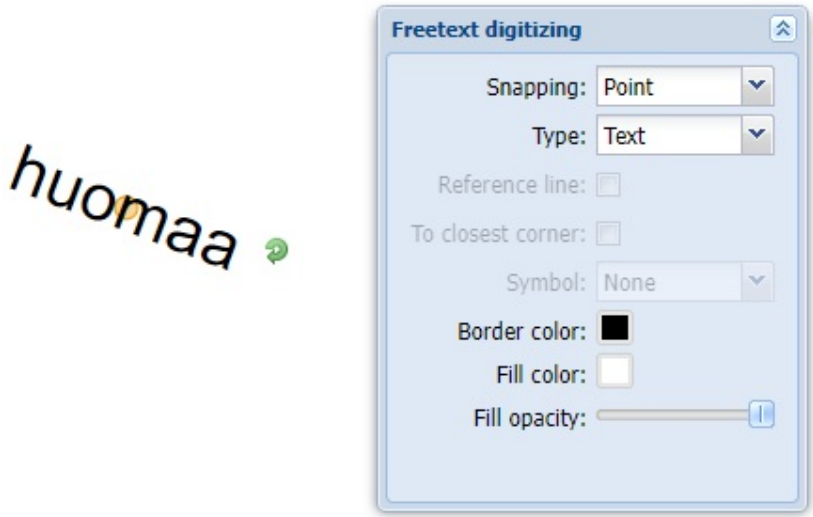


1. Open the **Text** form by clicking **Text** in the main toolbar.
2. In the text field, enter the text you want to add.
3. Select the **Colour**, (font) **Size,** and other information. Note that the placement scale does not affect the size of the text – only the font size does.
4. Click **Create** in the form's toolbar.
5. In the **Freetext digitizing** dialogue box that is displayed, select **Type**.
6. **Text**: only text on the map.
7. **Frame**: text with frames.
8. Select the Border colour.
9. Select the Fill color.
10. Adjust the opacity using the **Fill opacity** selector.
    a. **Line**: underlined text.
        i. Select the **Border colour** (colour used for underlining).

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1. Position the text at the appropriate location on the map.
2. Use the tool to rotate to the appropriate angle.



TIP: You can edit the text, colour, and size at any time when creating text.

1. Complete the process by right-clicking, or click **Save form** on the form.

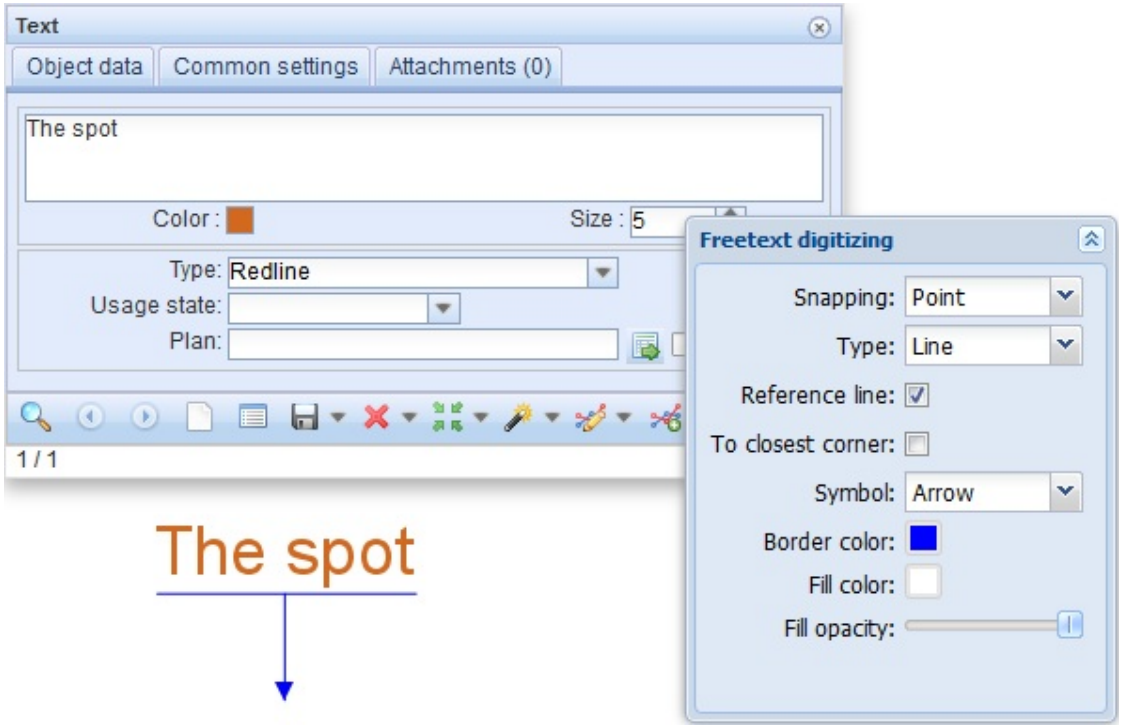
Note! The drawing options you selected are session-specific. With this, adding texts using the same style will be quicker.

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Adding text with a reference line on the map

Steps 1–5 as described above, but select **Frame** or **Line** as the type.

1. Select the **Reference line** checkbox.
2. Select the **To closest corner** checkbox if you want to connect the reference line to the nearest corner instead of the nearest point.
3. Select **Symbol**
    a. **None**: the line has no symbol.
    b. **Arrow:** The line is an arrow pointing to a point.
4. **Circle:** see the chapter Adding text with a circle reference line on the map.



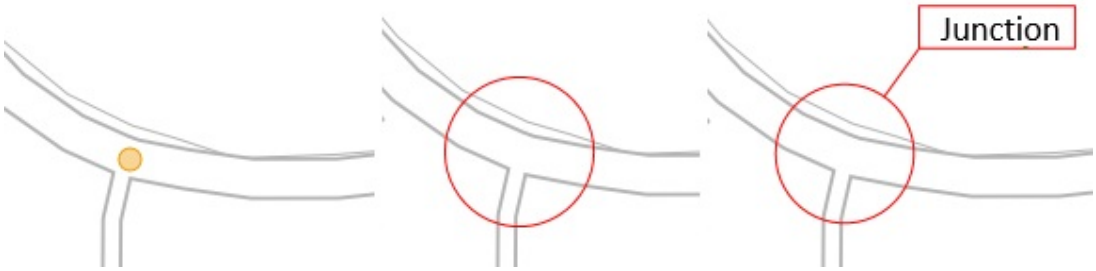
1. Position the starting point of the reference line on the map and move the mouse to see the line attached to the text.
2. Position the text at the appropriate location.
3. Rotate using the function.
4. Complete the process by right-clicking, or click **Save form** on the form.

Adding text with a circle annotation line on the map

Steps 1–8 as described above, but select **Circle** as the symbol.

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1. Position the center of the point buffer on the map.
2. Move the mouse to define the size of the circle.
3. Accept the size by clicking the left mouse button.
4. Position your text on the map.
5. Rotate using the function.
6. When you are done, click the right mouse button or click **Save form** on the form.

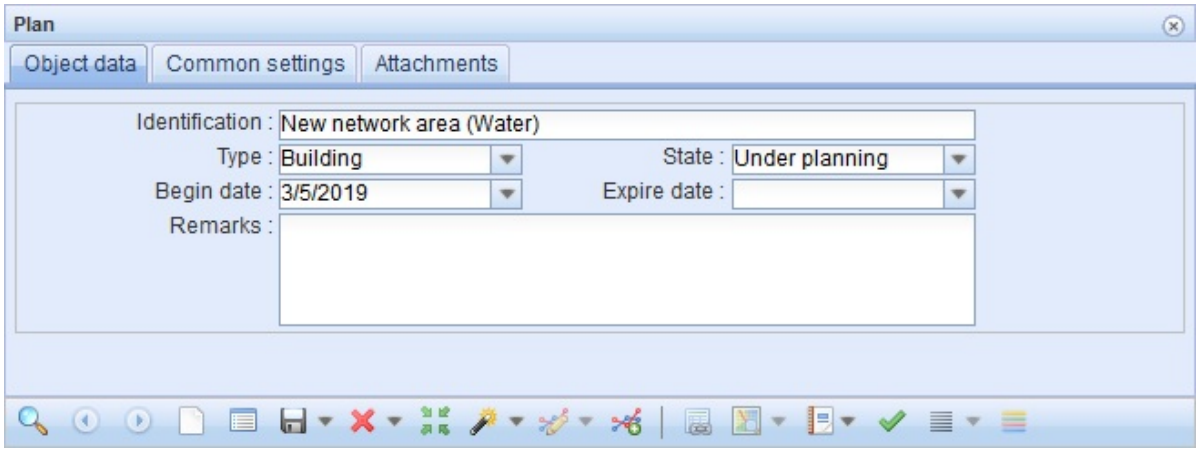


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PLANS

You can use the **Plan** field of an object form to attach the object to a **Plan** . If a plan does not yet exist, you can create one on the **Plan** form. The mandatory fields for a new plan are **type**, **state**, and **identification**. Give an identifiable name for you plans, because plans are selected to other forms based on their identification. It is important to save an area for a plan. Saving an area is a prerequisite for using a plan as input for automatic fiber-optic planning. For more information, see the chapter Integration with FiberPlanIT™ by Comsof (This function is subject to a separate order).

Click **Create** and digitize the border of the area. Instructions on this are available in the chapter Modifying the geometry of an area. Stop digitizing and save by clicking the right mouse button. After you have created the plan and saved it in the system by clicking **Save form** , it is available for selection in the **Plan** field of object forms.



Set as the default plan

Click **Set as default Plan** to set a plan retrieved to a form as the default plan. When you click **Defaults** on object forms, the default plan is automatically added to the form. You can cancel the **Default plan** setting in the **Defaults** menu. See the chapter Managing settings defined by a user.

Locating a plan

Click **Locate** to locate a plan and the related objects.

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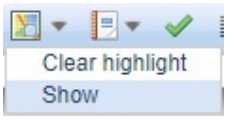
TIP: Define the location of the plan so that you position the plan on the map already before adding any objects to it.

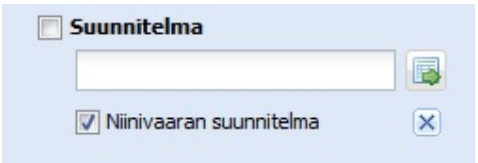
Highlighting objects

Objects that are part of a plan can be highlighted on the map by clicking **Highlight** . This centers the map on the objects included in the plan and highlights the objects on the map.



To view a plan's objects on the map, select **Show** in the drop-down menu for **Highlight** to activate the **Plan** filter in the **Layers** (Filters) selection and to display only the objects of this plan on the map. More information on filters is available in the chapter Layer configurations.





You can save a **Layer configuration**, that is the selected background map and the active layers, by clicking **Save** in the top-right corner of the **Layers** tool. Layer configurations are saved in the browser cache of the browser that was used, and they are, therefore, not available on other computers.

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Layer configurations can also be saved in a database with a user name, in which case the layer configuration is user-specific instead of browser-specific. Save a layer configuration in a database by clicking **Configure** and wait for the background colour to change to orange. Click **Save** to save the layer configuration in a database.

Upload the saved layer configuration in the Layers form by clicking **Reload** . You can restore the original layer configuration settings by clicking **Reset to defaults** . The program displays the following notification: **User preferences will be deleted and default configuration will be loaded.**

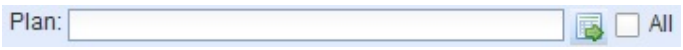
TIP: You can view all objects by removing the **Plan** filter on the **Filters** tab of the **Layers** form.

Adding an object to a plan

Use the objects' own forms to add objects to plans.

1. Open an object form.
2. Retrieve the object you want to add to the form (Retrieving information to a form, **or**Picking objects from the map), **or** fill in the information on the new object.
3. Select the required plan from the drop-down menu in the **Plan** field **OR:**

Retrieve the appropriate plan to the **Plan** field (Using the predictive search field).



1. Click **Save** .

TIP: Plans that are marked to be **ready** are displayed as search results for the predictive search field if you select the **All** checkbox.

Maintenance state of plan objects (this function is subject to a separate order)

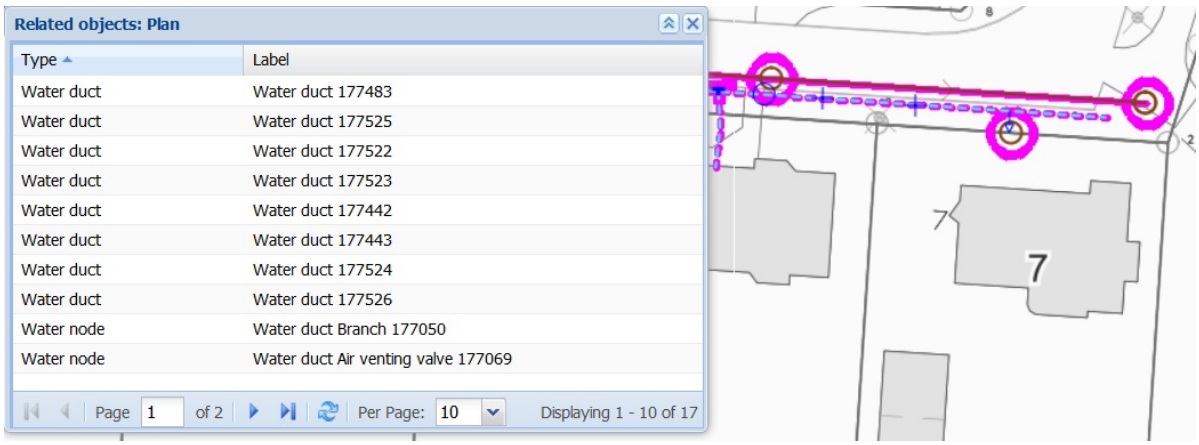
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The usage state of objects that belong to a plan can be locked if the related function has been enabled on the basis of a separate order. If a plan is in the maintenance state, users cannot update the network object included in the plan, and they cannot delete the plan. Network objects that can be locked include cables, conduits, ducts, telecom premises, devices, splices, manholes, poles, and other point objects and connections at the cable and device levels.

The admin site is used to specify the user group with the right to set plans to the maintenance state. However, all users can modify the property attributes and location information of plans in the maintenance state, excluding the usage state of the plans.

List the objects of the plan

Click **List objects of the plan** to view information on a plan's objects. Clicking this button opens a list of the objects related to the plan, including the **type**, **identification** and **description** of the objects. Click the right mouse button over the target row to click **Show on the form**. This takes you to the object form. You can view or edit an object's information on the object form.

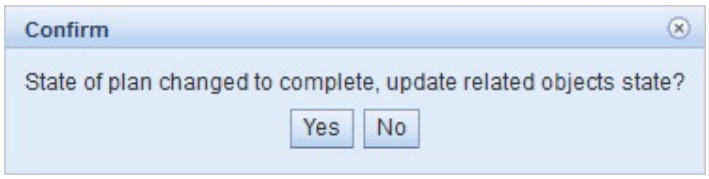


Completing plans

When you edit the **State** of a plan, you can update the objects related to the plan.

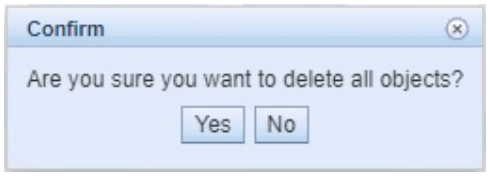
Use this function when a network with objects in the **Planned** state has been planned on the map. When the plan is implemented and completed, the usage state of its objects should be updated to **In use**. Open the appropriate plan on its form and change the usage state to **Ready**. Then click **Save form**. The program will then ask: **State of plan changed to complete, update related objects state?** Click **Yes** to update the state of the related objects to **In use**.

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Deconstructing a plan

You can also use the **Plan** tool for planning the deconstruction of a plan. In deconstruction plans, set **Deconstruction** as the **Type** of the plan. **Deconstruction plans** function in the same way as normal plans, in addition to which any objects linked to the plan when it was completed can automatically be removed from the map (deconstructed), or their usage state can be set to scrap. Note that you must mark the **State** of the plan as **Ready**.



List the apartments and addresses in the plan

In the drop-down menu for **List** , select **Plan apartments** to view a list of the plan's addresses and apartments. This list displays the number of apartments and all the basic information on the **Address** and **Apartment** forms can be selected for a column view. In the menu for the **Reports** button, click **List report** to create a list report.

In addition, you can list the addresses related to the plan (**Plan addresses**), the properties related to the plan (**Intersected properties**), or the properties related to all plans retrieved to the form (**Intersected properties for all**).

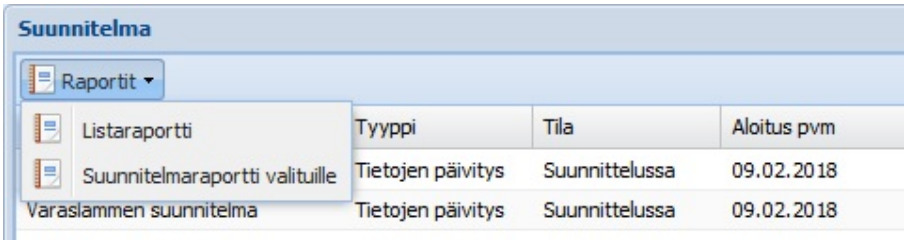
Further information on the list view is provided in the List chapter.

Plan report

The plan report (an Excel document) includes all the objects related to the plan. Furthermore, the plan report includes the role of the cable and the number of connected threads, as well as the conduits' and ducts' **distances eligible for subsidy** (if the feature Distance eligible for subsidy has been ordered).

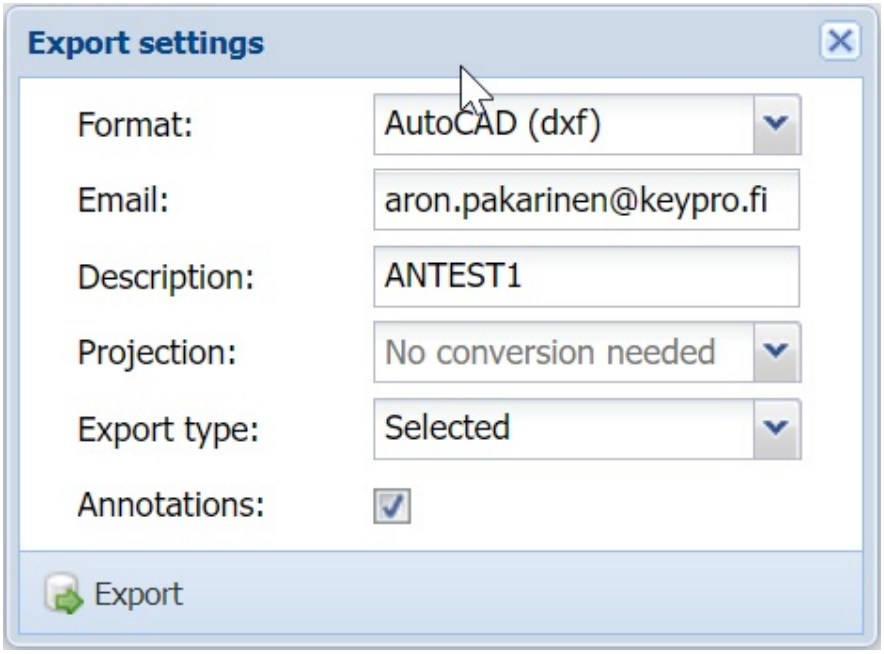
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You can create a plan report for more than one plan. On the Plan form, select **List** . On the displayed form, select the required plans by clicking the rows with the left mouse button while holding down the Control/Shift key. Open the **Reports** drop-down menu and select **Plan report for selected**. The header field of the Excel report includes the names of the selected plans.



Tukikelvottomien sijaintien vienti (Erikseen tilattava toiminto)

Voit viedä kaapelien ja kanavien tukikelvottomat sijainnit ulkoisiin tiedostomuotoihin valitsemalla **Raportit** -alasvetovalikosta **Vie**-toiminto. Vientiasetuksissa määrittele **Vientityyppi**-valikkoon **Tukikelvottomat sijainnit.** Kaapelin ja kanavan tukikelvoton sijainti muodostuu niistä osista, jotka kulkevat tukikelvottomien alueiden läpi.



Show in group display

Click **Show current in group display** to open the plan's objects in a group display. More information on the group display is available in the chapter Group display.

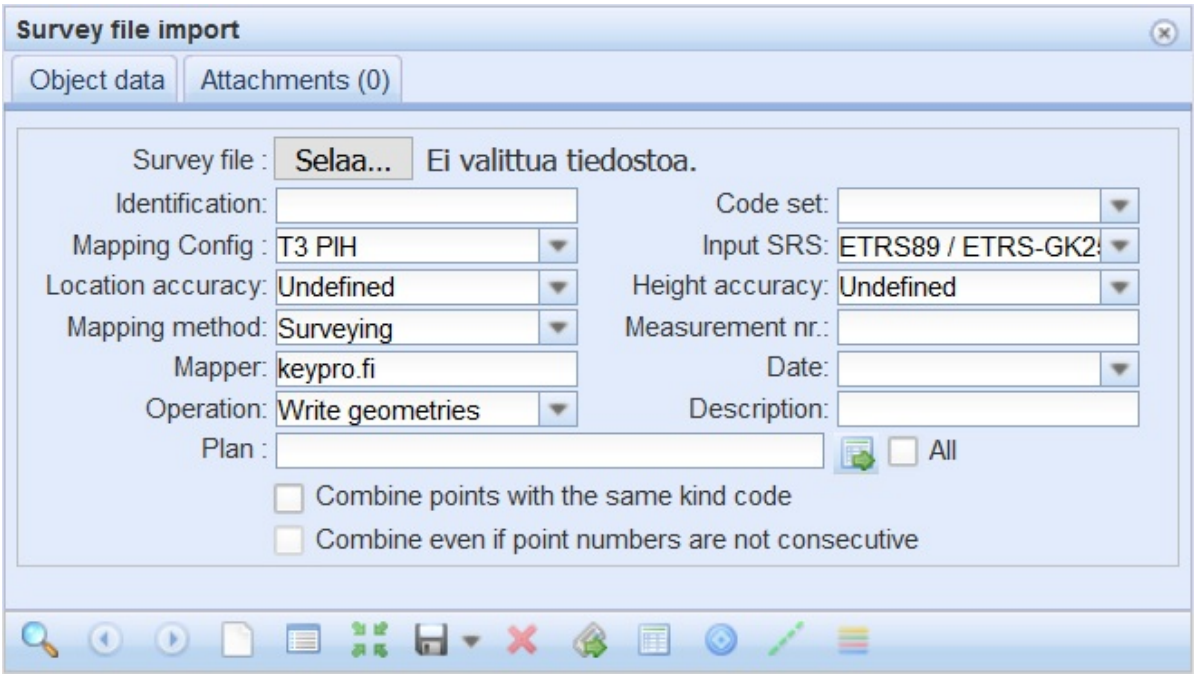
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SURVEY FILE IMPORT

Use the **Survey file import** tool in the toolbar to import to the system any land surveys carried out in the field, to view and edit created survey objects, and to transform survey objects into network objects.

TIP: The structure and terminology of land survey files is discussed later in this document in the chapter Survey file description.



Importing a survey file

1. In the main toolbar, click **Survey file import** .
2. Click **Choose file** to select the file for reading.
3. Select the **Code set** used in the survey file.
4. Select the **Mapping configuration** that is appropriate for the survey file structure.
5. Select the correct **input SRS** for the survey file.

- KKJ (such as KKJ / Finland zone 1)
- Shortened GK (such as ETRS89 / ETRS-GK19FIN (EPSG:3126))
- Standard GK (2010) (such as ETRS89 / ETRS-GK19FIN 2010 (EPSG:3873))

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- local coordinate systems (such as ANC Finland)
- WGS (such as WGS84 (EPSG:4326))

1. Select **Operation**: **Create objects, Write geometries**, or **Also create objects.** If you select Create objects, the mapped ducts, manholes, valves, and so on, are created on the map. The survey geometries include point and line objects, and the **Surveys** layer is activated in the **Layer selection** when these are applied.
2. Select the **Combine points with the same kind code** checkbox to form lines based on consecutive points.
3. Select the **Combine even if point numbers are not consecutive** checkbox to join lines with non-consecutive point numbers.
4. Fill in the rest of the fields as necessary.
5. Click **Convert** in the form's toolbar. The survey file is automatically saved after the conversion.

Results of the survey

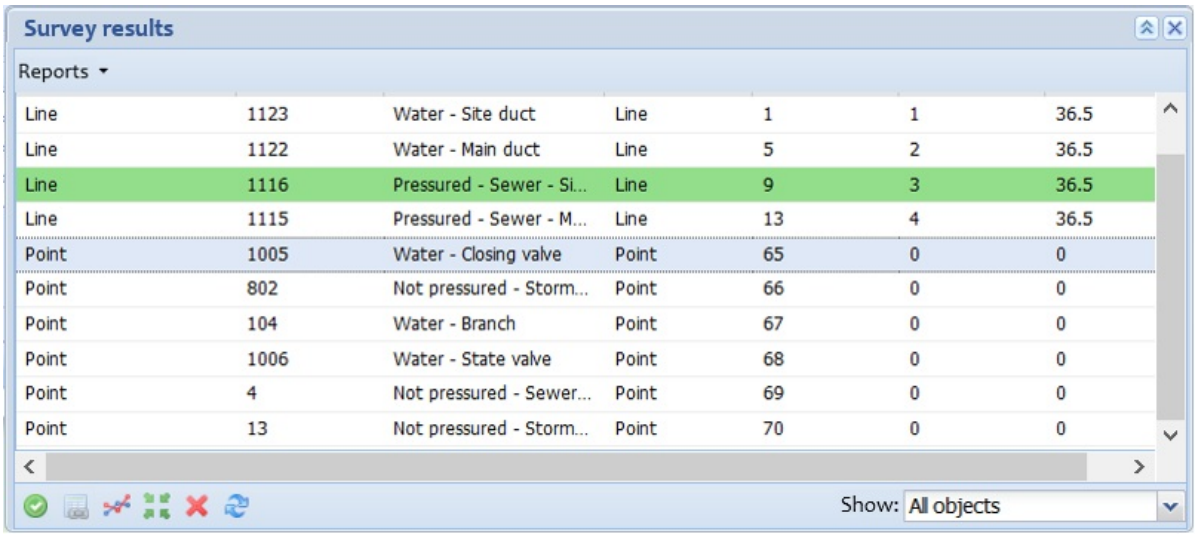
Click **Show results** to view the survey objects on a list.

The **Results of the survey** form includes information on survey objects that were created in the conversion. There are three types of objects: points, lines, and unknown. Unknown objects are created only if the kind code in the file has not been defined in the selected code set.

The list has seven columns by default: Type, Kind code, Code description, Geometry, Point number, Line number, and Length. The columns displayed depend on the survey setting that is applied.

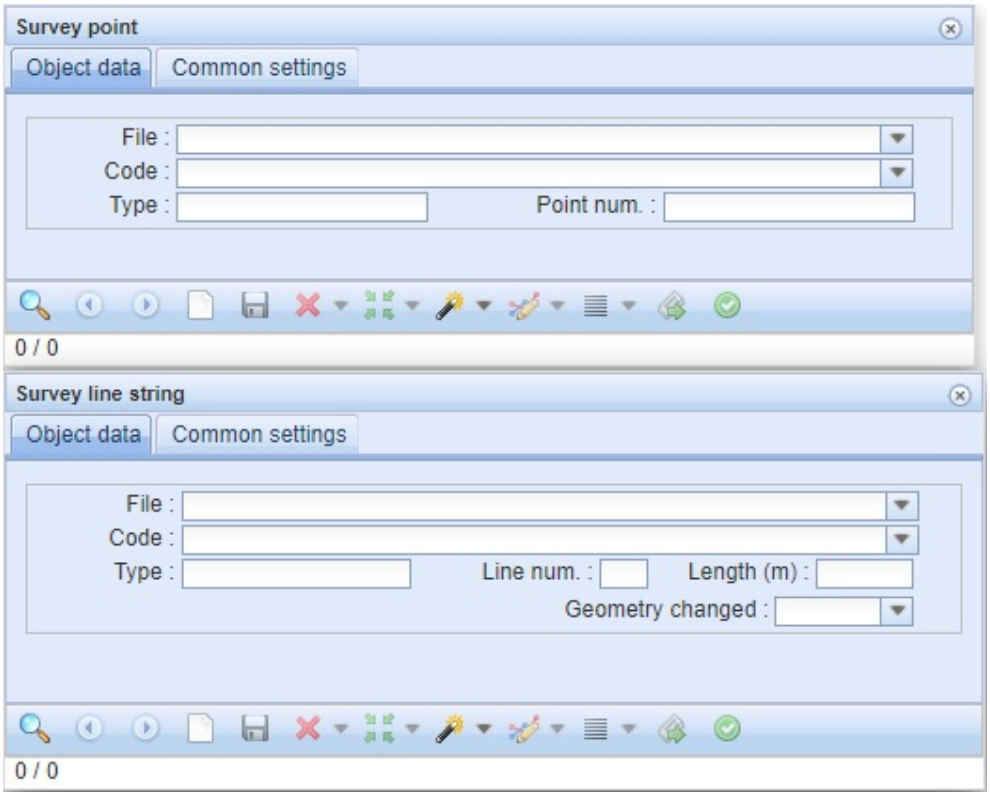
The **Show** menu includes the following options for displaying the Results of the Survey list: **All objects**, **Created objects**, and **Not created objects.** Update the **Results of the Survey** list by clicking **Refresh** .

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Filter the objects by selecting the appropriate option in the drop-down menu for **Show** at the bottom of the form. Rows from which network objects have been created are displayed in **green**. For more information, see the related chapter: Creating network objects.

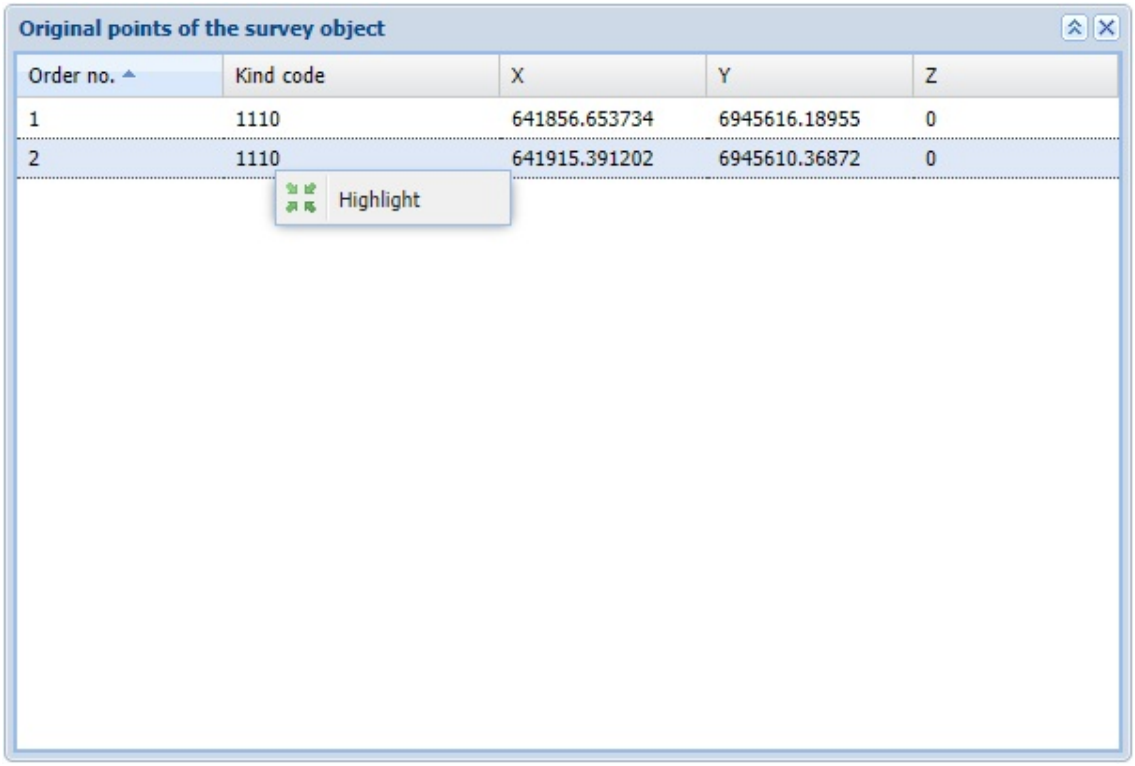
You can view survey objects on the **Survey Point** and **Survey Line string** forms that are available in the drop-down menu for **Survey file import** . The main purpose of these forms is to provide tools for editing the location and geometry of the objects. You cannot create new survey objects on these forms.



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Viewing the single points of a survey line

To view the points of a single survey line, go to the **Survey Line string** form and, in the drop-down menu for **List** , click **Survey line points.**



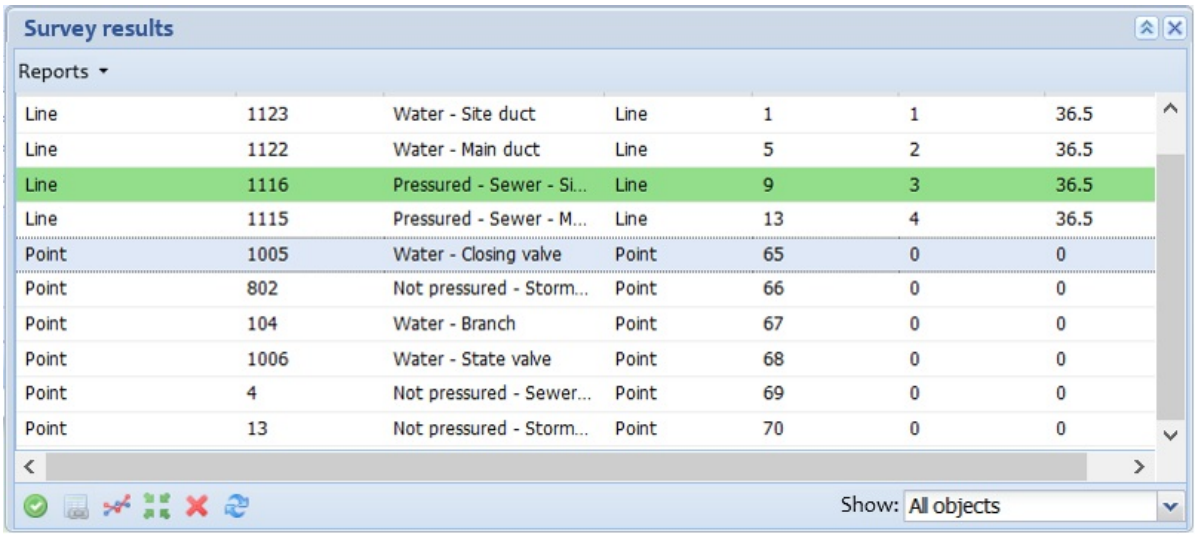
To locate a point, click a row using the left mouse button and then select **Highlight** in the menu that is displayed when you click the right mouse button.

TIP: Double-click a point to locate it.

Creating network objects

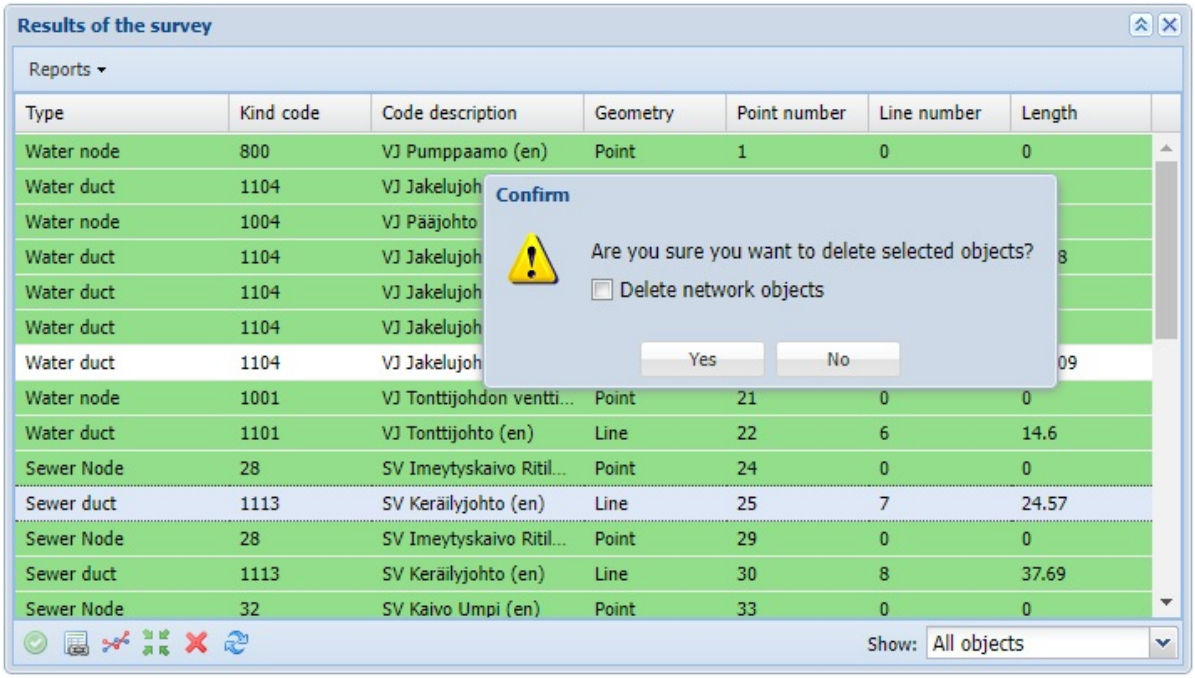
1. Select the rows that you want to use for creating network objects.
2. In the tool bar at the bottom of the form, click **Create network object** .
3. The rows of created objects are marked in green.

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Deleting survey objects

1. Select the rows you want to delete.
2. Click **Delete** in the form's toolbar.
3. In the dialogue box for confirming the deletion, select **Delete network objects** if you also want to delete the network objects created based on the objects.
4. Click **Yes** to confirm.



Locating survey objects

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1. Select the row you want to locate (multiple selection is not supported).
2. Click **Locate** .

Survey report

You can create an **Excel** report on the survey results, including the applicable codes, their number, and the total length per code. Start creating a report by clicking **Survey results report** in the **Reports** menu.

Editing the created network objects

1. Select the created object (green) that you want to edit.
2. In the toolbar at the bottom, select **Modify** , or click the right mouse button and select **Modify** in the menu.
3. The form for the created network object is displayed. For example, if the object's type is **Conduit,** the object is opened on the **Conduit** form.

Editing the geometry of survey objects

1. Select the object whose geometry you want to edit.
2. In the context menu (**Virhe. Viitteen lähdettä ei löytynyt.**), click **Edit geometry** , or select **Edit geometry** in the toolbar at the bottom.
3. Depending on the geometry type of the object, the **Survey Point** or **Survey Line string** form will be displayed.
4. Edit the geometry as instructed in the Modifying the geometry of an object chapter.
5. Do not forget to click **Save** to save your changes. Note that you cannot edit the original survey coordinates in this connection. You can view them as described in the chapter Viewing the single points of a survey line.

Survey file description

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Admin users can configure various **Survey settings** for survey files. The so-called GT format (T3 PIH) is discussed next. The GT file is a text file that consists of columns. Each row has 7 or 8 columns. These are called T1–T8. Columns are separated using space or tabulation characters. The data in a column must not include space or tabulation characters and, apart from column T8, the column cells cannot be empty.

An example of a land survey file. The survey file contains two valves (4200) and two conduit routes (67250).

```
1       0       42000   1       27509090.86     7655592.10      99.404
1       1       67250   2       27509090.86     7655592.10      99.404
1       1       67250   3       27509134.78     7655619.09      99.544
1       1       67250   4       27509190.34     7655654.01      99.577
1       1       67250   5       27509243.10     7655687.51      99.764
1       1       67250   6       27509289.14     7655713.97      99.923
1       0       42000   7       27509289.14     7655713.97      100.273
1       1       67250   8       27509341.00     7655747.83      100.273
1       1       67250   9       27509391.80     7655776.94      100.404
```

The coordinate file has information on one coordinate point on each row. The first four numbers are the point identifiers T1...T4, and T3 is typically the kind code. Kind code refers to a “key” that is used to link the description and property values to a certain coordinate point. The applied code set defines the kind codes that are used in a land survey file. These can be edited via the admin user interface.

The line code T2 is used to separate various lines. For point objects, T2 is 0. The identifier T4 is usually the point number defining the order in which points have been measured. Identifiers are followed by coordinate values. Coordinates can be in the order North-East-Height or East-North-Height (this can be defined on the form). In addition to the coordinate values (T5–T7), a row can include a comment or other information related to the object (T8).

The following default code set is applied to the example:

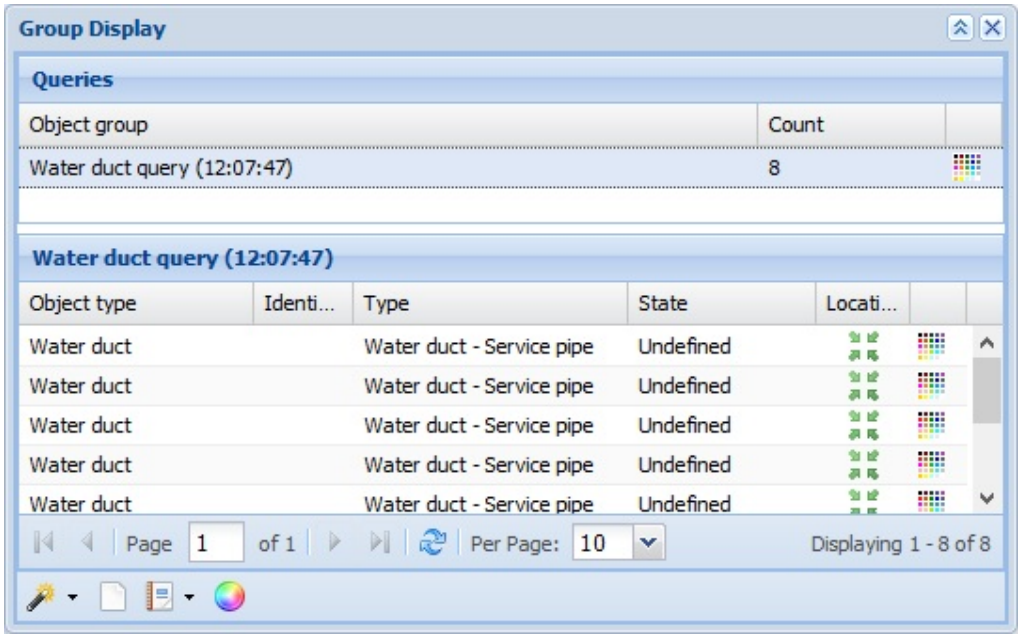
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41000	Bleeding + shut-off + bleed valve (IP+SV+IP)
42000	Bleed valve + shut-off (IP+SV)
43000	Shut-off valve (SV)
44000	Bleeding valve (IP)
45000	Drain valve (TY)
46000	Single shut-off valve
60000	DH lines
67125	Mpuk (U) DN 125+125/500
67150	Mpuk (U) DN 150+150/560
67200	Mpuk (U) DN 200+200/710
67250	Mpuk (U) DN 250+250/900

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GROUP DISPLAY AND USER THEMES

The **Group display** function helps you view various object groups. You can use it to edit and highlight a group or its objects, or to combine a group with another group. In addition, you can open objects in a group on their own object forms and on object form lists.



Groups are groups of searched objects or combinations of them.

Creating groups

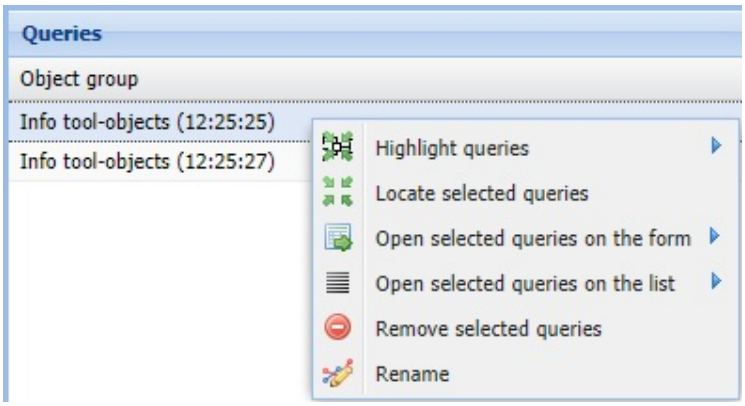
Groups can be created in many ways:

1. Add object form search results as a group to a list using the **Show in group display** function in the drop-down menu for **List**. More information on this function is provided in the chapter Show in group display.
2. Pick objects from the map through the **Group display** form, as described in the chapter Picking objects from the map .
3. View the results of the Info query in a Group display.
4. Retrieve the objects of a **Plan**. This is discussed in more detail later in this document in the Show in a group display chapter.

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Renaming an object group

1. To rename an object group, either double-click a group or select **Rename** in the context menu, in which case you do not need to select the row.
2. Enter the new name in the **Object group** field.
3. Complete editing by clicking outside the field.



Merging object groups

1. Select the groups you want to merge on the list.
2. In the context menu, select **Merge selected queries.**
3. Enter the new name in the **Object group** field.
4. Complete editing by clicking outside the field.

Highlighting groups

1. Select the colours used for highlighting the groups.
2. In the context menu, select **Highlight queries** to highlight the selected groups and groups for which you assigned a colour. Groups with no colour assigned are highlighted using the default colour. To apply a specific highlight colour for the selected groups, select the colour in the sub-menu. The items outside the selection are then highlighted using the default colour.

Locating queries

1. Select the group(s) you want to locate.

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2. In the context menu, select **Locate selected queries**.

Opening groups on forms and lists

1. Select the group or groups you want to open.
2. a) Open all search results by selecting Open selected queries on the form or Open selected queries on the list.

Or:

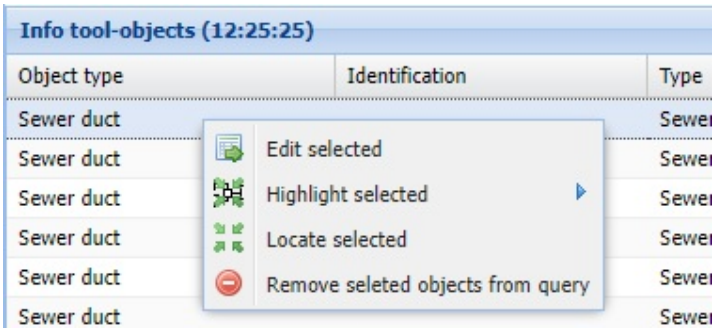
b) In the sub-menu, open a single group of search results.

Removing groups

1. Select the group you want to remove.
2. In the context menu, select **Remove selected queries**.

Opening a group's objects on forms and lists

1. Select the objects.
2. The right-click opens the (context) menu for the object list.
3. In the context menu, select **Edit selected**. The selected objects are opened on their own object forms.



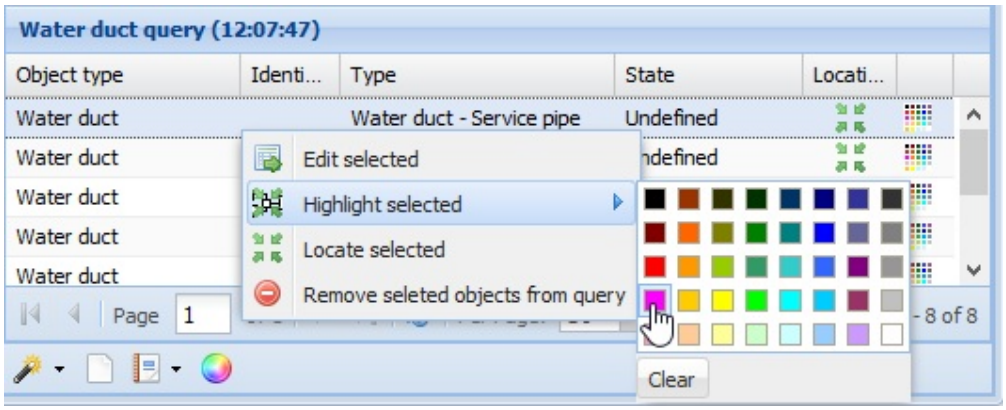
Highlighting individual objects in a group display

Highlighting options: Select the highlight colour separately for each row, select the same colour for all, or use the default highlight colour.

1. Select the objects you want to highlight.
2. a) In the context menu, select **Highlight selected** to highlight the

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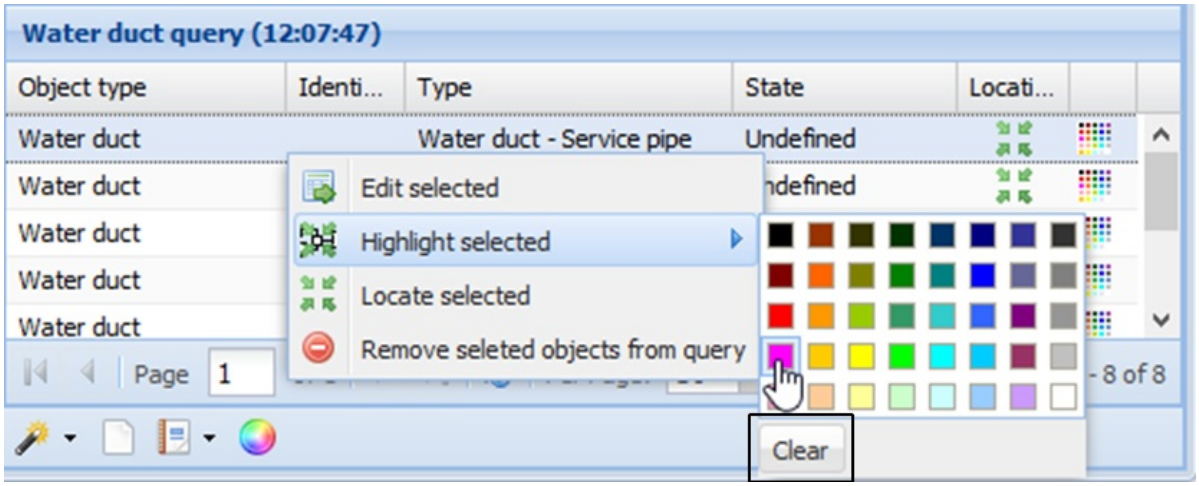
objects using the default colour, unless you have defined a colour for the row in question. b) Highlight all selected objects using the same colour by selecting the colour in the sub-menu.



Note! The next time highlighting is applied, the current highlighting is removed. For this reason, if you want to highlight additional objects, you must include the currently highlighted objects in the selection.

Clearing the highlighting of group objects

To clear the highlighting of objects, select **Clear** in the context menu for **Highlight selected**.



The highlighting of objects is cleared when you switch to another group or delete objects.

Locating individual objects in a group display

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In the **Location** column, click **Locate** to center the map on the object and highlight the object. If there is no **Locate** button visible on the object's row, the object in question has no location defined. Locating multiple objects: First, select the objects you want to locate. Then, in the context menu, select **Locate selected queries**.

Removing an object from a group

1. Select the objects you want to remove.
2. In the context menu, select **Remove selected objects from query** .

Group reports and exporting a group to an external file format

To create an **Excel** report on the group opened on the object list, click **Reports**. In the drop-down menu, select **Reports** **Current query to Excel**. A new browser window is opened. The Excel file is handled in accordance with the device and browser settings. Follow the instructions displayed.

In the drop-down menu for **Reports**, select **Export** **Export current query to...** to export the current group to an external file format and to display the **Export settings** form. See the instructions in the chapter Exporting objects to external file formats (a function subject to a separate order).

Creating user themes

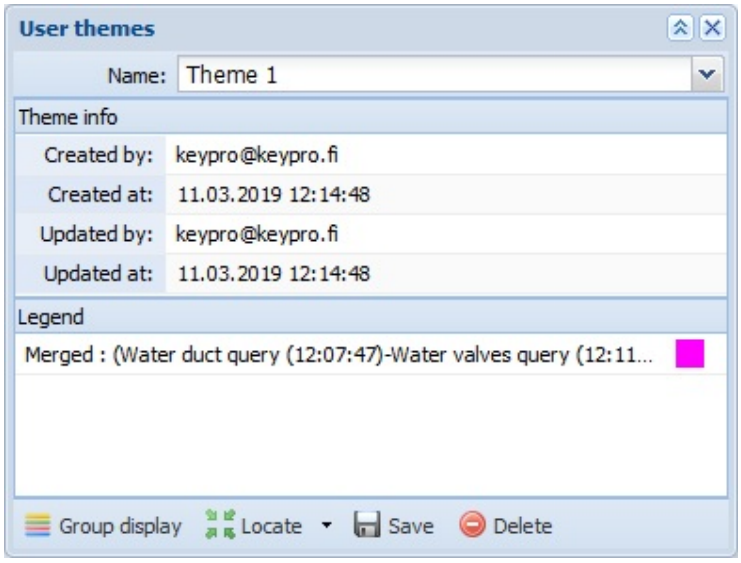
1. Create object groups in the **Group display** . For more information, see the chapter Creating groups.
2. Select the highlight colour for each group.
3. Click Save as new theme .
4. In the dialogue box that is displayed, enter a **name** for the theme and click **OK**.

More information on user themes is provided in the chapter User themes.

User themes

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Open the **User themes** form by clicking in the toolbar at the top. First, plan the highlighting applied to **the group display** and save it as a **User theme** for later use.



Viewing user themes

1. Open the **User themes** form by clicking **User themes** in the toolbar.
2. In the **Name** field, select the theme you want to view.
3. Click **Locate** and **Highlight**to view the selected theme. The map is then centered on the theme and objects are highlighted using the selected colours.
4. To view the content of the theme, click **Group display** and select in the Group display the group you want to view. The functions of the Group display are described in the chapter Group display.

Editing user themes

1. In the **Name** field, select the theme you want to edit.
2. **To change the highlight colour**, click the **Highlight colour** icon and select the colour you want to use.
3. Click **Save** to save changes.

TIP: Edit the contents of the theme by updating groups in the **Group display** and by saving/replacing a **User theme** using the same name.

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Deleting user themes

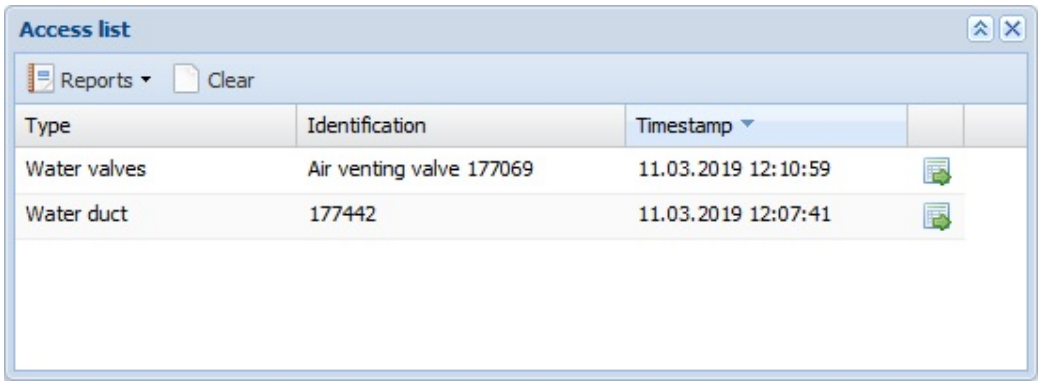
1. On the **User themes** form, on the list in the **Name** field, select the theme you want to delete.
2. Click **Delete**. You will be asked to confirm the deletion of the theme. Click **Yes** to delete the theme.

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CHANGE HISTORY AND DEFAULT OBJECT VALUES

The **Access list** function keeps a record of forms that were opened during a session and the objects retrieved to the forms. This makes it easier to return to the objects. Select a row on the list and click **Open** to open the object form.

On the Access list, you can view the type and identification of objects and the time when a specific object was handled.



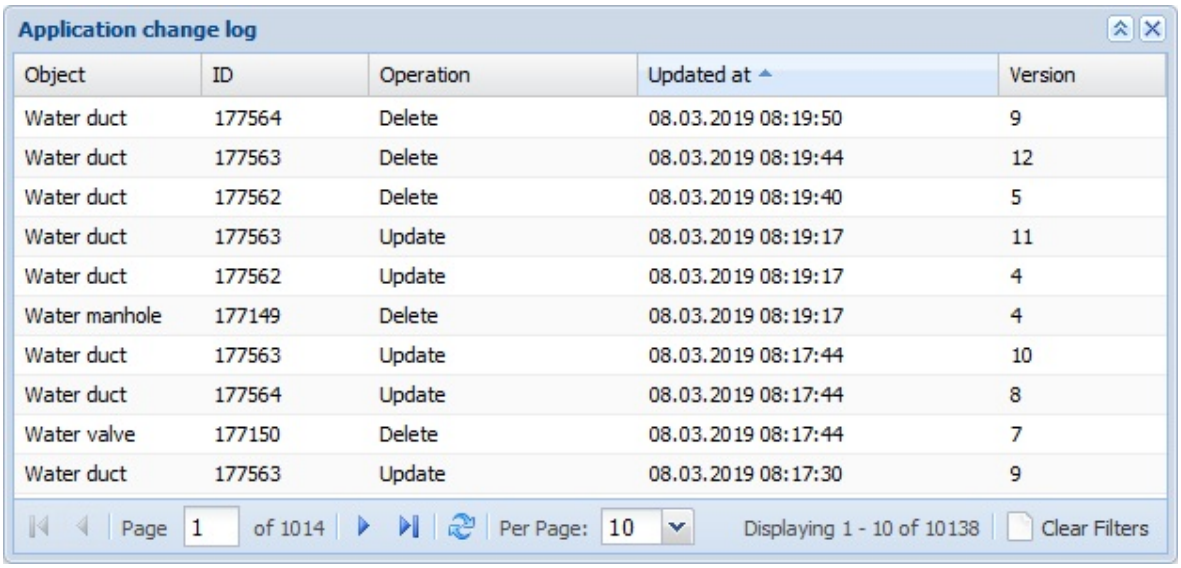
TIP: If you have deleted an object, you cannot retrieve it to an object form by clicking the Open button. Instead, use the Global change list function.

You can create an Excel report on the access list information by selecting **History report** in the drop-down menu for **Reports**. Click **Clear** to clear the access list. The **Access list** is automatically cleared when you log out from **KeyHeat**.

Global change history

To view the global change history, click **Global change history** . The **Global change history** function lists all saved changes starting from the most recent one. Click a column header to sort the list or select the sorting order in the menu for a column. View the current version of an object by clicking **Open form** in the context menu.

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Viewing changes made to an object

In the context menu, click **Open complete change log** to view the full change history of an object. The **Change history** form is displayed with the row in question pre-selected. More information on the form that is displayed is available in the chapter Change history.

Restoring changes

To restore changes, take the following steps:

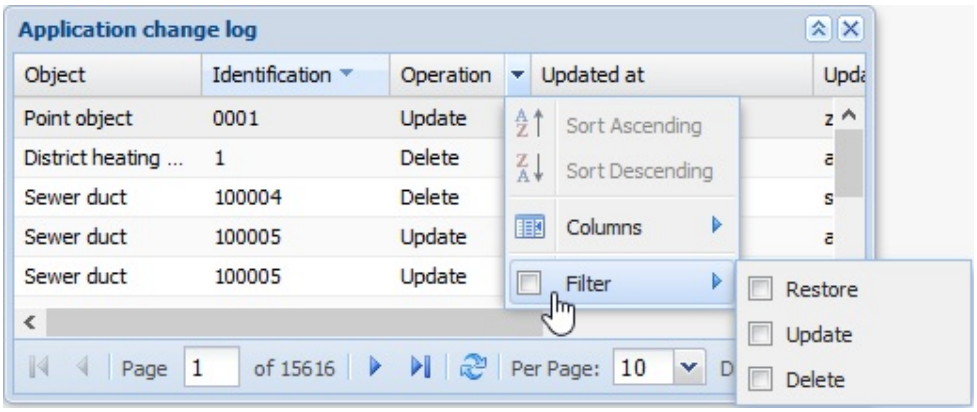
1. On the list, select the changes you want to restore.
2. In the context menu, select **Restore selected changes**.
3. In the **Report on restored changes** that is displayed and that includes separate fields for **Restored** and **Failed**, check that the change was restored successfully.

Note! If you selected more than one version of the same object, only the most recent version is restored.

Using filters

You can filter the changes displayed on the **Global change history** list by activating the required filters in the drop-down menu for a column header. When filters are activated, the related column headers are marked in ***bold and italics***.

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Clear a filter by deselecting it in the drop-down menu for a column header, or click **Clear filters** in the bottom right corner of the form. This clears all filters.

Managing defaults

Default values can be defined for most objects, and users can use these values as the basis when they create a new object. For more information, see the chapter: Default form values.

Managing settings defined by an admin user

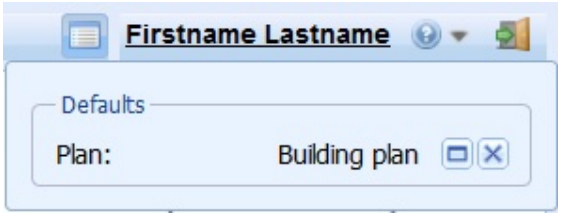
Admin users can save default values for an object by clicking **Save as default** in the menu for **Save** . The defaults are then available to all users. The **Save as default** function is only displayed for admin users, and it is active when a form has been cleared or an unsaved object is open on the form.

Managing settings defined by a user

On the **Plan** and **Exchange/Telecom area** forms, you can configure the object in question as the default for the duration of the session. Click to do this. After this, in addition to other default settings, the **Plan** and **Area** fields are completed on various forms when you click **Defaults** . For further information, see the chapter Set as the default plan.

The defined defaults are displayed in the **Defaults** dialogue box in the top-right corner of the screen.

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Click **Show on the form** to **open** the default object on its own form. Click to **remove** the default setting.

TIP: If there is no **Defaults** button in the top-right corner, the user has no active default settings.

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SMS SENDING AND ALERTS (these functions are subject to a separate order)

KeyAqua's SMS Sending service is used to send notifications (e.g. leakage or maintenance situations) to the customers of a water supply plant that can be found in KeyAqua. You can send a notification to a maximum of 500 recipients at a time.

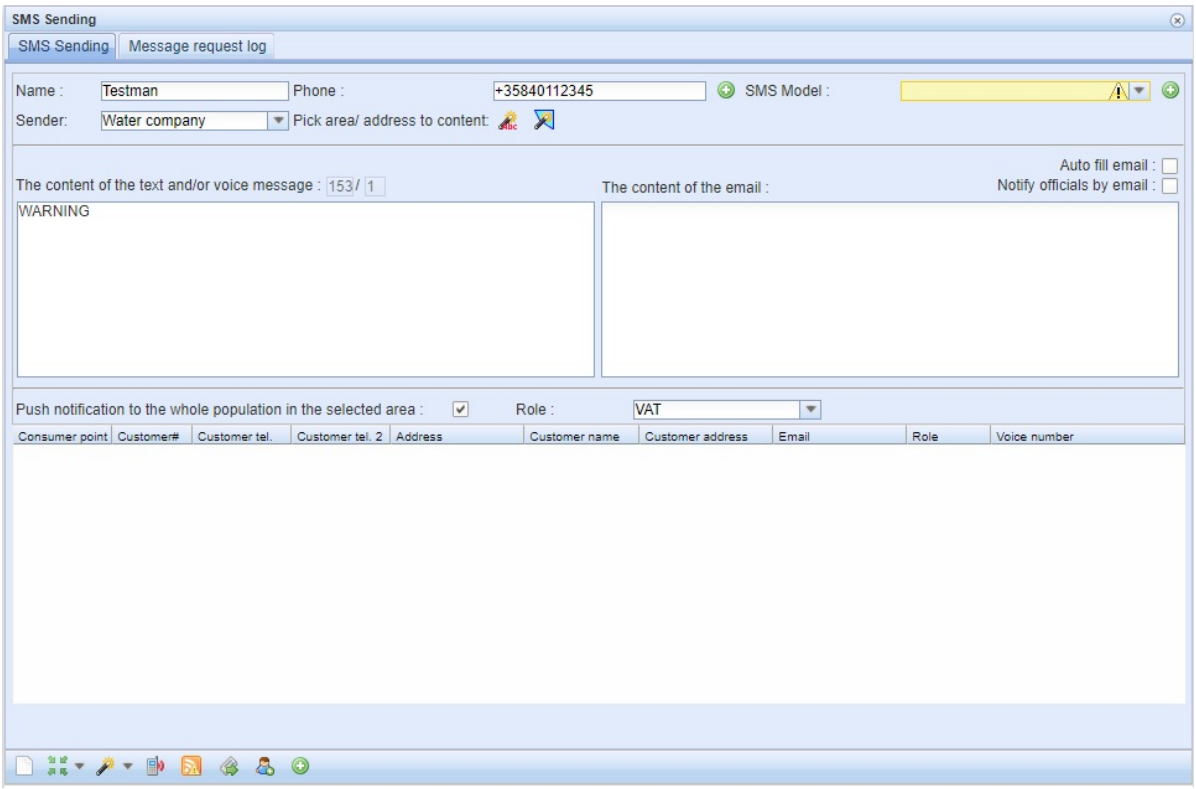
The SMS Sending form

The SMS Sending service is available in the main toolbar in the drop-down menu for Customer/Consumer Point:



The form consists of two tabs: **SMS Sending** and **Message request log**. SMS messages are sent through the first tab. Add customers/phone numbers to the form for sending the text message. Enter your message in the **SMS** field and click **Send SMS**. Information on sent messages is stored on the **Message request log** tab.

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Adding customers to the form

The following paragraphs describe the various ways to collect the target phone numbers to the **SMS Sending** form. There are various ways to create a target group: Each group of new phone numbers is added to the existing phone numbers on the form. If a phone number is already included in the list for SMS sending, only one SMS will be sent to it.

Adding individual customers

You can add a customer/phone number to the target group by using the top section of the **SMS Sending** tab

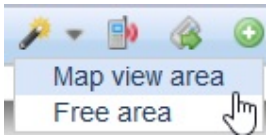


To add a customer, complete the **Name** and **Phone** fields and click the **Add new customer** button next to these fields. Phone number information is mandatory. Adding a name will help you distinguish one phone number from another on the target list, but it is not necessary.

Picking customers from the map

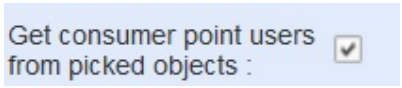
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To pick objects to the form directly from the map, use the **Pick** tool and the options in the related drop-down menu.



The tool is used in the same manner as the **Pick** tools on other forms. Use the tool to select **Consumer points** and the customers connected to them from the map. A **customer** may be connected to a consumer point as either an owner or an invoice recipient.

When the **Get consumer point users from picked objects** checkbox is selected, it means that the **Pick** tool retrieves to the list the users of the consumer point in question. A **user** can be, for example, a person living in an apartment of the apartment building that is the consumer point.

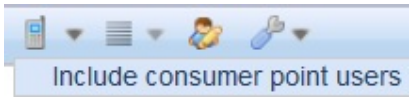


Importing from the Customer/Consumer point/Consumer point user form

Customers can be imported to the SMS Sending form from the Customer and/or Consumer point forms**.** You can retrieve **Customers** to these forms by using the available tools for searching and picking. When you have added the target group to the form, you can transfer it to the **SMS Sending** form by clicking the **SMS Sending** button on the form.



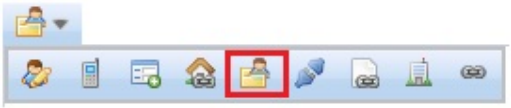
On the **Consumer point** form, this tool also provides the option **Include consumer point users** in the drop-down menu. This functions in the same way as the **Get consumer point users...** selection described in the previous section. In other words, it will add the consumer point users to the SMS Sending form.



Using Consumer point user form to send SMS

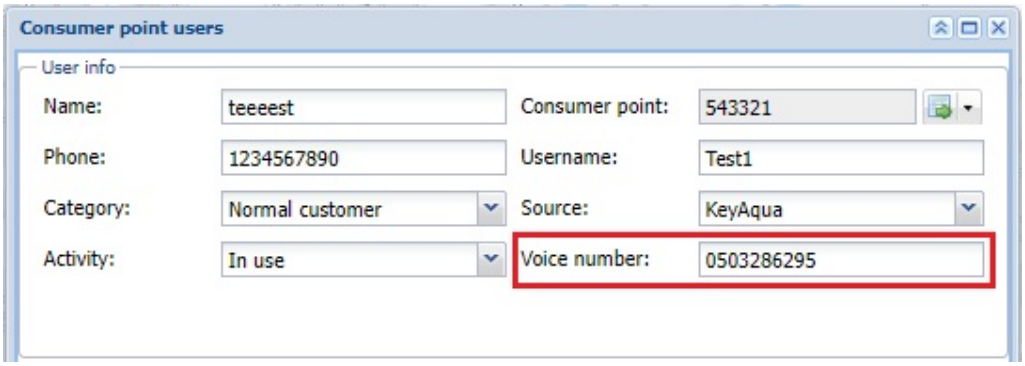
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Consumer point users are not the owners/administrators of the **Consumer point**. They are, for example, tenants or other family members. **Consumer point user** form can be found from the **Customer/Consumer point** menu from the main toolbar.



Consumer point users form has many fields which affect the way the SMS is received.

1. **Voice number**: The number on the field is for receiving voice messages:



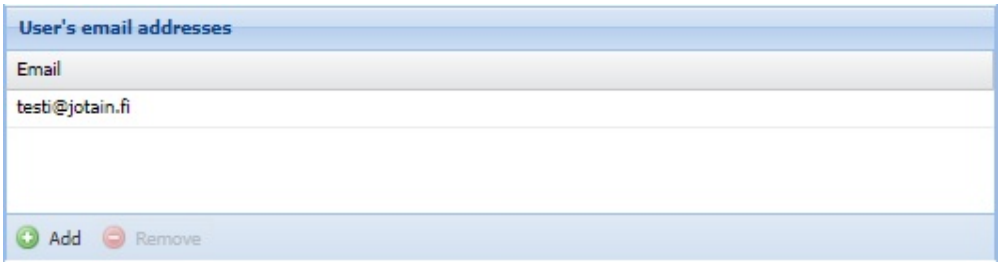
1. **Notifications**

There are three option to notify the consumer point user, by **SMS**, **email** or **voice number**. You may also choose all of them if necassary:



2**. User's email addresses**

It is possible to send a message written in the **SMS** form to the saved email address:



3. **Send SMS**

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When all the information has been filled in, open the **SMS sending** form by pressing **Send SMS** The information of the **Consumer point user** will be transferred to the recipient list of the message:

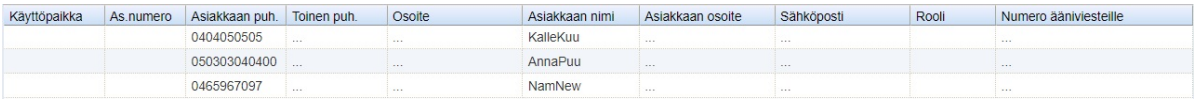


Saving default recipients

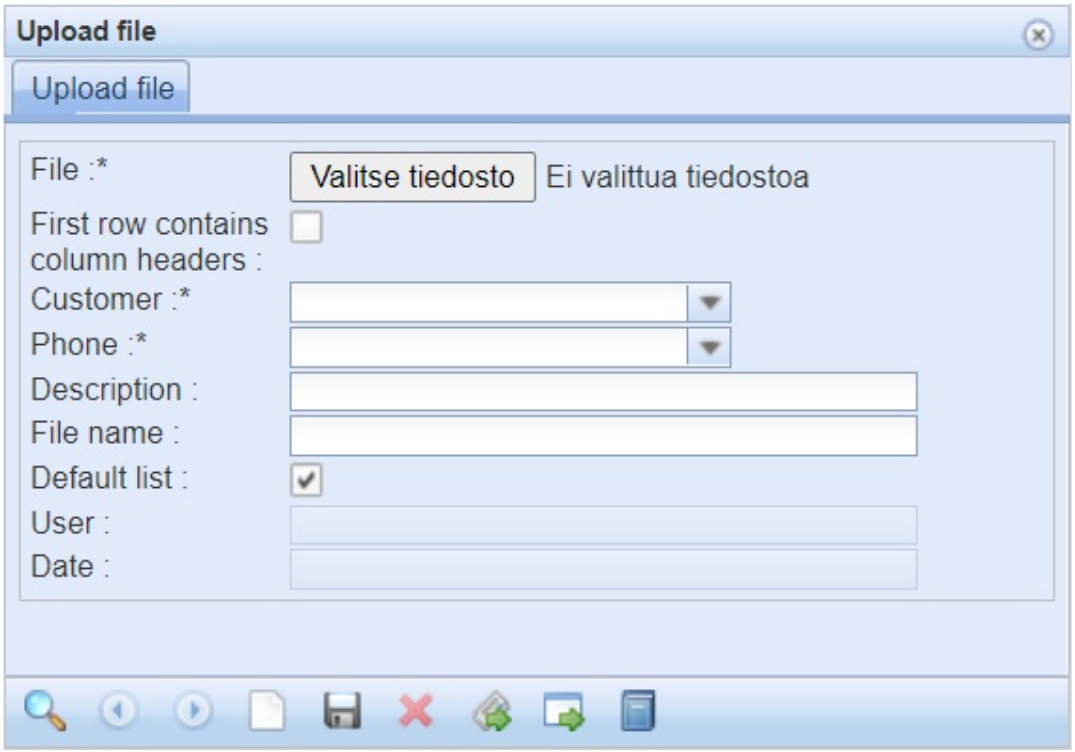
Sometimes there is a need to send messages to the same target group more than once. In this situation, it makes sense for you to save the target group as **Default recipients**.

Save as **Default recipients**:

1. Pick potential **Default recipients** to the **SMS Sending** form:



1. Click **Insert grid to database** button from the toolbar of the **SMS Sending** form.
2. Then **Upload file** and check the **Default list box** to save the default recipients:



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1. Save your work and close the **Upload file** form.
2. Click **Default recipients** button in the **SMS Sending** form. The recipients are then added as the receivers of the SMS.

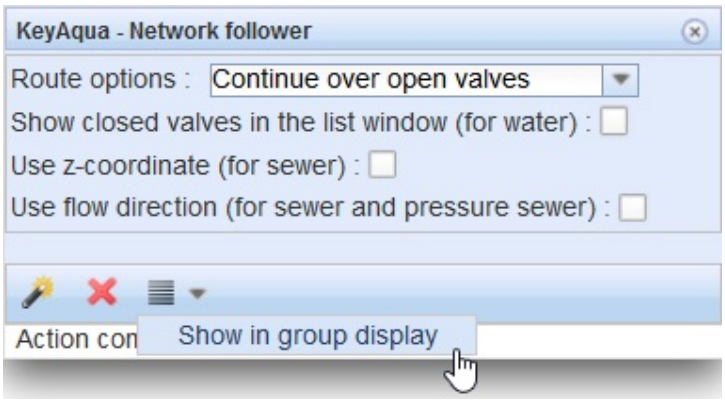
Note, you can create several default recipients lists. Once you click the **Default recipients** button from the **SMS Sending** form, every file that has been marked as **Default list** in the **Upload file** will receive the SMS.

Read more about the **Upload file** form: Saving a target group.

Network follower and group display

Another way to add customers to the SMS Sending form is to use the **Network follower and Group display tools**.

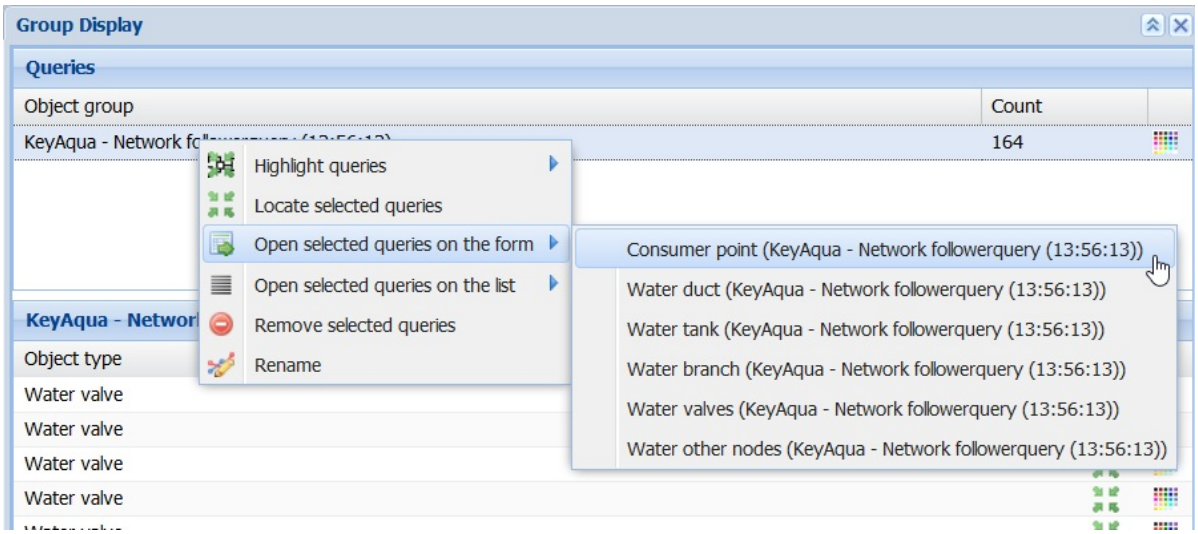
The consumer points found by the Network follower can be exported to the SMS Sending service by using the **Group display** tool. For network following to take into consideration the consumer point, it must be connected to the network that is being followed (a water, sewer, or rainwater connection). The consumer points are moved to the group display by selecting **Show in group display** in the drop-down menu for **List** .



A Network follower query added to the group display will include all the objects covered by the Network follower. The next step is to transfer consumer points from the group display to a separate form. To do this, right-click the group and select **Open selected queries on the form** à**Consumer point**.

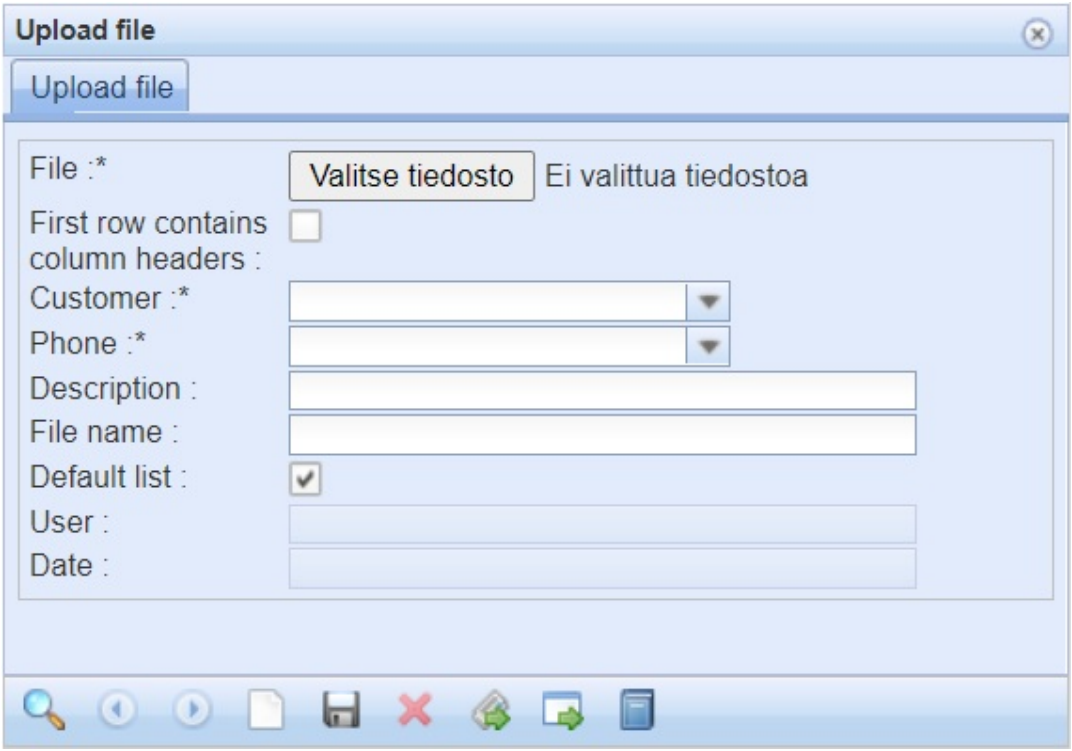
In addition, you can create groups in the group display by other means than the Network follower tool, for example, through picking or searching objects or through themes. Further information is available in the chapter Group display.

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Importing recipients from an external file

You can import a group of recipients to the SMS form from an external **CSV file**. On the SMS Sending form, click **Upload file** to import. This opens the **Upload file** form with no pre-filled fields.



1. Click **Browse** to search a local disk for the file to be loaded in the **File** field.
2. In the **Phone** and **Customer** fields, you must specify the CSV columns in which the names and phone numbers of the target persons can be found. For example, the format of the CSV file can be:

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Name	Address	Number
Example person 1	Manhattan street 99	0401234567
Example person 2	Manhattan street	100;0501234567

Note! CSV files must use UTF-8 encoding. You can ensure this, for example, by saving the file with the **Save as function of the Notepad** program and by selecting **UTF-8 in the Encoding field.**

This example uses the following selections on the **Upload file** form:

- The first row contains column headings
- Customer: In column 1 of the file
- Phone number: In column 3 of the file

When you have completed the selections on the **Upload file** form and selected the files, click **Upload file** to save the data included in the file in the database, or add them directly from the file to the target list on the SMS sending form by selecting **Import the data from the database** from the toolbar.

Customer roles

After selecting the recipients in the **SMS Sending** form, you can select the actual recipients from among them. Selection refers to filtering a set of customers based on the role assigned to the customer. The roles are:

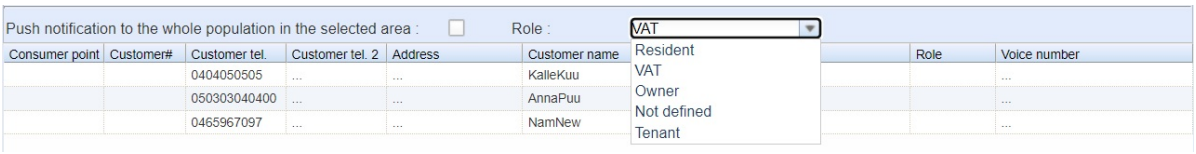
- Owner = The owner of the Consumer point.
- Tenant = A tenant who pays rent.
- Resident = Consumer point user, for example, occupant of an apartment building.
- Not defined = Customer role is not determined.

Select **Push notification to the whole population in the selected area** if you want to send a SMS to all the roles.



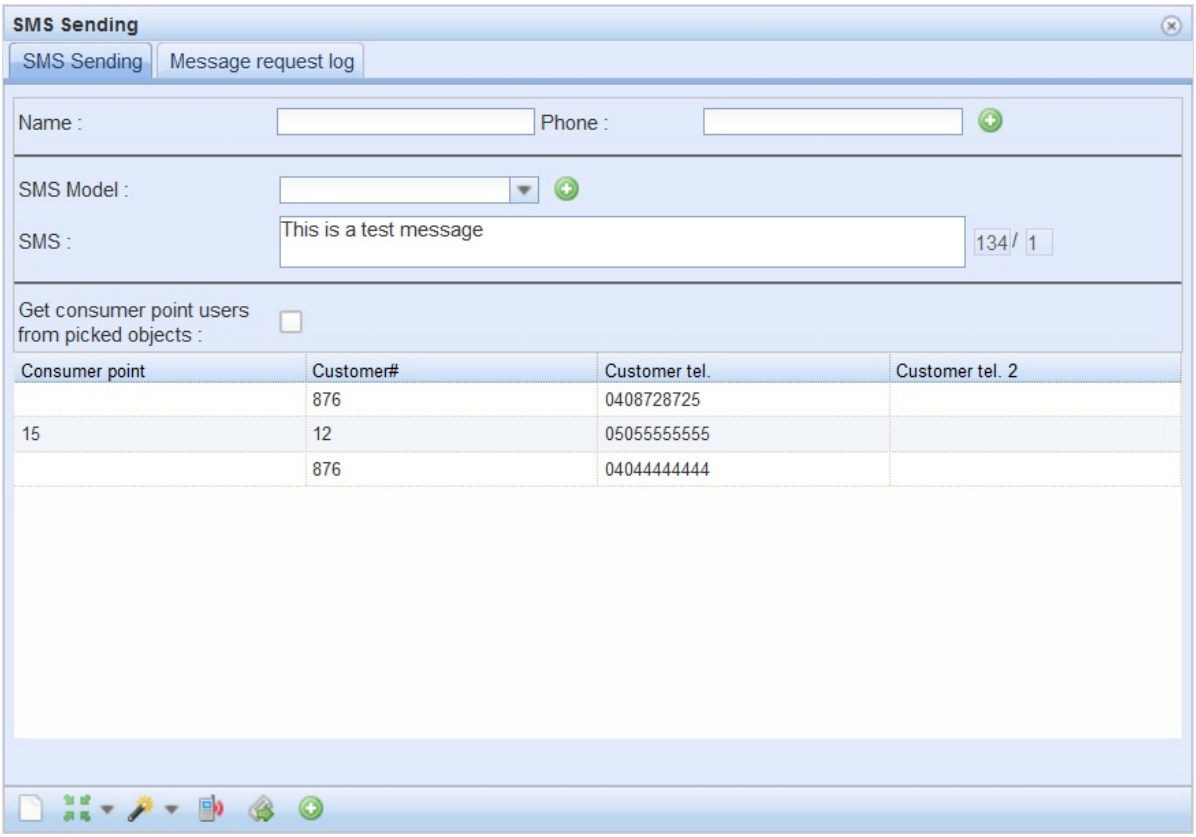
To filter recipients, turn off the **Push notification to the whole population in the selected area** setting, then select the desired customer roles. The recipient list below will be updated according to your selection.

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Writing and sending messages

When you have created a recipient group on the **SMS Sending** form, you can write and send messages. Enter your message in the **SMS** field and click **Send SMS** .



Take into consideration:

Sender drop-down menu: You can select the right organization as the sender for the message from the drop-down menu. It is possible to edit and choose different senders in the admin interface. The sender's name can only be **11 characters** long and words cannot contain special characters. If no selection is made, the sender is predefined.

Multiple same phone numbers/email addresses: If the same phone number appears in the list more than once, the message will be sent to this number only once. The number can repeat if, for example, the same **Consumer point** has been picked several times, or the number appears to the customer as another telephone number.

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If the same phone number appears more than once in the object list, the message is sent to this number only once. For example, the number can be repeated if the same **Consumer point** has been picked several times on the form, or the number appears as another phone number for the customer. **If the customer does not have a saved phone number (Customer tel. or Customer tel. 2 columns are empty), they will not be sent a text message.**

Length of the SMS

When you write an SMS, please note that the maximum number of characters in one SMS is 160. If the message has more characters, it will be sent in several parts. The figures displayed next to the message field provide information on the number of messages 

. The latter number is the number of messages, whereas the first number is the number of used characters.

For example: There are 50 target persons and 3 messages required for the text. This means that 3 * 50 = 150 messages will be sent.

You will see a notification of a successful SMS sending in the **Info** window: **SMS sent.**

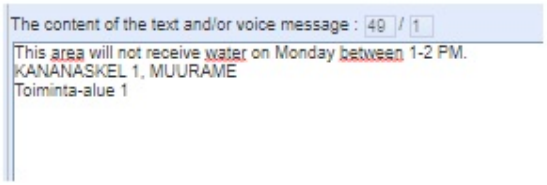
If a specific number occurs several times on the target group list, the SMS will be sent only once to this number. A number can be repeated, for example, if the same consumer point has been picked on the form several times, or if the number is a secondary phone number for a customer. **If no phone number has been saved for a customer** (the columns Customer tel. and Customer tel. 2 have no information), **no SMS will be sent to the customer.**

Pick an area/address

It is possible to add addresses and areas to a message by using the **Pick address** and **Pick area** tools. In this case, the end of the message will have area and/or address information, which you have assigned by cropping on the map.

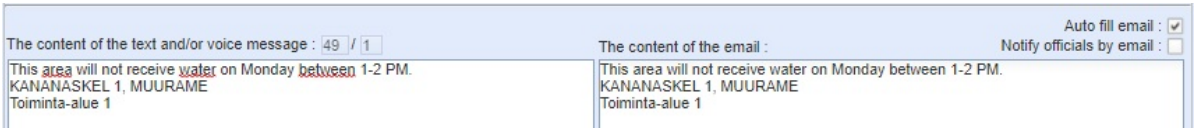
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Sending a message to email

You can also send the messages to email. Check the **Auto fill email** -box and the content of the SMS message is copied to the email as well. Email is sent to recipients who have stored an email address in the **Customer** or **Consumer point** forms.

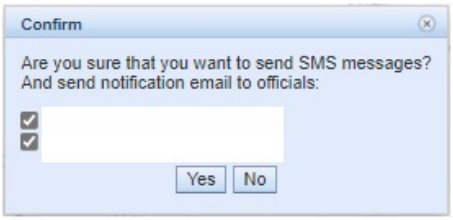


Notifying officials

The text message you typed in can also be sent to the email address of the local officials. The contact information of the officials is saved in the admin interface. When you send a text message, the **Confirm** window will remind that the message is send to the officials if you have the **Notify officials by email** check box active.







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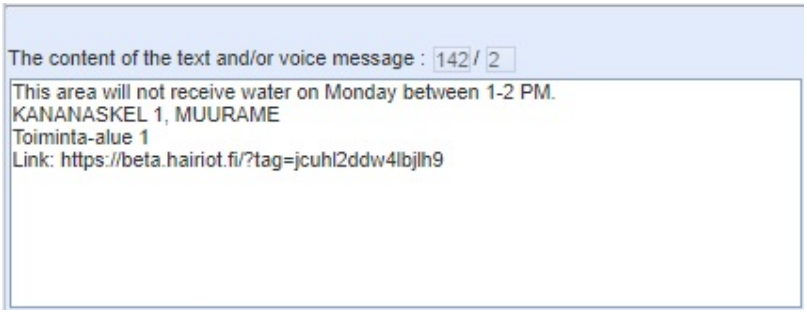
Linking Alerts to SMS (this function is subject to a separate order)

After adding a message and contact information to the **SMS** form, click **Alerts** to start.

Note that this function us subject to a separate order. If it's not activated the button is not shown.

The **Description** fields in the **Alerts** form is filled based on the SMS message created on the SMS form. In addition, the number of customers applied for the **SMS** form has been transferred to the **Alerts** form.

1. Create an **Alert**, like instructed in the Creating an Alert chapter.
2. Once the **Alert** has been created and saved, its linked to the **The content of the text and/or voice message** field:



3. Send SMS by clicking the **Send SMS** button from the toolbar.

Two phone numbers for a customer

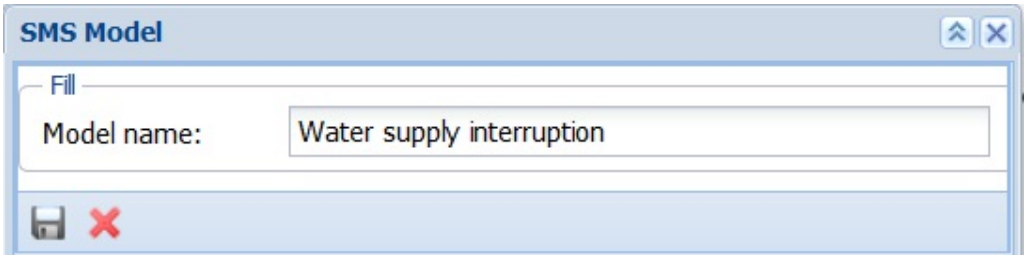
The Customer form lets you save **two phone numbers** (e.g. for work and home) for the same customer. When the numbers have been saved and the **2 SMS numbers** checkbox has been selected, an SMS is sent to both the customer's numbers. On the **SMS Sending** form, phone numbers, in this case, will be displayed in the **Customer tel.** and **Customer tel. 2** columns.



SMS templates

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The text in the **SMS** field can be saved as a template for future messages. Create the text for the template in the **SMS** field and then click **Add new model** . This will open an **SMS Model** form. Enter a name for it in the **Model name** field.



To save the template, click **Save** . The SMS template will now be available on the form through the drop-down menu for **SMS Model**.

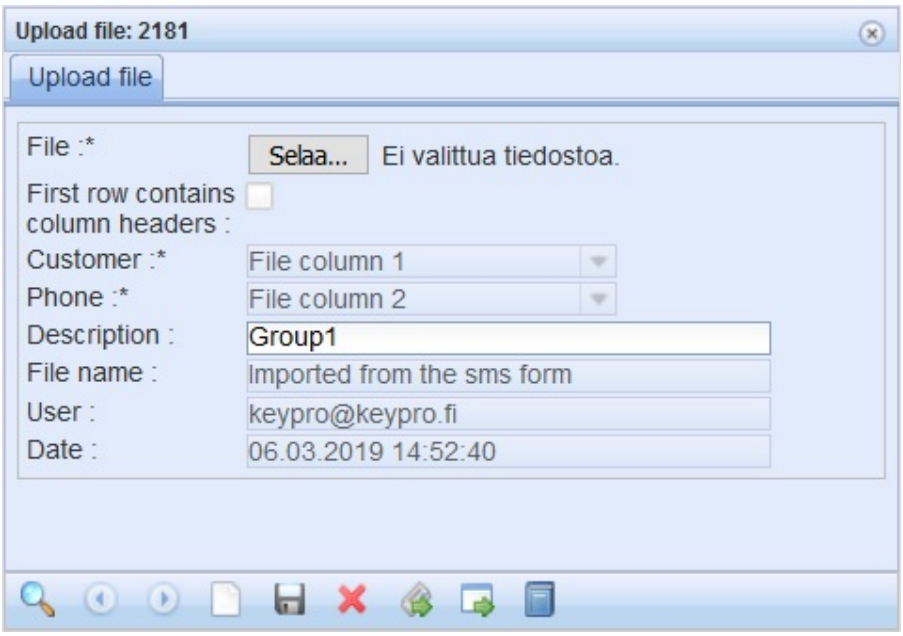
Deleting SMS templates: In the **SMS Model** menu, select the template you want to delete. Click **Add new model** . The template name will be displayed on the **SMS** form, and you can delete it by clicking **Delete** .

Saving a target group

You can save the target groups on the **SMS Sending** form for later use. This function can be used, for example, when you want to send an SMS on the start and end of maintenance work to the same people. When you have saved the target group, you do not need to re-create it to send the second message.

To save a target group, click **Insert grid to database** at the bottom of the form. This will save the target group directly and the **Upload file** form will be opened with pre-filled information (**Virhe. Viitteen lähdettä ei löytynyt.**).

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We recommend that you add a **Description** of the file for searches that will be carried out later.

To export a target group to an external file, click **Write the file from the database** .

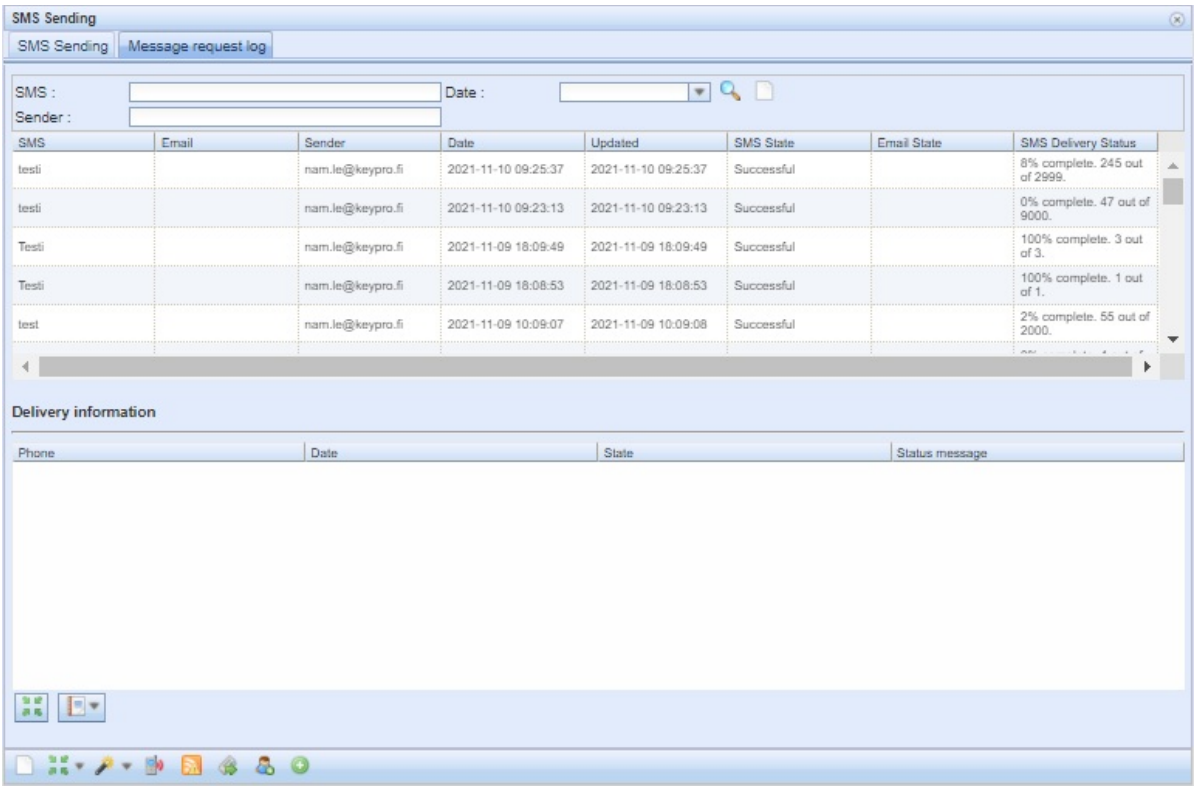
Message request log

Information on sent text messages is displayed on the **Message request log** tab of the **SMS Sending** form. You can search the log using the tools at the top of the tab**,** either by **SMS** content or by **date** sent.

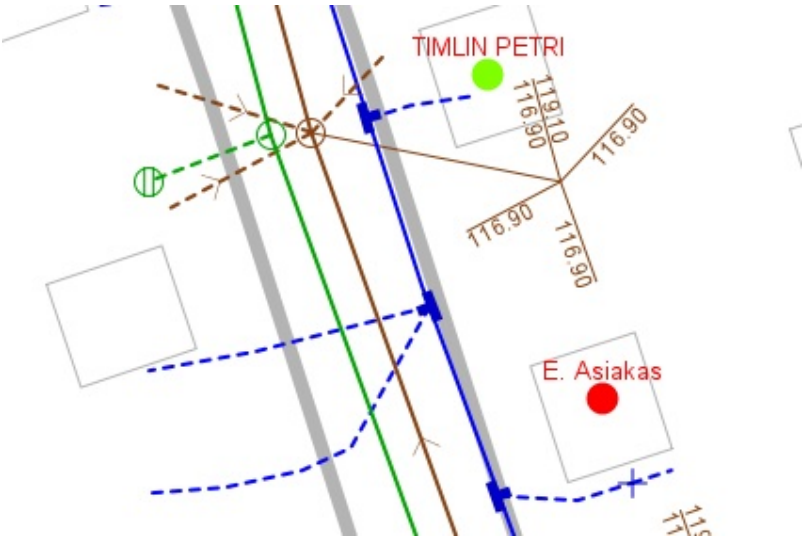
You can find the **SMS State** and **SMS delivery status** columns from the Message request log tab. Here you can follow the progress of the delivery.

- **SMS State** shows the current state of the message.
- **SMS Delivery Status** column tells you real-time status of the delivery. The status is indicated in percentage. When you click a column, it updates the percentage. The upload is complete once it reaches 100%.

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Click a message in the upper section of the tab to view the detailed delivery information in the lower section. This data can be **exported** from one program to another using the **Locate consumer points** and **Export** **tools.** The **Locate consumer points** tool highlights the consumer points on the map in red or green according to successful or failed delivery.

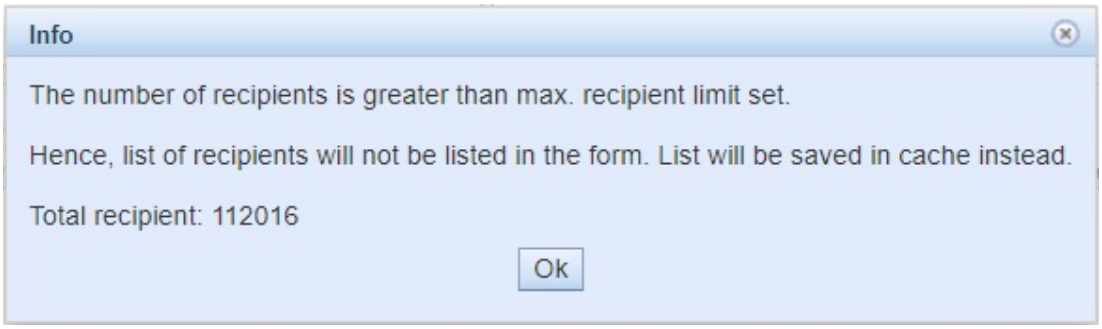


Mass sending SMS

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KeyAqua's **SMS sending** form enables you to send messages to a large number of people. Mass sending feature is activated when more than 2,000 **Consumer point users** are transferred to the **SMS sending** form. This means it is activated automatically and you don’t have to do it manually. **SMS sending** feature allows you to send up to 200,000 SMS messages to recipients at once.

1. When you have saved the data of more than 2,000 users to the **Access Point Users** form, click the **Send SMS** button to export it to the **SMS sending** form as usual.
2. The system will ask you to verify this action. After that, an info message will pop-up and tells you that the limit of recipients is greater than the set limit.
3. Click the Ok button to continue. The same message will appear if you choose to collect the recipients by using the **Pick** tool.



1. When the number of recipients is greater than the max, the **User info** will not appear in the **SMS sending** form and it remains empty. The list of **User info** will be saved in cache instead and you can continue using the form normally.

The speed of sending SMS

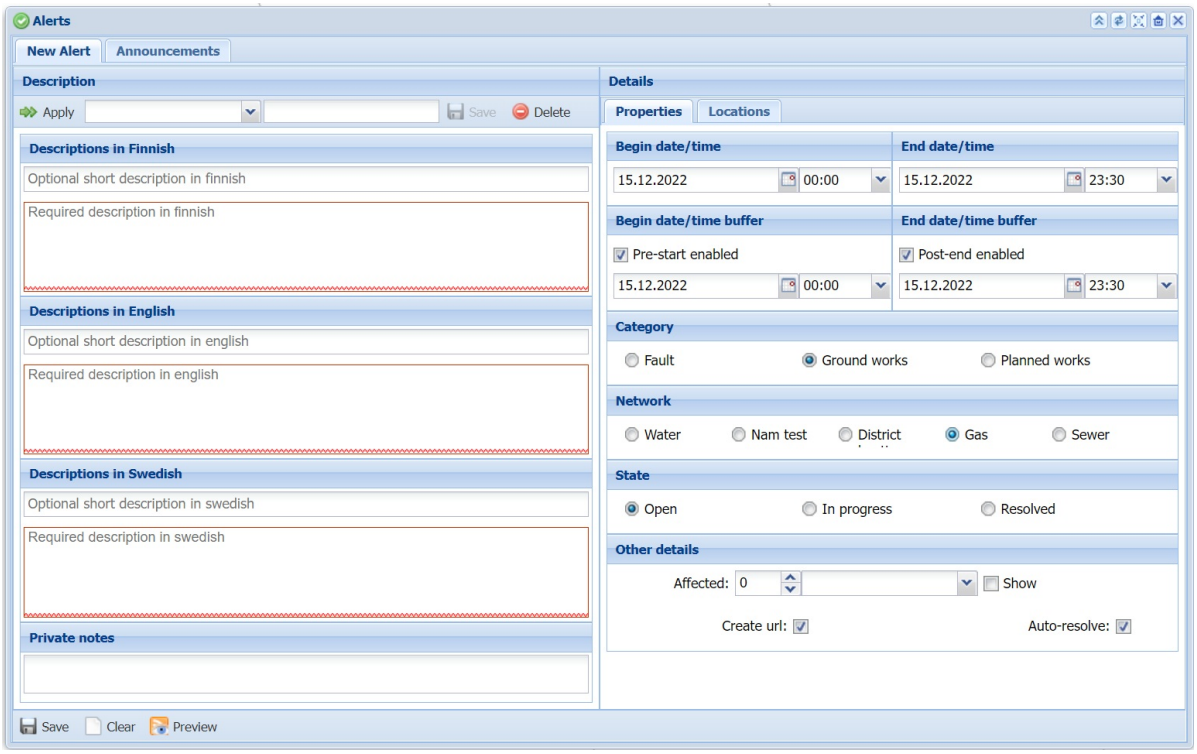
Approximately 30 messages can be sent per second. The connection speeds presented below in the table are estimate but give a good direction on the speed of mass sending SMS. However, connection speeds can be affected by poor internet connection.

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Number of messages	Time
2000	Approx. 1 minute
10 000	Approx 6 minutes
100 000	Approx 1 hour

ALERTS (this function is subject to a separate order)

Click **Alerts** to open a separate form that is used for managing the affected alert areas and alerts. On the **Alerts** form, you can specify and save information about planned construction sites, distribution breaks, and other planned disruptions, as well as their start and end times. The form is used to record information about the category and status of the alert and the network type. The form can be used to determine the number of customers affected by the alert.



Creating an alert

1. Create a new message or search for a pre-saved message template, as

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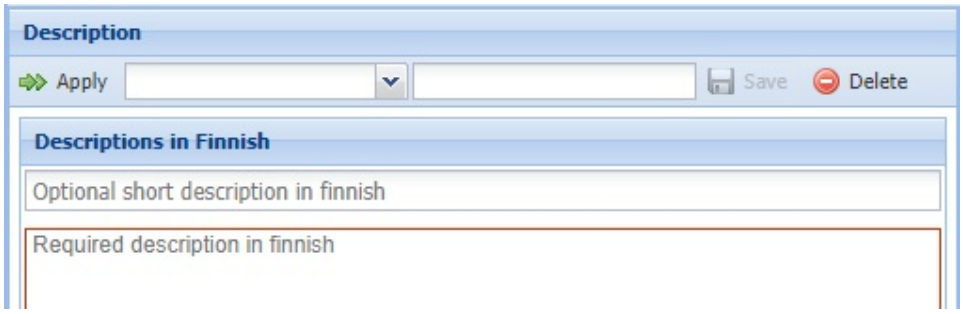
in the chapter. Creating a new message and a message template

2. Enter more detailed specifications for the alert in the **Details** tab. Read more in chapter Details.
3. Give the alert a location like instructed in chapter Locations.
4. Press the **Save** button in the lower left corner to save a new alert.
5. The created alerts can be found from the **Announcements** tab.
6. By pressing **Clear** you can clear the form from all the info.

Creating a new message and a new message template

You can write alert messages in the **Description** section of the **New Alert** tab. You can report in Finnish, English and Swedish, because the public alert information website supports these languages.

NOTE! The Finnish description is also copied to the English and Swedish fields. You can translate the text to match those languages



1. Write a headline for the message (this field is optional).
2. Enter the description text in the fields below. It is not possible to save the form without filling in the required description message field. If you do not want to save the message template, continue without saving and move to Details.

OR:

1. To save a new message template, enter a name for the message template and press Save : 

2. To delete the Alert, simply press **Delete** .

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NOTE! If you have started creating an Alert via the SMS form, the Description fields are automatically filled in according to the typed text message. Read more in the section Häiriötiedotesivuston linkittäminen tekstiviestiin (Erikseen tilattava toiminto).

You can write confidential or private information about the Alert to the **Private notes** field. It can only be seen by your organization and cannot accidentally be published to the customers or citizens.

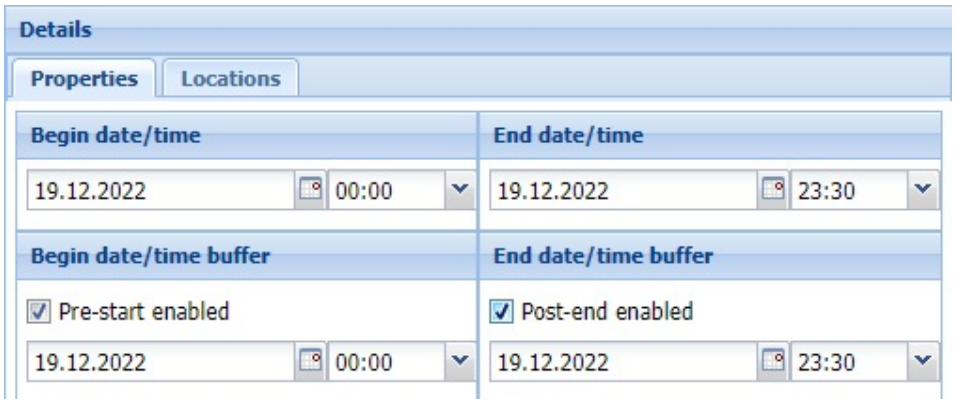


Details

In the **Details** section, the information related to the alerts is specified.

The **Begin date/time buffer + Pre-start** and **End date/time buffer + Post-end:** Define the start and end dates of the alert in the calendar and time menus.

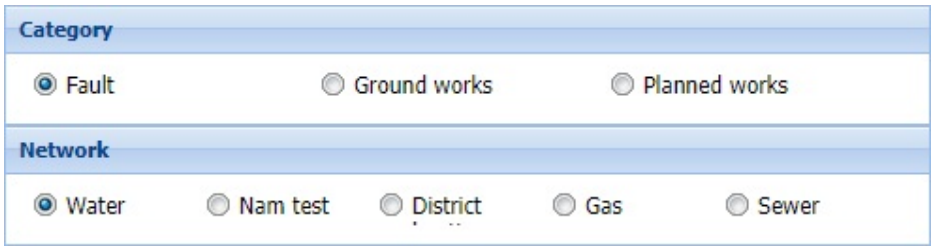
If you select the checkboxes **Pre-start enabled** and **Post-end enabled**, the date and time fields are also activated. With the **Pre-start enabled**, you may inform customers about faults, ground works or planned works in advance. You can also inform after the alert by selecting the **Post-end enabled** check box, in which case the information will be displayed for the period you selected.



Category and Network

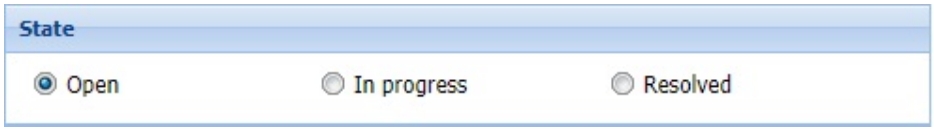
Choose the right category fort the alert. Options are **Fault**, **Ground works** tai **Planned works.** Also choose the network type for the alert:

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State

Define the state of the alert. Is it **Open**, **In progress** or **Resolved:**



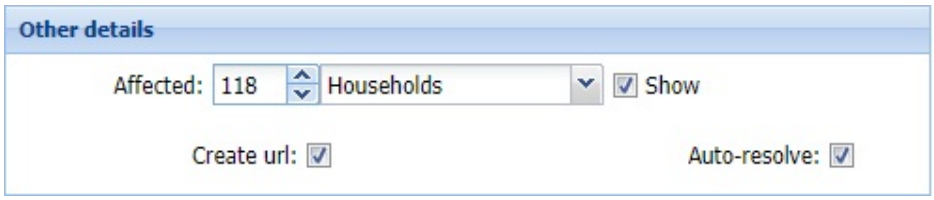
Alerts which are in **Open** and **In progress** state are shown on the map. However, if the alert is in **Resolved** state it will not be shown on the map.

Other details

You can give more details about the alert in the **Other details** section.

In the **Affected** field, specify the number of customers who will be affected by the construction, disruption or supply interruption. The **Show** checkbox determines whether or not the information is published in the alert website.

The **Create URL** checkbox creates a link to the alert for the notification. The link allows customers to see the alert message and maps on a separate alert information website. For further information on alerts, please see the Notifications on disruptions chapter.

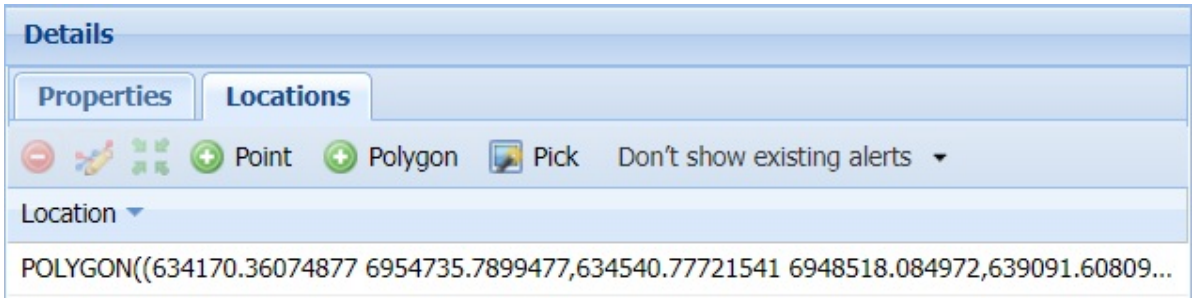


NOTE! If you have started creating an alert through the SMS form, the number of objects will be automatically replenished according to the number of recipients of the text message. For more information, see Linking an alert to SMS.

Locations

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Use the **Locations** section to define the location of the disruption, construction, or supply interruption on the map. Open the **Locations** menu from the bottom-right corner of the **Alert** form.



Point: Click on the map to add a point object location for the alert within your operational area. You can add several point objects.

Polygon: Click on the map to add a polygon-type location for the alert within your operational area. You can add several polygons.

Pick: Pick an existing area geometry from the map.

Don't show existing alerts menu

1. **Don't show existing alerts**: Alerts are not displayed on the map.
2. **Show active alerts**: Active alerts are displayed on the map.
3. **Show all alerts**: All alerts that have been created are displayed on the map.

You can **modify** a location, **locate** it, or **delete** it.

Editing and deleting templates

1. **Choose** a template from the drop-down menu based on its description:
2. Click **Apply** to have the template information completed in the fields below for you to edit.

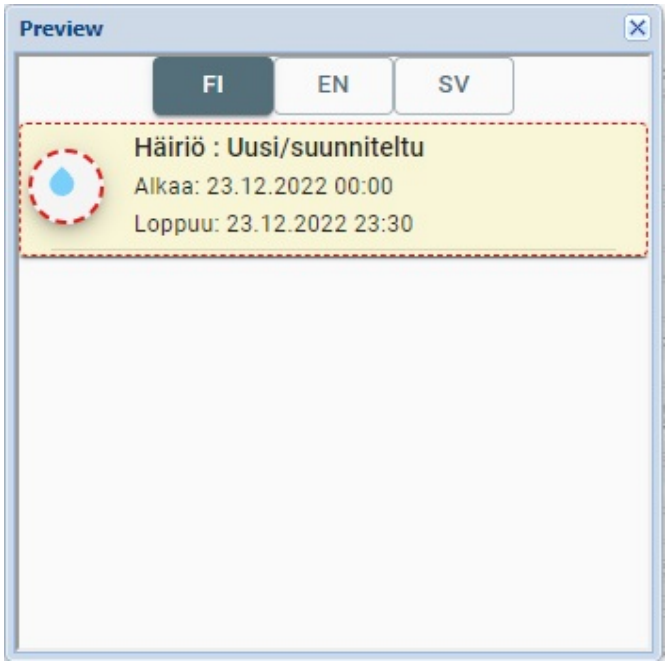
OR:

Click **Delete** to delete the template.

Preview

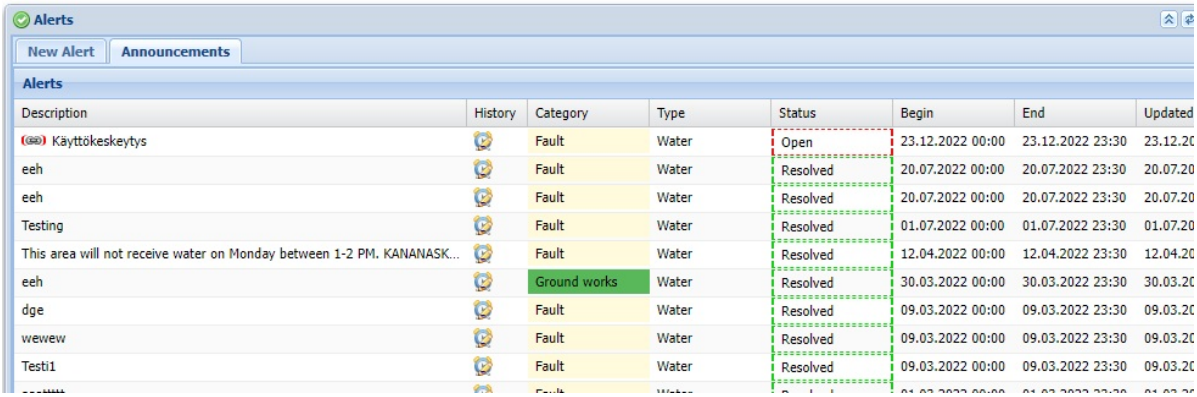
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At any stage of creating an alert, you can preview the alert message you have made by pressing the **Preview** button at the bottom of the form.



Saved alerts

The alerts are stored on the **Announcements** tab. The table presents the alert description, category, type, status, begin date, end date, and the date the alert was updated. If the alert is connected to a SMS service, the alert will begin with a symbol .



Each category **type** (Fault/Ground works/Planned works) may be assigned a background color that is used when displaying the information on the alert information map. Similarly, the alert state (open/in progress/resolved) can be assigned a color that is also used when displaying information on the alert information map.

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Edit alerts

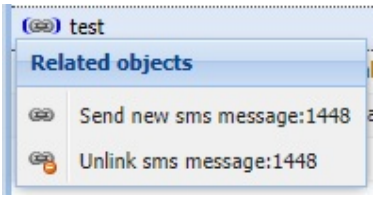
Select the alert you want to edit and click **Edit alert**. The warning will open on a separate **Edit alert** tab, where you can edit the information. When you are ready, click **Save** to save changes.

Deleting alerts

Select the alert(s) you want to delete. Click **Delete** . The program will ask you to confirm the deletion.

Resending an alert

It is possible to send a new text message to those alerts that have been connected to the SMS service, for example, due to the end of the disturbance or its continuation. Right-click on the alert row with the symbol and select **Send a new SMS** . The program will take you to the **SMS** form, where you can format and send a new SMS to your customers.



The **Unlink sms message** option removes the SMS link from the alert.

New URL

You can **create a new URL** for one or several alerts. Use the Shift or Ctrl key to select the alert rows for which you want to create a new URL. Then click **New url**.

This is a useful function when you want to link more than one alert so that they are available through the same link.

Linking

You can add additional alerts to the selected alert link. In the **Links** section, click the link to which you want to add existing alerts. Use the Shift or Ctrl key to select from the Alerts list the alerts that you want to link. Click **Link**.

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Unlink

If you have created a link to an alert and want to remove it, click **Unlink**. If the function is not available, the alert has no linking.

Links section

In the **Links** section, you can see the alert links, the number of alerts, and the dates for alert updates.

Announcement url	Alerts	Updated
https://beta.hairiot.fi/?tag=aczx25q1fxnmynow	1	25.05.2021 10:28
https://beta.hairiot.fi/?tag=aocj857u7kvskjr8	0	16.12.2021 16:43
https://beta.hairiot.fi/?tag=bcxigq0z8lanyo9j	1	10.03.2021 12:15
https://beta.hairiot.fi/?tag=becopbabfuz73lfx	1	07.01.2021 16:09
https://beta.hairiot.fi/?tag=bimxx5q4jbygsaow	1	30.06.2021 08:59
https://beta.hairiot.fi/?tag=cstvwrwxexahuzfa	1	11.10.2021 11:07
https://beta.hairiot.fi/?tag=czt5f61z32wjkf7z	1	16.12.2021 23:12

Delete Select a link and click **Delete** to delete the link. The program will ask you to confirm the deletion. After the deletion of the link, the alert will no longer be displayed on the public alert information website.

FilteredUse the **Filtered** menu to select whether the **Links** section displays only the link for the selected alert (**Filtered**) or the links of all alerts (**All**).

Quick buttons on the form

The quick buttons in the top-right corner of the **Alerts** form include the following functions:

You can minimise the form to the **Favorites** bar by clicking .

The **Reload config** button is useful when the **Alert** form cannot connect to a server. In this case, you can see the symbol in the top-left corner of the form. The settings have been reloaded when you can see the symbol .

The **Zoom to operational area** button centers the map to your operational area.

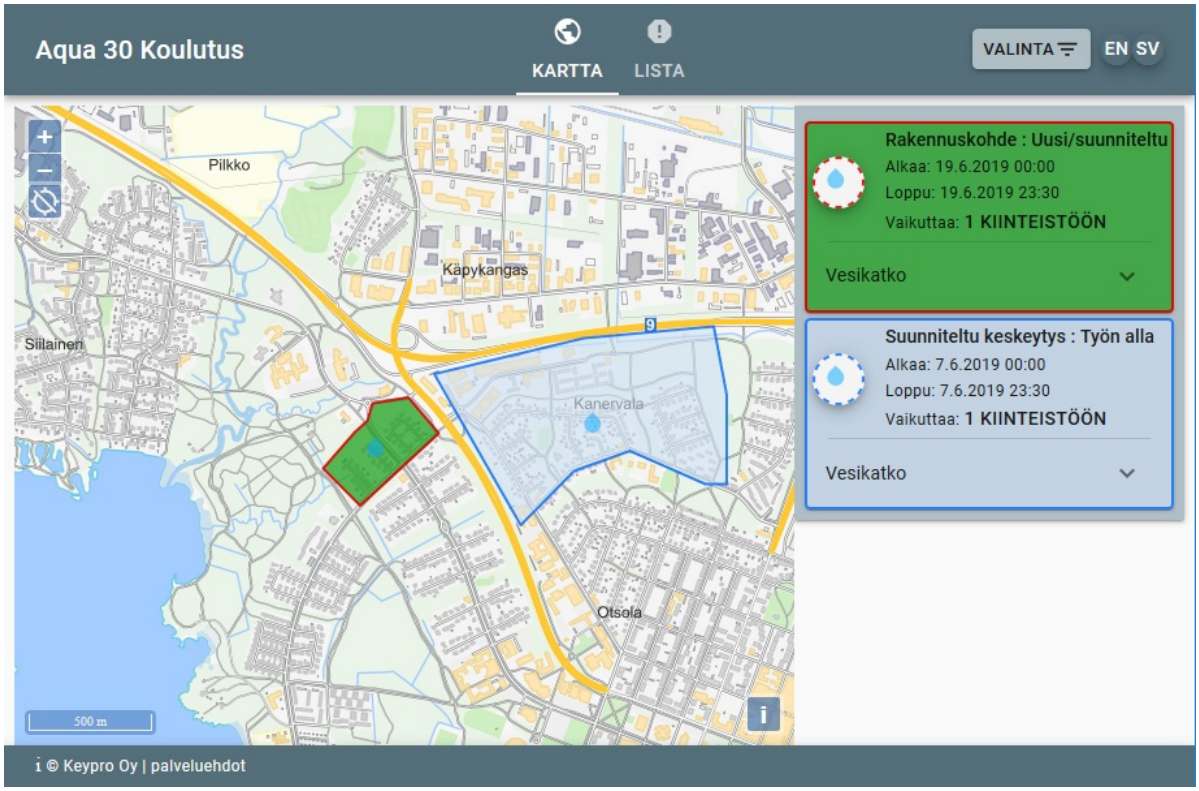
Click **Show tenant url** to open an alert map, which displays all alerts with the status **Open** and **In progress**.

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Click to **close** the form.

Sharing information about alerts

The **Alerts** tool is linked to a separate public website on which the actual information sharing takes place. The link to the **Alert information website** can be published on the websites of operators. Alerts can be customer and operator-specific with information including the affected services, the start time, the estimated repair time, the affected area, and phone numbers for on-call technical support.

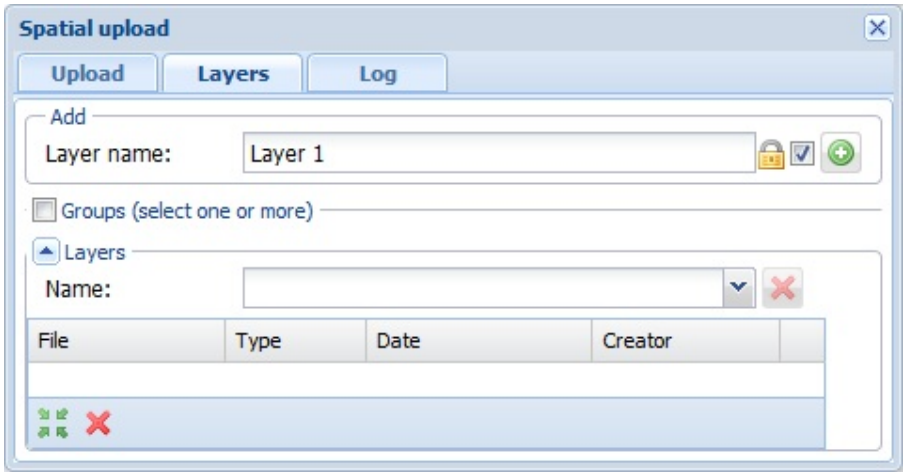


Customers located in the affected areas can also be informed by using **text messages**, which can include a link to the alert information website. Further information is available in the Linking alert information sites to text messages chapter.

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SPATIAL UPLOAD (This function is subject to a separate order.)

Add background maps using the **Spatial upload** tool. Organize and add new background maps to the background layer levels and specify the symbology* for imported files (*Esri™ SHP only). Background maps imported into the system are shared or available for a specific group or user. First, in the main toolbar, click **Spatial upload** .



The **Spatial upload** tool supports the following file formats for creating background maps:

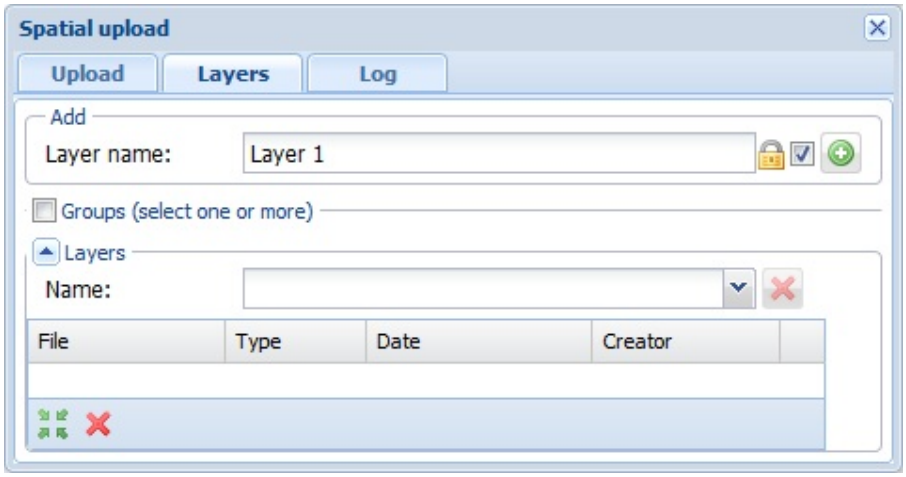
- Esri™ SHP
- Bentley MicroStation™ DGN (V8)
- Autodesk AutoCAD™ DWG
- CSV files (X;Y; name; color; size), see the chapter CSV file format.

In addition, you can create network objects directly from files in the Esri™ SHP format (network). More information on this is provided in the Uploading network objects chapter (Settings must be configured through the admin user interface.).

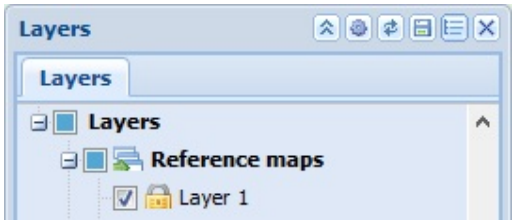
Managing layers

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To upload background maps, select an existing layer or create a new background layer on the **Layers** tab. To create a background map layer, enter its name in the **Layer name** field and click **Add layer** . The layer appears in the **Reference maps** section on the **Layers** form. You can organize the background map layers and their hierarchy.



The user-created layer is now visible under the Reference maps layer.

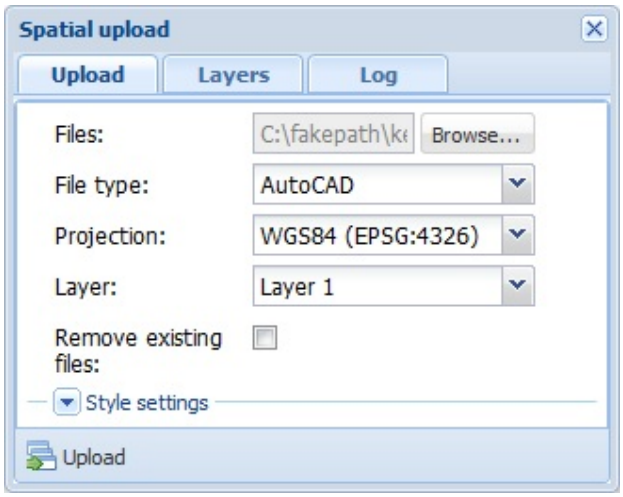


You can create user-specific or group-specific background maps. Any layers you create will be shared by default and will be marked with the unlocked lock icon . You can define a layer as private by selecting the checkbox. The icon will be replaced with a locked lock and the layer you created will not be visible to others. When you have defined the level you created as private, the **Groups** checkbox will be activated. If you want a specific group to see the background map you created, select the name of the group in the drop-down menu for **Group**. Admin users can create groups and add users to the groups.

Spatial upload form

1. Select the **Upload** tab.

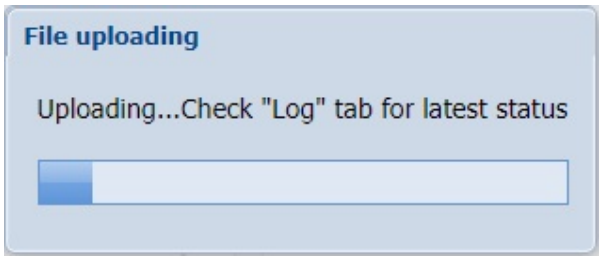
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2. Click **Browse** and select the file you want to upload.
3. If you are uploading an ESRI **shp** file, also select the **dbf** file.
4. Check the file type before uploading. This field is usually filled in automatically so that it matches the file you selected.
5. Select the projection applicable to the file that is uploaded.
6. Select the background map layer to which your file is added.
7. Select **Remove existing files** if you want the layer to include only the data included in the files you are uploading (as if you would first delete all files from the layer in question, see the chapter Deleting reference maps).
8. Define the style settings applicable to the object types **(Esri™ SHP only).**

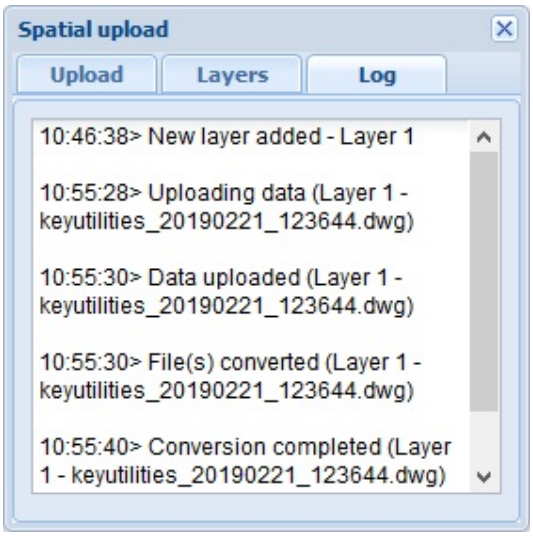
TIP: If your file includes objects with various style settings, you might have to separate them into different files based on their symbology.

1. Click **Upload**. The progress bar indicates the status of the file upload. Note that it could take several minutes to upload a large file.



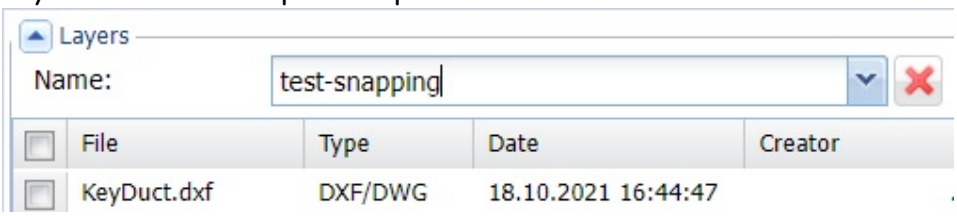
2. Browse the the Log tab for a file upload.

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3. When the file upload is complete, the following notification is displayed: **Data is ready, zoom to extent?** Click **Zoom** and check the result on the map.

When the file has been uploaded, it appears in the **Layers section** on the Layers tab of the Spatial upload form:

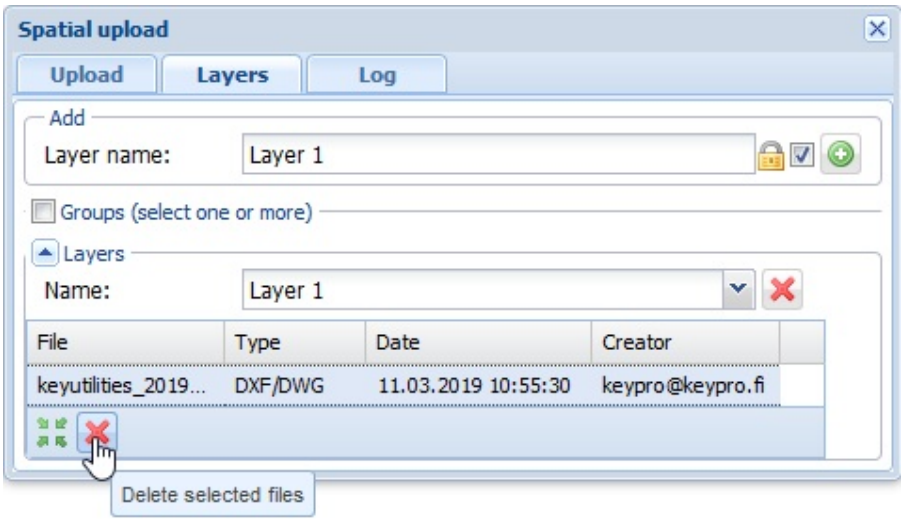


Note! When you create new network objects, you can use the snapping function on the background map.

Deleting background maps

1. Select the **Layers** tab.
2. Expand the **Layers** section if it is hidden.
3. In the drop-down menu for **Name**, select the layer where the background map you want to delete is located.
4. Select the file you want to delete and click **Delete selected files** .

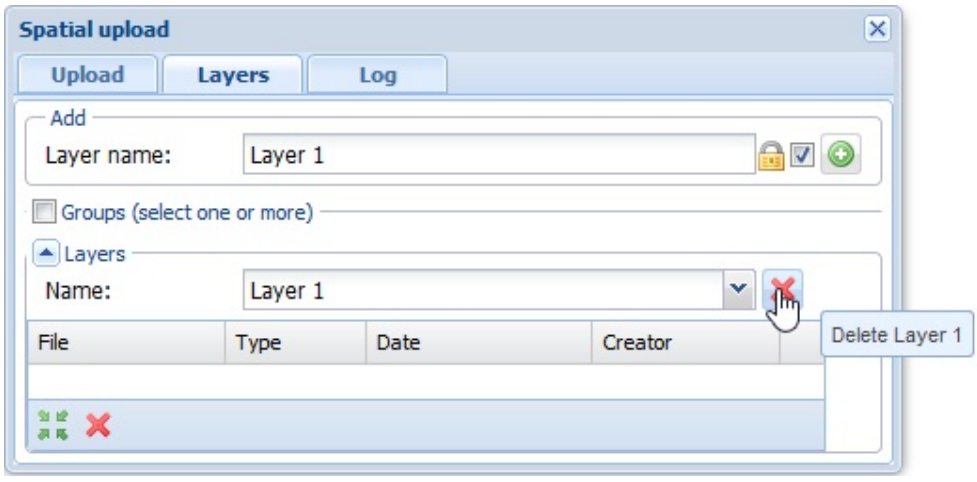
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5. Confirm and check the result on the map.

Deleting a background map layer

1. Select the **Layers** tab.
2. In the drop-down menu for **Name**, select the layer you want to delete.
3. Click Delete
4. If there are files attached to the level, the following notification will be displayed: **Layer** If you are sure that you know what you are doing and you still want to delete the layer, click **Delete** to confirm the action.



Material in CSV format

Rules for importing CSV files:

1. Fields are separated by semicolons (*;*).
2. No column headers are used.

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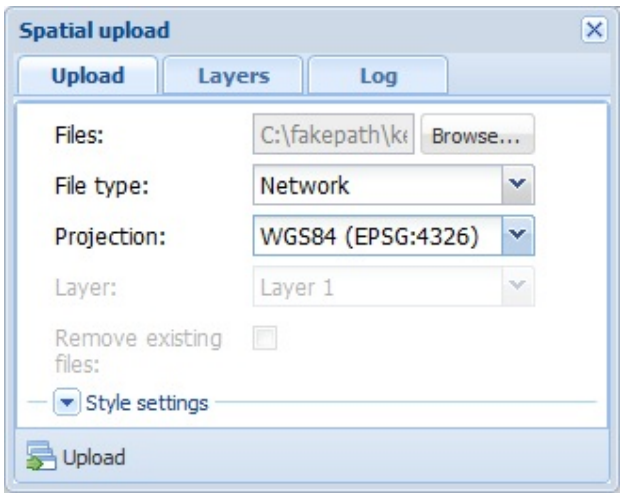
3. Rows are in the following format: X;Y;[TEXT];[COLOUR];[SIZE]
4. The TEXT, COLOUR, AND SIZE columns can be empty.
5. If TEXT is empty, a point object is created. Otherwise, free text is created.
6. If COLOUR or SIZE is empty, default values are applied.
7. COLOUR is an RGB value, such as “255 255 0”.

```
3458126;6705024;teksti1;255 255 0;10
3458226;6705024;teksti2öäöä;255 255 0;10
3458226;6704924;;255 255 0;10
3458126;6704924;;255 255 0;
3458126;6704824;;;
3458226;6704824;teksti3;;
3458226;6704724;teksti3;;20
```

TIP: If you want to create both point objects and free text, create two versions of the file – one containing the texts and another where text boxes are empty – and upload both files to the same layer.

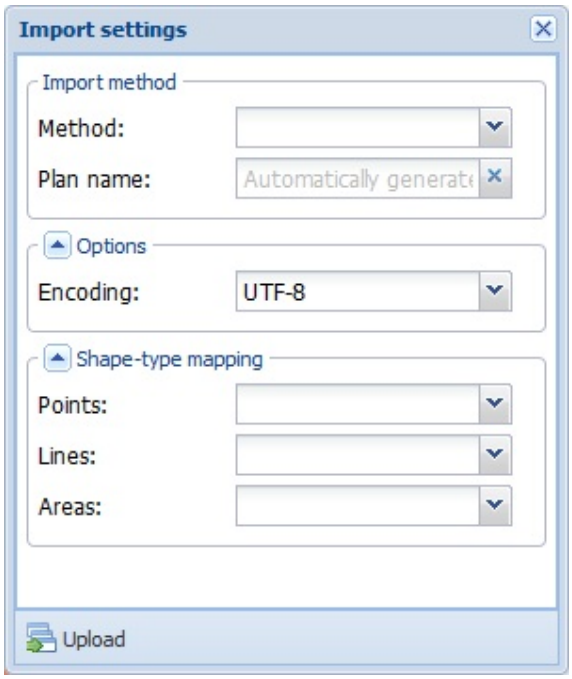
Uploading network objects (Settings must be configured through the admin user interface)

1. Select shp and dbf files, or a zip file containing such files, as the files.
2. Select **Network** as the file type.



3. Click **Upload**.
4. On the **Import settings** form, select **Method**.

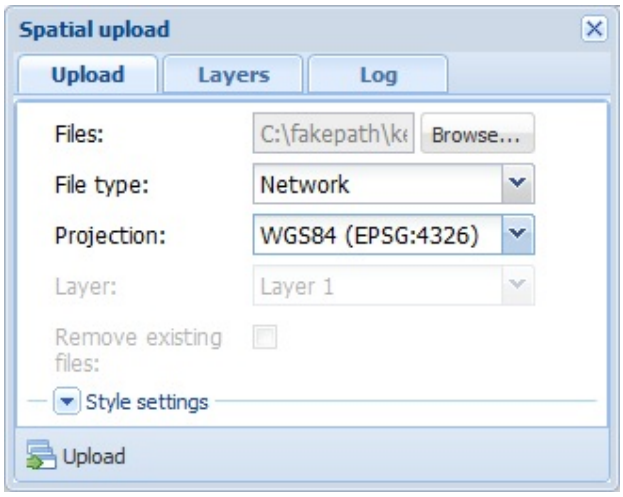
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5. Check that the mappings are correct.
6. Click **Upload**. The progress bar indicates the status of the file upload. Note that it could take several minutes to upload a large file.
7. When the file upload is complete, the following notification is displayed: **Data is ready, zoom to extent?** Click **Zoom** and check the result.

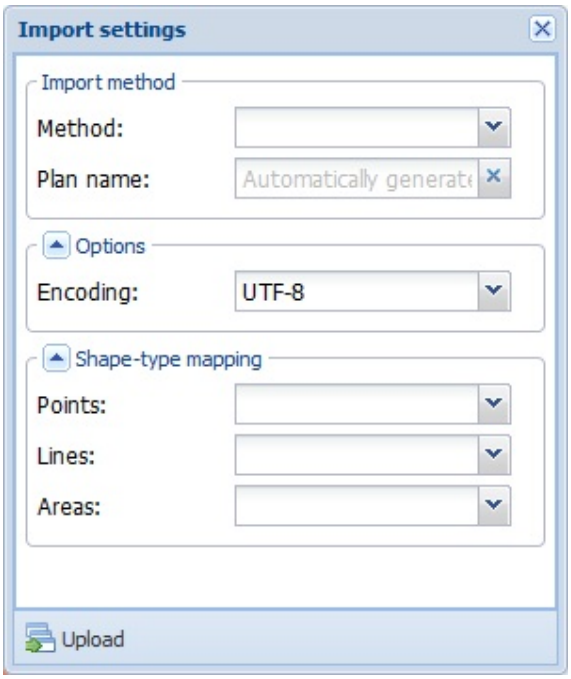
Uploading network objects by using Area import (Settings must be configured through the admin user interface)

1. Select **shp** and **dbf** files, or a zip file containing such files, as the files.
2. Select **Network** as the file type.



3. Click **Upload**.
4. On the **Import settings** form, select **Area import** as the **Method**.

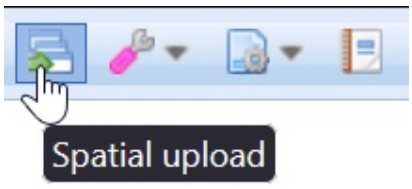
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5. Check that the mappings are correct.
6. Click **Upload**. The progress bar indicates the status of the file upload. Note that it could take several minutes to upload a large file.
7. When the file upload is complete, the following notification is displayed: **Data is ready, zoom to extent?** Click **Zoom** and check the result.

Spatial upload for consumer points

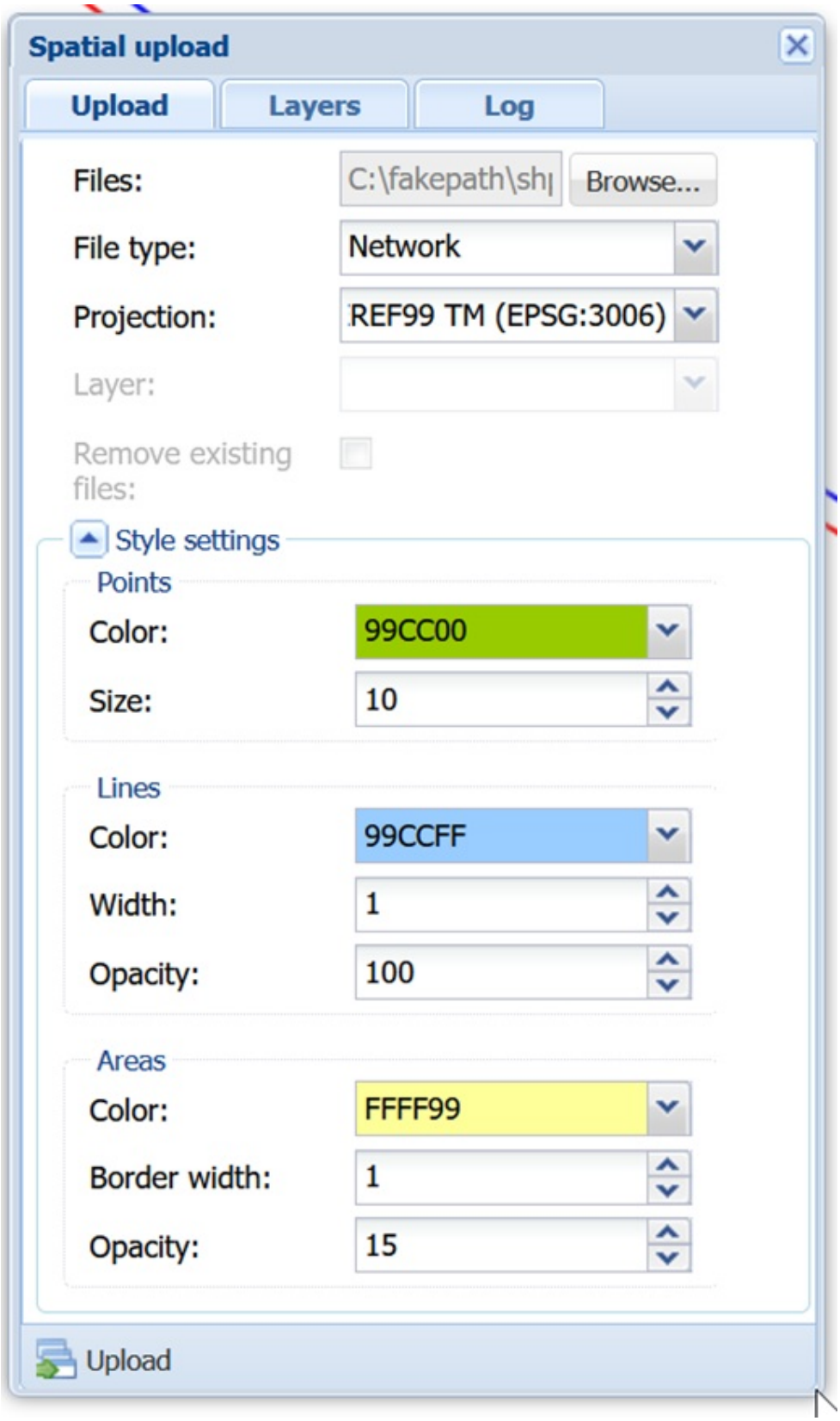
This chapter describes how to use **Spatial upload** tool for importing consumer points. The **Spatial upload** tool can be found from the main toolbar.



Importing the consumer points

1. Open the **Spatial upload** form in the main tool.

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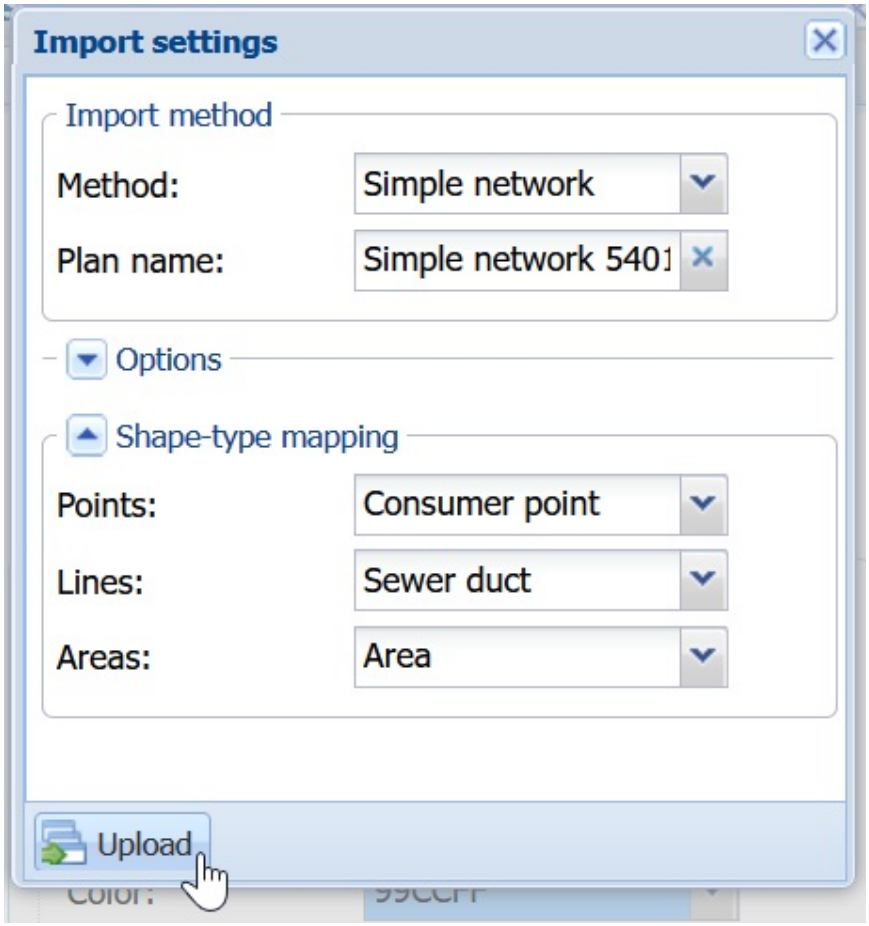
2. In the **Upload** tab, fill in the following fields as described:

- **Files**: Zip-package with shape files. You can only select .dbf and .shp files.
- **File type:** Network.

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- **Projection:** Select accordingly.

1. Styles can be edited in **Style settings.**
2. Click **Upload** which opens the **Import settings** window.



3. In the **Import settings** window, fill in the following fields as described:

- **Method:** Simple network.
- **Plan name:** Generated automatically*.
- **Points:** Select **Consumer point** from the drop-down menu.

Lines and Areas: Can be left as they are (they are not used in this type of import).

1. Click **Upload** .
2. If the importing was done successfully, a popup dialog with a **Zoom** button appears.
3. Consumer points are now imported.

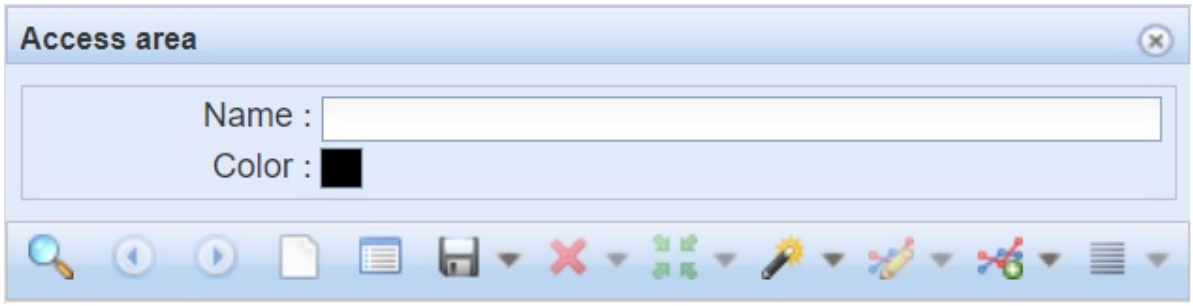
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OTHER TOOLS

Access area (this function is subject to a separate order)

Use the **Access area** tool to limit the network in which objects are displayed to various users or user groups. The right to use network objects can be defined, for example, based on area, the owner, or the creator of the object. You can also restrict the right of use to specific network objects, such as telecom premises or cables. The settings are discussed in more detail in the Admin user guide.

Click **Access area** to create a new permitted area on the map. Continue as instructed in the Adding an area chapter.

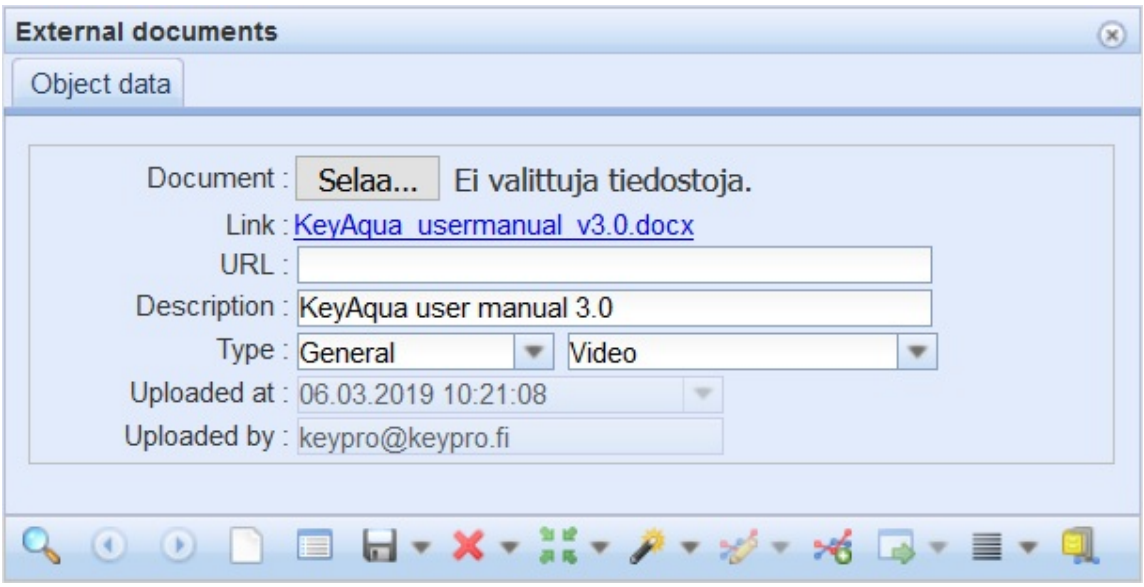


Use the **List** function to create a list report on permitted areas and to modify the access areas and the related addresses and apartments in the list view. Access areas can also be exported to a group display.

External documents

External documents can be **files** or **URL links** that can be positioned on the map and attached to network objects. To open the form, click **External documents** in the toolbar or on the **Attachments** tab on the forms. For more information, see the chapter Attached documents.

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Viewing external documents

To open a document, click the link below the **Choose files** button. If the attachment is a **URL link**, it is opened on a new tab in your browser. The function for opening a file depends on your browser and browser settings. Usually, the browser asks whether you want to save or open the file.

TIP: If an external document includes **both a file and a URL link**, you can open the URL link by copying it to the address field in a new browser window.

Adding external documents

1. If you want to add a file, click **Choose files**.
2. Select the file or files that you want to attach as external documents.
3. Save the information on the form (**Type** is a mandatory field).
4. Click **Save** , or if you are attaching documents to an object, click **Attach document** .

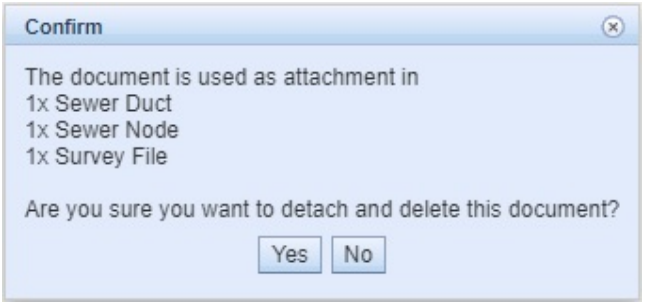
If you selected several files, a separate external document is created for each file.

TIP: If you want to attach a **web address**, enter it in the URL text field or copy the address from the browser. If you also select a file, the URL is additional information to the document.

Deleting an external document

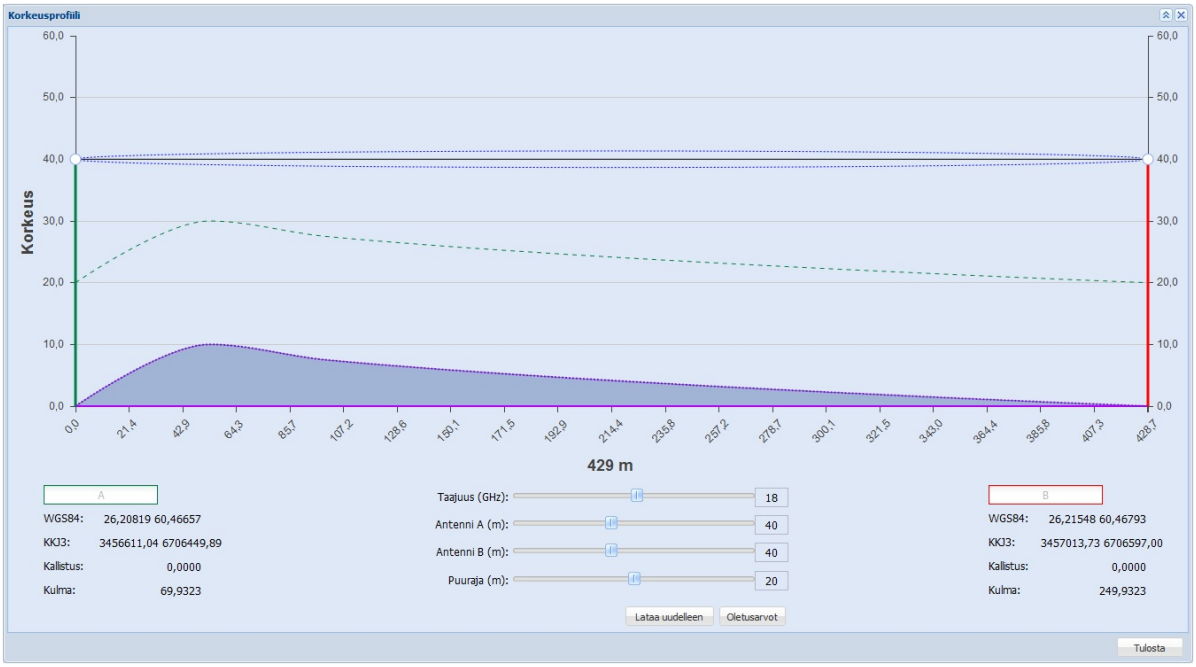
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1. Retrieve to the form the document you want to delete.
2. Click **Delete**. If the document has been attached to an object, you will be asked to confirm the deletion.



Line of sight tool (this function is subject to a separate order) – Duct height profile

The **Line of sight** tool needs to be purchased separately. This function makes it possible to create a **height profile** on the form based on the contour lines in the database of the National Land Survey of Finland. The **line of sight** tool illustrates the radio link between masts and the ellipse illustrating the related first Fresnel zone for the selected frequency. This function includes the height profile of masts and the profile of trees at the given height above ground level. In addition, the curvature of the Earth is taken into account.



Creating a line of sight profile

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Open the form by clicking **Line of sight** in the toolbar at the top. The program then asks you to enter the start and end points of the profile. First, click to enter the location of the antenna A on the map and then enter the location of the antenna B. After you have entered the location information, the height profile is displayed.

Use the sliding controls on the form to modify the look of the automatically created height profile. **Frequency** controls the frequency applied to the profile. **Antenna A**, **Antenna B**, and **Tree line** are used to define the distance between these objects and the ground level in metres.

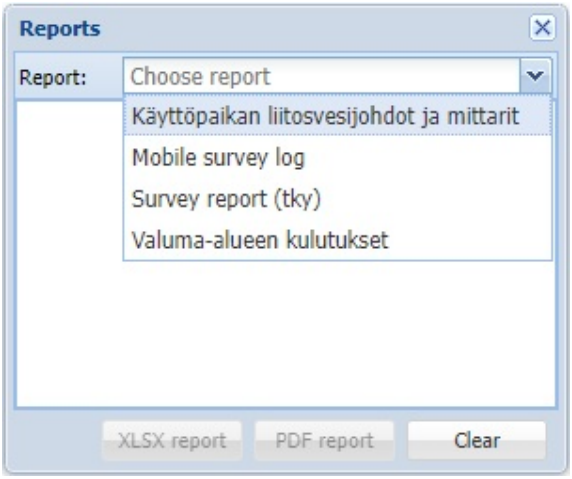
When you edit the original values of these sliding controls, click **Reload** to update the profile on the form. Click **Reset** if you want to restore the sliding controls to the original settings.

Click **Print** to create a printable version of the height profile.

Reports

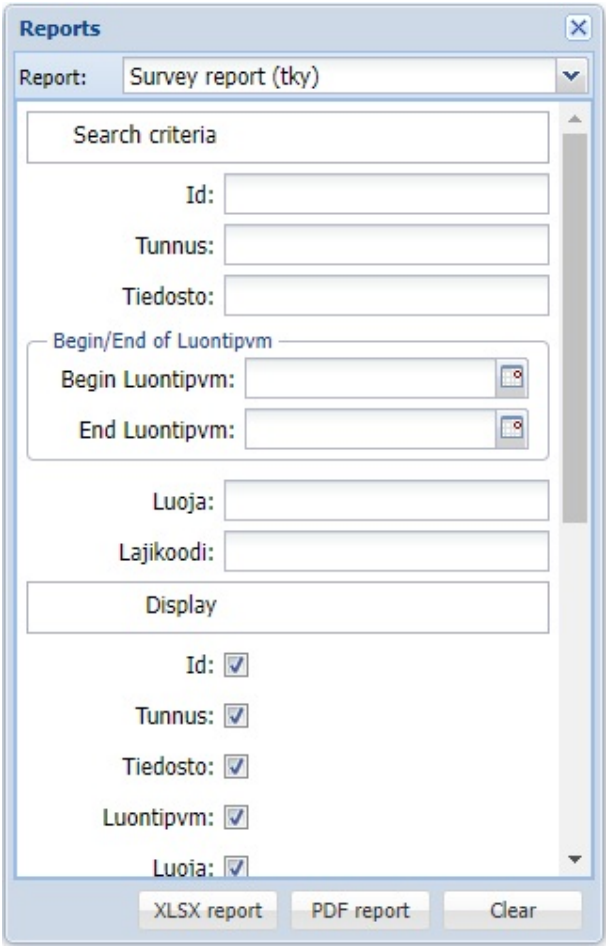
KeyHeat has an integrated reporting function, and separate report servers are therefore not required. This enables faster creation of information content for reporting. In addition to PDF, reports can be created in Excel format (xlsx). Reports in Excel format can be edited: For example, you can define column widths and add comments. In addition, you can save Excel reports as PDF files. Logos and identifiers for reports can be configured through the KeyHeat admin interface.

Open the **Reports** form by clicking **Reports** in the main toolbar. On the **Reports** form, in the drop-down menu for **Reports**, select the required report.

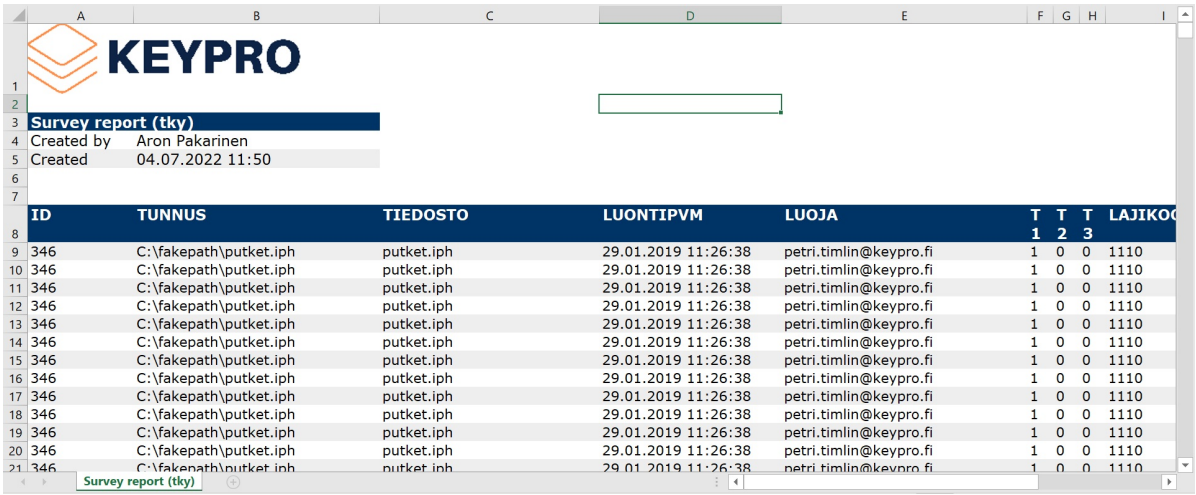


Fill in the search criteria.

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Click **Create** to download the report as an **Excel** file.



KEYPRO

Survey report (tky)

Created by Aron Pakarinen

Created 04.07.2022 11:50

ID	TUNNUS	TIEDOSTO	LUONTIPVM	LUOJA	T1	T2	T3	LAJIKOO
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110
346	C:\fakepath\putket.iph	putket.iph	29.01.2019 11:26:38	petri.timlin@keypro.fi	1	0	0	1110

Survey report (tky)

Asynchronous reports

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When reports are created for a large number of search results, reporting is carried out asynchronously, that is, in a reporting mode that is run in the background when report creation exceeds the time limit specified for the environment in question. Typically, this time limit is defined to be one minute. The report will then be sent as an attachment to the email address specified for the username. The program will notify the user if the report has been sent to the user by email.

Customer-specific reports (a function to be ordered separately)

KeyHeat enables the creation of customer-specific reports if this function has been ordered separately. With the help of Keypro's experts, the admin user interface is used to create a Report group that configures the fields to be displayed in the report and the applicable search criteria.

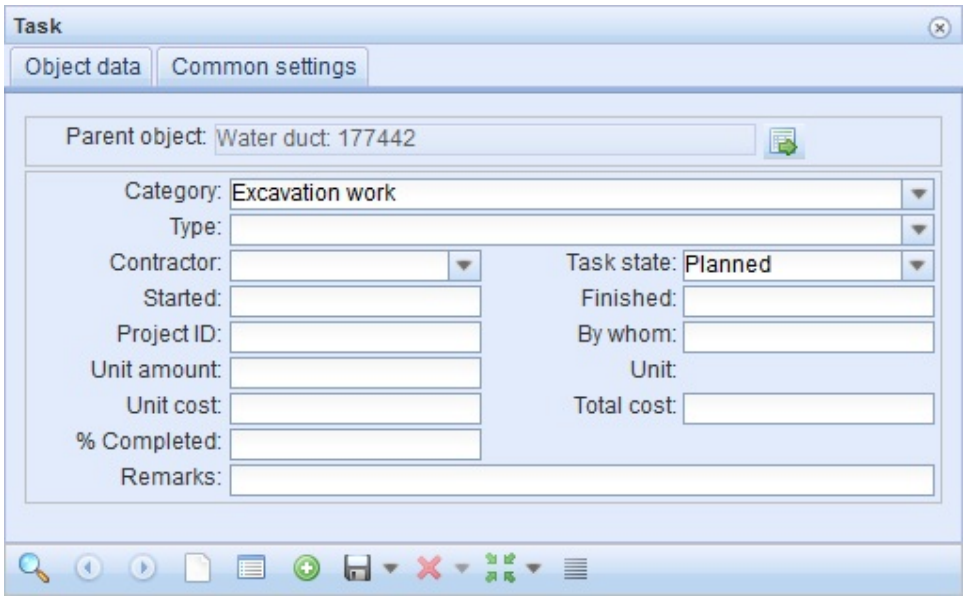
Customer-specific reports are available in the **Reports** menu in the main toolbar (**Virhe. Viitteen lähdettä ei löytynyt.**). A report is processed in the background and sent to the user's email.

Tasks

Tasks are, for example, work related to various construction phases or maintenance. You can define tasks for individual objects or a plan. Most of the **Task** form functions are the same as on other forms. More information is provided in the chapter Buttons on object forms.

TIP: You can define tasks, for example, in order to document in detail the work phases required for network building and to link them to the correct objects and plans.

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Creating a task

1. Open the required object on the object form, or click **Show the parent object** to open the parent object.
2. Follow the instructions provided in the chapter Adding a task for an object.

Locating and highlighting the parent object of a task

Click **Locate parent object** to highlight and locate the task's parent object. This button functions in the same way as on any other form, but the location here is the location of the parent object. More information on locating is provided in the chapter Locating and highlighting an object.

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