USER'S MANUAL

KeyLight 2026.1

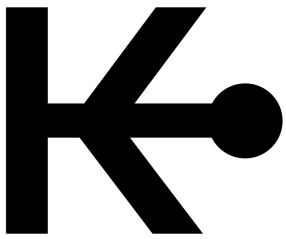


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INTRODUCTION

This user manual describes the functions of the **KeyLight** software. The software is designed for the **documentation and management of outdoor lighting networks**. You can use **KeyLight** to maintain up-to-date information about network objects and structures. The network model generated can be utilized for network maintenance and planning.

The first part of this user's manual introduces general tools and buttons, and the rest of this document provides instructions on using various object forms. The forms are used to view, create, and modify network object information with the help of buttons that have the same functions throughout all object forms. Before reading the instructions for object-specific forms, we recommend that you read the chapter Buttons on object forms. This chapter describes operation of common tools on a detailed level. The instructions on using the object forms have been created based on the assumption that users are familiar with the various button functions.

The chapter Logging in and accessing help describes system login, password change, and accessing the help during a session.

The chapter Map view discusses the tools related to the **basic functions in the map view**. The chapter introduces, for example, the selection of background maps and object layers, the use of the coordinate section, address search, and printing functions.

The **buttons and tools** common to all object forms are introduced in the chapter Buttons on object forms. This chapter is aimed particularly at users who have no previous experience in using Keypro's browser-based software. The tools introduced in this chapter are related to viewing the properties and location information of objects, and they are similar to the tools used in our other browser-based software.

Section KeyLight tools discusses the **use of KeyLight object forms**. At this point, it is recommended that the user have an understanding of how the common form buttons work. The forms are mainly used in a consistent manner. Functions that differ from the other forms are described separately for each form.

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The Other tools section discusses the **tools in the KeyLight application** that have not yet been presented in the paragraphs above. The section discusses, for example, managing surveys, searching for an address, and adding free lines and text to a map.

Software overview

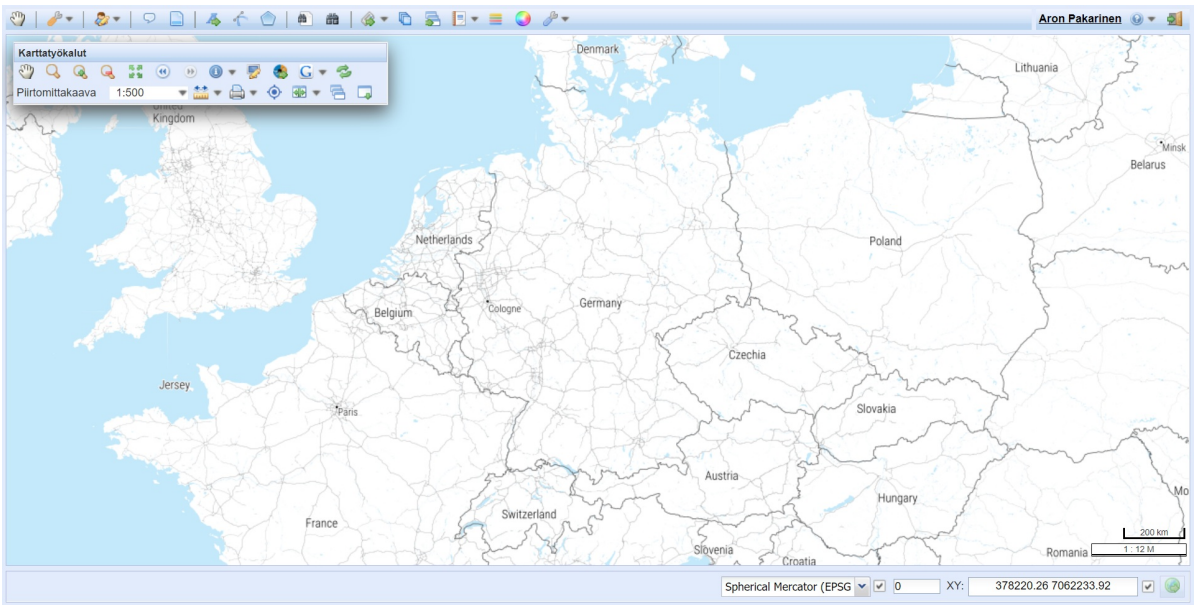
The software is used with **Internet browsers** and requires no additional software installation on the user's workstation. The network data that is used is stored **on a network server in an Oracle database** from where the browser receives the data.

You can manage the network data on **network object forms**: If you are adjusting the data of a pole, open the Pole form. Correspondingly, new cables are created in the system on the Cable form. Object forms are used for viewing, creating, and updating properties and location data. Information regarding network structure that is saved includes network topology and object properties, such as cable installation year, usage state, type, and length. The technical details of cables types, needed for short circuit calculation, are saved in the system. **Your license determines the scope of the features available.**

User interface

The user interface consists of map tools, a toolbar, map view, and the coordinate section. 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 **map view** includes a floating **Map tools** toolbar, which also contains the Layers tool for layer selection (Materials). **Map tools** enable you, for example, to zoom in and out in the map view, measure distances, and print the views 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. In the coordinate section, you can configure the so-called active Z setting for objects, providing the objects with this value as their default Z coordinate. With the coordinate section, you can also go to a coordinate point that you specify by entering the coordinates. In addition, the bottom bar displays **instructions** while various buttons and tools are used.

Note! If the border of the user interface is of a very bright colour, you are most likely using the test environment.

Hardware requirements

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

1. **Browser:** Firefox, Microsoft Edge, and Google Chrome with the latest updates. You must enable cookies in the browser.
2. **Operating system:** in accordance with the browser's requirements. Keypro tests the system functionality with Windows-based equipment.
3. **Display:** Minimum resolution of 1366 x 768 pixels (1920 x 1080 pixels recommended)

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4. **RAM:** Minimum 4 GB, 8 GB recommended, with browser requirements taken into account.

User roles

Different users have been assigned a **role** in the **KeyLight system**, and the permissions of the role determine the actions the use can take. **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 even visible to users with read-only rights. If a user has **read and write access** to properties or location information, the related buttons are visible. In addition to these, the **admin user** can, for example, change the default values. Permissions can be used to configure which tools are available to different users.

The system 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. For more information about user roles and permissions, see the admin user manual.

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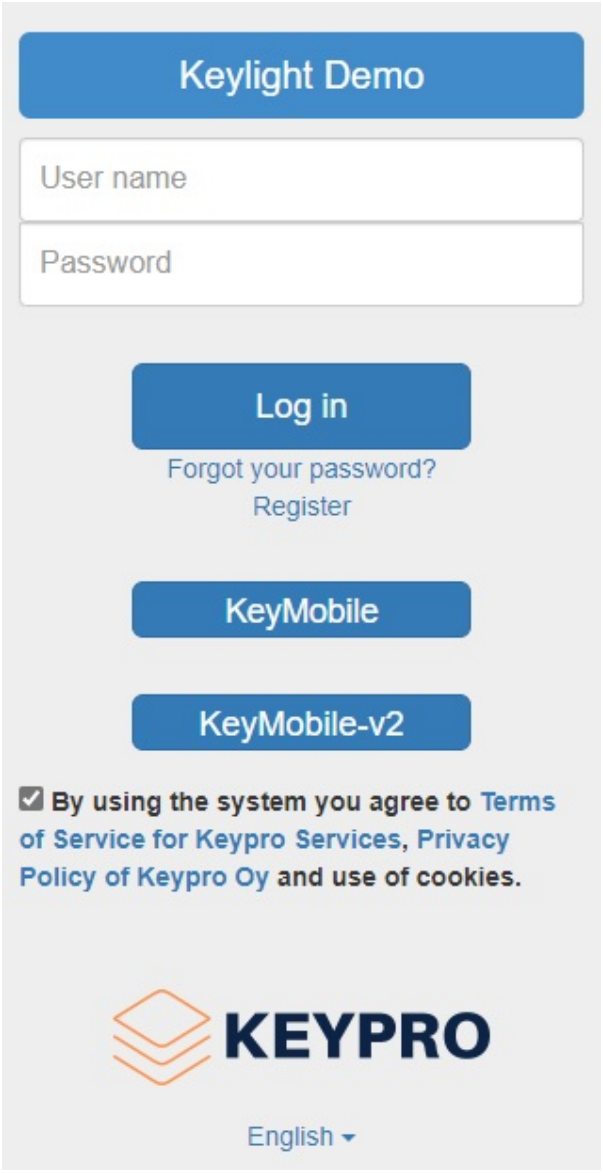
LOGGING IN AND ACCESSING HELP

This section discusses logging into **KeyLight**, changing the password, using application support, and finding the user manuals.

Logging into the system

Start your **Internet browser** and enter the **address of the KeyLight service** in the browser's address bar to connect to the server. When the login form is displayed in the browser, enter your personal **KeyLight username** and **password** in their fields. Remember to accept **Keypro Oy's terms of service and data protection principles** by checking the checkbox. Your session will start when you click **Log in**. On the login page, you can select the mobile version for smart devices with the KeyMobile button.

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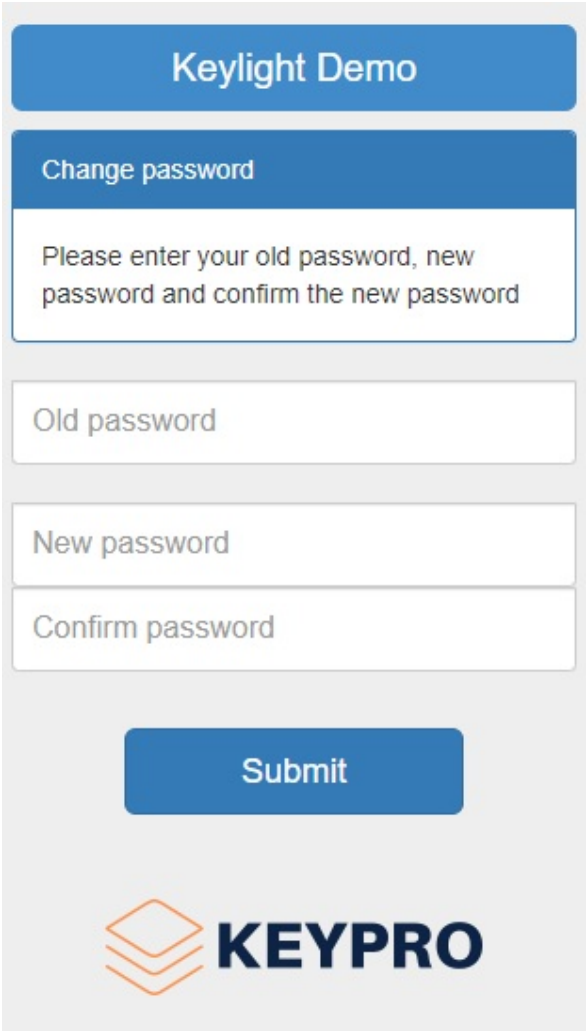


If you receive the notice **Enter the correct username and password:** Note that the fields are case sensitive. You may have entered either a wrong username or a wrong password. Enter the correct information and try again. Contact your system administrator if necessary.

Changing your password

To change your password, click the link button on the toolbar in the upper-right corner with your name (username) on it. On the form that appears, enter your new password twice in the appropriate fields. Then click **Submit**. After you receive a notification that the password has been successfully changed, you can continue working in the **KeyLight** environment.

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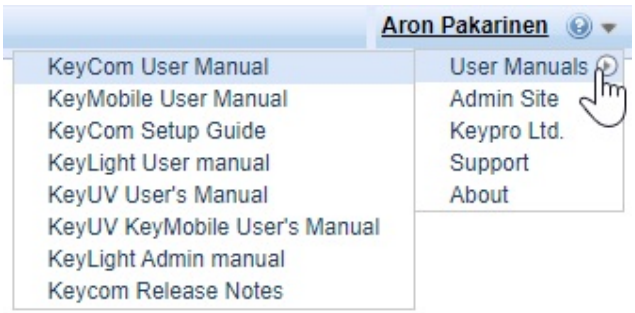


User manuals, information, and support

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

In the **User manual** menu, select **KeyLight user manual** to open this document in PDF format. The **KeyMobile user manual** is available in the same menu. In addition to these two instructions, the admin user can access the **KeyLight** configuration guide.

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

Select **Support** to open a pre-configured email message in an email application. You can complete this draft message and send 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 clicking **Keypro Oy** in the menu.

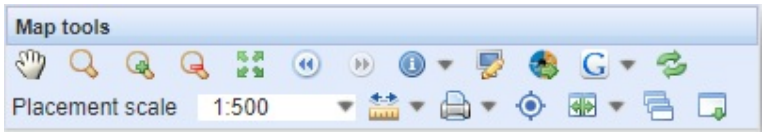
TIP: When you contact Keypro's application support, be prepared to provide the exact version number of the application you are using. To find this information, go to the Help menu and click About. In the Help menu, click Support to submit a support request.

Logging out of KeyLight

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

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MAP VIEW

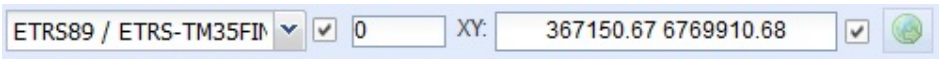


Panning the map

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 allows you to move the map in the background, for example, when you are drawing a new conduit.

Coordinates

The coordinate section displayed in the bottom-right corner shows the map coordinates for the **location of the mouse pointer** if the checkbox **Coordinate reading on/off** to the right of the coordinates is selected. You can turn coordinate reading off by deselecting the checkbox. Coordinates are visible in the field, with the first one being the east coordinate and the second one the north coordinate. The coordinate values are separated by a single space.



Center the map on the coordinates specified

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** .

Place an object at the coordinates specified

Uncheck the **Coordinate reading on/off** checkbox.

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Enter (or paste from the clipboard) the coordinate values in the coordinate field.

You can now place any point-type object at these coordinates in the following way:

On the object form that is created, click **Create new** or **Edit geometry** .

Click **Center map on the given coordinates** .

Picking the coordinates of an object

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

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

Changing between coordinate systems

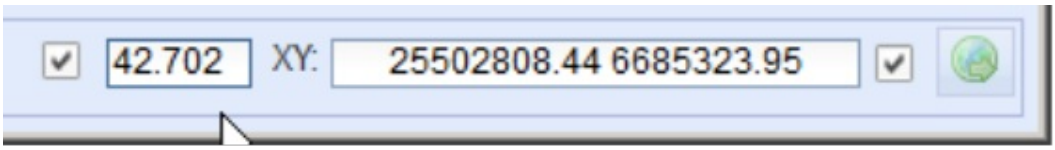
Have the coordinate section display the desired coordinate system by selecting the correct coordinate system from the drop-down menu. The selected coordinate system is used for all functions.

KeyLight uses a default coordinate system that is displayed in the **Coordinate system** drop-down menu in bold.

Coordinate elevation value (Z coordinate)

The value in the coordinate elevation field to the left of the coordinate field specifies the object elevation when objects are created. If the **Active Z lock** checkbox to the left of the elevation field is checked, the field value also specifies the coordinate of new points when snapping to objects. If you want to keep 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, uncheck the **Active Z lock** checkbox.

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You can find further information on snapping to and following objects in the section 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** window appears.

When you modify an existing geometry, or create a new one, and you press the SHIFT key on your keyboard, the mouse pointer will display the snap search 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.

You can use drawing options to sap to or follow other objects. This is done with the **Drawing options** window. Under **Snapping**, you can select either Point or Nearest. With the **Point** option, you can **snap to the nearest point** while holding the Shift key. With the **Nearest** option, you can **snap to the nearest object** while holding the Shift key.

Under **Following**, you can select either Completely or Partially. If you select **Completely** and click the start point of the object you select, the line object you create will follow through all points of the object, and digitization will continue from the end point of the object. However, if you do not want to follow along the entire item, you can select **Partially** to follow the item to the point you want and continue digitizing from that point.

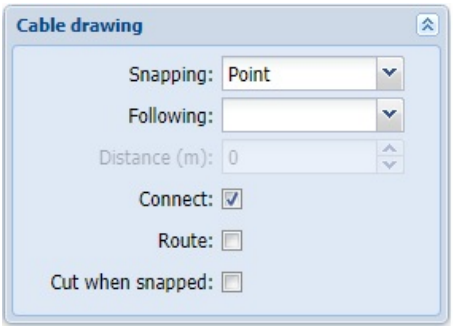
Change the **Distance (m)** value to follow the route of a line object for the distance you choose. The default distance is 0 meters.

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The **Connect** checkbox allows you to connect a line object (cable, conduit) while using snapping when starting and ending the drawing of it. When this checkbox is selected, the line object is connected to a point object.

When drawing a cable, the **Route** option will create a **conduit** for the section for which the **Route** option is on. If you uncheck the **Route** checkbox while drawing, the route will end, and re-checking the **Route** checkbox will start a new route. Routes and cables are saved when you stop drawing the cable.

The **Split at snap** feature splits the cable at the point where you use the snap feature. For example: Digitize the cable and select the pole on the map while holding down Shift on the keyboard to split the cable at the pole selected on the map. You can continue digitizing the cable and split it at the next location or snap point you want. The tool allows you to quickly create a cable network between poles.





In the **Modification settings** window, 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. Select **Nearest** for snapping if you want to move the point somewhere along a line. In this case, the point will move to the nearest point of the nearest line.

Changing the scale

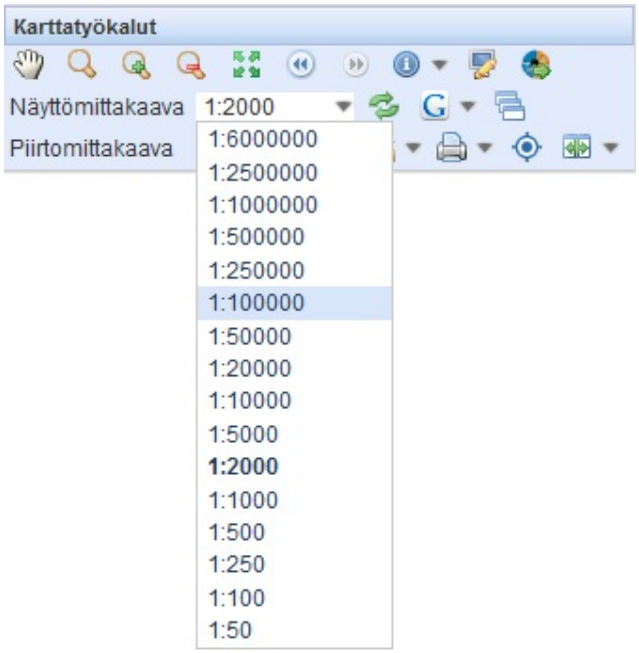
You can zoom the map by clicking **Zoom in** . This zooms the map in while the map center remains the same. Zooming in is carried out one scale level at a time. You can also zoom in using your **mouse wheel**. When you scroll the mouse wheel away from yourself, the map zooms in, and the map center is 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** which you can find adjacent to the above tools. Click **Zoom to area** to specify 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 display scale in the **Display scale** menu. The selected scale is displayed in bold letters. The map is automatically updated to the selected scale.



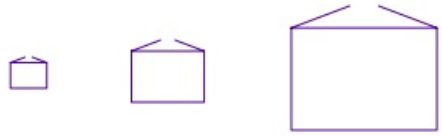
TIP: You can also zoom the map in by holding down the Shift key and using the left mouse button to select the map area to zoom in to. The map is zoomed in when you release the left mouse button. This is a fast way to zoom in to a larger scale.

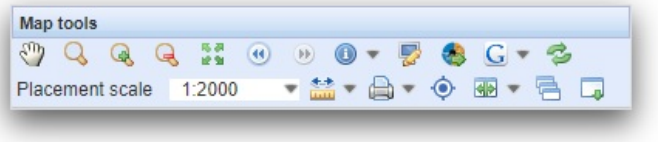
Using the placement scale for new objects

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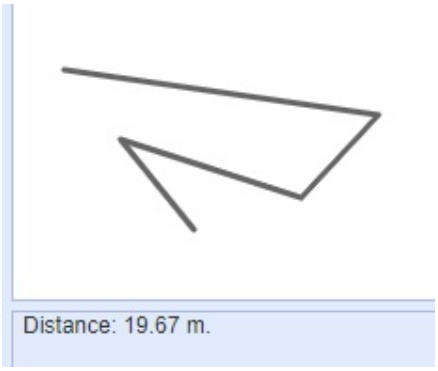
In the **Placement scale menu**, select the scale that will be used for creating printouts. New objects will be created at a size proportional to this scale, and individual objects will thus be visible, for example, in a printout with a 1:2000 scale.





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. At the start point, press the **left mouse button** and move the pointer on the map. When moving the pointer, a line is drawn on the map from the start point to the pointer's location, and the distance from the start point to the pointer location is displayed in real time at the left end of the bottom bar. To specify **points**, press the left mouse button. The distance is updated when the pointer is moved. **Right-click to stop the measurement.** Check the distance in the bottom bar at the lower-left corner of the screen.



The **Area and perimeter** feature in the **Distance** drop-down menu can be used to measure areas. The tool works in the same way as the **Distance** tool.

Info tool

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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.

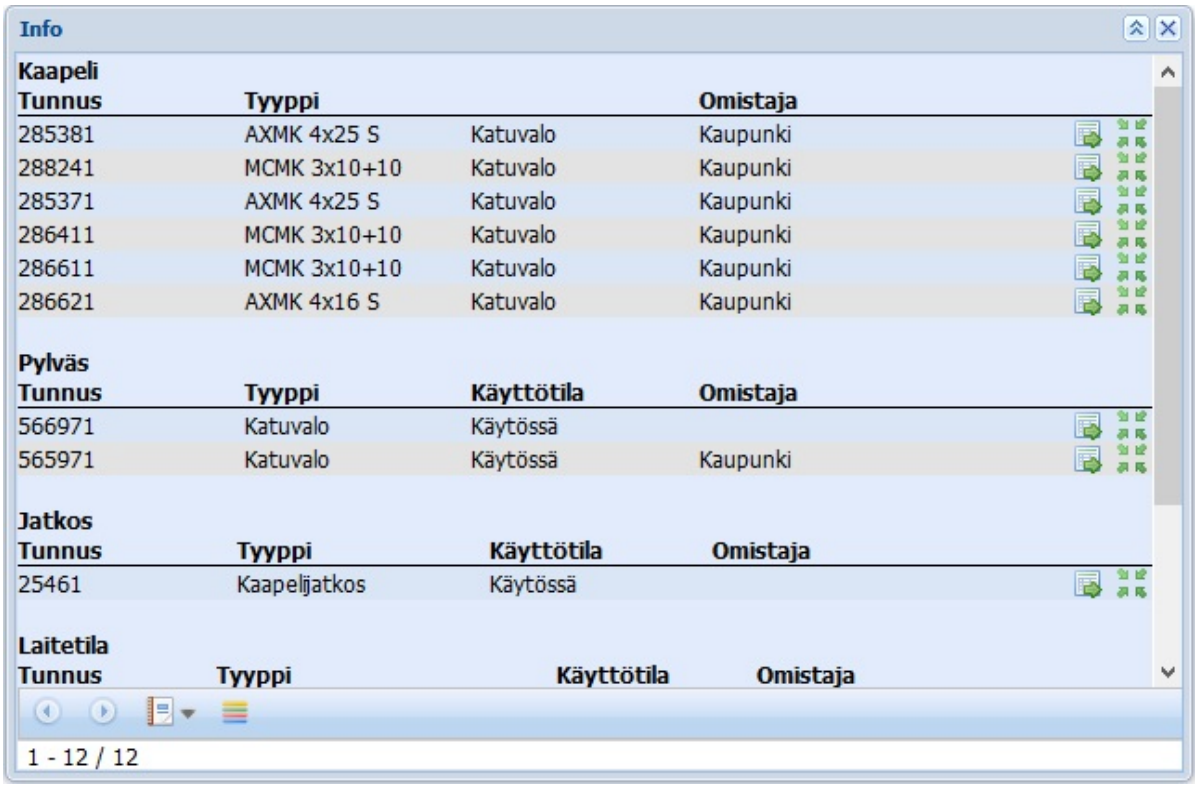
TIP: You can double-click an object on the map with the left mouse button to view the object's information. The application then displays a separate object form on which the object's information is displayed. If there are multiple objects in the area you double-clicked, they are listed, and you can choose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

You can specify a rectangular area by selecting the area you want by holding down the left mouse button.

In 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 network objects currently displayed on the screen. You can use the **Free area** function to specify 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 using the **Area** function and to retrieve the objects in that area.

The search will open an **Info** window on the screen, displaying the **basic information** about network objects. For example, the identifier, type and owner are displayed for cables. The search results are grouped by their type, such as cables and poles. Click **Show** to center the map on an object highlighted on the map. Click **Modify** to view and edit information about the object. 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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TIP: You can limit your search to specific objects by using object layer selection. You can limit the search to cables only if, for example, you select only the Cables layer in the Materials tool.

Exporting data and reports on map objects

1. Select objects on the map as described above.
2. Click **Export** to produce an **AutoCAD DWG** file from the selected items.

View 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.

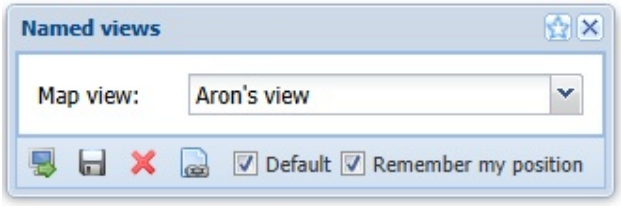
Map views

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You can save the current map view by clicking **Map views** . 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 in the drop-down menu.

Select the **Default** checkbox to configure a default map view. The map view set as the default one will be loaded on the screen the next time you log into KeyLight. If **Remember my position** is selected, the application saves the map location, zoom level, and open map layers. The **Map views** feature enables the feature where you can continue from where you left off the previous time when you next log in.

You can also copy the map link of the map view by selecting **Copy map link to clipboard** .

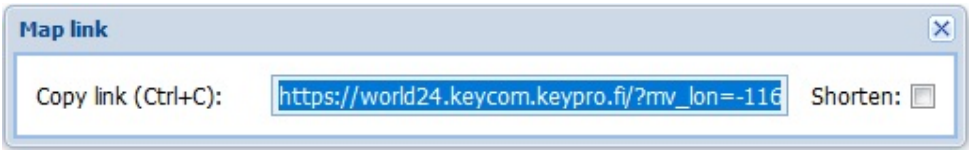


You can also click **Previous view** to return the previous view. This always takes you back to the previous view, one view at a time. Click **Next view** to go to the next view.

Map link

Use the **Map link** tool to copy the current map view and, for example, send a URL to your colleague or a partner.

1. Click **Map link** in Map tools.
2. With the **Shorten** checkbox, you can make the address shorter or keep it unchanged.
3. Copy the address.
4. Paste it into an email or add it as a browser bookmark.

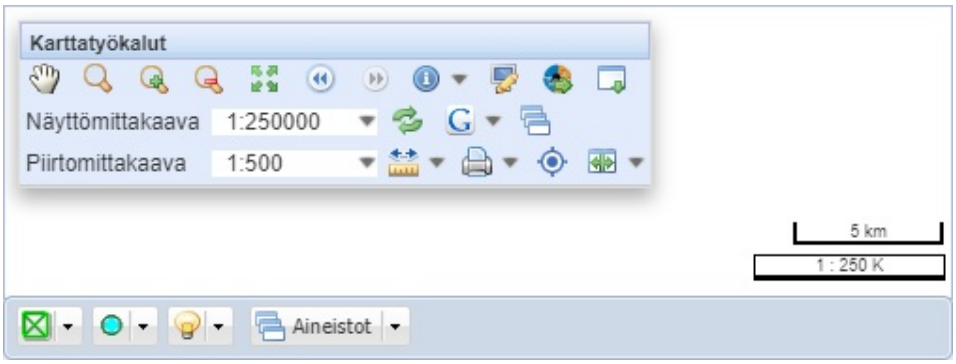


To return to the view later, copy the address into your browser's address bar or use the bookmark you saved.

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Dock/Undock all windows

Use the **Dock/Undock all windows** option, to dock all open forms to the bar displayed at the bottom of the map view. This tool enables you to clear the map view of all forms in order to get a comprehensive view of the network map. In addition, the toolbar includes user-specific favorites that are introduced in the chapter Favorite tools.



When you re-click **Dock/Undock all windows** , all docked windows will again be displayed.

Refreshing the map

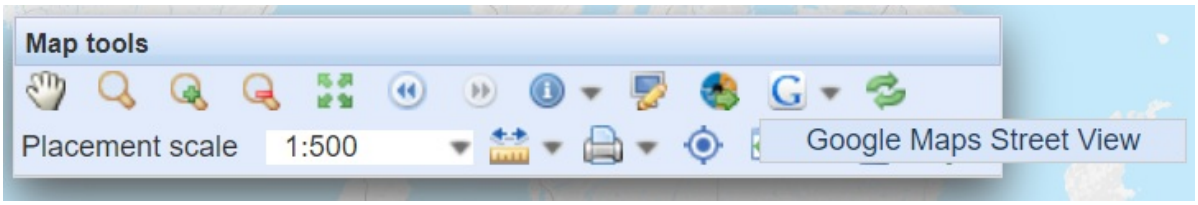
If necessary, you can update the map view with the **Refresh map** button, which will cause the program to retrieve the latest geometries of the object from the database to the map. This function is useful, for example, when the map data is being updated at the same time **on another workstation**, in which case changes are not necessarily immediately visible in the area that you are viewing.

Google Maps

You can view the area in the map view in the **Google Maps** service hosted by Google. Click **Google Maps** to open a new browser tab to view the current map view on the Google Maps website.

You can view a street view in the **Google Maps Street View™** service: In the **Google Maps** drop-down menu, click **Google Maps Street View**. Point to the road/street location that you want to view and click to open the view in question in Google Maps Street View.

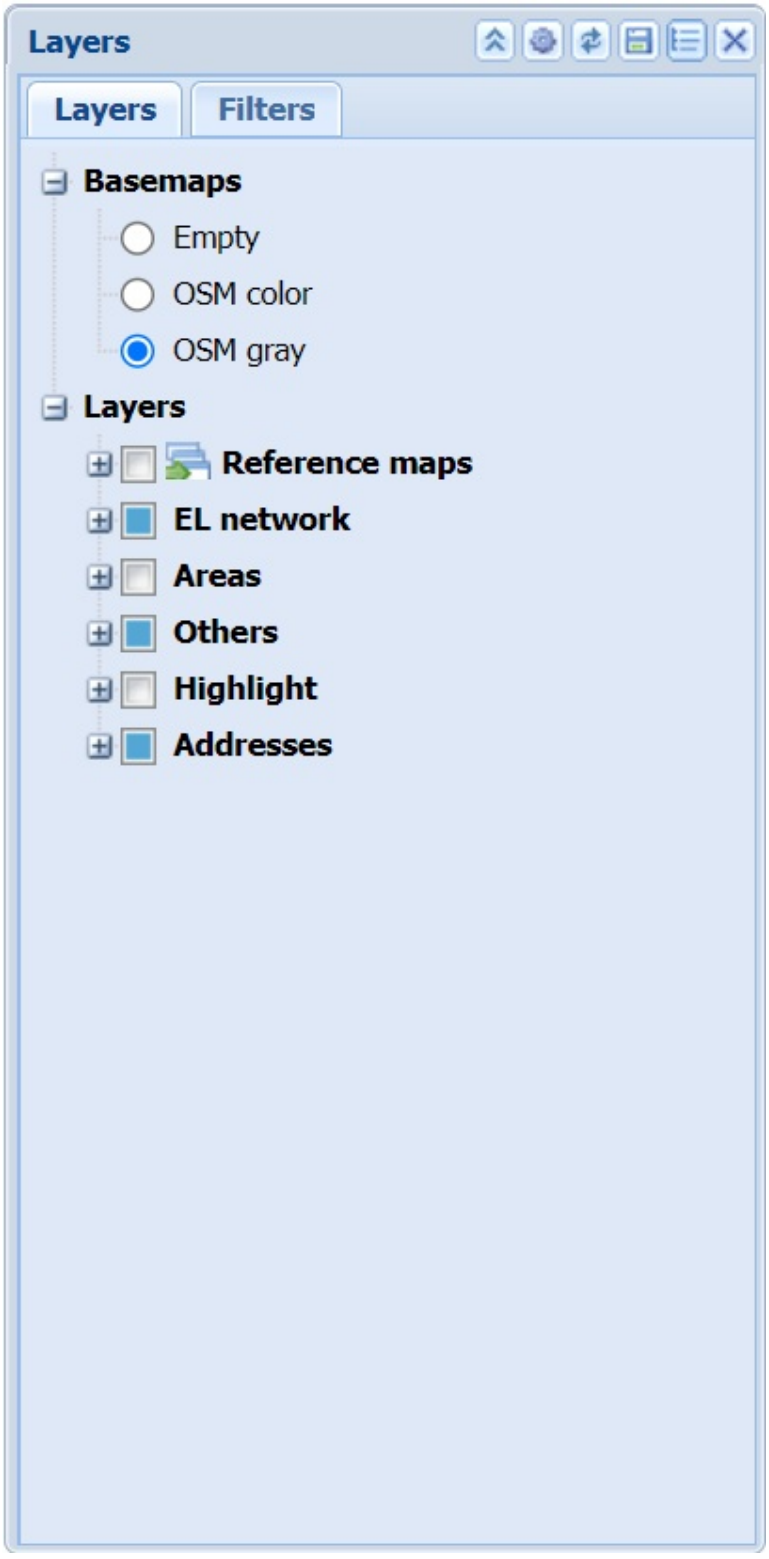
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Layers (Layer selection)

You can select background maps and target layers for the map view with the **Materials** tool. To see the object list, click the **Materials** button in the map tools. The map layers available depend on the customer and what has been agreed concerning the available maps.

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You can minimize or maximize 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

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The default map is one of the available maps. You can also select another map as the **background map**, or you can select the option **Background map**, hiding any background map from the view. 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.**

The layers available for selection include network objects, downloaded background materials, annotations, themes, etc. In addition, free-drawn lines and texts, addresses, surveying objects, themes, and other similar objects in the layer selection list can be selected.

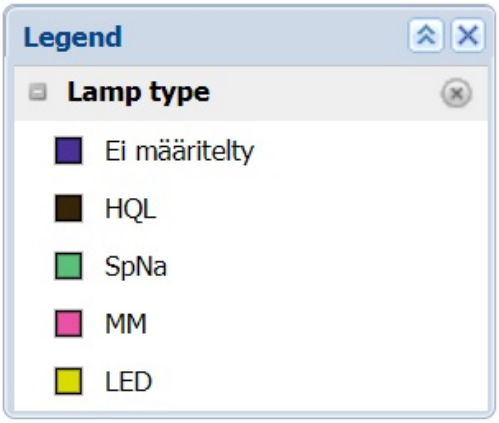
The **checkbox** to the left of an object's name indicates whether the object has been selected. You can remove or add an object by clicking its checkbox. If you want to activate all layers at once, select the checkbox for the highest layer (**Layers**). You do not need to refresh the map afterwards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

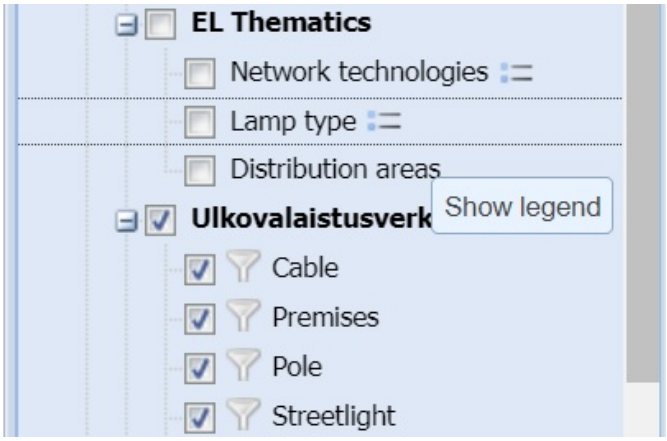
The number of objects visible on the map is proportional to the speed with which the map is refreshed. For this reason, we recommend that you only select the layers you need to view on the map.

Thematics

You can view objects on the map based on various object attributes. Thematics highlights objects based on, for example, network usage state or technology. You can view a theme legend by clicking **Show legend** in the context menu or by clicking **Show legend** . The Legend window that appears indicates the theme coloring and its verbal description. Labels (legends) can be created for all map layers by the administrator.

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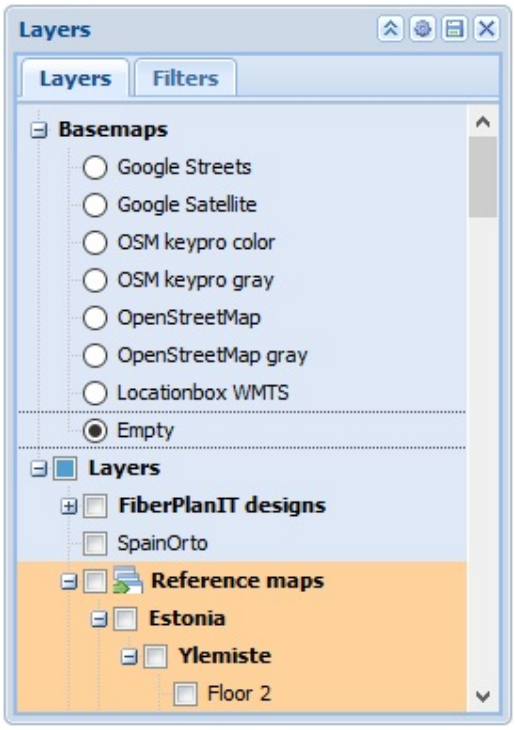




Configuring object layers

You can configure the layer selection layers into separate groups via the application user interface. You can group similar layers into one group, for example, group all KeLight 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 the **Configure** button.

Click the **Configure** button at the top corner of the layer selector to start grouping the object layers. Active layer editing is indicated with **orange** window background.



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To group layers, drag layers into layer groups with the mouse. For example, you can move the **Annotations** layer to the **Street light network** group by grabbing the **Annotations** layer with the left mouse button and dragging it onto the of the **Street light network** group.

Layer configurations

You can save a **Layer configuration**, i.e. 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** .

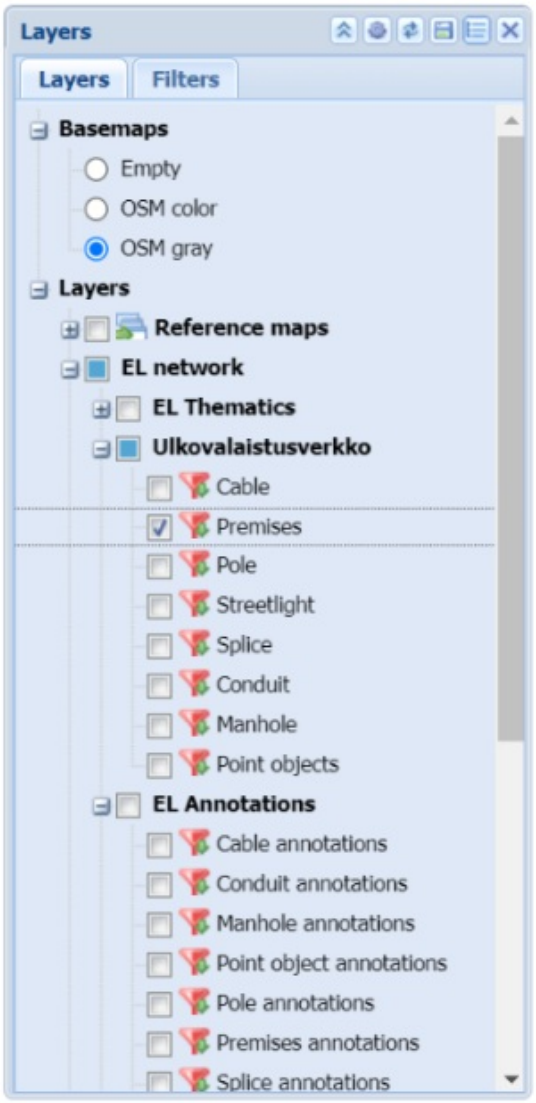
Layer filters

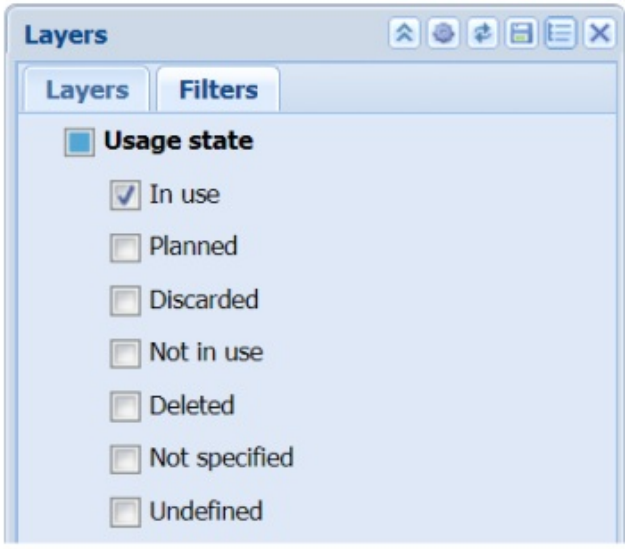
Layer filters are used for limiting the number of objects shown on the map. Objects can be filtered based on **usage state** and **plan**. When filters are used, only the objects selected on the filter form are visible on the map.

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 highlighted .

In the figure below, the filtering applied is **Usage state** = In use (left image). The filter icon in front of the filtered layer is shown in red.

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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 one-sheet printout of the map.

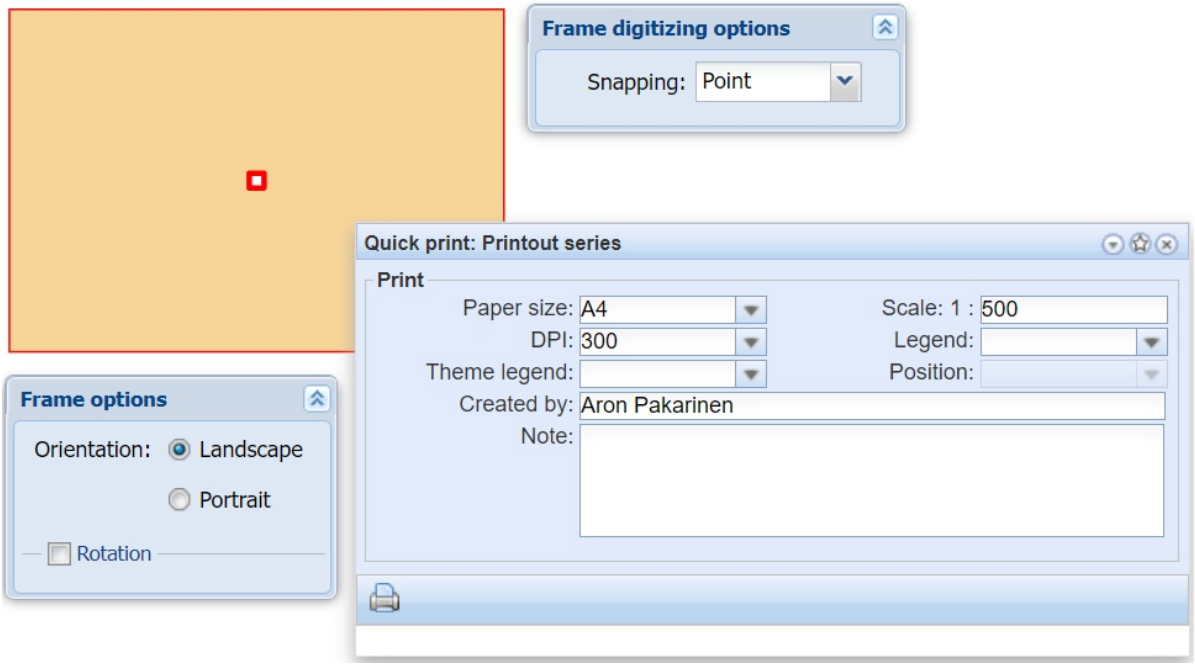
Quick print

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Click the **Quick Print** button to start **Quick Print**. The pre-completed **Quick Print** form will appear. Fill in the fields you want. Complete **Paper size** and **DPI** 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 specify their **location** on the printout.

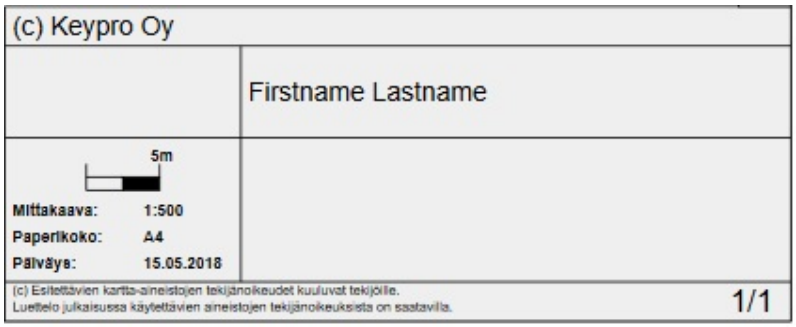
The **Print legend** refers to the map legend, which includes information on the paper type, scale, person creating the printout, and date of printing. You can add your own text in the **Note** field.

Set the margins for the printout. The boundaries of the frame move with the mouse pointer until the desired position is set with the left mouse button. To accept the printout, click the right mouse button, and a new document will be generated on a new tab. You can also cancel the frame layout and press ***Esc*** to change the information in the quick print form. The frame layout will then be reactivated with the **Print** button on the form.



You can select multiple **print legends**. You can position the print legend on the printout to the right or left top or bottom corner by selecting the corresponding option on the quick print form. The printout scale, paper size, print date, and person printing (printout creator on the print form) is printed in the print legend. Entries in the **Note** field on the print form are printed in the print legend. The logo printed in the print legend and the text on the top and bottom rows can be separately configured with admin user permissions.

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You can include a **Theme legend** on the printout by activating the desired theme layers on the **Materials** layer selector. In the drop-down menu for the theme legend, select the location of the legend. In the printout, **theme legend** contains the same information as the **Show legend** window for the **Themes** layer.

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 the **Drawing options** menu, 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 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.

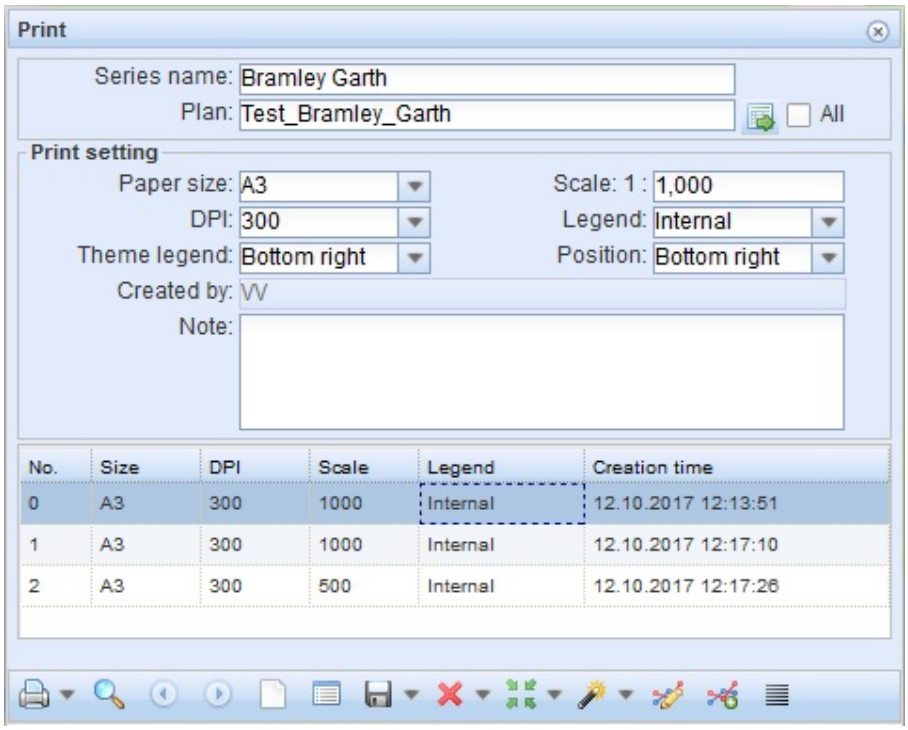
In the **Frame options** window, you can modify the orientation and rotation of the print area. The changes you make are applied immediately to the frame shown on the map.

TIP: Depending on your browser settings, there may be a warning about pop-up windows when printing. You must allow pop-up windows in order to enable printing.

Print series

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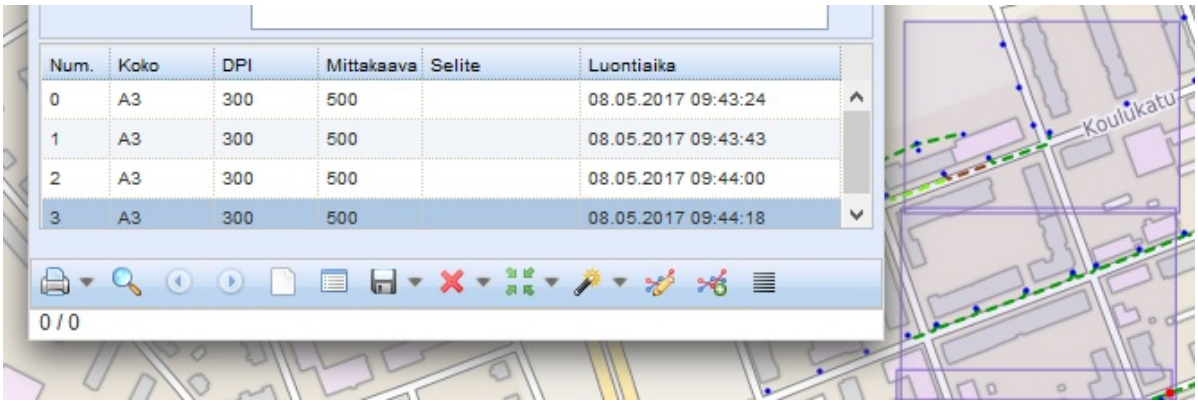
The difference between **print series** and quick print is that a print series consists of several map printouts (frames). The first page of a **print series** includes an index map showing all the map printouts, and it provides an overview of the individual frames with their numbers and locations. This feature helps to locate the various partial printouts on the map. To start using **Print series**, select **Printing** in the drop-down menu under the **Quick Print** button on the map tools. The form contains option fields and a list of frames. The first row of the **list of frames** is always a title page, and the actual frames are listed below it. The settings information displayed in the form's fields is related to the selected frame that is active in the list of frames. You can edit and save data and print frames individually.



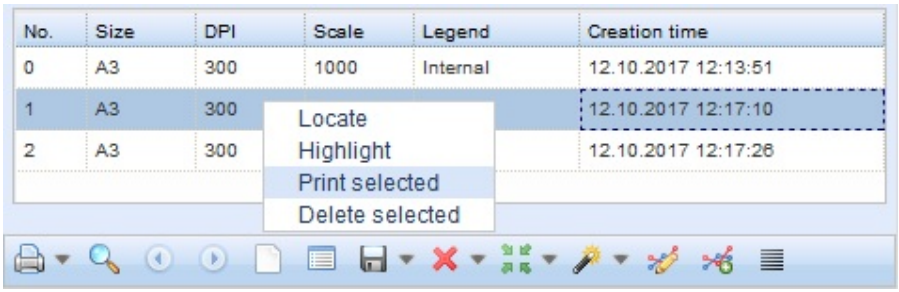
Start using the print series by completing the information on the form and then clicking **Save** . To activate the creation of a new frame, click **Create new** . The borders of the print area (frame) move along with the mouse until you select the map location you want by clicking the left mouse button. When you create a print series, the **Frame options** and **Frame digitizing options** menus are also displayed. Frames are laid out the same way as in quick printing.

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.

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To download a print series in PDF format, click the **Print** button on the form. The browser provides a PDF file for download, containing 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 frames.



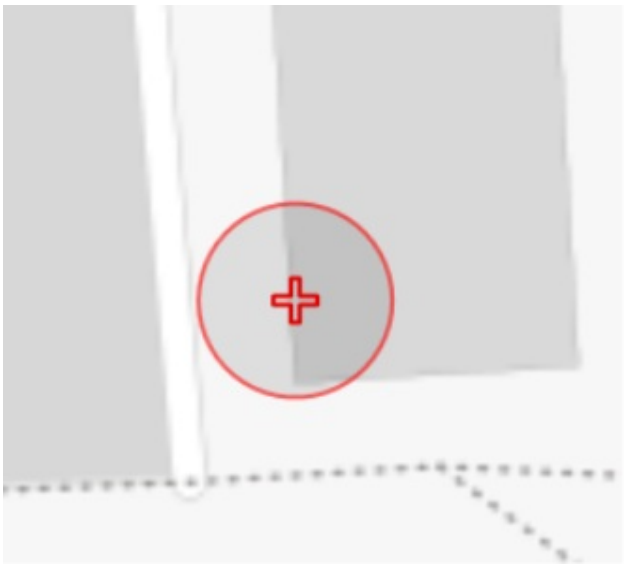
You can also use the **Quick print** function on the **Print series** form. The drop-down menu for the **Print** button includes the option Quick print. Use the **View** action to highlight the desired item on a map, making it easier to locate it. Click the **Modify** button to edit the information about the object in the selected frame.

TIP: The print series are stored in the database until they are deleted. This lets you re-print the same series later.

Locating yourself

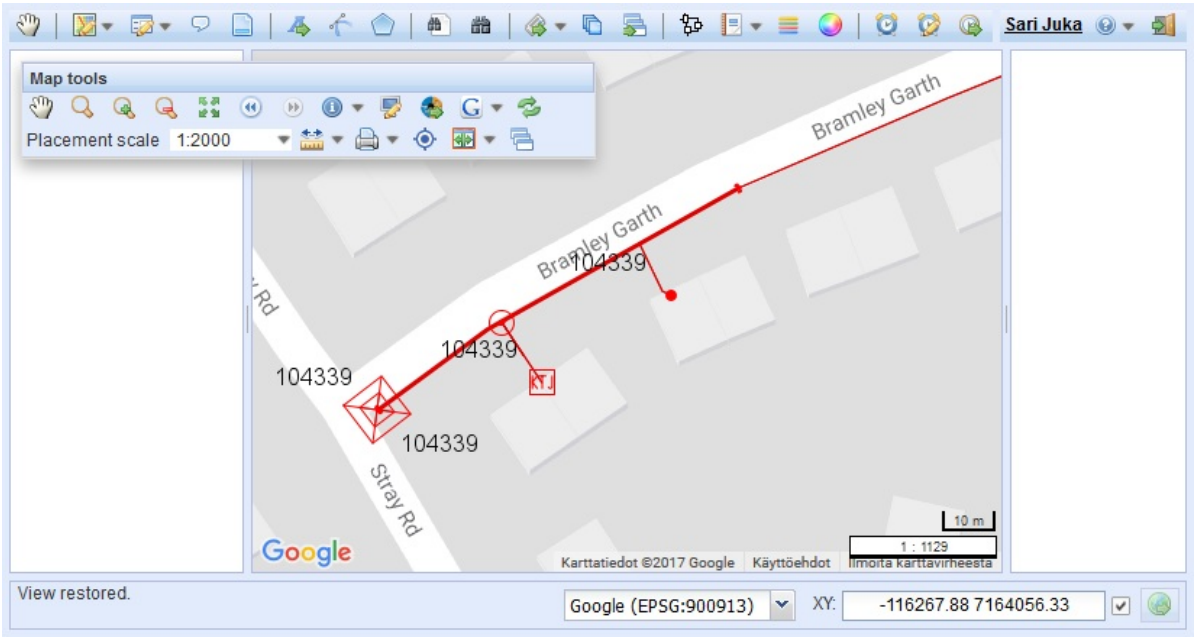
The **Locate** tool enables you to center the map based on the location of your equipment. Depending on the functions of your equipment, your location can be based on, for example, GPS coordinates or the location information obtained from a wireless or fixed network. Please note that the network location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

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Splitting your display

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 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 **Cable** form is used for cables and the **Poles** form is used for poles.

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 work in the same way** for all network objects and on all forms. The buttons that are displayed **depend on the user's rights**. If a button is dimmed, it is unavailable in that context. The button functions are introduced in the next chapters.



In addition to the buttons displayed at the bottom of 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.**

Favorite tools

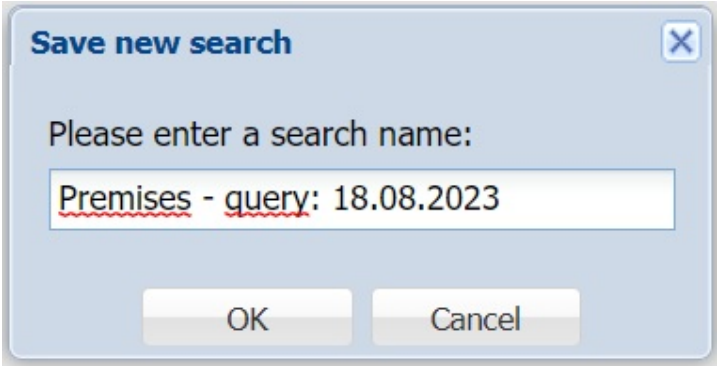
Click **Favorite** in the top-right corner of the form to set the form in question as a favorite. User-configured **favorites** are displayed in the toolbar at the bottom of the map view, from where you can open them quickly. Future version updates may affect your settings concerning your favorites.

You can also save the form's search results as favorites:

1. Retrieve the required information to the form, as instructed in the Retrieving information to a form and Picking objects from the map chapters.
2. Click the **Favorite** button.

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3. You can enter a name for the search results in the **Save new search** dialogue box.



4. Click **OK**.
5. Your search results are now saved in the **Favorites** toolbar.



Deleting favorites:

- **Clear** the form that you want to remove from your favorites. Click the **Favorites** button at the top. The program will ask you to confirm the deletion of the favorite.

OR:

- Right-click the favorite in the bar at the bottom. The program will ask you to confirm the deletion of the favorite.

Note! By deleting the favorite, you delete the search result queries associated with the favorite.

Retrieving information to a form

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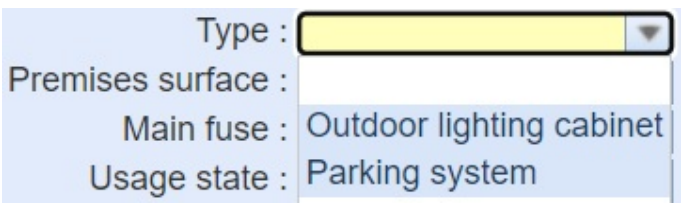
To retrieve data on all objects to the form, first click to clear the form and then click **Search** . If you want to retrieve data on some specific object types, you can specify the **search criteria** that are applied to your search. For example, if you want to retrieve all cables of a particular type, **set the cable type to your desired type** 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 arrow buttons . 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 some individual search result, the easiest way to do this is to use the **List** action (List view). Double-click a list view row to open the corresponding object form.

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.

Each object form has a **Database ID** text field. The database ID refers to the internal ID of each object. These IDs are automatically generated for each new object and they cannot be changed. This feature makes database IDs good identifiers because when using it, the user can be sure that an object is definitely the same even if its property attributes have been changed. Searching with the database ID works the same was as presented above.

Selecting multiple items

You can select multiple values from the same search field for your search. For example, the **Premises** form allows searching for multiple results based on values specified in the **Type** field. Hold the **Ctrl** key down and use the right mouse button to select the desired values in the **Type** field menu that you want to use as search criteria. The background of the selected values changes to blue. Click outside the field, and the values will be shown in ***italics***, which means that they are included in the search. Click the **Search** button.



Searching by a date or number range

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



Clearing an object form's fields

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. The admin user can change the 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.

Object template catalogs

You can also save the values entered in the object form fields and apply them later by selecting a saved template from the **Defaults** drop-down menu under **Template Catalogs**.

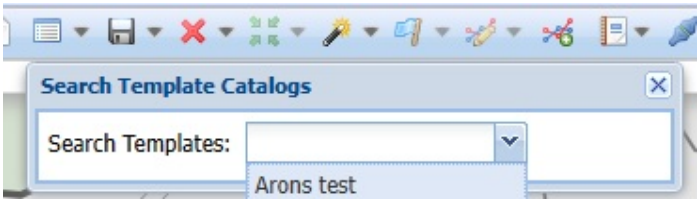
1. First, fill the desired object form fields.
2. Then, click **Save as Catalog** and enter a name for the catalog. If the name already exist, the system asks to update the existing catalog.

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3. Click **Save Catalog.**

Your template is now saved and can be accessed anytime from the **Defaults** drop-down menu by selecting the correct template.



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 some telecom premises and add information about the installation year, take the following steps: Open the required telecom premises on the **Telecom premises** form, go to the **Usage state** menu, and select **In use**. Then enter, for example, 2016 in the **Install year** field. Click **Save** .

Copying an object as a new object

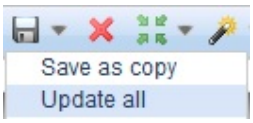
You can create a copy of an object with the **Save as copy** function. This function creates a new object by using the same property values and location. We recommend using this function, for example, when the intention is to digitize several similar objects in the same place.



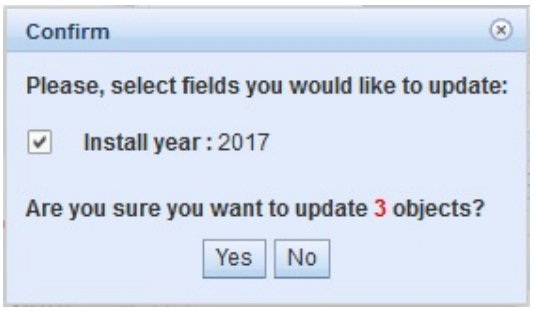
Mass update (Update all tool)

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.

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For example, if you want to update the year 2016 as the installation year for all cables in the area, first retrieve information on all the cables in the area in question (area search) and enter 2016 as the value for **Install year**. 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 update 2016 as the installation year of the objects retrieved to the form.

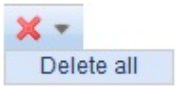
Deleting objects and mass deletion

To **delete objects from the system**, retrieve an object through the form and click **Delete** to open the **Confirm** dialog. The following dialog 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 specifying the 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 may be available to you depending on your user rights. 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 KeyLight 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.

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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.



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.

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Picking objects from the map

To pick objects from the map, first click **Pick from map** and then **click a map object with the left mouse button**. 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 telecom premises to a form for splices, 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 specify 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 Modify to access the object's form. For more information about the Info tool, see Info Tool.

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, Service area, Exchange/Telecom area), in which case the search is 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 2016 in a specific area, enter the search criteria on the **Cable** form, that is, enter 2016 in the **Install year** field. After you have defined 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.

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 dialog** appears, in which you can select various settings related to modifying the object's geometry. Update the geometry and click the **Save** button.

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Modification settings

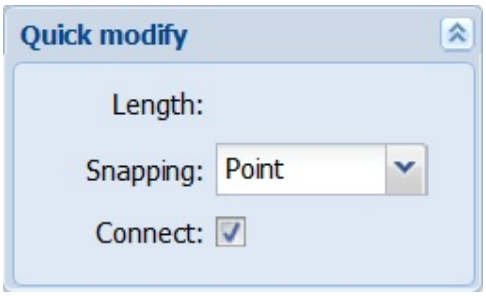
In the settings for geometry, you can select the snapping point applied to a point that is moved while holding down the **Shift** key. Select **Point** for snapping if you want to move the point to the same location as some other point. Use **Nearest** if you want to position a point on top of the line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

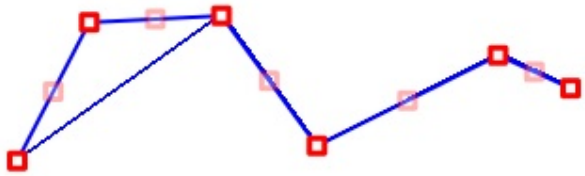
Quick modify of a line object:

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.

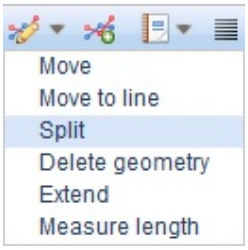
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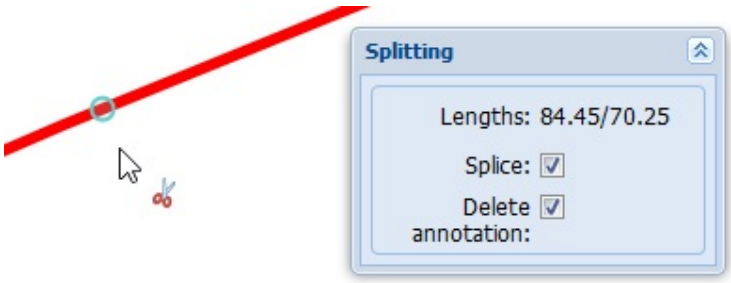
You can use the pink squares to add points. You can move the squares in the same way as the existing points. Position your mouse pointer over a square, grab it while holding the left mouse button down and relocate the square. When you release the left mouse button, the square becomes a **new** point. 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** dialogue box. This dialogue box displays the **lengths** of the parts to be split. These lengths are automatically updated based on the selected splitting point.



When a **cable is split**, it is possible to place a **splice** at the point of split. When a **conduit is split**, it is possible to place a **manhole** at the point of split. The cables in the conduit remain unchanged after the splitting.



You can select one of the following as the **split state** in the menu:

- **Default:** You can split a line object at a free location according to your choice.
- **Vertices:** You can split a line object at one of its points.
- **Intersections:** You can split a line object at an intersection. Another line

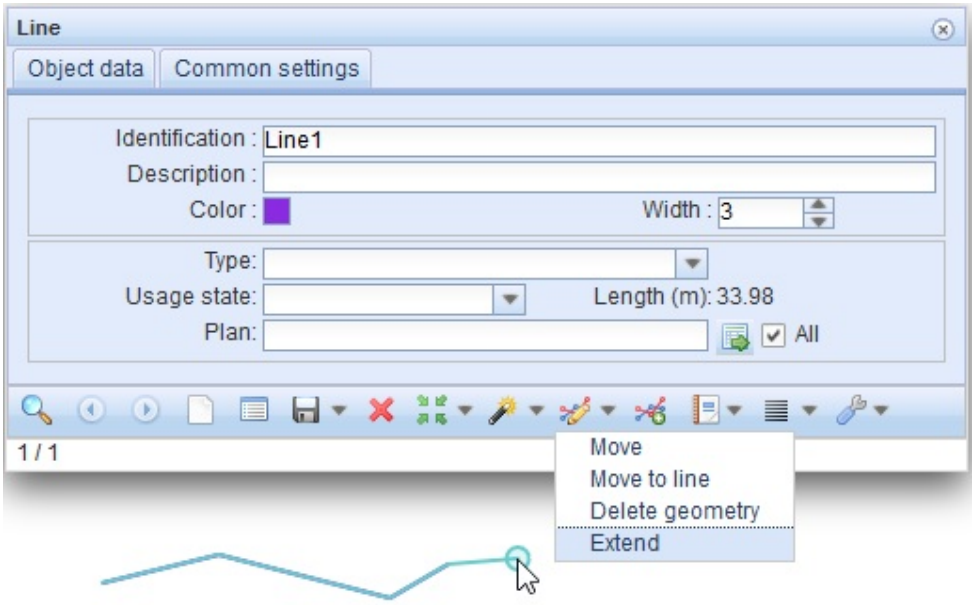
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object, such as a cable or conduit, crosses at the intersection.

- Use the **Delete annotation** option to automatically remove annotations of a line object from the map.
- Select the point 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** dialog also appears. The functions of the Drawing options dialog are described in the chapter Snapping and following (settings for drawing and modifying).



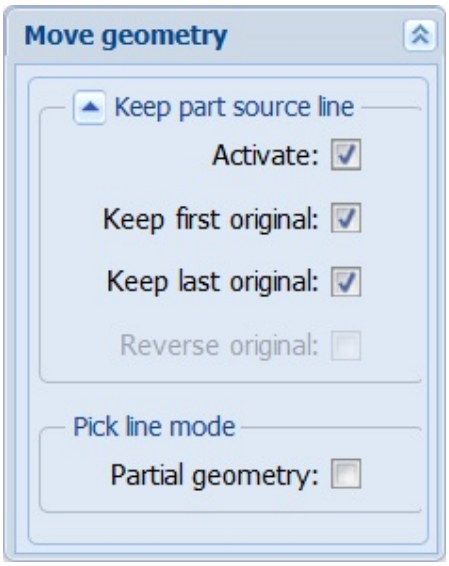
To continue the digitization of the object from its end point, create new **points** in required locations using the left mouse button. Create the **end point** of the object by **first clicking the left mouse button and then the right mouse button**. The object's location and property values are automatically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

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1. In the drop-down menu for the **Modify** function on the form, select **Move to line**.
2. Select the required options in the **Move to line** dialog that appears.

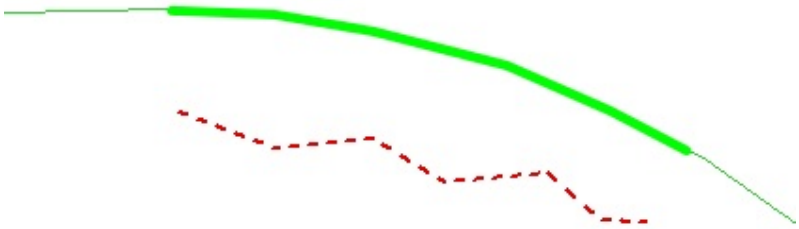


- **Activate**: With this option, you can maintain a part of the line's original location, while another part is moved to a new target line. Activate the additional functions for the line that is to be moved:
- **Keep first original**: Keeps the first part of the line unchanged up to the point where you click the line
- **Keep last original**: Keeps the last part of the line unchanged from the point where you click the line.
- **Reverse original**: Reverses the order of the start and end points of the line to be moved
- **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.

1. With the left mouse button, **click** 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 **Pan**.

In the figure below, 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.

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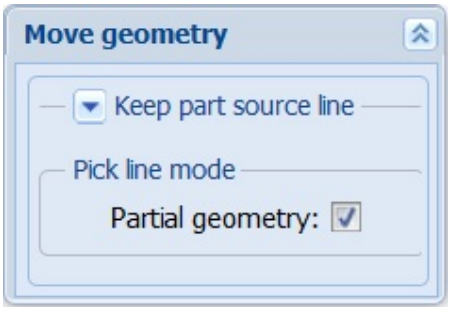


In the figure below the move has been accepted.



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** dialog, check the **Partial geometry** checkbox.



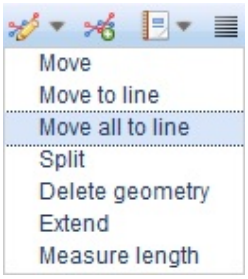
3. Click the object to be moved on the map.
4. Select the starting point on the target line (left mouse button). The selected starting point is shown as a blue box.
5. Select the ending point on the target line(left mouse button).
6. **Repeat items 3–5 if you want the object to follow more than one line.**
7. Stop the line selection by clicking the right mouse button. The new location of the object to be moved is highlighted in green.
8. Accept the object move with **Save** or reject it with the **Pan** button.

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Mass movement of line objects

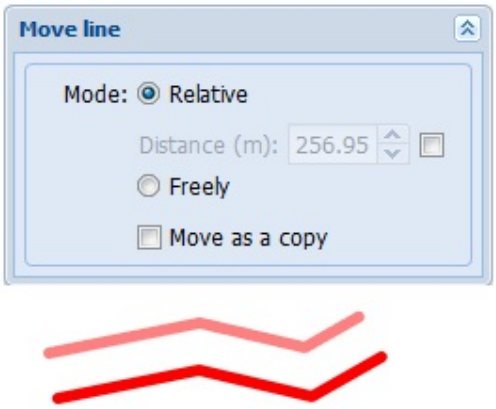
In the drop-down menu for the form's **Modify** function, select **Move all to line** to activate a mass transfer. Note that more than one line object must be retrieved to the form to make mass movement possible. Take same actions as when moving a line object, as explained in the chapters Moving a line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

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

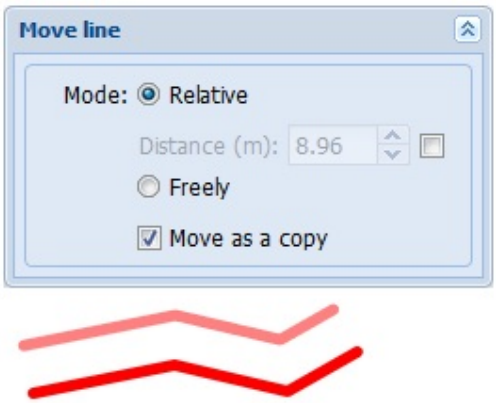


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Select **Relative** to move an object horizontally or vertically for the number of metres displayed in the **Distance** field. Click the left mouse button to accept the location and click **Save form** to save it.

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.

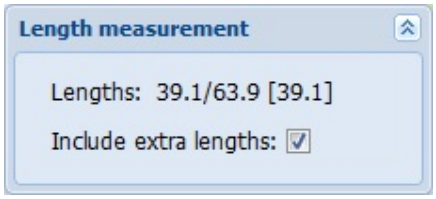
Checking the **Move as a copy** checkbox makes it possible to copy the object to a new location.



Modifying the geometry of a point object

Modifying the location of a point object**, such as a pole, 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 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.

For some point objects, such as telecom premises, any objects connected to them can also be moved. The modification dialogue box for such objects includes a **Move connected** checkbox. If this **Move connected** checkbox is selected, any objects connected to the point object will also be moved. In addition, you can connect a point object, such as **Telecom premises**, when you make modifications.

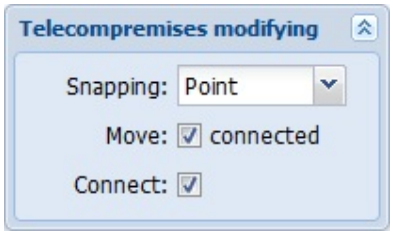


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The quick modify function of a point object:

1. Point at the required point object on the map and click the right mouse button while holding down the Ctrl 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** .

Select the required options in the displayed **Quick modify** dialog box.



Drag the red square to the required location. You can snap to another object by holding down the Shift key while releasing the left mouse button.

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.

Rotating a point object

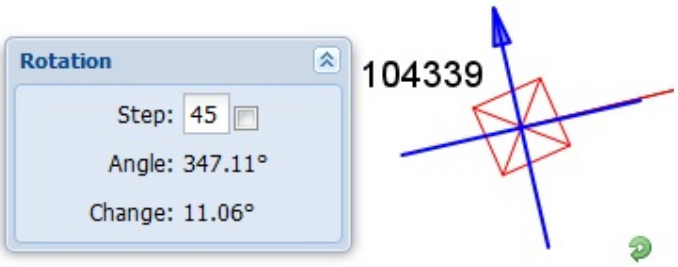
For a **point object**, you can set a new rotation angle via **Rotate** in the **Modify** drop-down menu. Click the **Save form** button to save the new rotation angle of the object.



A blue cross appears on of the object you are editing. The cross indicates the angle of rotation of the object. Rotate the object by grabbing the symbol.

When you click **Rotate**, the **Rotate** window is displayed, where you can enter the required angle. You can specify the **steps** as degrees. If Steps is selected, the rotation angle of the selected object changes in steps when you rotate the object. Use this feature to rotate an object in steps of, for example, 45 degrees. **Angle** displays the rotation angle of the object. 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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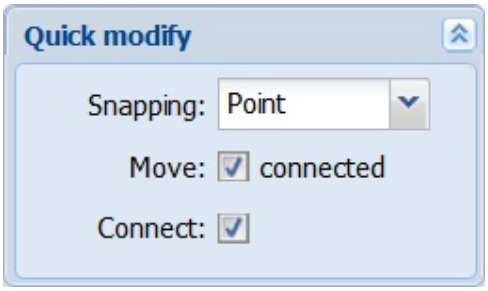


Modifying the geometry of an area

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

Quick modify function of an area object:

1. Point at the required area object on the map and click the right mouse button while holding down the Ctrl 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** dialog box.



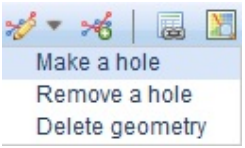
Drag the points highlighted in red to the required location or remove them with the **Delete** key. You can snap to another object by holding down the Shift key while releasing the left mouse button.

Click the right mouse button and click **Save** in the **Confirm the move** window to save the changes. Cancel the changes by using the **Pan** function.

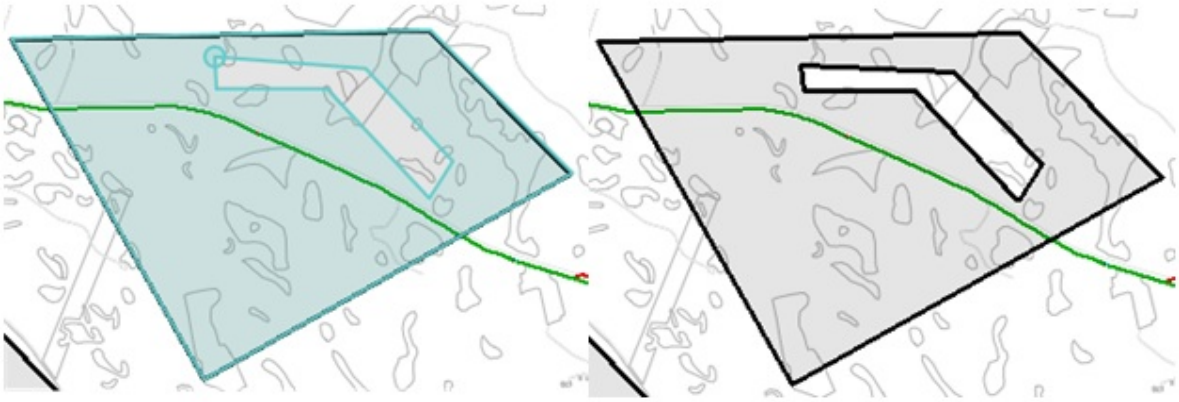
Digitizing a hole in an area object

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

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2. Within the highlighted area, draw a hole that has the required shape.
3. When you stop drawing, the form is saved and the hole has been created.

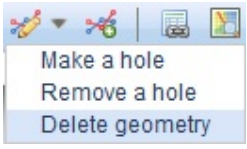


Removing a hole in an area

1. On the Area form, 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 click **Delete geometry** in the drop-down menu under the **Modify** button. 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

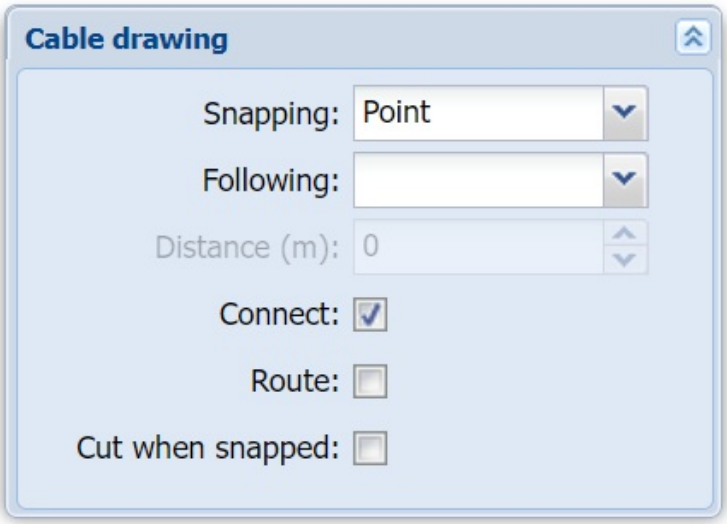
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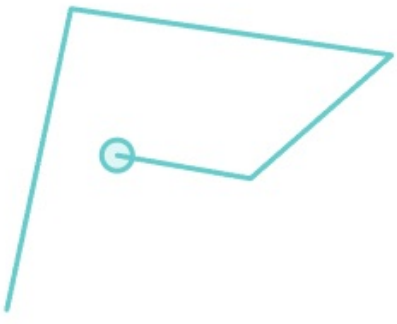
Create a new object by specifying its location, that is, its geometry. Click Create new to do this. Always select the correct object form. For example, use the **Cable** form to create a new cable, and the Pole form to create a new pole. You are usually required to provide at least some **mandatory information** 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** .

Click the **Create new** button to open the **Drawing options** form. The functions of this window are described in the chapter Snapping and following (settings for drawing and modifying). In general, line objects have more drawing options than point objects. Once you have created a new object, you can update it with **property information** on the **form.** The property information that you add to an object varies somewhat depending on the object and its form. The property information is updated with the **Save** button.

Creating a new line object

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. You can select the **Connect** checkbox, for example, to automatically connect a cable to premises. Connecting cables is discussed under Connecting cables.



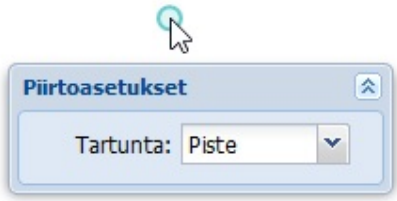


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The drawing settings for **line objects** include the option **Following**. You can use this function, for example, when you digitize a cable to go through a conduit. When you have selected the option **Completely** for **Following**, point at the 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 at a specific distance, specify **Distance** in the drawing settings.

Creating a new point object

A point object is created by specifying one point on the map where the object is created. 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 cross 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 information of existing objects.

Retrieve an object's information to the form, for example, by picking an object from the map. After this, either

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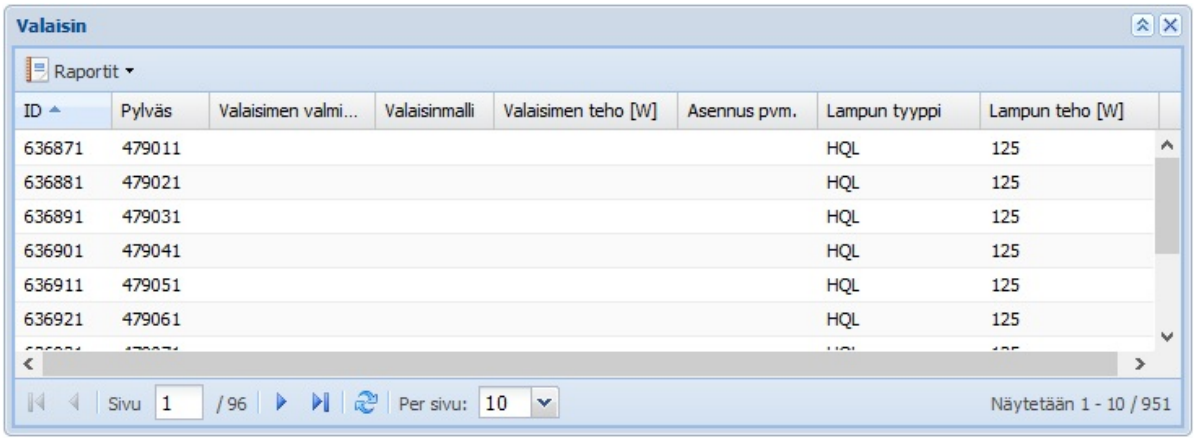
1. Click **Create** to create a new object based on the object information retrieved to the form. The program calculates the length of a line object based on the geometry of the new object.

OR

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

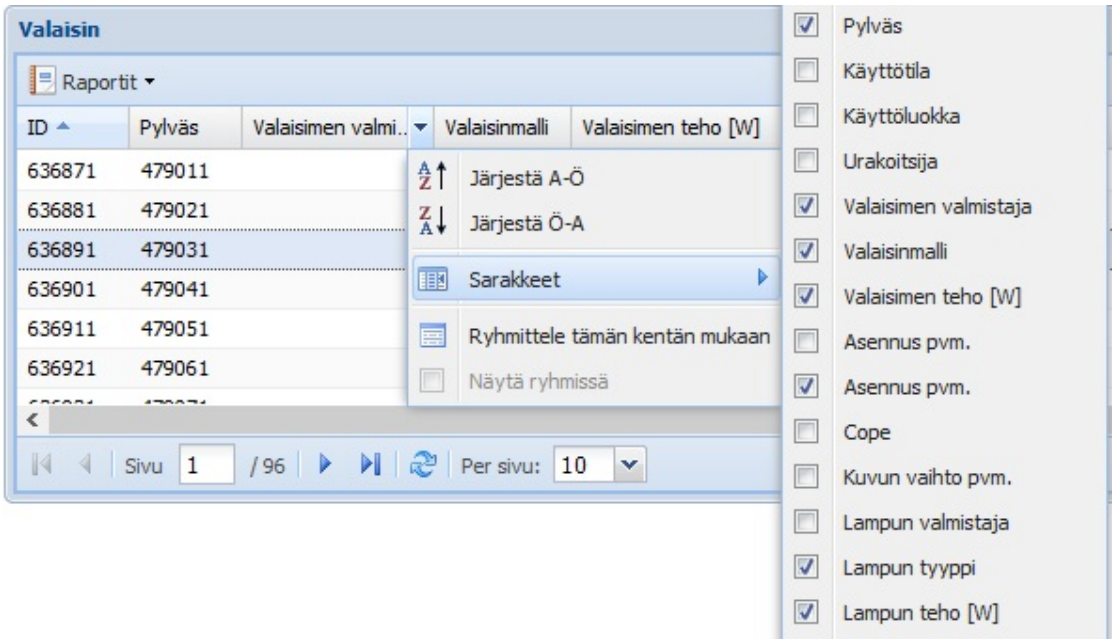
List view

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, hover your mouse pointer over a header field. This displays a menu in the selected field .

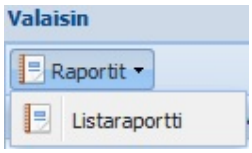
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The menu includes an option for sorting the list based on the selected field either in ascending or descending order. The **Columns** function lets you select the columns that are displayed in the list view. The lists include the typical information 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**.

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



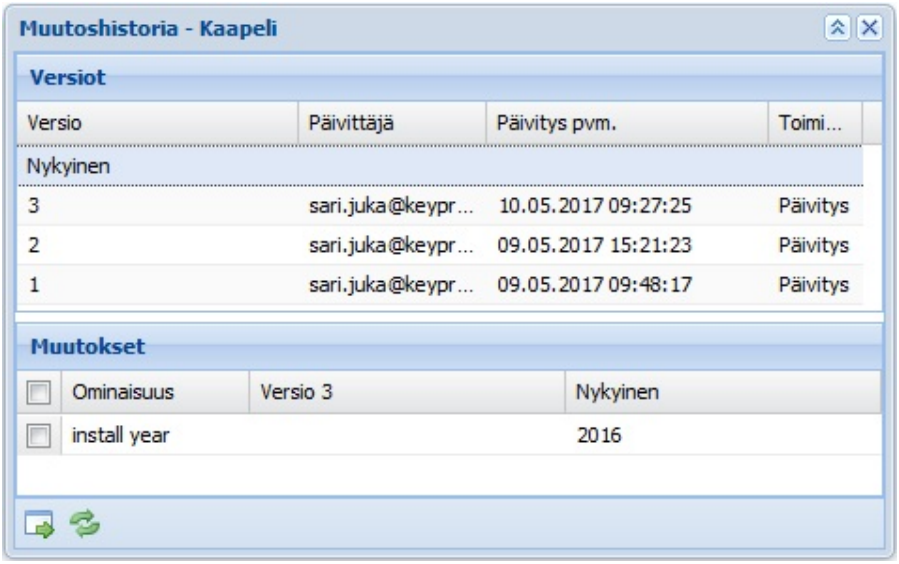
Show in group display

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, click **Change history** in the drop-down menu for **Other 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.



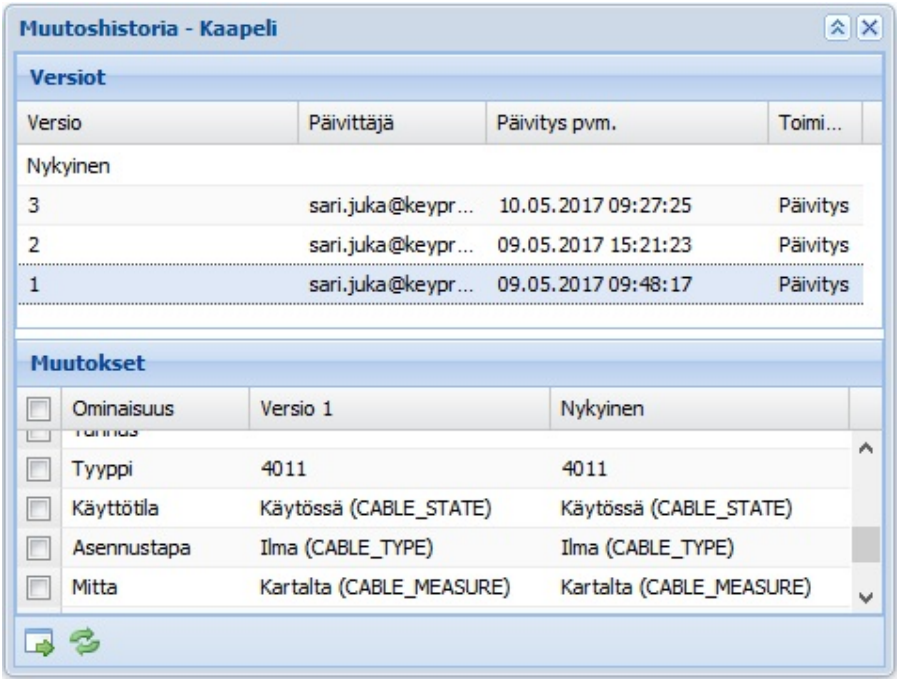
Restoring the values of an object

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** on the object form to confirm the changes.

Comparing object versions

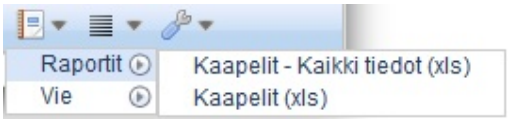
In the **Versions** list, select the rows for comparison to see, in the **Changes** list, the current version in addition to the selected versions.

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Reports

Reports can be created on forms and lists. Creating a report on objects that are included in a list of search results is discussed in the chapter List view. Report generation is available in the **Export** drop-down menu. 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. You can save the report as a file or open it directly in Excel.



Asynchronous reports

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.

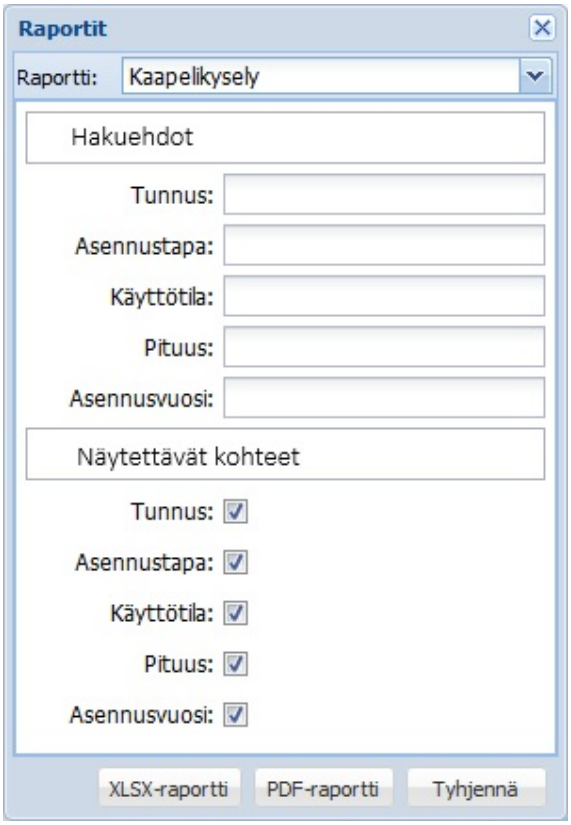
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Customer-specific reports

KeyLight 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. A report is processed in the background and sent to the user's email.



Entering a date

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Object forms may include date as a property attribute that can be used, for example, to specify when a survey was carried out. Adding a date has been standardized using the calendar, making sure that the same format is always used when dates are entered in the database. This also allows for using it as a search criterion.

Hover the mouse over the **Date** field and click the left mouse button to open the calendar menu. 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 at the bottom. To select a date, click a day using the **left mouse button**. 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 contains 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, unit 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 Address search.

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

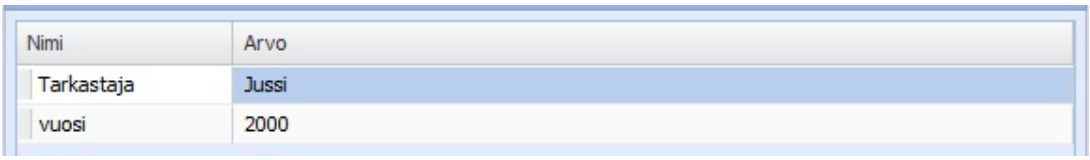
If you do not know the name/identifier:

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

Free-form property attributes

If some free-form property attributes have been added to an object form, the form includes an **Extra data** tab where such information can be viewed.

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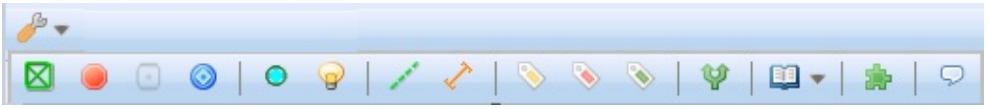


You can use the free-form property attributes when searching for objects, and they can be included in the **List** function and the related report. The admin user of the system can freely configure the free-form property attributes, name them, and select the data type to be applied (text, figure, date).

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KEYLIGHT TOOLS

The **KeyLight tool** chapter introduces the various KeyLight tools which are described in more detail in the following chapters, excluding the **Network follower** , **Work program (and Work program type)** , **Exchange area** and **KeyLight Annotations** tools, which are explained in the end of this chapter.



The street light network includes point and line tools and tools for network maintenance and other purposes.

The forms for managing **point objects** are:

- **Telecom premises**
- **Splice**
- **Manhole**
- **Other objects**
- **Pole**
- **Streetlight**

The forms for managing **line objects** are:

- **Cable** button
- **Conduit** button
- **Information related to the maintenance of network objects** is processed using these forms:
- **Premises inspection**
- **Pole inspection**
- **Cable inspection**

The **other tools** listed in this chapter are:

- **Network follower**
- **Work program (and Work program type)**
- **Exchange area**
- **KeyLight Annotations**

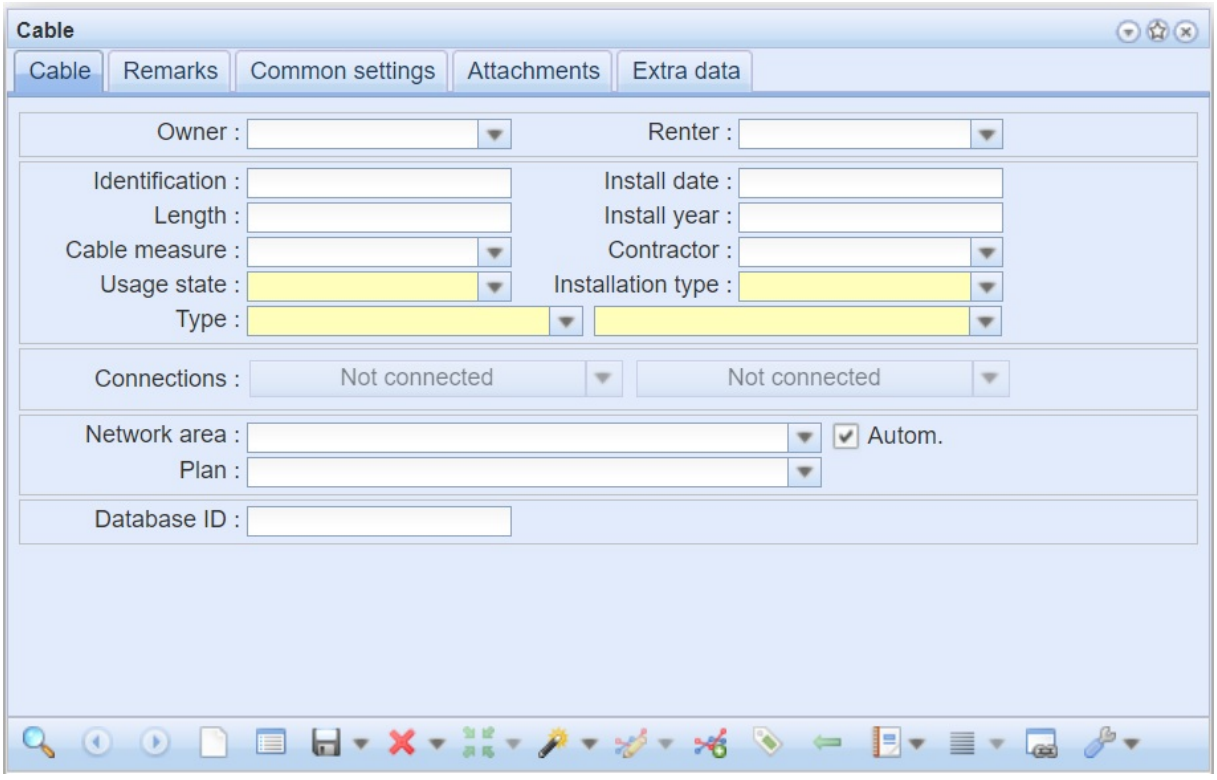
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The **functions and information content on the forms are the same**, meaning that objects are handled in the same way, but the object form is different for each object. **Depending on your user privileges**, you can, for example, search for objects based on search criteria, modify their location and property values, and locate them on the map. The button functions related to forms used for managing objects are introduced in the chapter Buttons on object forms. Some object forms include buttons that have functions not available on other forms. These functions are introduced in this chapter after providing instructions applicable to all forms.

Property attributes

The object you are managing determines the form that will open. Regardless of the applicable type and object form, objects have **similar property attributes**. Such information is related to the object owner, its properties, location, area, and plan.

If you want to create a new point object (premises, manhole, splice, pole) or conduit, the **required information** include **Type** and **Usage state**. For **cables,** the mandatory elements are **Type**, **Installation type**, and **Usage state**. Required data fields are indicated in yellow on the forms. Certain information elements are updated automatically when a new object is created. For example, when you create a new cable, it gets a **Length** and **Database ID**.

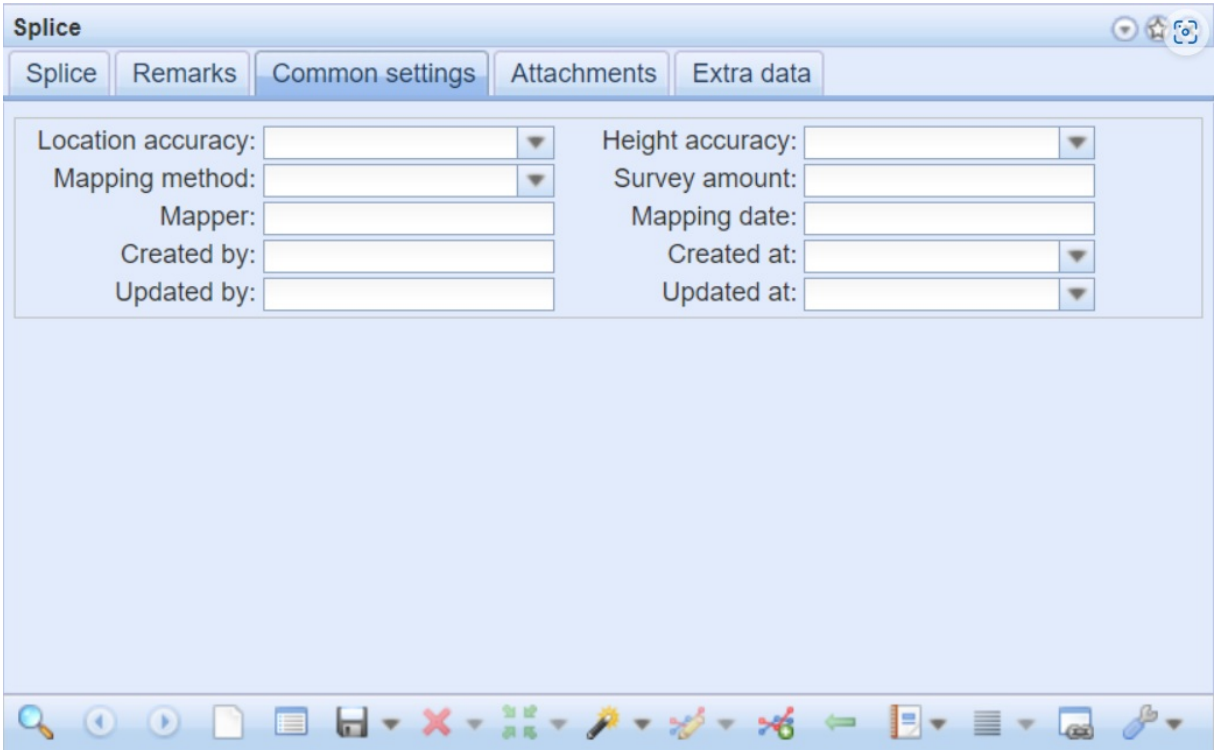


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After entering the mandatory data, click **Create** to create the object on the map. When the object was created successfully, the following text is displayed at the bottom of the form: **Saved successfully**. You can then update other property values for the object and save them in the system by clicking **Save form** .

The property values that can be specified vary depending on the object. For example, for a pole, you can enter information on its material, warranty period, and connection enclosures. For all objects, you can specify the **owner**, **renter**, and **installation year**. In addition, you can freely include text on the **Comments** tab.

The **Common** tab has the same data content for all objects. On this tab, you can enter information on mapping and its accuracy, in addition to which the tab includes information about the creator and updater of the object and the creation and update dates. This information is automatically saved in the system, and it cannot be edited.



Network follower

The **Network follower** tool can be used to follow the desired part of the network on the map. Network following requires cables and nodes to be connected to each other in the database.

Select one of the available options to go to the **Network follower** form to view a route you created:

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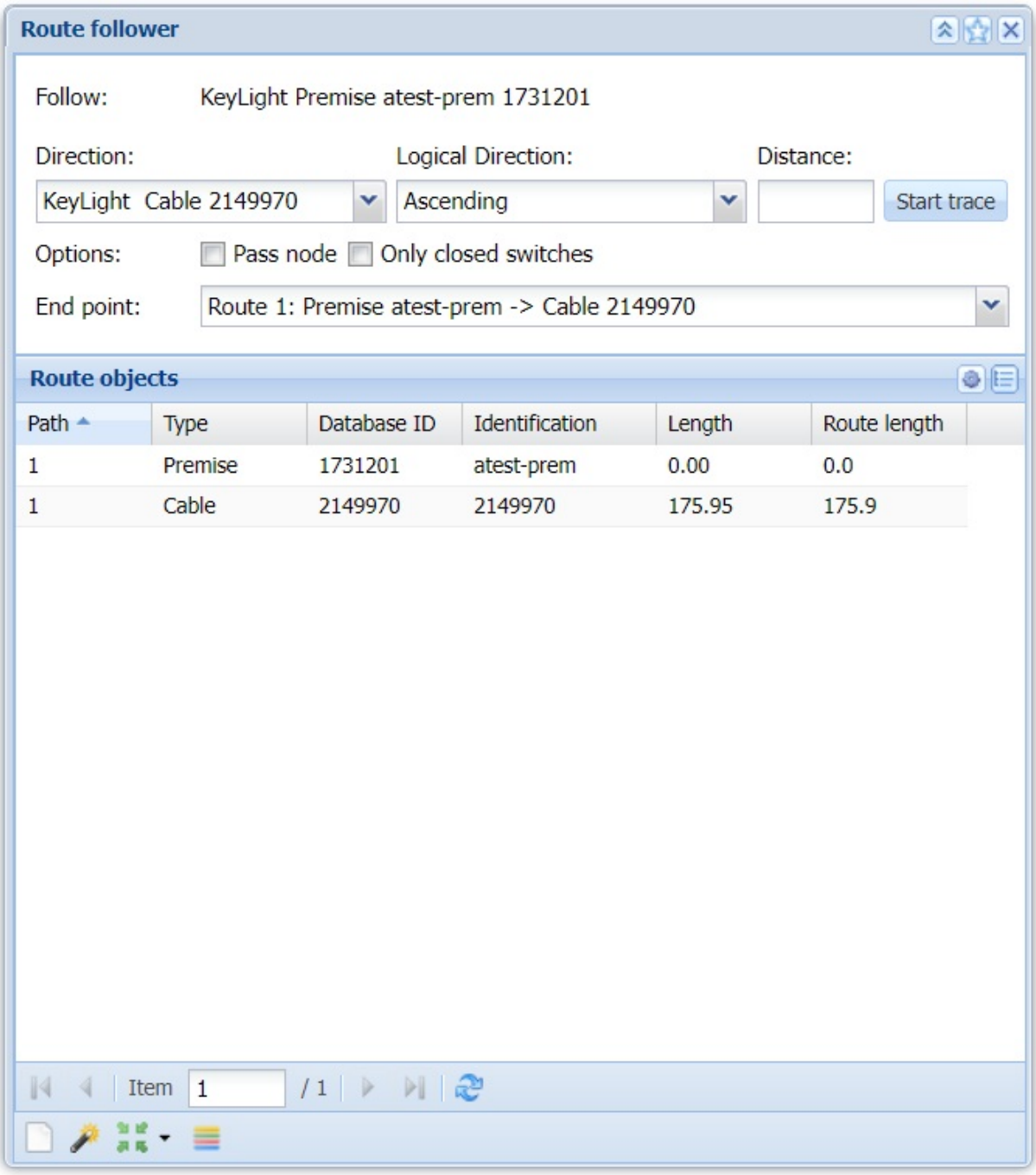
1. In the **KeyLight tools** menu, click **Network follower** .
2. On the **Premises** form and select the Highlight premises output's .

Initiate Network follower

Start following using an empty **Network follower** form by using the **Pick object** tool. After you have downloaded the object used for starting the network following to a form, information on the object will be displayed after the text **Follow**. If you have entered the **Network follower** form via the **Premises** form, the element in question will automatically be the object that is followed.

Network following can be used, for example, to locate the affected area of a device in the event of an incident or fault situation. The **Distance** tool can be used to define the exact cable location in metres.

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Define the criteria for the network follower

On the **Network follower** form, you can define the criteria according to which the network following is carried out:

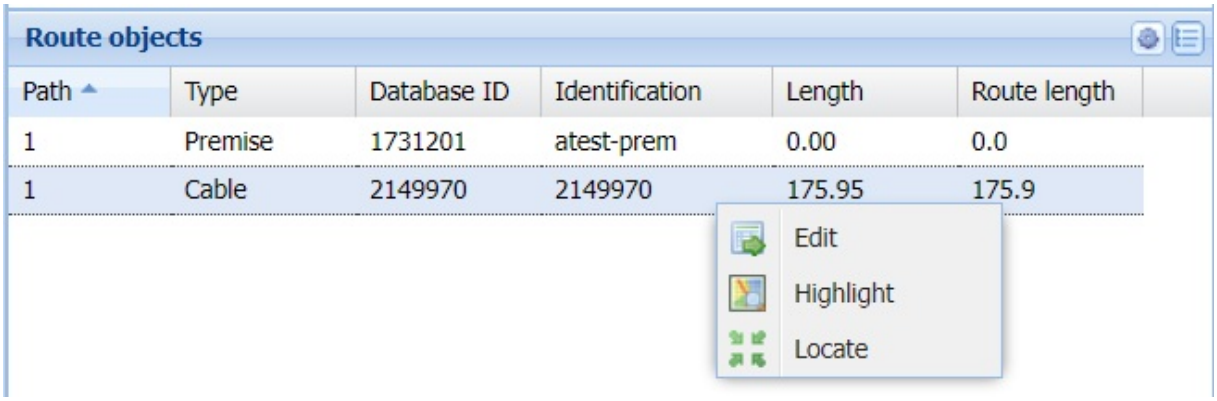
- In the **Direction** field, you have the option to define the direction for following in accordance with the network. This field also allows multiple selections.
- In the optional **Logical direction** field, you can define whether the direction of logical connections is ascending or descending.

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- In the **Distance** field, you can define the maximum distance (in metres) to be applied to network following starting from its starting point. The **Route objects** list displays the **End point** row, which can be used to locate the defined route length marked on the map by a red cross. This function is useful, for example, when locating faults.
- **Pass node** enables following continues over existing nodes.
- **Only closed switches** lets the user specify whether network following occurs over connected cables.
- The **End point** menu lets you select all routes or a single route to be displayed in the Route objects list.
- Click **Start trace** to start network following. The located routes and their objects are displayed in the **Network objects** list.

Network follower results

The network follower results are listed in the **Network objects** view.



Click a route row with the right mouse button to access the menu through which you can edit the selected object by clicking **Edit** . Click **Highlight** to highlight an object on the map. Click **Locate** to center the map on the route and to highlight the route on the map.

You can add and remove displayed columns by clicking located on the right. The displayed menu lets you define the information content of the column.

You can browse the network follower results by using the arrow buttons at the bottom.



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The first page of **Route objects** displays all the followed routes. The subsequent pages display the located routes in the order: route 1, route 2 etc. If **Distance** has been defined for the route, the route options with their end points are displayed from page 2 onwards.

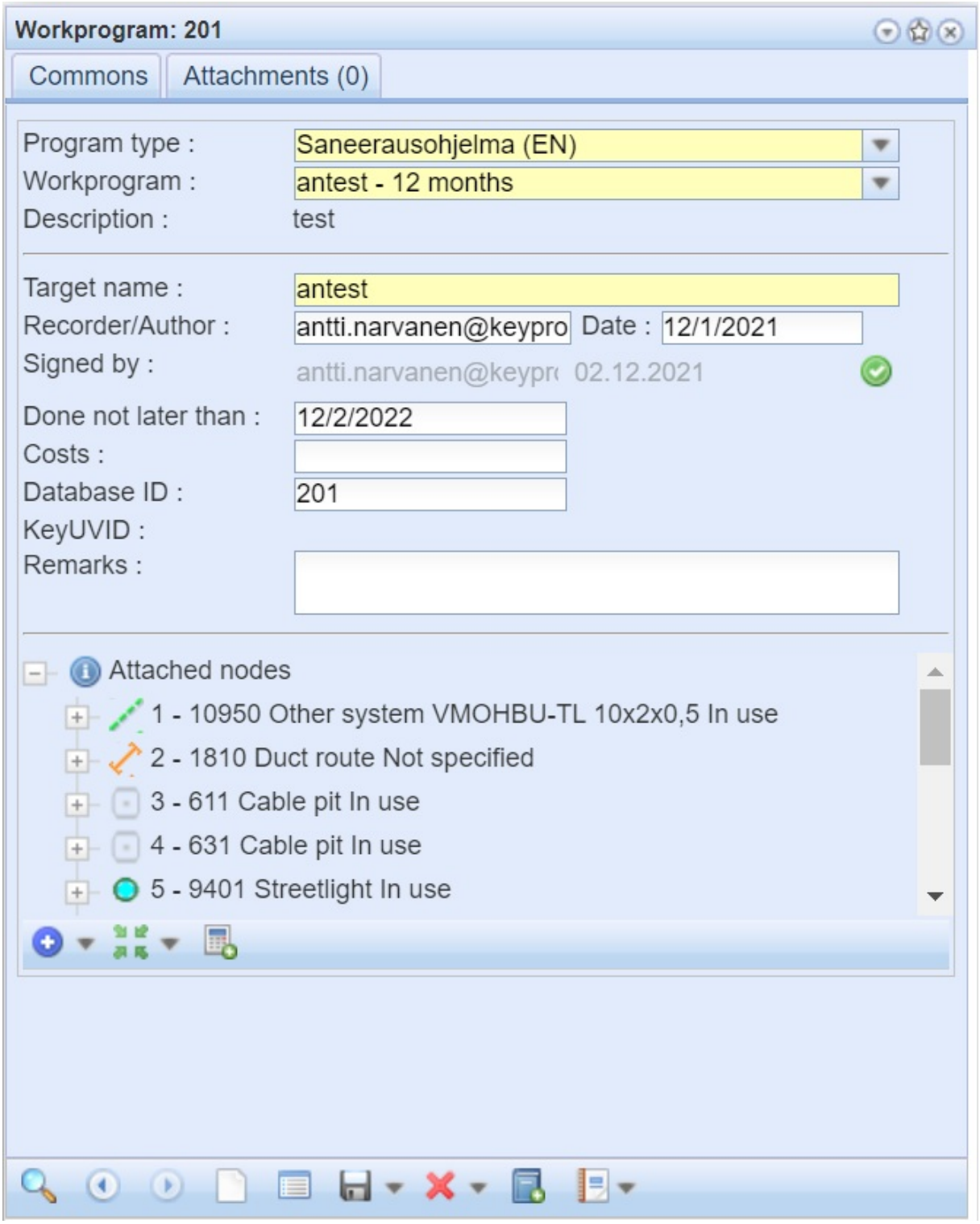
Viewing network follower results in group display

You can view the results of network following in the group display by clicking **Show components of the route in group display** . Further information on the group display is available in the chapter Group display.

Work programs

Work program information is processed and network objects are added to the program with the **Work program** form available under **KeyLight** Tools. The **work program** form is divided into three parts. **The top section of the form includes general information on the work program:** The **Program type**, e.g. maintenance/repair/renovation/group replacement program, and a more detailed description of the work program. This data is maintained on a separate **Work program types** form, on which admin users can add new work program types and work programs to the system. Adding new **work program types** is described in the chapter Adding work program types.

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Maintenance programs include, for example, recurring maintenance work. **Repair programs** refer to network objects awaiting repair but not requiring immediate action. **Renovation programs** include objects awaiting renovation: Renovation programs can be created for future use, to which objects to be renovated can be added. **Group replacement programs** for lamps are created for annual group replacements, and the light points to be replaced at any time are added to them.

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In addition to the information in the work program, you need to **enter the information about the work program object on the form** and add the network objects that belong to the objects. The object of the work program refers to a job done in one go. For example, a renovation program for a given year consists of several different renovation objects.

The network objects that are part of the work program are listed in the **Attached nodes** list at the bottom of the form. The objects are shown as a list, and additional details on a row is available via the button. If there are multiple objects, you can scroll through them with the scroll bar.



The object's **sequence number**, **ID**, **type**, and **usage state** are displayed. Click the button in front of the object to get information about the creator of the object, the date of association, and the party acknowledging it. Use the selection list accessible with the right mouse button to locate, highlight, acknowledge, modify, or delete an object. Click **Locate** to center the map on the object in question. If you have highlighted all the associated ducts and nodes on the map, you can click **Highlight** to highlight an individual object so that you can distinguish it from the others.

Use the **Signed by** button to mark a work program as completed. Once a work program has been signed, the name of the party acknowledging the object and the date of signing will appear in the **Signed by** section on the form. This will also increase the date in the **To do before** field by the number of days in the work program's interval, counted from the date of acknowledgement.



Adding objects to work programs

There are three ways to add objects to a work program:

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On the **Work program** form, click the **Attach an element** button and select the object on the map. If the specified area contains more than one option, choose the desired object in the **Object selection** window.

or

By retrieving the desired objects to the object form and clicking the **Take to Work program** button on the form, all objects retrieved to the object form are transferred to the work program.

or

Add an object with the actions in the **Attach an element** drop-down menu's list.

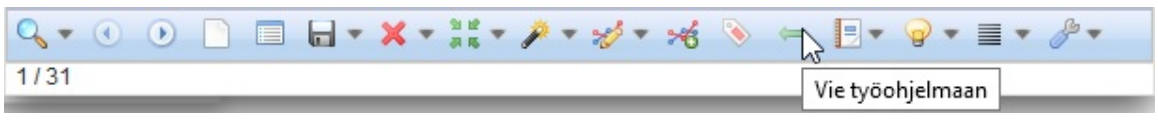


1. Open the desired object form via the list and use its search features to retrieve the objects to be added to the work program.

Adding several objects to a work program:

For example, when you want to add all streetlight poles of a specific area to a work program.

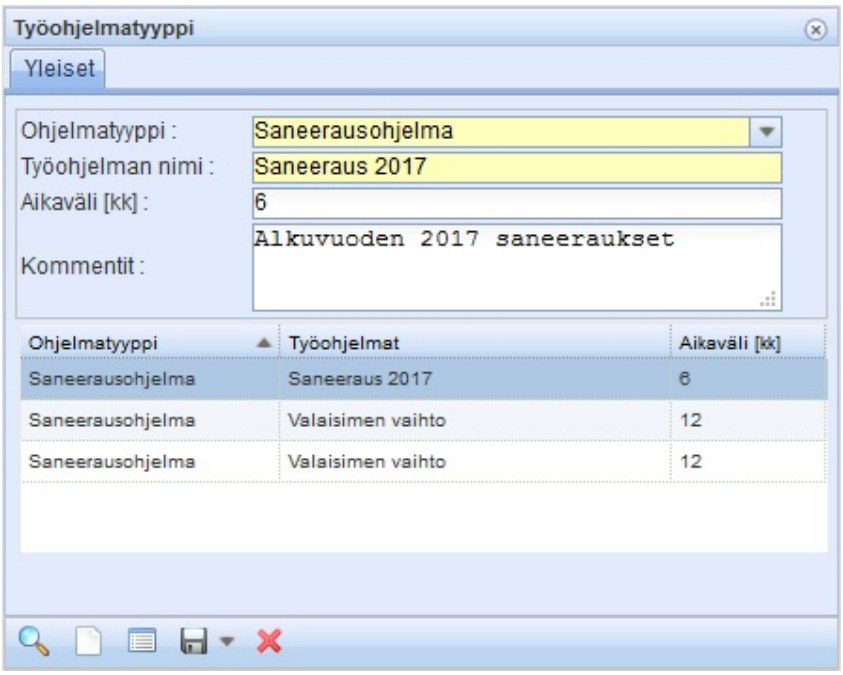
1. Click the **Attach an element** drop-down menu (**Add pole**) to **open** the Pole form.
2. **Retrieve** all poles of the area to the form, for example, with the **Free area** function in the **Pick from map** drop-down menu. The search functions of the forms are described in chapters Retrieving information to a form and Picking objects from the map.
3. **Move** the objects retrieved to the form to the **Work program** form using the **Export to work program** button on the Pole form.



Adding a work program type

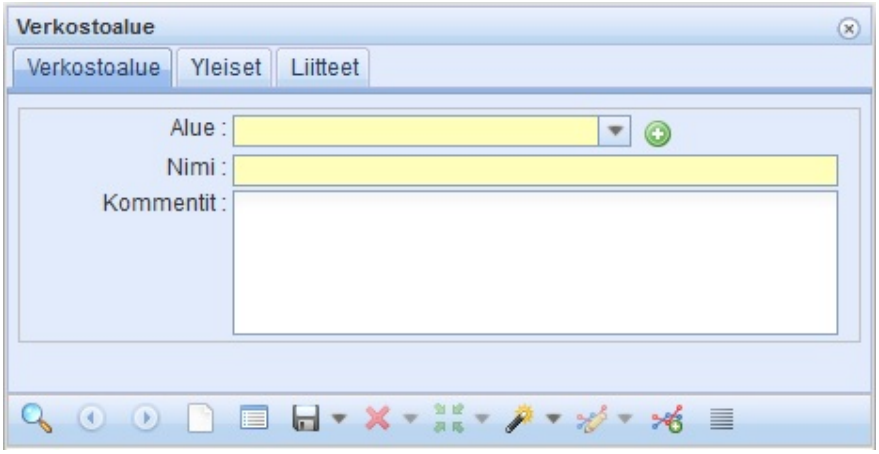
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Work programs can be added in the system using the **Work program type** form. Select a **program type** for the work program and enter the **Work program's name**, **Time period (months)** and any free-form **comments**. When you click the **Save** button, the work program types created are listed at the bottom of the form. Select a row to edit its program type information or **delete** the work program type from the system.



Exchange area

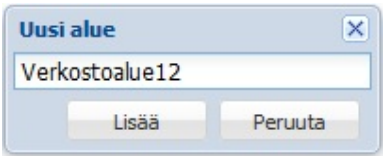
You can add and edit exchange areas with the **Exchange area** form. In the **KeyLight tools**, click **Exchange area** to open a window for managing exchange areas.



To create a new exchange area, take the following steps:

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1. Select the **area** in the drop-down menu. If you cannot find the area in the menu, click **Add new area** to create a new area. On the form that is displayed, enter the name of the new exchange area and click **Add**. After this, the network area that was created will be selected on the form.
2. Enter a **name** and optional comments for the network area.
3. Click the **Save** or **Create New** button to create an exchange area on the map. If you try to create a new exchange area with a name that already exists, the program notices this and retrieves it to the previous form without creating a copy with the same name.



The exchange area/area is added using the **Exchange area** drop-down menu on the object form.



Use the **Layers – Layers** selection tool to show the areas on the map. Zoom in on the map to see the names of the areas.



Annotations

The KeyLight environment allows you to add **Annotations** to the map view. You can add an annotation to objects placed on the map, such as cables, nodes, conduits, and light points. **Annotations** can be found in the **Network tools** drop-down menu.

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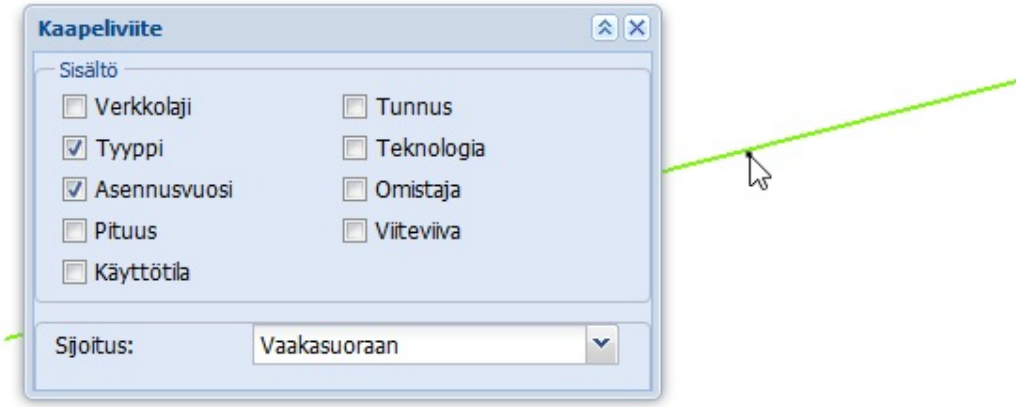


The creation of annotations is illustrated below using a few examples.

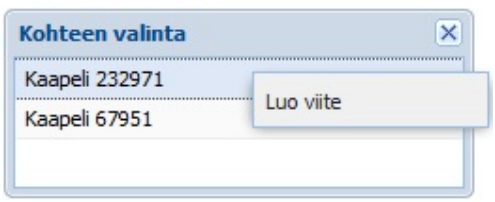
Cable annotation

In KeyLight annotations, click the **Cable annotation** button. This will display the Cable annotation form, where you can change the information content of the annotation its presentation on the map. **To add an annotation to the map,** first select a cable on the map for which you want to create an annotation and point at the location in which you want to place the annotation.

You can change the information content of the annotation on the **Cable annotation** form by checking or unchecking the desired checkboxes. The settings, i.e., the checkbox states, are stored in the browser's memory as cookies.



If more than one object is located at the point of left clicking, the **Object selection** window will appear. Left-click the item on the list to highlight it on the map. **Right-click the object** and then click **Annotate** and indicate the location for the annotation. You can also select an object in the **Object selection** window by double-clicking its row, and then place the annotation at the desired location.



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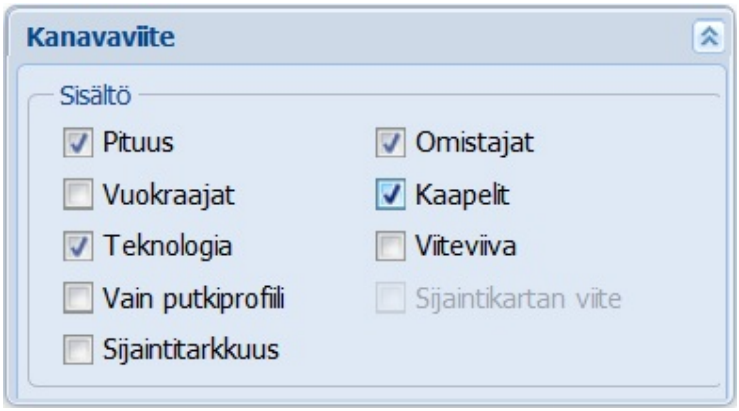
Annotate node

Node annotations allow you to create annotations for point objects, such as splices and poles. In the **Annotate node** window that opens, select the content of the annotation and place it on the map.



Conduit annotations

Conduit annotations allow you to create annotations for conduits. In the **Conduit annotation** window that opens, select the content of the annotation and place it on the map. For more information, see Cable annotation.



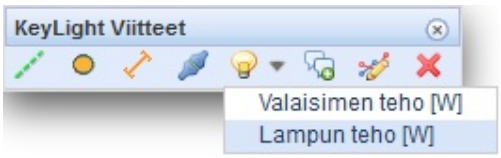
Annotate leavenumber

In **KeyLight** annotations, click **Annotate leavenumber** and click the desired cable. Specify a location for the annotation on the map.

Streetlight and lamp power

Printing the **power (W) of a streetlight or lamp** on the map can be activated via the **Light point annotation** drop-down menu. The power value is printed on the map if it has been saved for the lamp.

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To print the power of a lamp on the map, click the pole/light point on the map.

If there are more than one streetlight on the pole, select the streetlight whose lamp power you want to print on the map in the list that opens. The selected direction of the streetlight is highlighted on the map. Select the streetlight either by double-clicking it on the selection list or by right-clicking it and then clicking **Choose** in the context menu. Then click the location of the annotation on the map.

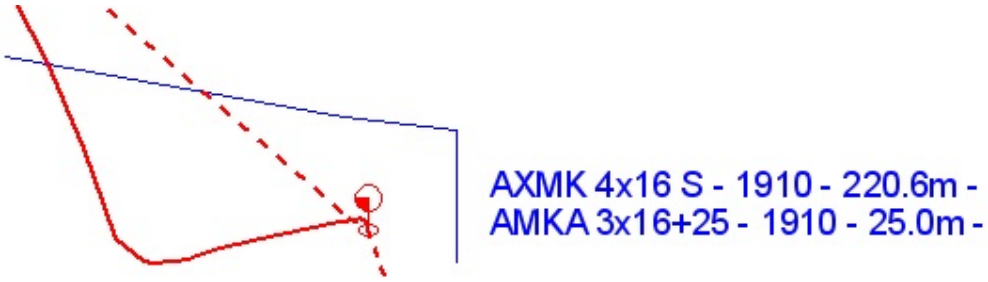


Group annotations

Use the **Annotate group** button to aggregate **information about multiple cables and conduits in a single annotation**. Select the cables and conduits for the annotation with the left mouse button by first clicking a map object at one extreme of the area and then a map object at another extreme of the map. Information about these objects and the cables and conduits that fall between them is printed in the annotation. Finally, click the place for the annotation with the left mouse button. In other words, you need three clicks to create an annotation. You can select content to print on the annotation for cables or ducts or both in the **Group annotation** window (type, installation year, length, ID, usage state, and technology).

In the figure below, group annotations are used to combine information on several conduits and cables into one annotation. To create an annotation, a cable was selected first (lower line), and then a conduit was selected (upper line). If there were other cables or conduits between the selected objects, information on them would also be added into the annotation.

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Mass update of annotations

Multiple cable and conduit annotations can be updated in one go. This function is particularly useful when you change the placement scale menu or want to change the information content of annotations. Open annotation mass update via the cable or conduit annotation's drop-down menu.

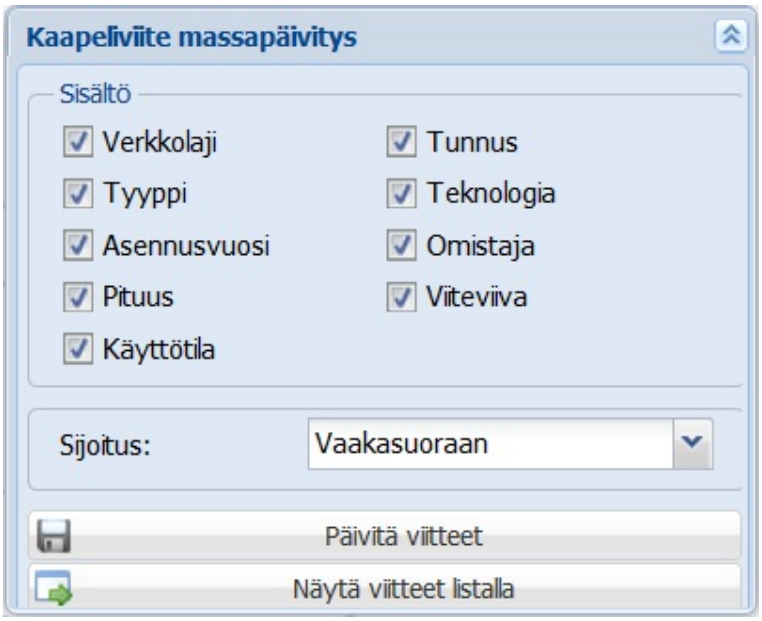


You can perform the mass update of annotations based on either 1) **Map view area**, 2) **Free area**, or 3) **Existing area**:

1. **Map view area**: Annotations that are displayed in the map view are updated.
2. **Free area**: Use the left mouse button to draw an area within which annotations are updated. Click the right mouse button to end drawing.
3. **Existing area**: Use the left mouse button to click a point within an existing area to open the **Object selection** window. Double-click an area's name on the list to select the required area. **Please note** that you must have **Areas** active in Layers in order to have the areas displayed on the map!

Select the information content you want to view on the map. After this, click **Update annotations** to mass update all annotation information on the map. Alternatively, you can click **Open annotations to list** to open the **Annotations** form. On the **Annotations** form, you can select the annotations that you want to update. The **Annotations** form is discussed in more detail in the chapter Selecting annotations.

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Edit annotation location

Use the **Edit annotation location** tool to change the location of annotations.

1. On the map, specify the area containing the annotations you want to move.
2. Click the map to start moving the selected annotations, highlighted with the symbol.
3. Move annotations by dragging the red square on the map. The annotations will be moved relative to the location of the point.
4. Accept the new location by clicking the right mouse button. In the **Confirm move** window that appears, click **Save**. Click **Cancel** to cancel the move.

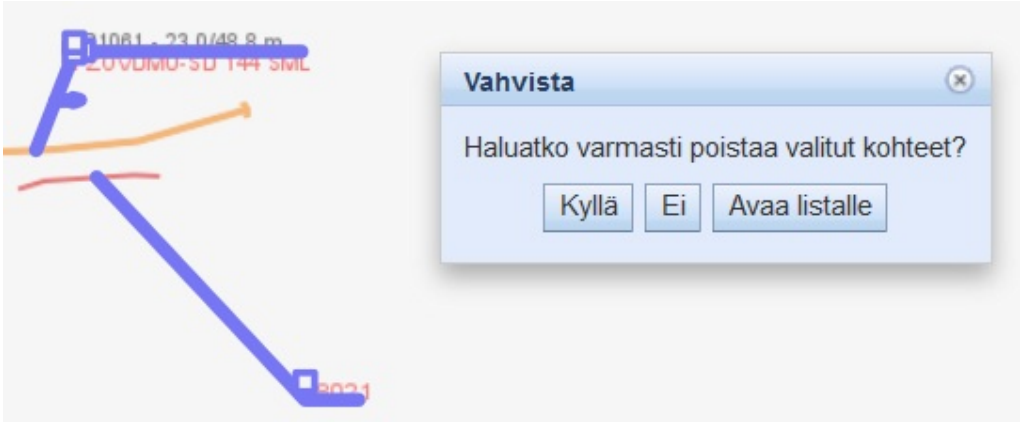
Deleting annotations

You can delete individual or multiple annotations from the map view or a specific area using the **Delete annotation** button. In addition, you can also select the annotations you want to delete from the **Annotations** list.

1. To delete an annotation, first click **Delete annotation** .
2. On the map, select the annotation you want to delete. If you want to delete multiple annotations, use the left mouse button to draw a rectangle on the map, within which annotations are to be deleted. The annotations that will be deleted are highlighted on the map.

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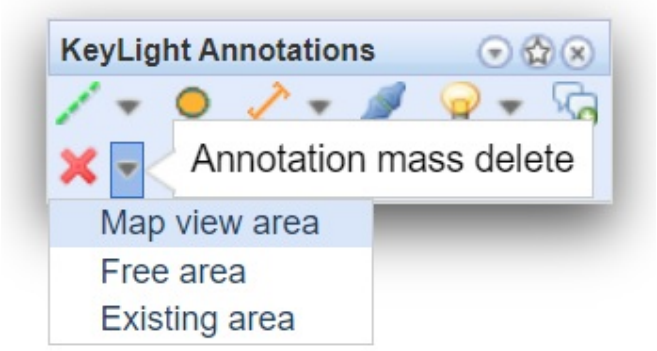
3. The program will ask you to confirm the deletion of the annotation. If you want to view the annotations that are to be deleted, click **Open annotations to list**. On the displayed **Annotations** list, you can delete or update annotations as required. Additional options provided by the **Annotations** list are discussed in the chapter Selecting annotations.



TIP: An annotation is automatically deleted when its object is deleted.

Mass deletion of annotations

Go to the drop-down menu of **Delete annotation** to activate the mass deletion of annotations.



You can perform a mass deletion of annotations based on either 1) **Map view area**, 2) **Free area**, or 3) **Existing area**:

1. **Map view area**: Annotations that are displayed in the map view will be deleted.
2. **Free area**: Use the left mouse button to draw an area within which annotations are deleted. Click the right mouse button to end drawing.
3. **Existing area**: Use the left mouse button to click a point within an

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existing area to open the **Object selection** window. Double-click an area's name on the list to select the required area. **Please note** that you must have **Areas** active in Layers in order to have the areas displayed on the map!

The annotations that will be deleted are highlighted on the map. The program will ask you to confirm the deletion. In addition, you can open the annotations to be deleted on the list view by clicking **Open annotations to list**.

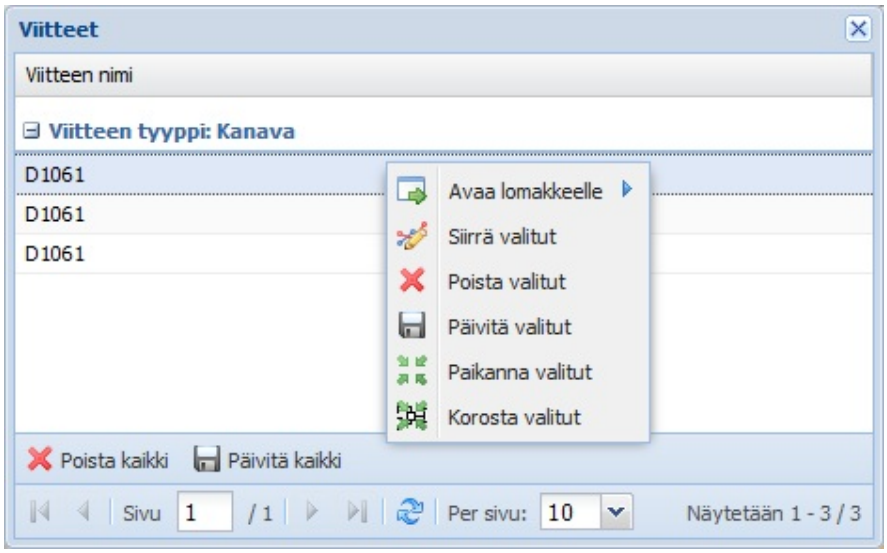
Selecting annotations

When performing a mass update or mass deletion, you can select the annotations you want to delete by first specifying the area within which annotations are to be deleted. After this, select the annotations that you want to update for the object set:

1. When performing a **mass update**, click **Open annotations to list**.
2. When performing a **mass deletion**, click **Open to list**.

Both options take you to the **Annotations** form. On the **Annotations** form, you can select the annotations that you want to update (**Update all**) or delete (**Delete all**). Please note that you cannot select the **Update all** function when performing a mass deletion.

In the figure below, the user has clicked **Open annotations** to list when performing a mass update of conduits.



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On the list of annotations, select the required rows while holding down the Control or Shift key. Click the right mouse button to access the following functions: open the selected objects on their forms and delete, update, locate, or highlight the selected objects.

Use the **Move selected** function to move annotations on the map to a new location. Further information on this function is available in the chapter Edit annotation location.

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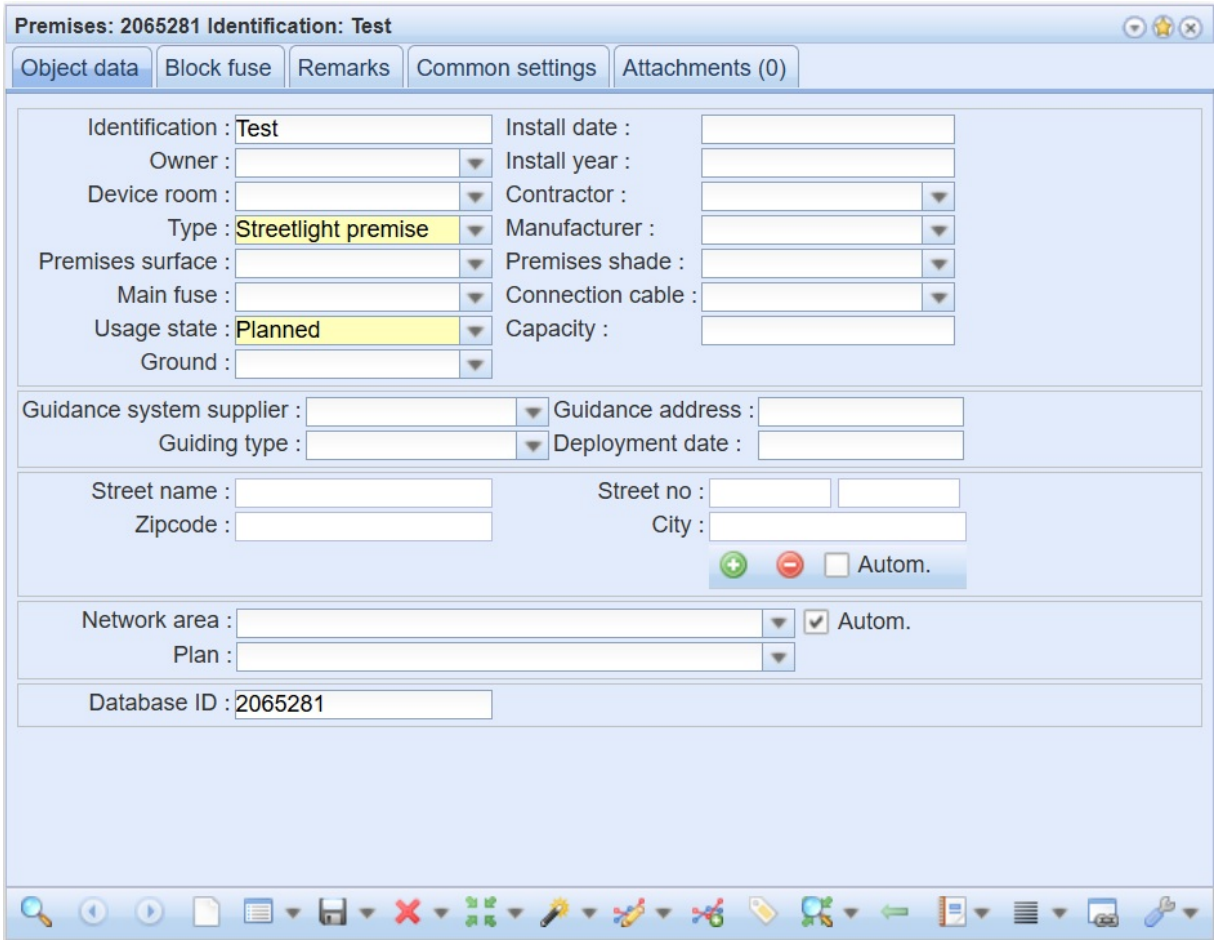
KeyLight point objects

The forms for managing **point objects** are:

- **Telecom premises**
- **Splice**
- **Manhole**
- **Other objects**
- **Pole**
- **Streetlight**

Premises

Use the **Premises** form to search for, edit, and add premises in the system. The required values on the form are displayed in yellow. For descriptions of the standard functions at the bottom of the form, see Buttons on object forms.



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Premises outputs – Block fuse

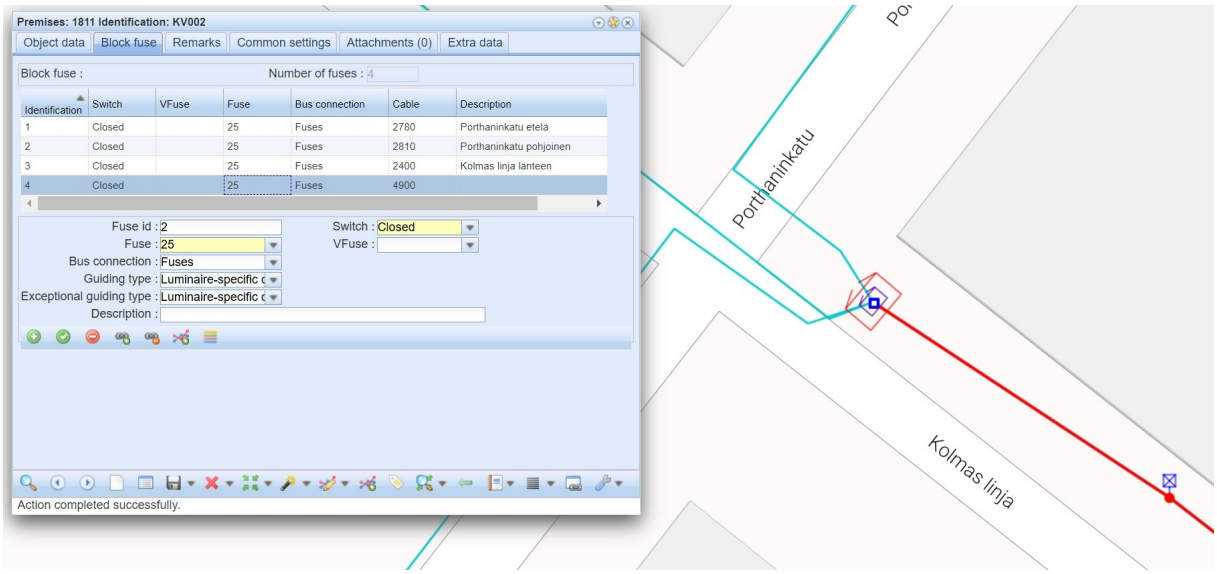
The **Block fuse** tab lists the outputs in the premises and their fuse details. When the output data is **activated with the left mouse button**, it also appears in the fields and drop-down menus, allowing you to edit and update it and then save by clicking **Save changes** .

- Click **Delete** to delete the active fuse. You can add new outputs by filling in their **details in the fields and drop-down menus** and then clicking **Add** .
- To connect a network map cable to premises output, click **Connect to cable** . Select the desired cable on the **map with the left mouse button** and then double-click the correct cable in the **Object selection** window. If the connection is successful, the ID of the connected cable will appear in the **Cable** column of that row. If the cable is located too far from the premises, you will get the notice: **Connecting the fuse to the cable failed.** If the premises are not connected to the cable, you will also get the notice: **Open the cable form and connect the cable to the premises.** In this case, follow the instructions. For more information about the connections, see Connecting cables.
- You can disconnect a connection with the **Disconnect connection** button, removing the cable ID from the list. **Please note** that the changes always apply to the output whose data is active and is displayed in the fields at the bottom of the form! You can specify a free-form description of the output, for example, indicating the direction of the output.
- **Circuit calculus** . Short circuit current calculation of the premises outputs.
- The **Show in group display** button lists the block fuses and fuses in the premises. Group display and its features are discussed in more detail in the chapter Group display.

Highlighting a single output

When a cable is connected to a fuse (premises output) and you select the corresponding row on the list, the output's cable is highlighted in the map window. If the network connections are in order, then all cables related to the output through the connections are highlighted on the map.

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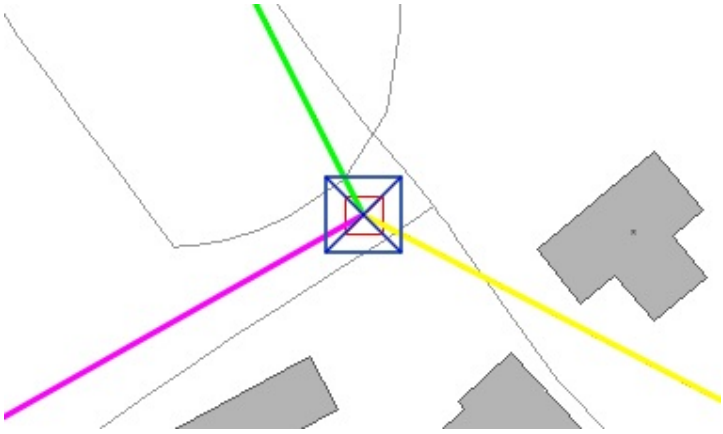


Highlighting multiple outputs; group listing

To highlight all outputs in the premises, retrieve the data of the premises to a form and then click **Highlight premises' outputs** . The program opens the **Confirm** window, prompting: **Highlight only closed outputs?** Click **Yes** to highlight only the **fuse-links/fuses** with a **Switch** set to **Closed**.

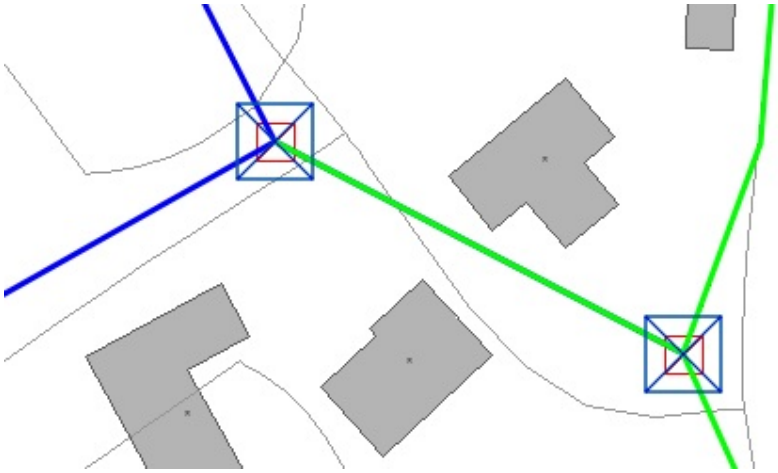


If you click **No** in the **Confirm** window, every output in the premises is highlighted with a different color regardless of the **Switch** state.



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In the submenu of the **Highlight premises' outputs** button, you can also find **Highlight all premises outputs**, which highlights on the map the outputs of all premises retrieved to the form. The outputs of different premises are highlighted with different colors.



The **Show premises outputs in groupdisplay** feature highlights all outputs in of the premises on the map and shows the **Group display**.

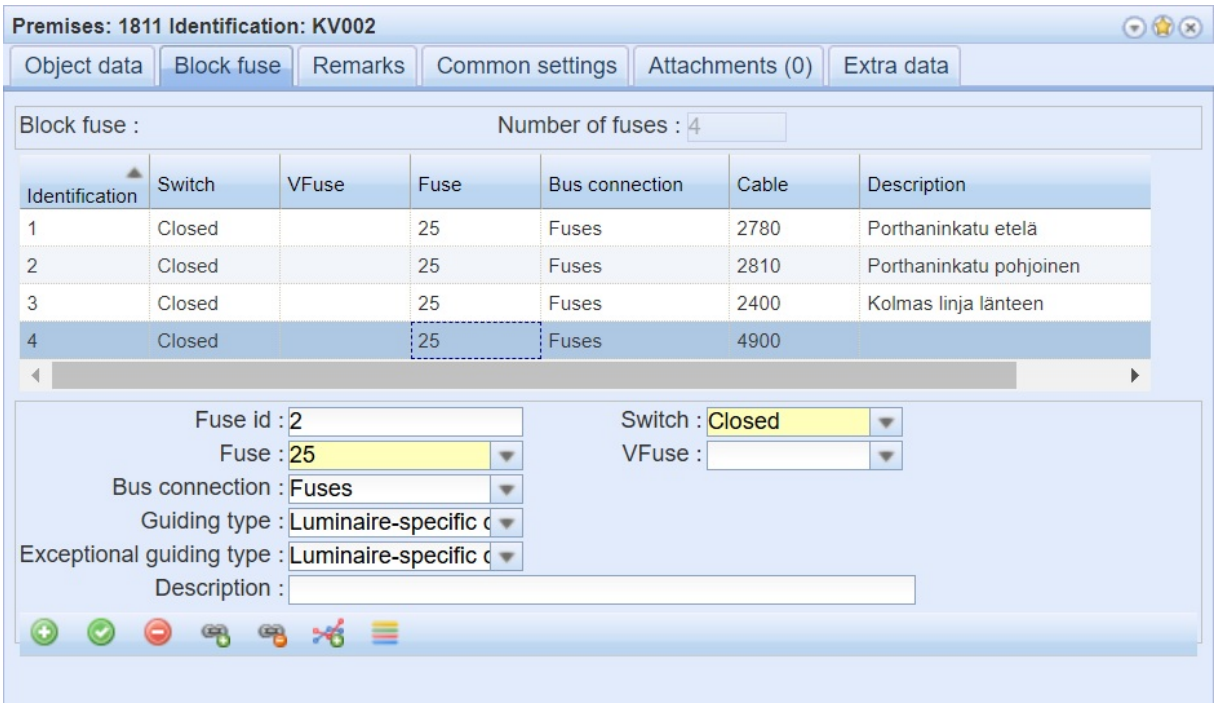
The **Show all premises outputs in groupdisplay** function highlights on the map the outputs of the premises retrieved to the Premises form and shows their **Group display**. **Note!** The group display will not be shown if the search set is very large.

Group display and its features are discussed in more detail in the chapter Group display.

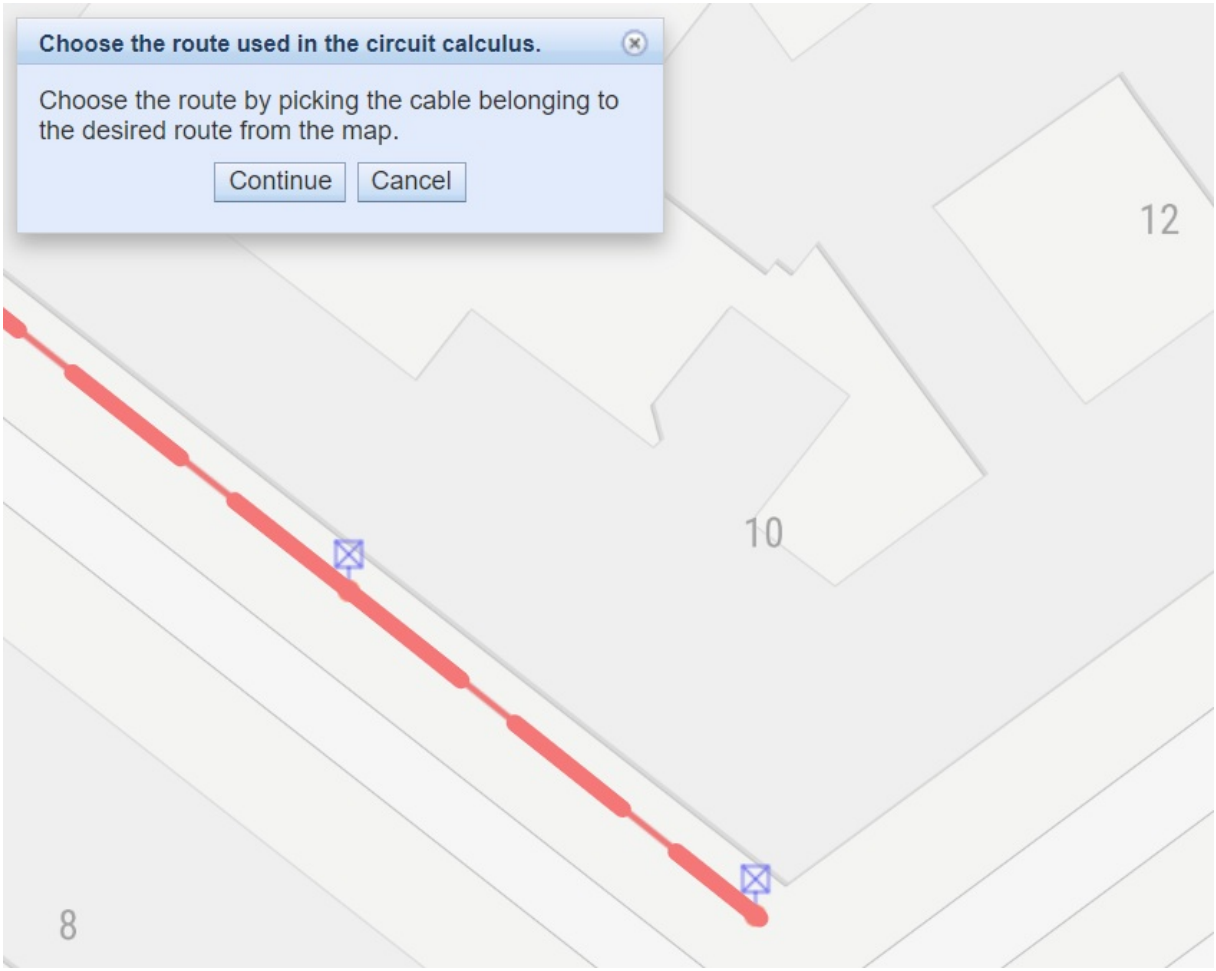
Short circuit current calculation of premises outputs

The short circuit currents in premises outputs are calculated in the short circuit calculation. The calculation starts on the **Block fuse** tab on the **Premises** form. **Select the output on the form list for short circuit current calculation.** The output will also be highlighted in the map window. To start the calculation, left-click the following function on the toolbar in the middle of the form: **Calculate short circuit current** .

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The program will highlight the branches of the selected output in different colors if there are more than one branch. The user will indicate which branch they want to calculate.



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The program highlights the selected branch and calculates the short circuit current. The results are displayed on the form that appears. You can print an **Excel** table of the calculation results by clicking pressing **Yes** on the form that appears.



The minimum and maximum short circuit current are calculated in the calculation. Based on the minimum short circuit current, the program calculates the maximum fuse rating possible for the output. If the output fuse has a higher rating, the program will issue a warning that the output fuse has too high a rating. If the electrical values of the cables are not specified, the program will issue an error message.

Initial values for calculation

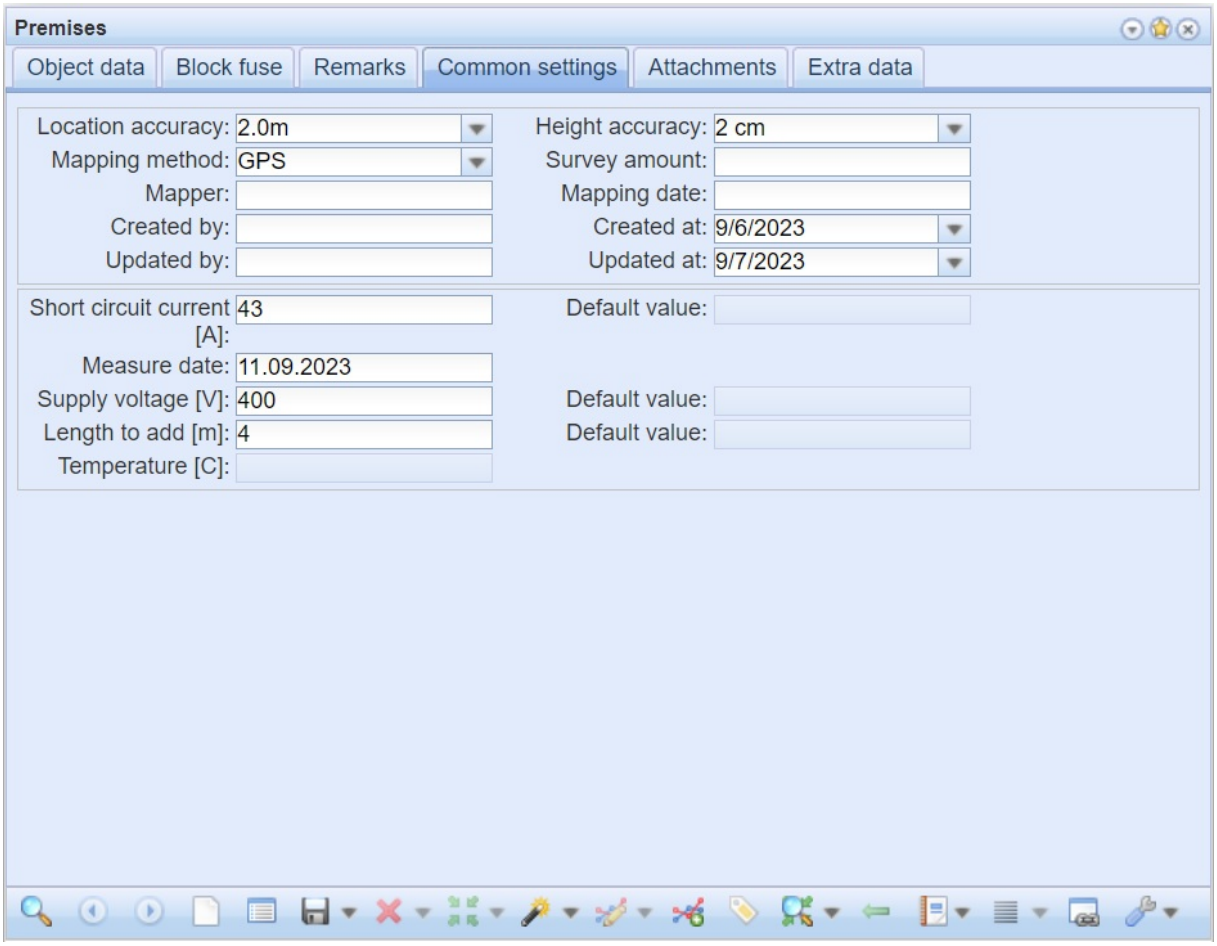
An admin user can save the types of cables used and their technical values in the system. The short circuit current of the network supplying the premises (outdoor light centre) must be verified as the starting point for the calculation, for example by measuring. The **Short circuit current (A)** of the supply network is saved as the starting value for the calculation on the **Common** tab of the **Premises** form. A short circuit current can be configured in the system as a default value that will be used if no supply network short circuit current has specifically been saved for the premises.

Other initial values specified in the system for calculation (an admin user can configure the default values):

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- **Supply voltage (V)**: usually **400**
- **Length to add (m)** to be allocated to the cable, e.g., **5** (meters per pole)
- **Temperature (C)**: e.g., **40**

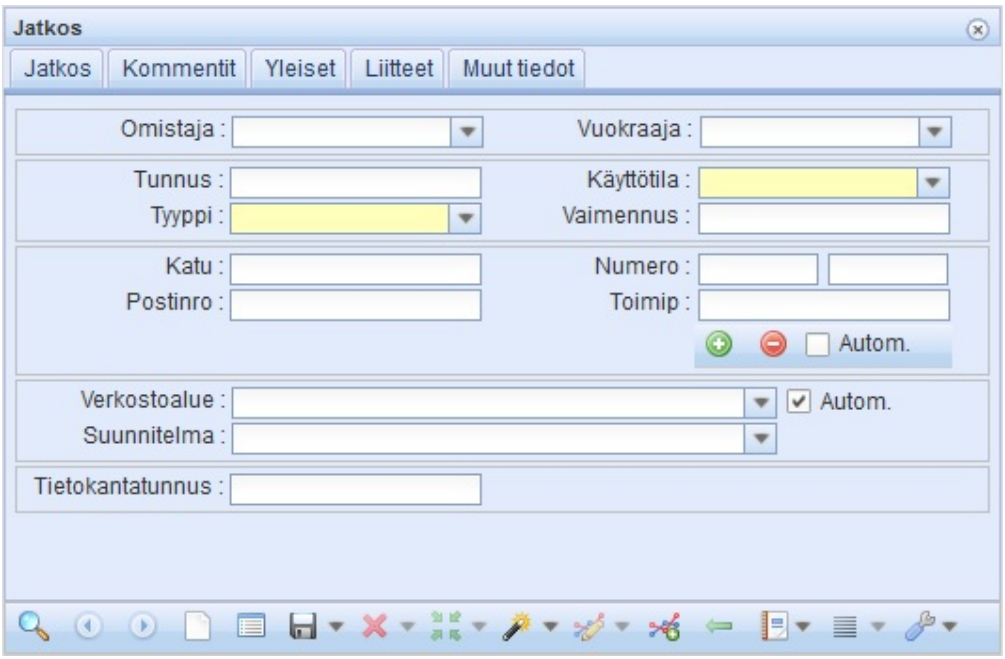
The user may change other values listed above, except for the calculation temperature.



Splice

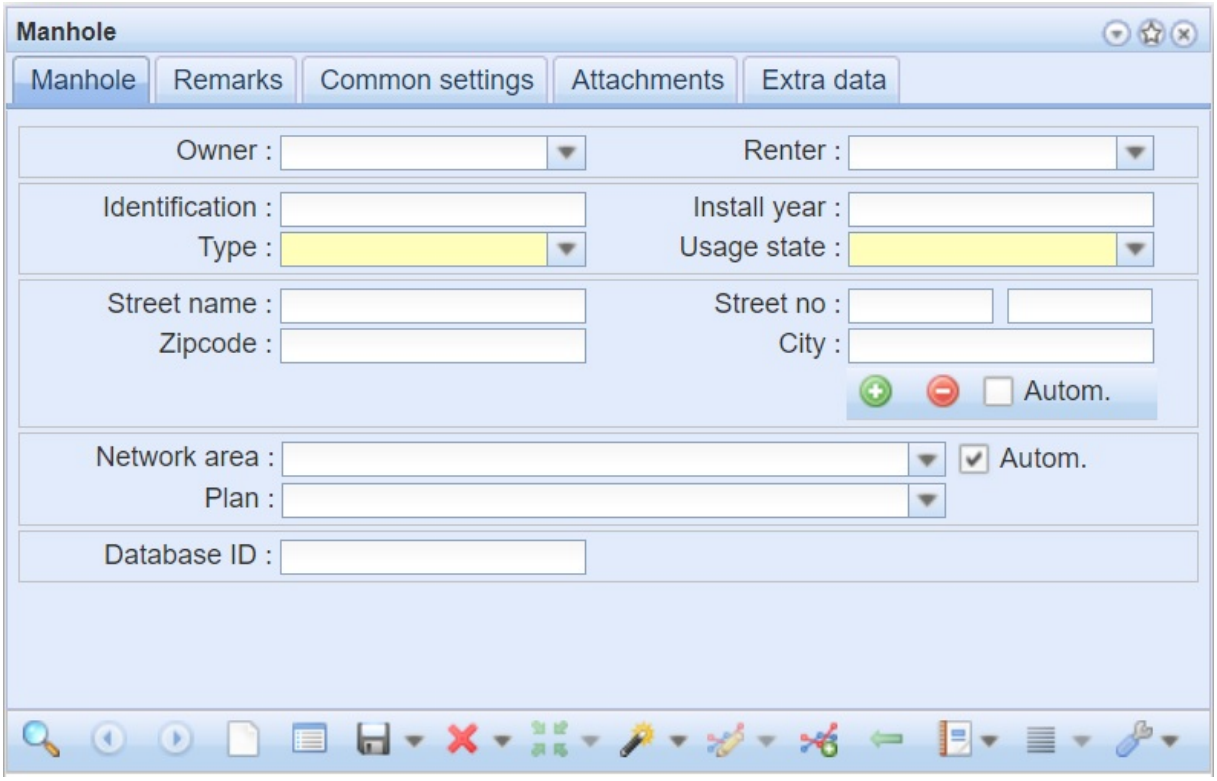
Use the **Splice** form to search, edit, and add splices in the system. Required values on the form are displayed on a yellow background. For more information about the common functions of the form, see Buttons on object forms.

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Manhole

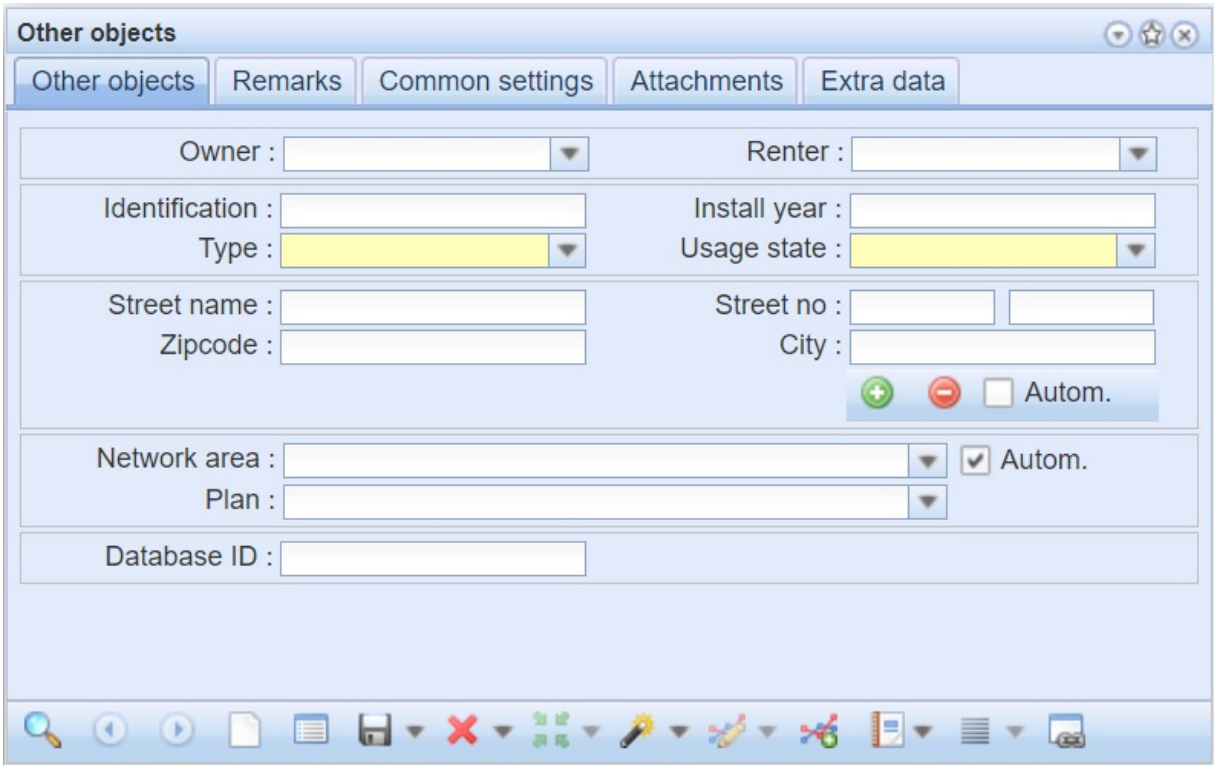
Use the **Manhole** form to search for, edit, and add manholes in the system. Required values on the form are displayed on a yellow background. For more information about the common functions of the form, see Buttons on object forms.



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Other objects

You can use the **Other objects** form to place different point objects on the map. Other objects include **Cable end in the ground**, **Plate**, **Earth rod**, **Billboard** and **Gantry**. The required values on the form are **Type** and **Usage state**. For more information about the common functions of the form, see Buttons on object forms.

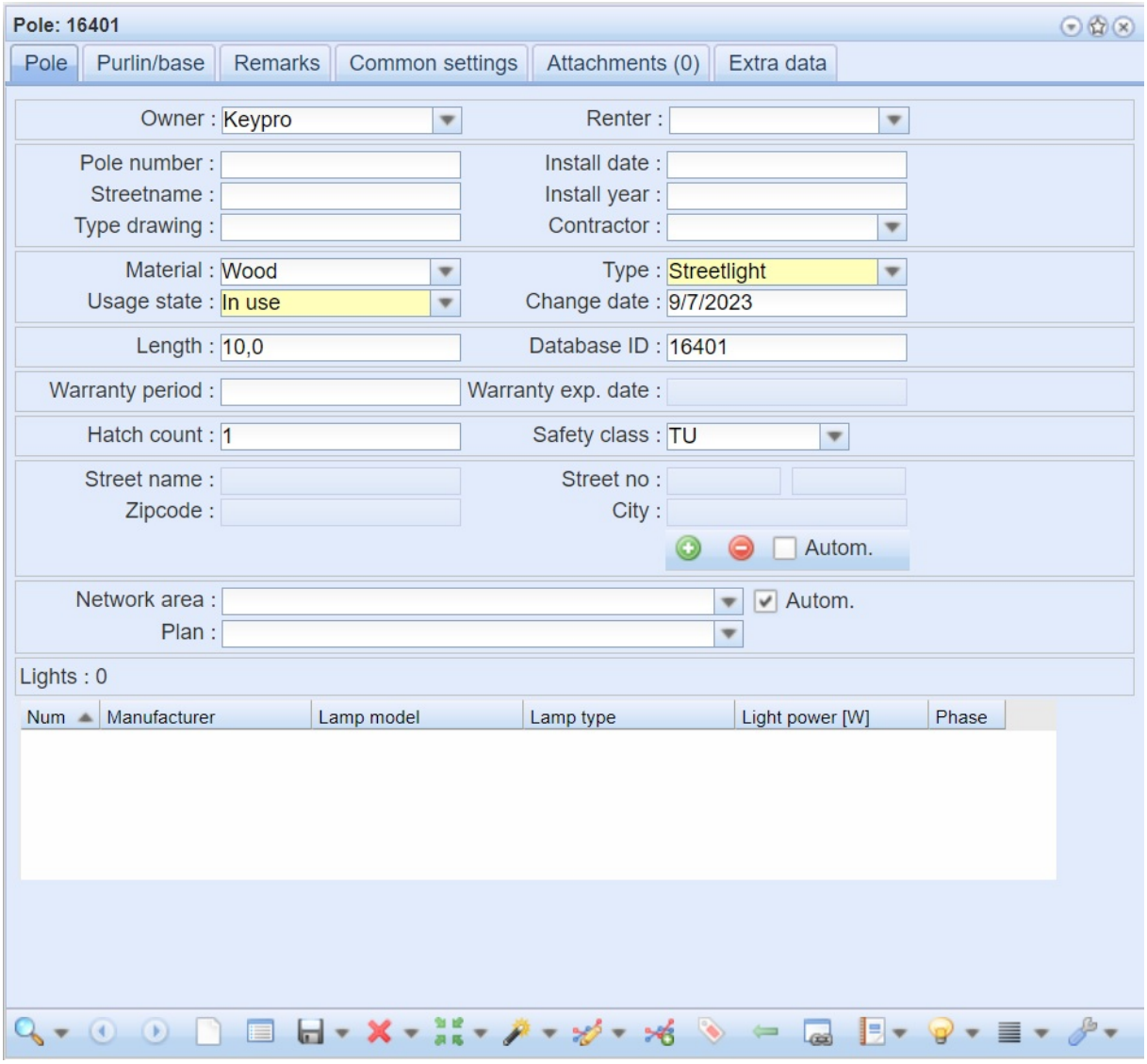


Pole

The **Pole** form is used for managing poles in the system. You can add, modify, and delete poles in the system. For more information about the common functions of the form, see Buttons on object forms.

The **Pole** form contains **two tabs for pole information**: **Pole** and **Tower body/Base**. The **Pole** tab contains information on the pole, warranty, and connection enclosures, as well as a list of the streetlights related to it. The program calculates the **Warranty expiry date** from the values in the **Change date** and **Warranty period (months)** fields. The warranty periods are updated and removed on the form when you also click the **Save** button. On the **Tower body/Base** tab, you can enter information about the tower body and the base.

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The **Streetlights** list contains the streetlights associated with the pole. You can open a streetlight on its form by double-clicking the desired streetlight on the list.

Filtering poles based on streetlight

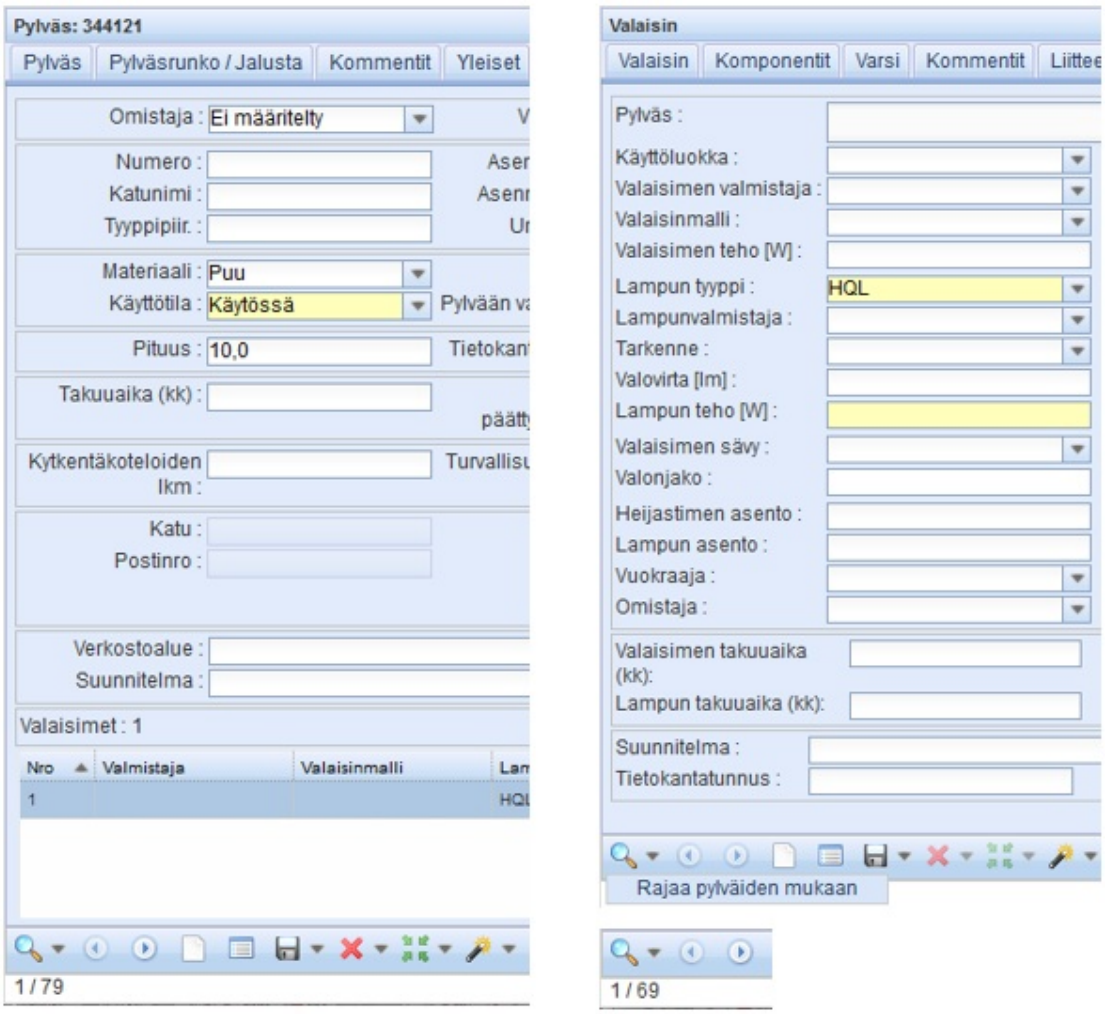
You can view the poles of a desired area or street section based on their streetlight.

1. Retrieve the poles of the desired area to the **Poles** form with the **Pick from map** feature (79 pcs).
2. On an empty **Streetlight** form, specify the search criteria according to which you want to select the poles. The search criterion in the illustration is **Streetlight type = HQL**.
3. Click the **Filter by streetlights** in the drop-down menu of the **Search**

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button on the **Streetlight** form.

4. The result set is now all the poles (69 pcs) retrieved to the **Pole** form, shown on the **Streetlight** form, meeting the search criteria you have specified (HQL) for the streetlight.

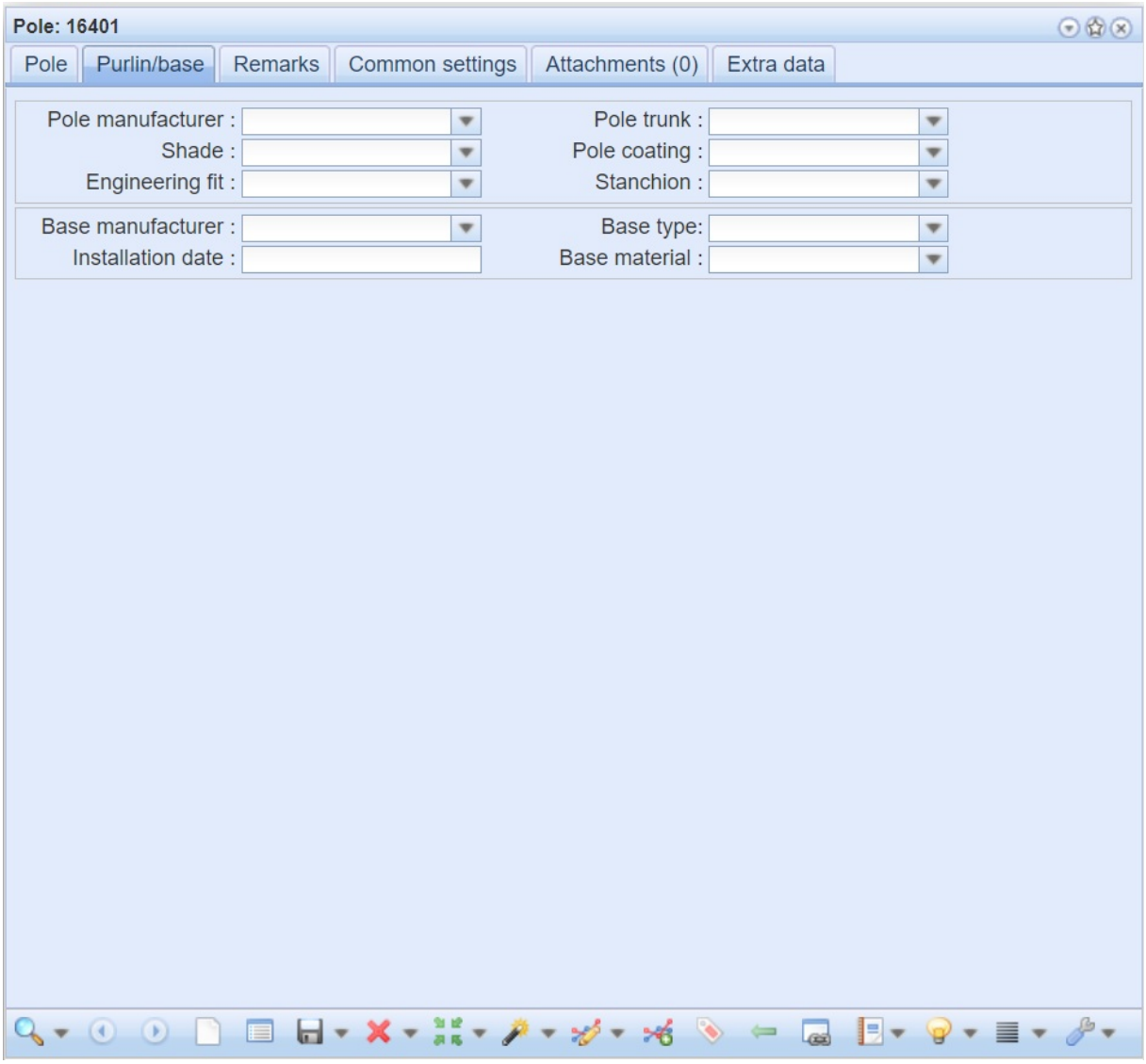


Tower body/Base

On the **Tower body/Base tab**, you can save data related to the pole base or the tower body. Select a manufacturer from the drop-down menu in the **Pole manufacturer** field to filter the options in the **Tower body** field accordingly. The same applies to the **Base manufacturer** and **Base type** fields.

You can select multiple options in the **Tower body** and **Base type** fields, allowing you to specify several tower bodies or base types for a single pole according to its manufacturer.

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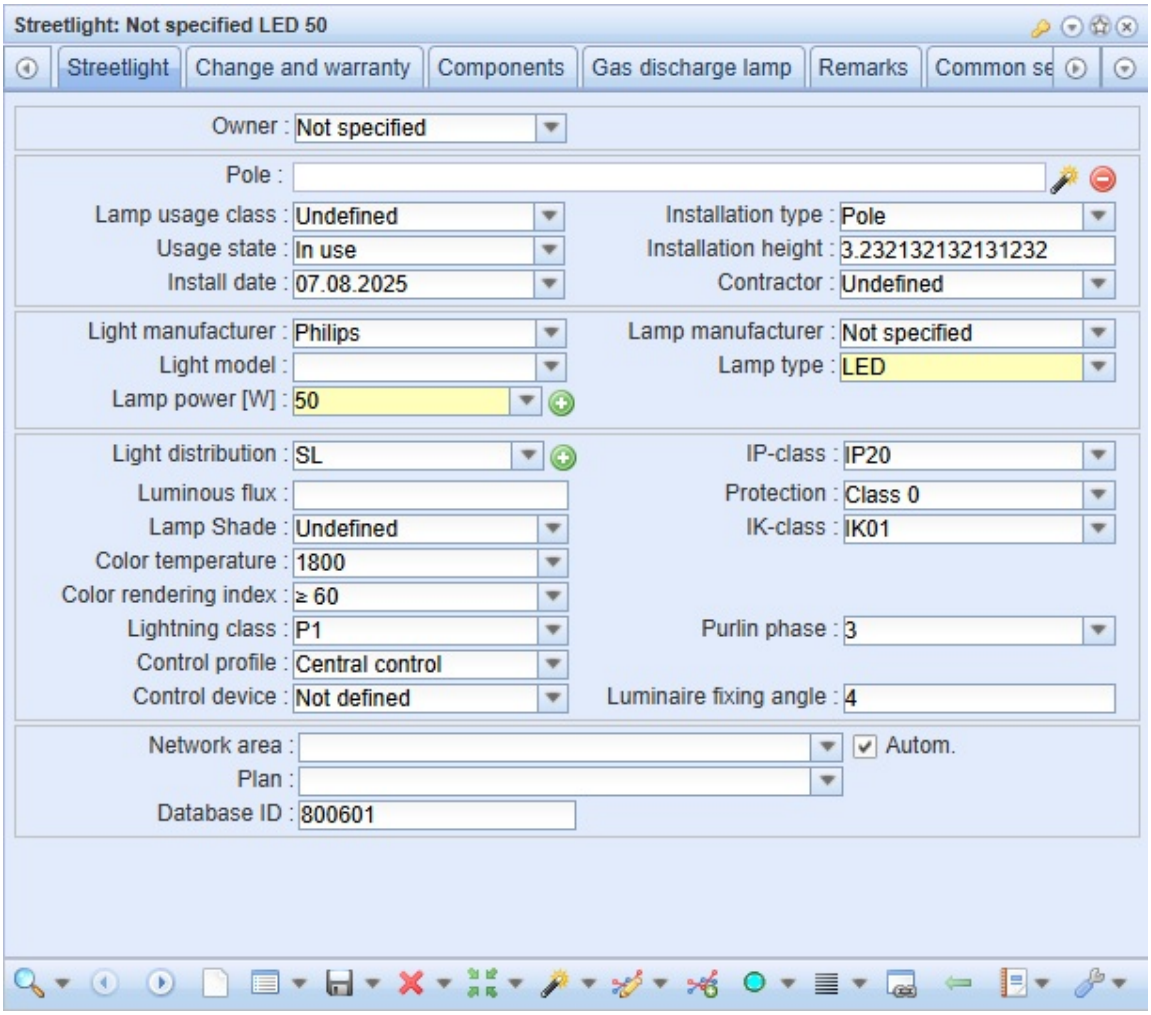
Streetlight

The **Streetlight** form is used for managing streetlights and lamps in the system. You can add, modify, and delete streetlights in the system. For more information about the common functions of the form, see Buttons on object forms.

To add a new streetlight, click the **Streetlight** button in the **KeyLight network tools** or on the **Pole** form. A **Streetlight** form opened from the **Pole** form is pre-completed with the pole data. The required data for a streetlight are the **Lamp type** and **Lamp power (W)**. You can create a streetlight in the system and place it on the map without a pole.

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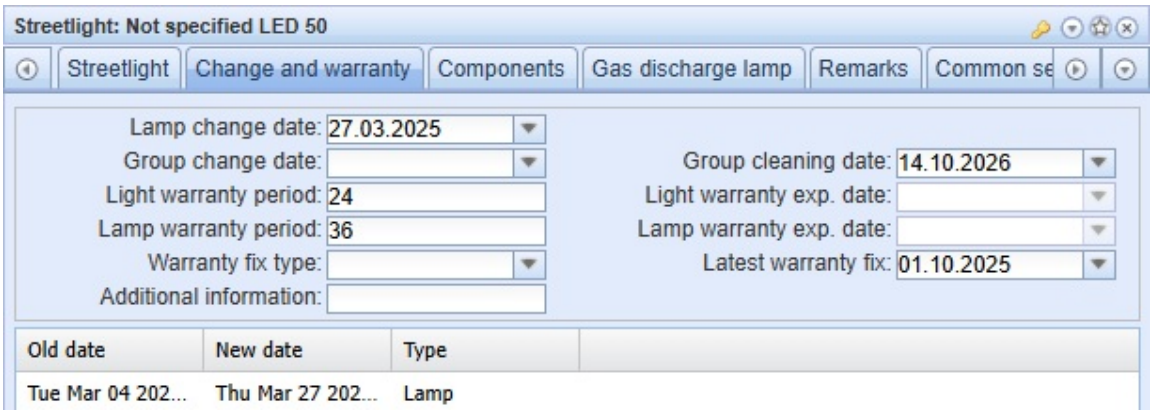
If you want to edit the information of an existing streetlight, you must first load the streetlight to the form using the form's **Search** function or the **Pick from map** tool. Once the streetlight has been loaded onto the form, you can update the details you want and then save with the **Save** button.



The **Streetlight** tab is used for managing information related to the characteristics of streetlights and lamps. You can associate streetlights to a **pole**, network area, or plan.

- On the **Change and warranty** tab, you can specify a warranty period for the streetlight and lamp.
    - The program calculates the **Warranty expiry date** from the values in the **Lamp change date** and **Lamp warranty period** fields.
    - The warranty expiry date is calculated for streetlights using the streetlight's **Install date** (**Streetlight** tab) and **Light warranty period (months)** values. The warranty periods are updated when you click the **Save** button.

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- On the **Components** tab, you can save any components related to the streetlight and their properties. The tab also displays information related to the arm material and type and its installation.
- On the **Gas discharge** tab, you can store data related to legacy gas discharge lamp technology.
- On the **Attachments** tab, you can add and manage attachments, such as pictures and documents.
- On the **Other** tab, an admin user may have configured variables and their values.

If a light point has several streetlights, you can determine the streetlight active on the form using the **Highlight** feature in the **Locate** tool in the bottom toolbar. This feature highlights the directional line of the arm of the active streetlight.





Adding a streetlight to a pole

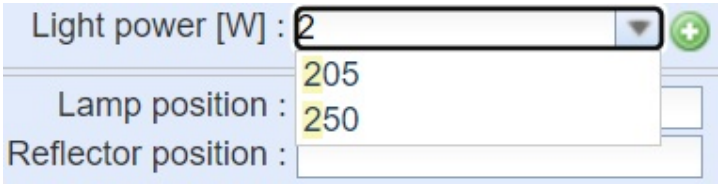
Open the **Streetlight** form. A Streetlight form opened from the **Pole** form is pre-completed with the pole data. If you open the form via the **KeyLight** toolbar, load the pole with the **Get pole** tool, and the program will ask you to select the object on the map. To detach a streetlight from a pole, click the **Detach from pole** button.

Tip: You can add a streetlight to the map without a pole. In this case, the Pole field on the Streetlight form is empty.

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First specify the **type** and **power** of the **lamp** on the form, which are required elements. Associate the streetlight with the pole with the **Save** button.

The functionality of the **Streetlight power** and **Lamp power** fields differs from other fields. When you start entering a numeric value on the form, the program will start listing options. The content of the list will change as you type in more digits. Select the power value you want from the list. If the list does not contain the power value you want, write the value in the field and save it in the system with the **Add lamp power** button.



Replacing a single streetlight or a group of streetlights

For individual lamp changes, the **Lamp replacement date** is updated in the **Lamp replacement date** field on the **Streetlight** form. This field is also updated with a single lamp replacement updated in the **KeyUV Outdoor lighting failure information system**, if both the KeyUV and KeyLight systems are in use.

A **lamp's group replacement date** is updated on the Streetlight form's **Group replacement date field**. The streetlight may be updated with a value either individually or as a mass update for all streetlights retrieved to the form. The **Mass update** feature is described under Mass update (Update all tool).

Moving and rotating streetlights

The direction of the lamp, i.e., its arm, can be adjusted with the **Rotate** function in the drop-down menu of the **Modify** button. The button opens the **Rotate** window. The use of rotation is described under Rotating a point object. You can mass update the direction of the arm of several streetlights by retrieving the set of streetlights to be updated on the form and rotating it to the desired angle and then clicking **Update all** (in the drop-down menu of the **Save** button). The program asks you to confirm the fields that are updated. Select either **Angle: Set** to set the angle of all streetlights to, for example, 45 degrees, or **Angle: Add** to add 45 degrees to the original streetlight angle.

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You can move a streetlight on the map with the **Modify** function. However, the move will not succeed if the streetlight is connected to a pole, in which case the pole must be moved, and the streetlight will move with it. Alternatively, you can detach a streetlight from a pole by clicking the **Detach from pole** button.

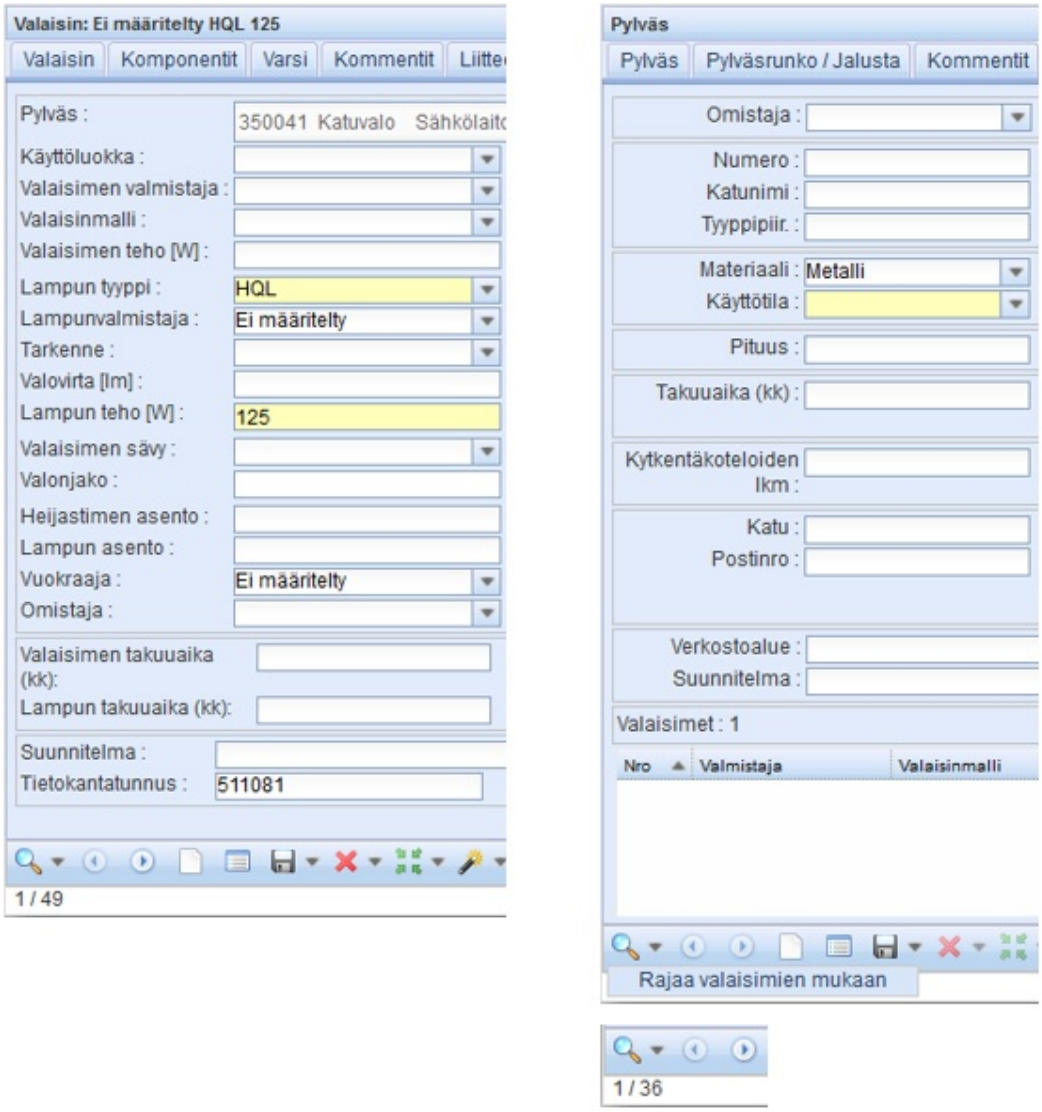
Filtering streetlights based on the pole

You can view the streetlights of a desired area or street section based on their pole.

1. Retrieve the streetlights of the desired area to the **Streetlight** form with the **Pick from map** feature.
2. On an empty **Pole** form, specify the search criteria according to which you want to select the streetlights. For example, the search criterion can be the pole **Material**.
3. Click the **Filter by Poles** in the drop-down menu of the **Search** button on the **Pole** form.
4. The result set is now all the streetlights retrieved to the **Streetlight** form, shown on the **Pole** form, meeting the search criteria you have specified for the pole.

In the figure below, 49 streetlights retrieved to the Streetlight form. On the Pole form, set the search criterion to Material (Metal). Filter the search by streetlight, resulting in 36 streetlights in the search area where metal is the pole material.

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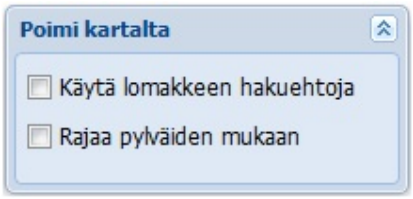


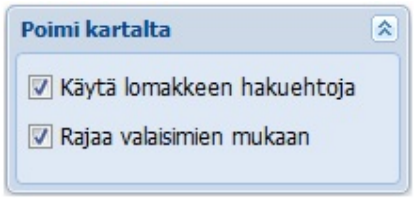
Filtering streetlights and poles in the Pick from map function

You can limit the search sets on the **Pole** and **Streetlight** forms with the other form's search criteria in the **Pick from map** function. For example, if the **Pick from map** function has been started via the **Streetlight** form and you are picking objects from the map, you can check the **Use form criteria** checkbox to retrieve objects from the map that meet the search criteria you have set, or you can check the **Filter by pole** checkbox, so that the search is filtered according to the poles retrieved to the **Pole** form. You can set the **Pick from map** function to retrieve items according to the criteria in both checkboxes. Correspondingly, the **Pick from map** functions also work on the **Pole** form, allowing for filtering by streetlight. The forms talk to each other once poles and streetlights or their search criteria have been retrieved to both forms.

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In the figure below, select from the map according to the form's search criteria and/or the Filter by streetlight/pole options. In the illustration on the left, the **Pick from map** function has been started via the **Streetlight** form, while on the right, it has been started via the **Pole** form.





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KeyLight line objects

The forms for managing **line objects** are:

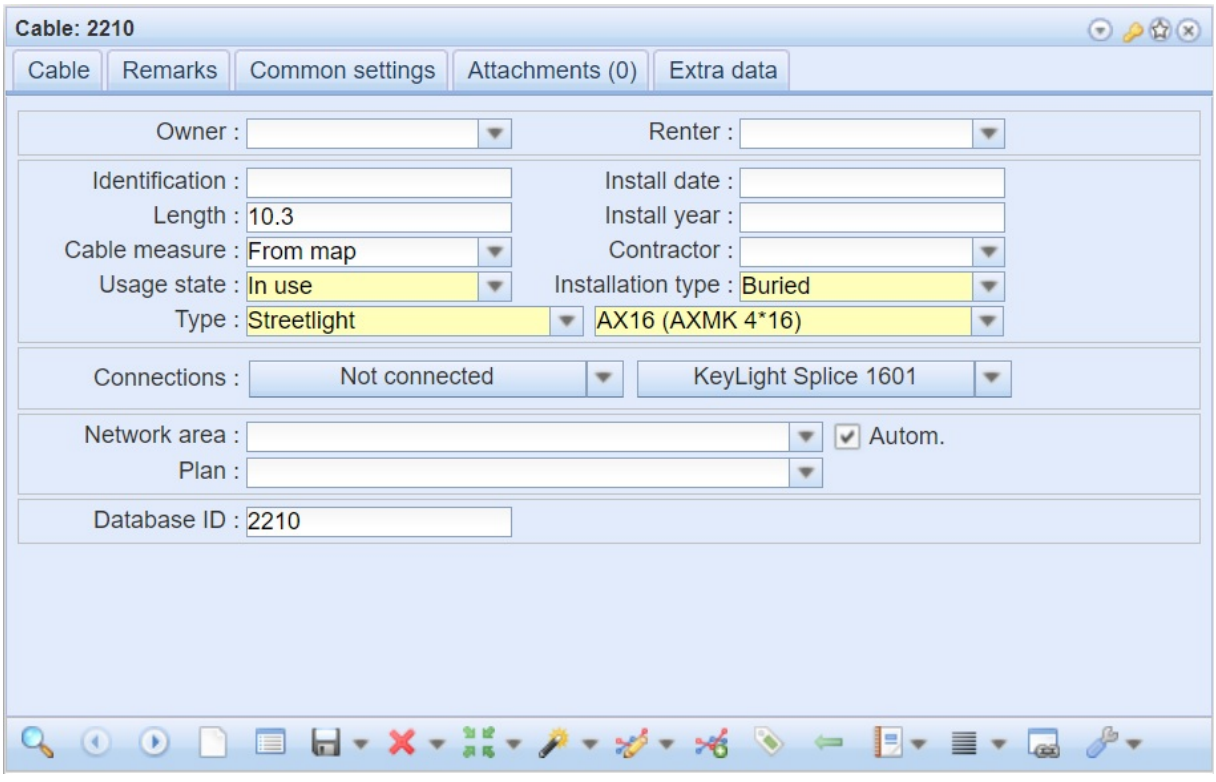
- **Cable** button
- **Conduit** button

Cable

The **Cable** form is used for managing cables in the system. You can add, modify, and delete cables in the system. For more information about the common functions of the form, see Buttons on object forms.

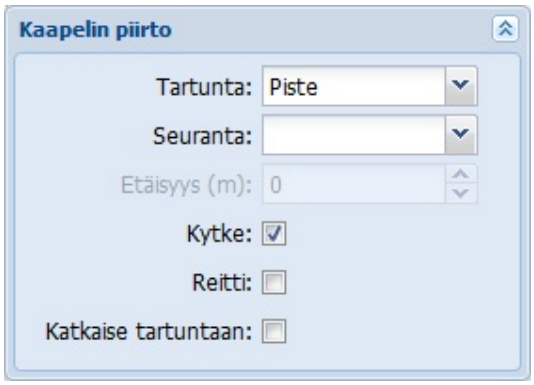
Adding a cable

To add a new cable, fill in the required information on the **Cable** form. The required information includes **Usage state**, **Installation method** and **Type**. You can connect the cable to a **Network area** and **Plan** an and assign other relevant details to the cable, related to, for example, the measurement method, installation or ownership.

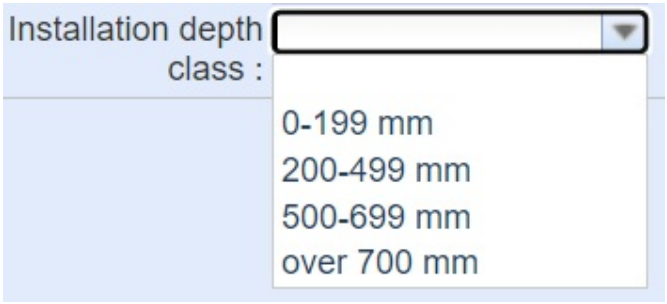


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To add a cable to the map, Click the **Create new** button, which opens the **Cable drawing** window. Make the required choices regarding cable digitization, as described in the chapter Creating a new line object. You can also use the **Connect** option to connect the cable to a point object by snapping to it while drawing. The **Route** option creates a conduit for the cable for the distance you digitize. The **Split at snap** option splits the cable at the poles where you use snapping (the Shift key).



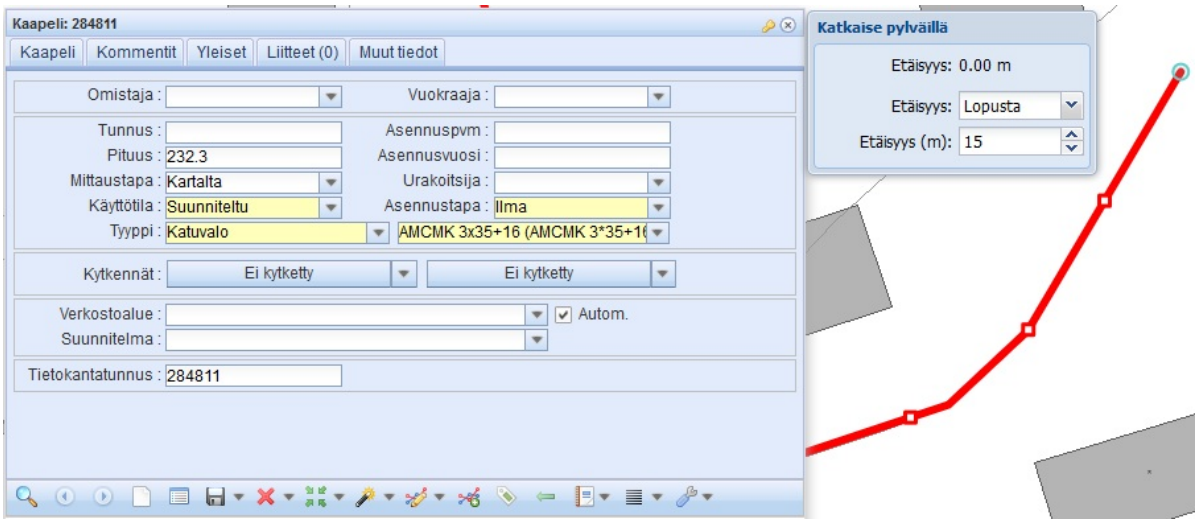
The **Common** tab displays the **Installation depth class**, which can be used to determine the installation depth of the cable.



Splitting cables at poles

It is possible to make a split in cable digitizing at a pole by checking the **Split at poles** option, found in the **Edit** tool's submenu. You can use this feature to modify an existing cable. When you activate the **Split at poles** function, both the **Pole** form and the **Split at poles** window will appear.

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On the **Pole** form, you can retrieve or fill in the details of the pole using which the cable will be split. In the auxiliary **Split at poles** window, you can choose the **distance (m)** of the pole spacing and whether to start splitting the cable at the poles at the beginning or end of the cable (**Distance: From the beginning/end**).

Use the left mouse button to split the cable so that the poles appear at the split points. To cancel the operation, right-click with the mouse.

Connecting cables

The cable can be connected to premises, splices, poles, or streetlights either when creating the cable or with the separate **Connect cable** function, when the cable has been retrieved to the form.

The cable may be connected at the beginning and at the end. The center of the Cable form contains the connection details for the beginning and end of the cable.

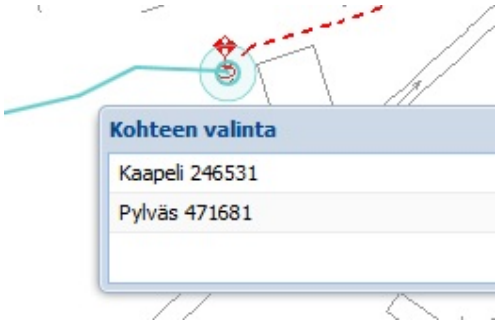
In the figure below, the cable is connected from the beginning to the streetlight and from the end to the pole.



Connection when creating a cable:

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A new cable can be connected to a pole during its creation phase, for example. When digitizing a cable, use the **Snap function**, i.e., **hold down Shift and click the pole** to snap the beginning or end of the cable to the object. When pressing the **Shift key**, a larger blue circle is drawn around the cursor, indicating the snapping area. In this area, the program will search for the object to connect to. Release the left mouse button, and the object will be snapped. If more than one object is found, the object selection list will appear, from which the user selects the object to connect. If the connection is successful, the following text appears in the bottom bar of the map window: **Snapping completed. Snapped to object Pole (ID).** The cable gets the coordinates of the object to which it was connected as its starting point or end point. End the digitizing with the right mouse button.

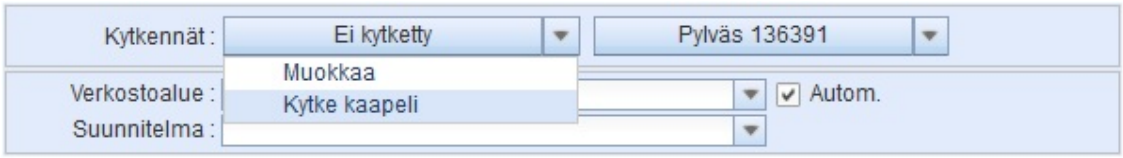


The cable is digitized from node to node, for example from a pole to a pole, a streetlight, premises or a splice. The cable will be split at these nodes. Between the nodes, the cable must be a continuous line. Once the digitizing has been done as described above, network following and short circuit calculation as the network branches will succeed.

Connecting after the creation of the cable:

If the cable is not connected from the beginning or end, the column data is **Not connected.**

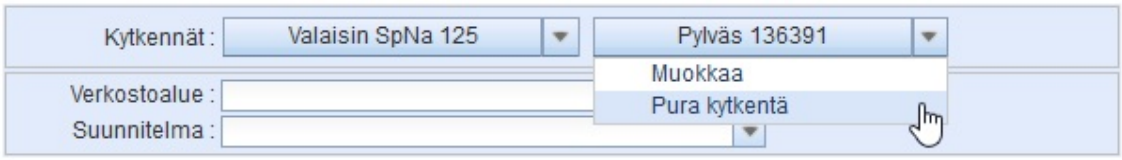
On the menu on the right side, select **Connect cable**. After this, select the object on the map to which the cable should be connected.



Disconnecting objects

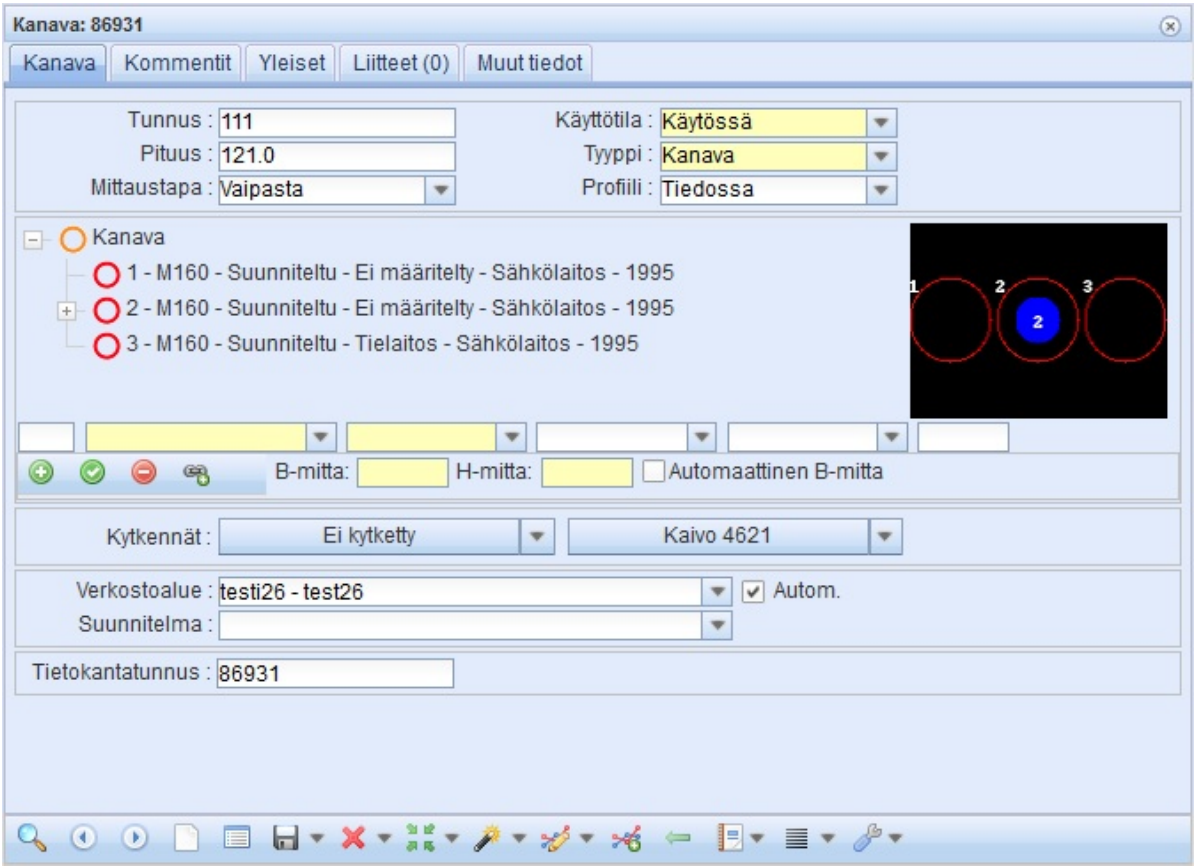
To disconnect an object, select the **Disconnect connection** on the menu on the right side of the column.

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Conduit

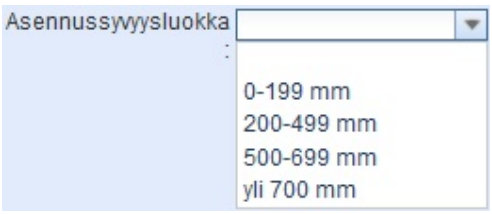
The **Conduit** form is used for managing conduits in the system. You can add, modify, and delete conduits in the system. For more information about the common functions of the form, see Buttons on object forms. The **Conduit** form differs in appearance and property information from other forms. The form buttons and conduit creation work as on other forms, only the processing of ducts connected to the conduit and cables connected to the ducts is form-specific.



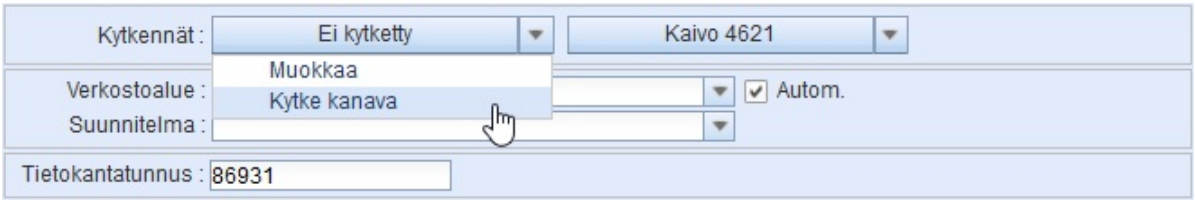
On the form, you can view both a list and an illustration of the ducts and cables connected to the conduit.

Several ducts can be added to a conduit, and several cables can be connected to ducts. A cable can also be located directly in a conduit (in the trench next to the ducts). The **Common** tab displays the **Installation depth class**, which can be used to determine the installation depth of the conduit.

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A conduit can be connected to other objects on the network via the **Not connected** menu on the **Conduit** form. To connect, select **Connect conduit** from the drop-down menu. To access the native form of a connected object, click **Edit**. To remove an existing connection, select **Disconnect connection** the drop-down menu.



The properties of ducts and cables in a conduit

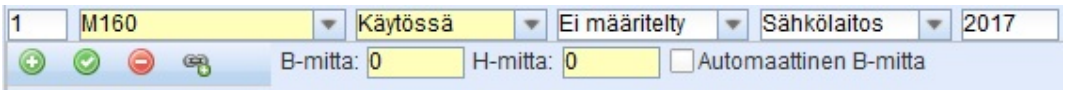
In addition to the information on the properties of a conduit, the **Conduit** form lists the ducts and cables that the conduit includes. To see **information about the cables** in a duct, click the ⊞ symbol in front of the duct. To hide the information, click the ⊟ symbol in front of the duct. For ducts, the information includes the duct number (displayed in the illustration in the top left corner of the duct), duct type, usage state, owner, renter, and installation year. For cables, the property information includes the type, state, owner, and installation year, if provided on the form.

In the figure below, the information on ducts (a red circle) and cables (green dotted line) in a conduit can be viewed on the Conduit form.



To **activate** duct **data for editing**, **left-click the duct in the list**. Data on the B and H measures is now also visible, expressed in millimeters. The **B measure** indicates the horizontal position of the duct in the conduit counted from its **left end**, i.e. if the B dimension of a duct is 0, the duct is at the left end in the illustration. The greater the B measure, the further from the left end of the image the duct is located. The B measure is calculated from the left end of the duct and is usually positive, i.e., a duct is not placed outside a conduit.

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The **H measure** indicates a duct's vertical location in a conduit, as measured from the ground level. In other words, the H measure is a **negative** figure, if the cable is underground. The greater the negative H measure, the deeper and lower the duct is located on the map. Ducts and cables do not have to be located in the conduit at the same depth.

Ducts and cables in illustrations

The **Conduit** form also illustrates the **location** of ducts and cables in a conduit using an **illustrative figure**. Ducts are presented as hollow circles, with the **duct number**, assigned to the duct when creating it, displayed in the upper-left corner. The color of the duct depends on its state: a planned duct is red, a purple duct is in use. If a duct is selected and its data is active in the fields, the duct is shown in blue.

	Figure A. The usage states of ducts are displayed in different colors. The cable number indicates the number of cables.		Figure B. A cable (blue symbol) can be installed directly in a conduit, in which case the cable number is displayed in the cable's top left corner.
	Figure C. Ducts can have different sizes and installation depths.		Figure D. Also cables can have different heights. The duct selected on the list is shown in blue in the illustration.

Cables are shown with a blue symbol in the illustration, and the number inside them reflects the **number of cables**. If a cable is installed directly in a conduit, and not in a duct, the cable's sequence number, which is automatically assigned and cannot be edited, is displayed in the top left corner of the cable. The **location and size** of ducts and cables is illustrated **in proportion to each other**, meaning that a duct of the same size may be illustrated in various sizes in different illustrations depending on the conduit's size and the number of ducts and cables in the illustration.

Creating ducts and editing them in conduits

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When you add a new duct to a conduit, the **required information** includes **duct type**, **duct state**, and the **B** and **H dimensions** of the duct. Once these have been added to the form, a new duct can be added to the conduit with the **Add new duct** button. The information of the duct appears on the list and on the map. In addition to the required information, you can also enter information about the **duct number**, **owner**, **renter** and **year of installation** on the form.



To **update** the properties of a duct, you must first activate the information for that duct by clicking the duct on the list with the **left mouse button**. Make the desired changes and then save them with the **Save changes** button. To delete a duct from a conduit, click **Remove ducts** . Click **Save** to save any changes you have made.

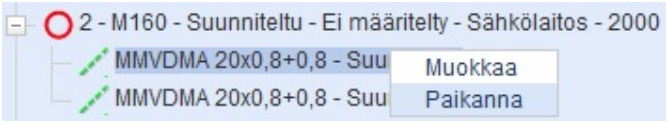
To add multiple ducts of the same type, check the **Automatic B-measure** checkbox. After the first duct has been added to the conduit, the B measure is automatically changed for the next duct to be added. After each addition of a duct, the B measure increases so that the next duct is positioned to the right of the first one in the illustration. The size of the distance between the ducts depends on their diameter: the larger the diameter, the wider the distance.

Adding cables and modifying them in conduits

A cable to be **connected to a duct must first be retrieved to the Cable form**. You can retrieve a cable to a form, for example, by using search criteria or by picking a cable from the map with the **Pick from map** button. Once the desired cable is on the form, it can be connected to the duct using the **Connect cable** button. If the cable you selected is more than 100 meters from the conduit and duct, the program will issue a notice and the cable cannot be connected. To disconnect a cable connected to a duct, use the left mouse button to activate the cable as active on the **Conduit** form. Then click the **Remove ducts** button to disconnect the cable without a confirmation. Click **Save** on the form to save change.

Duct data is processed on the **Conduit** form, but viewing and editing the **cable information** is done on the cable's own form. To open the form, **right-click a cable** on the list, so that you can either **locate** the cable with the **Locate** option or open the **Cable** form with the **Modify** option.

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Tools related to the maintenance of network objects

Information related to the maintenance of network objects is processed using these forms:

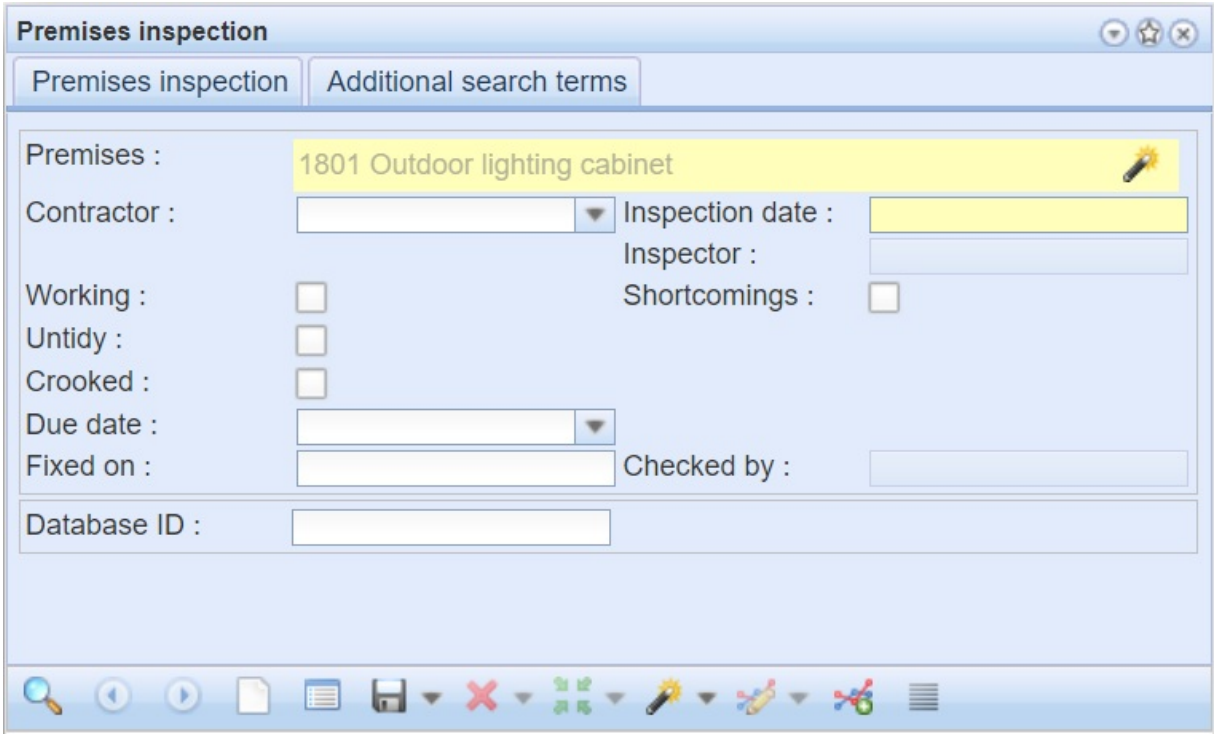
- **Premises inspection**
- **Pole inspection**
- **Cable inspection**

Inspections

Information on inspections can be saved on premises, cables, and poles using the **Inspections** forms. To view the inspection information for an object on a Premises, Cable, or Pole form, open the Inspection form with the form buttons. If the object does not data, a blank form will open.

The **Inspections** forms can also be opened via the **KeyLight** tools. The tools include the buttons **Premises inspection** , **Cable inspection** , and **Pole inspection** . When opening the **Inspection** form via KeyLight tool menu, the object to be inspected is added to the form with the **Get cable/premises/pole** button on the map.

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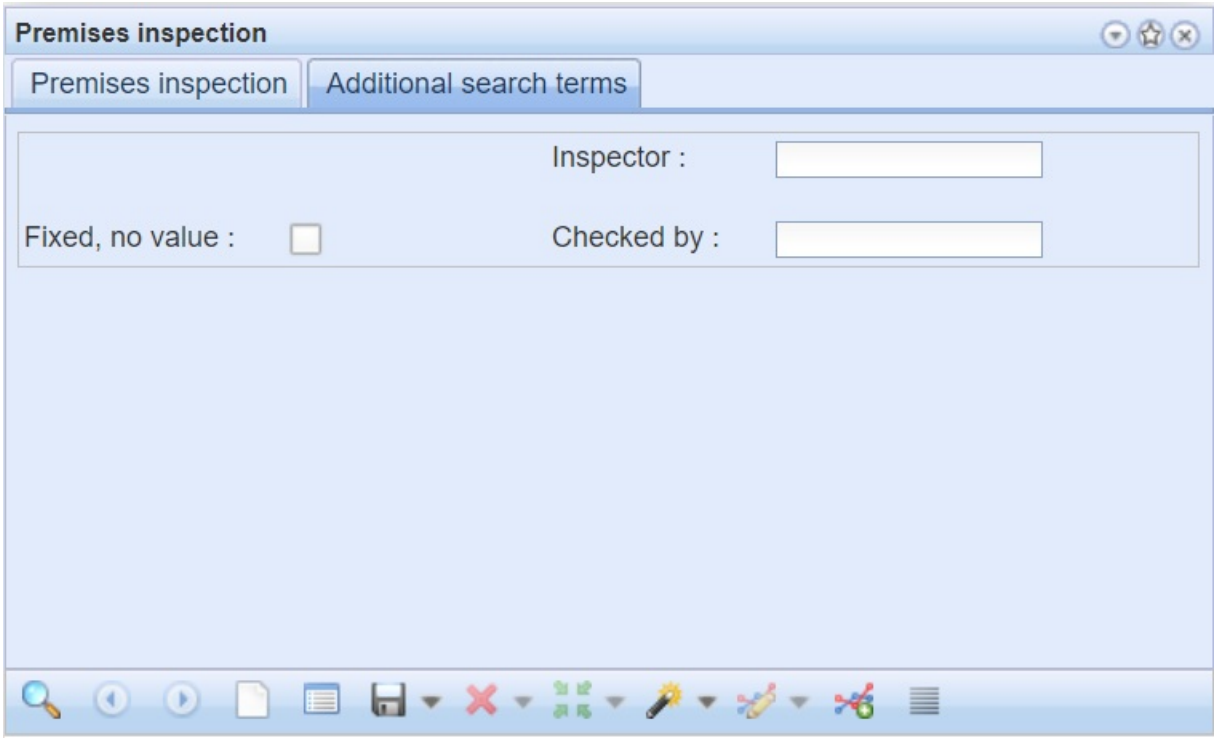


The data contents of the Premises, Cable and Pole inspection forms differ somewhat in detail, but the information deals mainly with similar issues. The required information element is the network object that the check applies to and the date of the check.

In addition to identifying an object, it is possible to store other property information on forms, such as estimates of any replacement needs or damage. In addition, information on a contractor, for example, can be added.

You can use additional search criteria on the **Additional search criteria** tab to search for inspection from the database. For example, you can set the search criteria to the date of an check or repair. The tab is intended for **use in database searches and not for saving data**.

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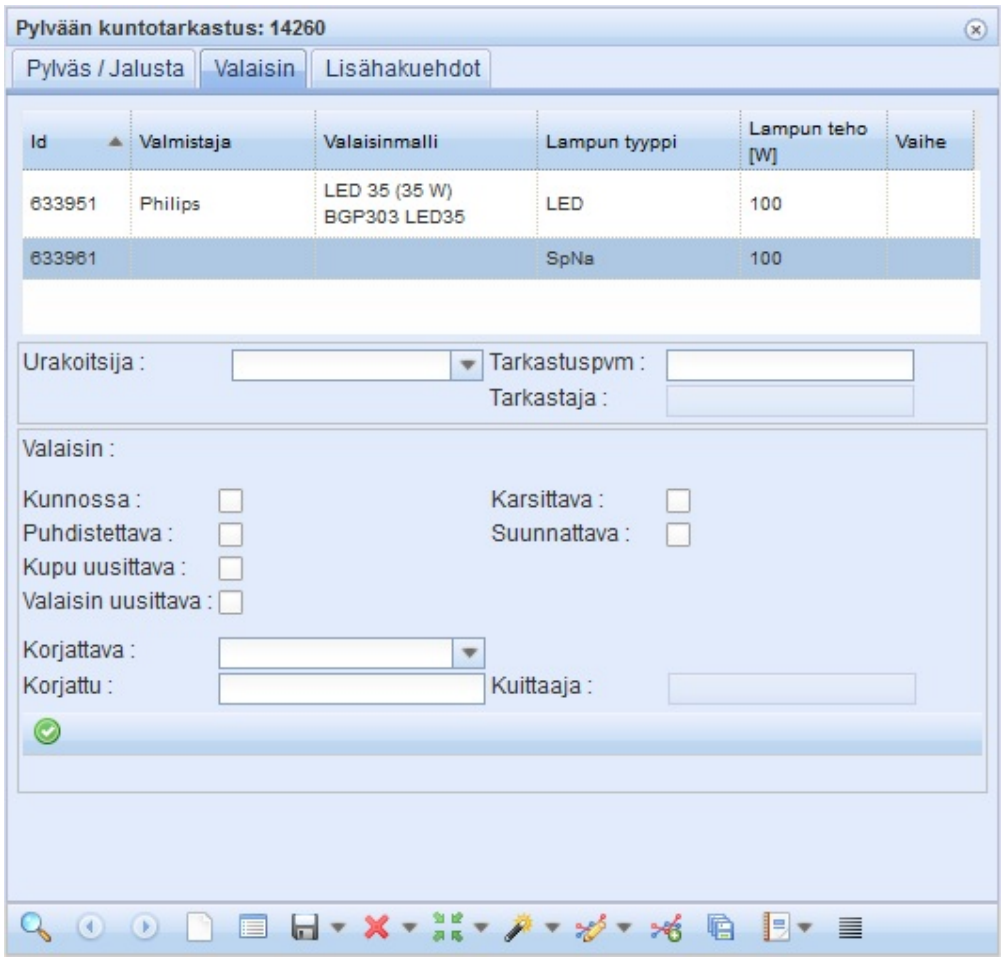
On the Additional search criteria tab for inspections, you can search for checks occurring during a specific period of time.

Inspection information can be added to each streetlight of a pole on the Streetlight tab of the **Pole inspection** . The tab displays a list of the pole's streetlights. To display the health information of the streetlight on the form, select the streetlight from the list with the left mouse button. Once you select a streetlight on the list, the selected streetlight is highlighted in the map window. You can add and update the health information of the streetlight you have selected on the list, such as information about cleaning, orientation, and replacement. The information is saved with the **Add/update streetlight inspection information** button.

You can select several poles for the inspection with the **Search items and save** button.

1. Select one column in the **Pole** field for which the inspection has been performed.
2. Click the **Search items and save** button.
3. Select the desired poles on the map.
4. The program will notify you of a successful saving. A black triangle will appear on the map as a symbol of the inspection.

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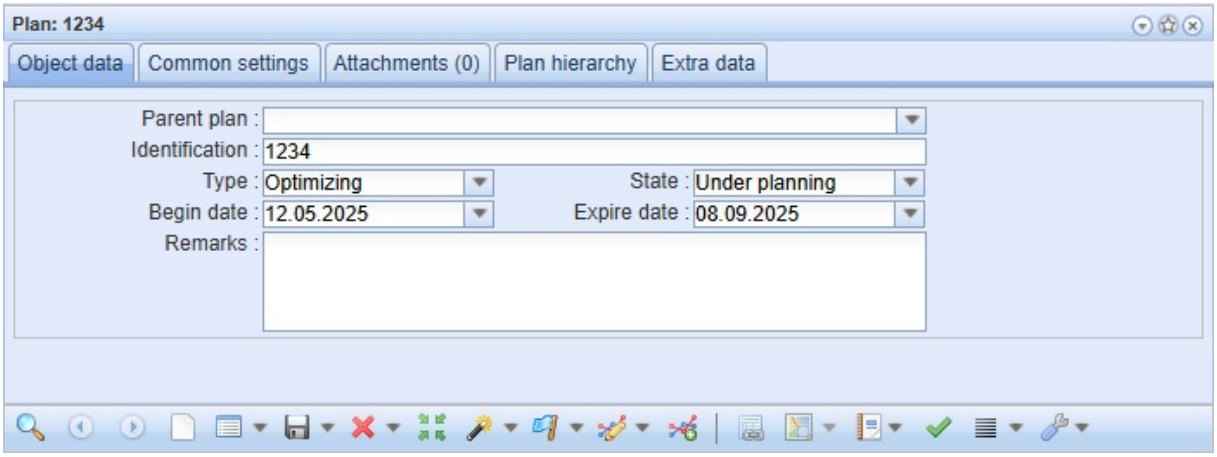


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PLANS

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.

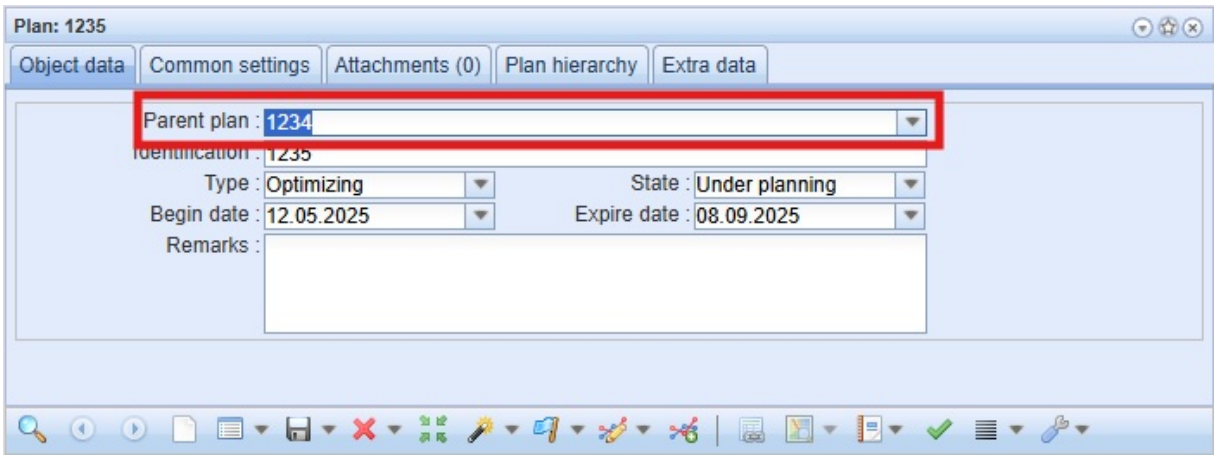
Click **Create** and digitize the border of the area. Instructions on this are available in the chapter Modifying the geometry of an area. Stop digitizing and save by clicking the right mouse button. After you have created the plan and saved it in the system by clicking **Save form** , it is available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



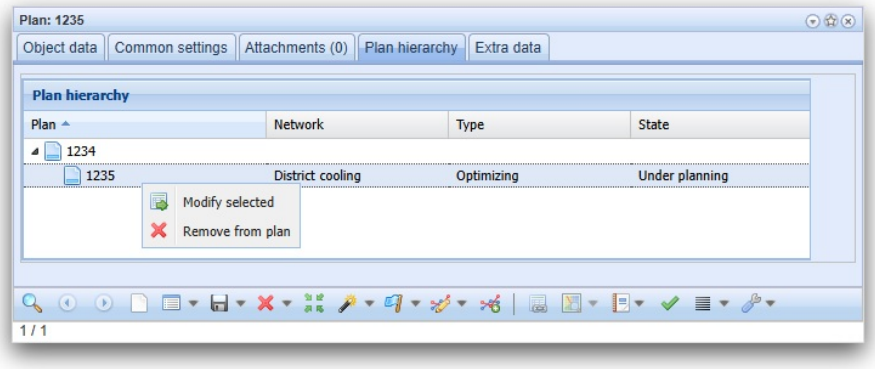
Plan hierarchy

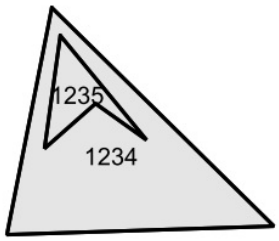
To add a plan as a sub-plan, simply select the parent plan from the **Parent plan** field located on the **Object data** tab. You can add multiple sub-plans under the same parent plan, or extend the hierarchy by adding a new plan under another sub-plan.

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Open the **Plan hierarchy** tab to view the parent plan and the sub-plans. To modify or remove a sub-plan, right-click its corresponding row in the table.





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

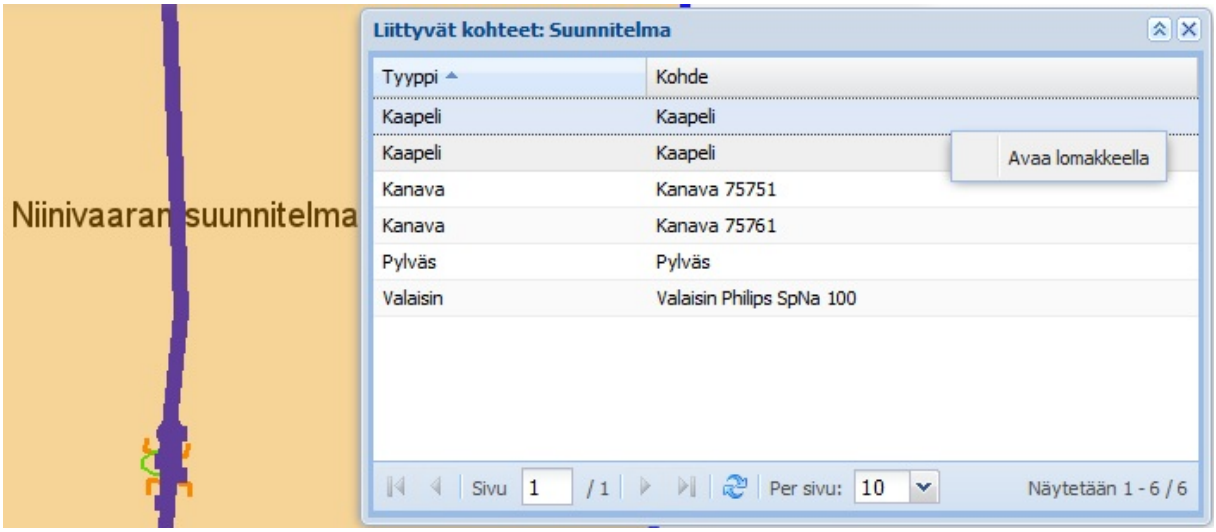
Click **Locate** to locate a plan and the related objects.

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

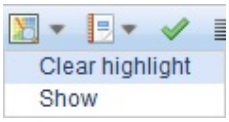
Highlighting objects

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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.

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.

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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 to the form of the object you want to add (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:**
4. Retrieve the appropriate plan to the **Plan** field (Using the predictive search field).



5. Click **Save form** .

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.)

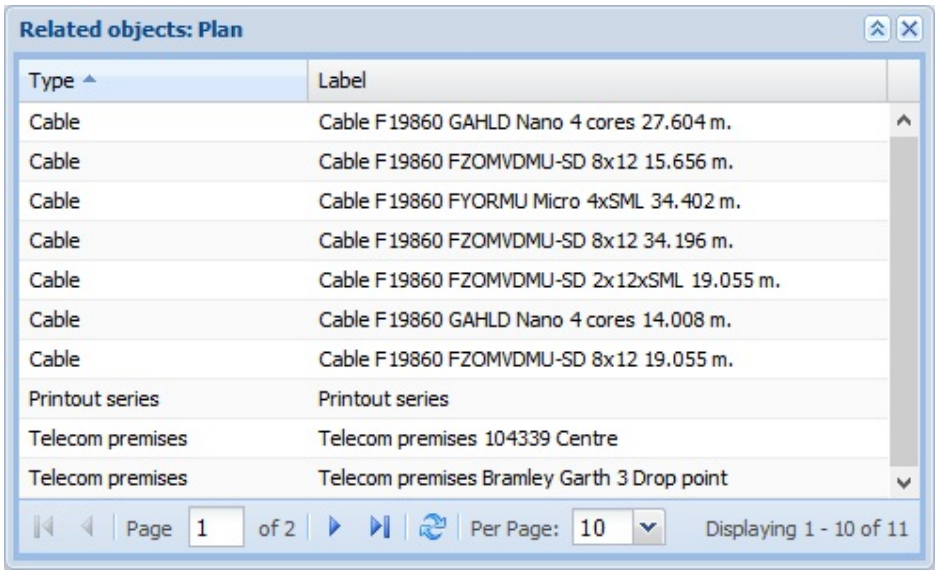
The usage state of objects that belong to a plan can be locked if the related function has been enabled on the basis of a separate order. If a plan is in the maintenance state, users cannot update the network object included in the plan, and they cannot delete the plan. Network objects that can be locked 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.

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List the objects of the plan

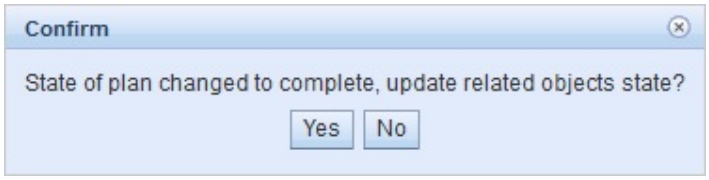
Click **List objects of the plan** to view information on a plan's objects. Clicking this button opens a list of the objects related to the plan, including the **type**, **identification** and **description** of the objects. Click the right mouse button over the target row to click **Show on the form**. 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.

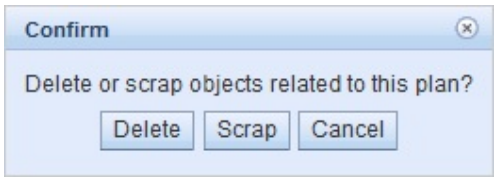
Use this function when a network with objects in the **Planned** state has been planned on the map. When the plan is implemented and completed, the usage state of its objects should be updated to **In use**. Open the appropriate plan on its form and change the usage state to **Ready**. Then click **Save 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**.



Deconstructing a plan

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You can also use the Plan tool for planning the deconstruction of a plan. To plan the deconstruction of a plan, select **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**).

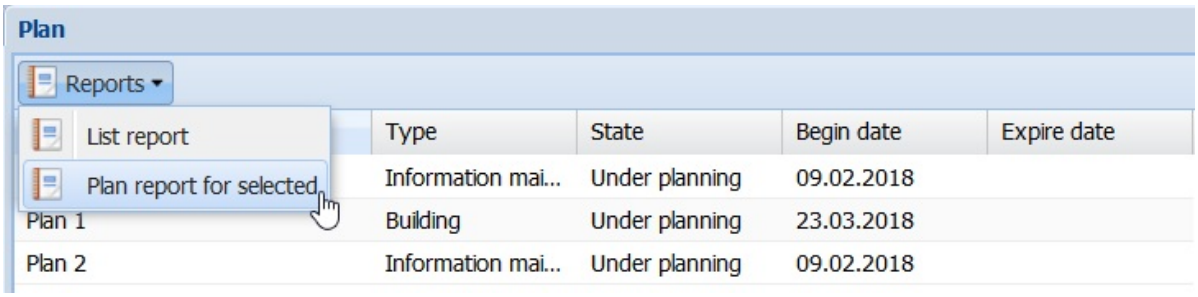
Further information on the list view is provided in the List chapter.

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.

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.

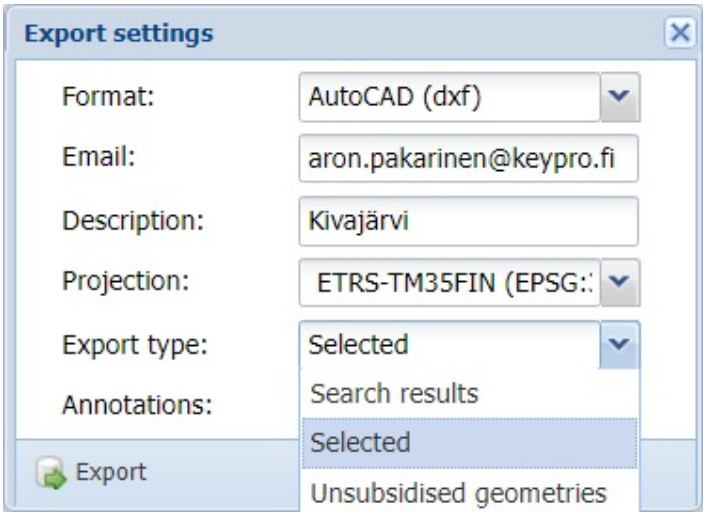
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Exporting unsubsidised geometries

You can export **Unsubsidized geometric** locations of cables and conduits to an external file format. Click **Export** on the toolbar to open the submenu. Then choose **Advanced export** to open **Export settings**. Click **Export type** and select **Unsubsidized geometries** in the submenu.

The Unsubsidized location of the cables and conduits will be formed from the parts that go through the Unsubsidized geometric areas.



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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ADDRESS

Address search

Use the **Quick address search** tool in the toolbar to **locate and highlight addresses on the map**. For example, if you want to view a network located on a specific street, you can go to the location in question by using the quick address search and then locating the address by clicking the **Locate** button. **Start typing the address in the Quick address search** field to have the options listed below the field and then select the one you want. Click **Address** to open the form used for editing the address.



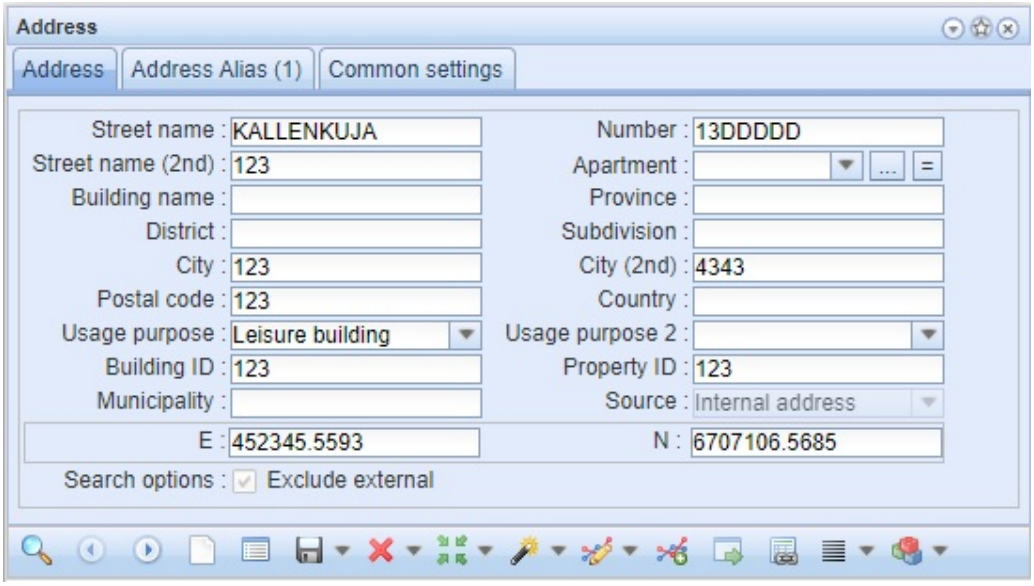
Note that the **Address** tool does not list addresses that have no location attached. Such addresses can be searched on the actual address form (**Address**).

Address search in the database

The **Address** tool can also be used to search for addresses in the database and to locate them on the map. In addition, this tool can be used to update address information and add new addresses in the database. 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**.

You can use all the fields 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 **wildcard** 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. 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. You can center the map on the searched address with the **Locate** button on the form.

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You can open the **Address** form from other object forms, such as the **Premises** form. If you open the **Address** form via the **Address** button on the **Premises** form, for example, the **Update to form** button is activated. Click the **Update to form** button to update the selected address to the object 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 saved this information, click **Create** , and then click the left mouse button to place the address on the map. Alternatively, you can click **Save** to create the address.

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**.



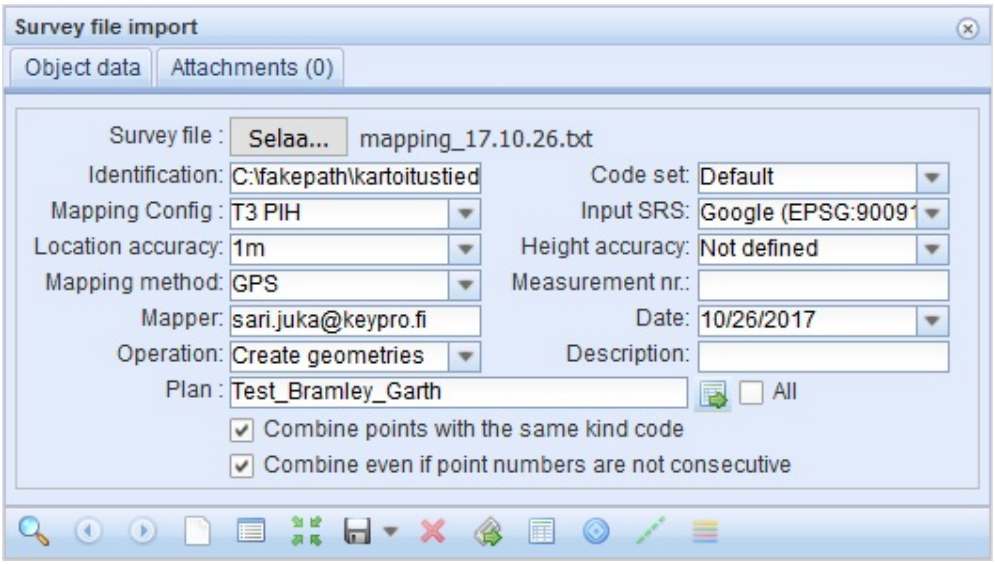
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SURVEY FILE IMPORT

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.
    a. KKJ (such as KKJ / Finland zone 1)
    b. Shortened GK (such as ETRS89 / ETRS-GK19FIN (EPSG:3126))
    c. Standard GK (2010) (such as ETRS89 / ETRS-GK19FIN 2010 (EPSG:3873))
    d. Local coordinate systems (such as ANC Finland)
    e. WGS (such as WGS84 (EPSG:4326))
6. Select **Operation**:

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a. **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.
b. **Create geometries:** The survey geometries include point and line objects, and the **Surveys** layer is activated in the **Layer selection** when these are applied.
c. **Create both:** If you select **Create both**, the system creates both the objects (such as ducts, manholes, valves, etc.) and their associated survey geometries. As the geometries are applied, the **Surveys** layer is activated in the **Layer** selection.

7. Select the **Combine even if point numbers are not consecutive** checkbox to join lines with non-consecutive point numbers.
8. Fill in the rest of the fields as necessary.
9. Click **Convert** in the form's toolbar. The survey file is automatically saved after the conversion.
10. Any errors and warnings are displayed on the list. Usually, these errors are related to the structure of the survey file and are displayed to help locate the possible errors in the file.



Results of the survey

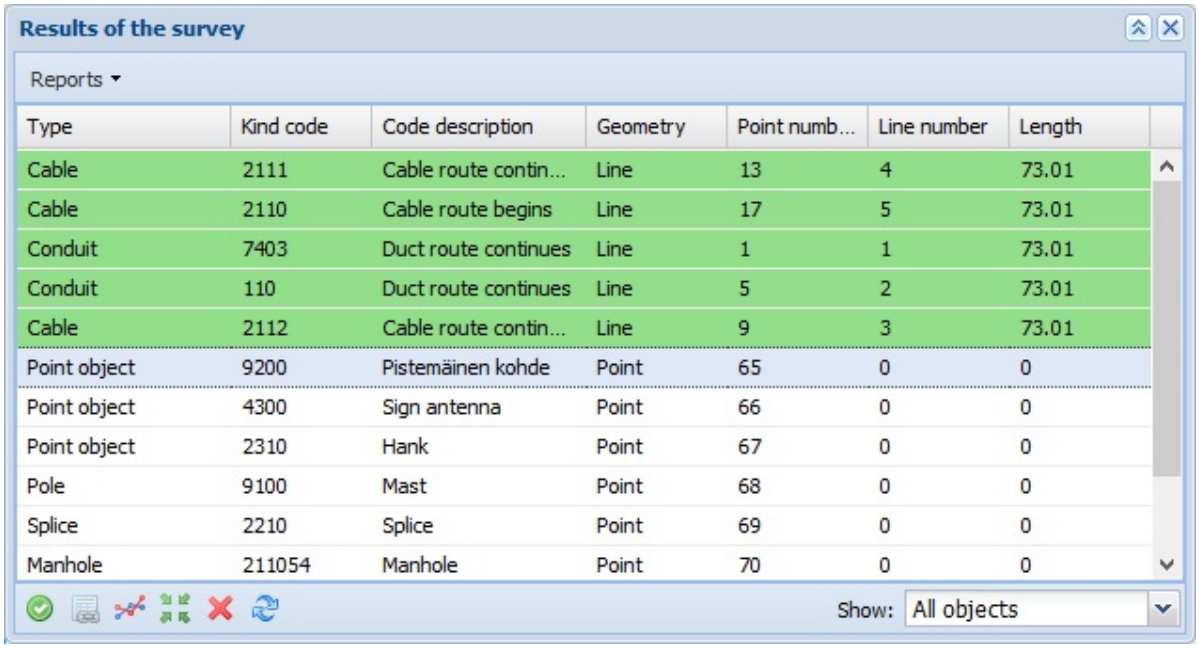
Click **Show results** to view the survey objects on a list.

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.

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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** .

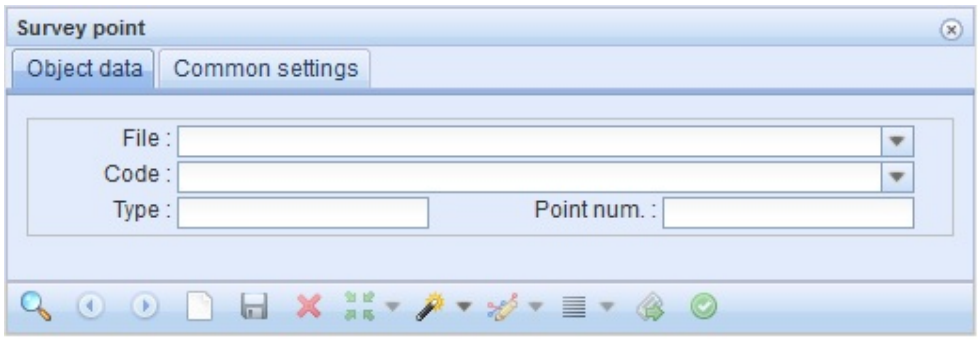


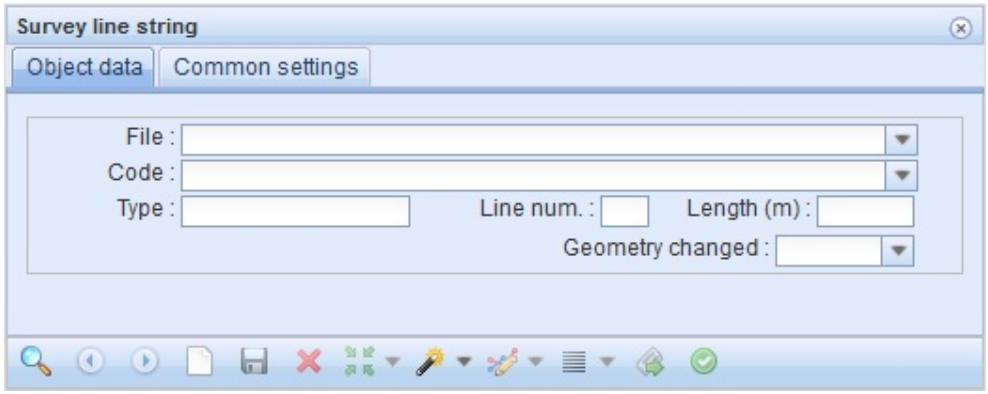
Filter the objects by selecting the appropriate option in the drop-down menu for **Show** at the bottom of the form.

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.

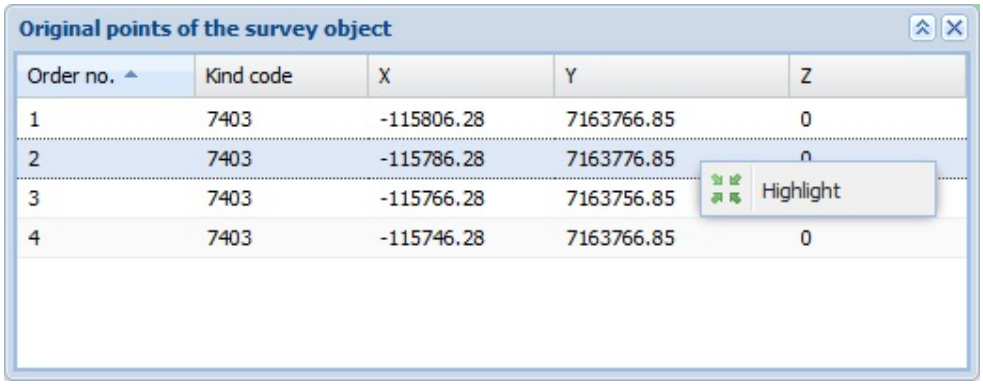
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Viewing the single points of a survey line

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.

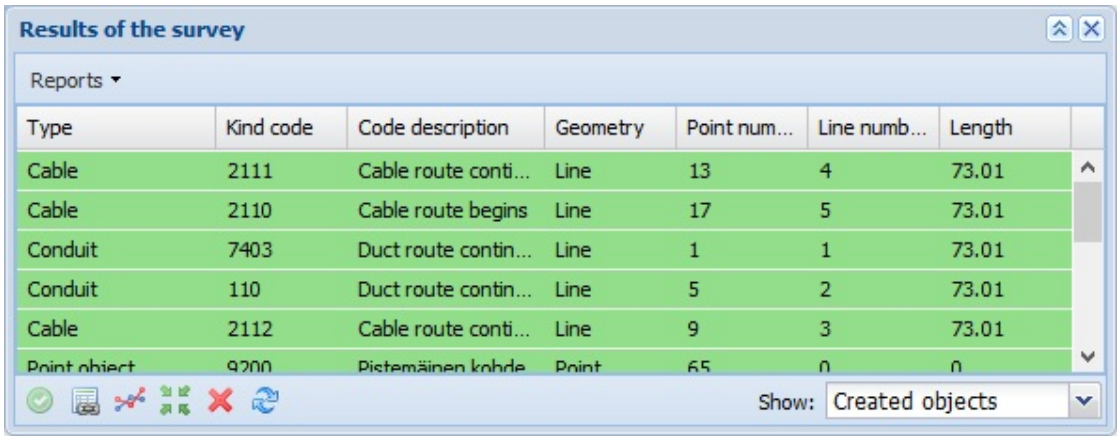
TIP: Double-click a point to locate it.

Creating network objects

1. Select the rows that you want to use for creating network objects.

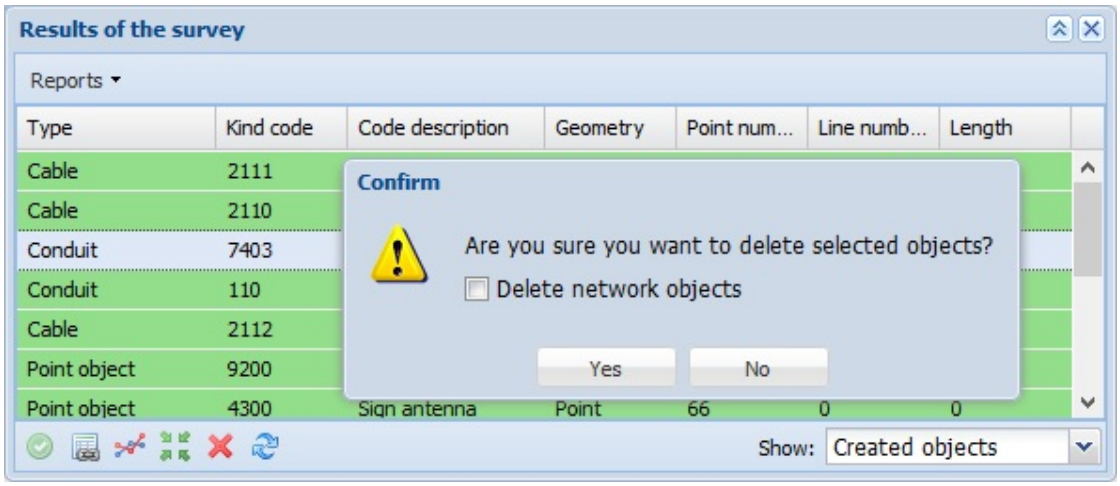
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2. In the tool bar at the bottom of the form, click **Create network object** .
3. The rows of created objects are marked in green.



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

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

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Survey report

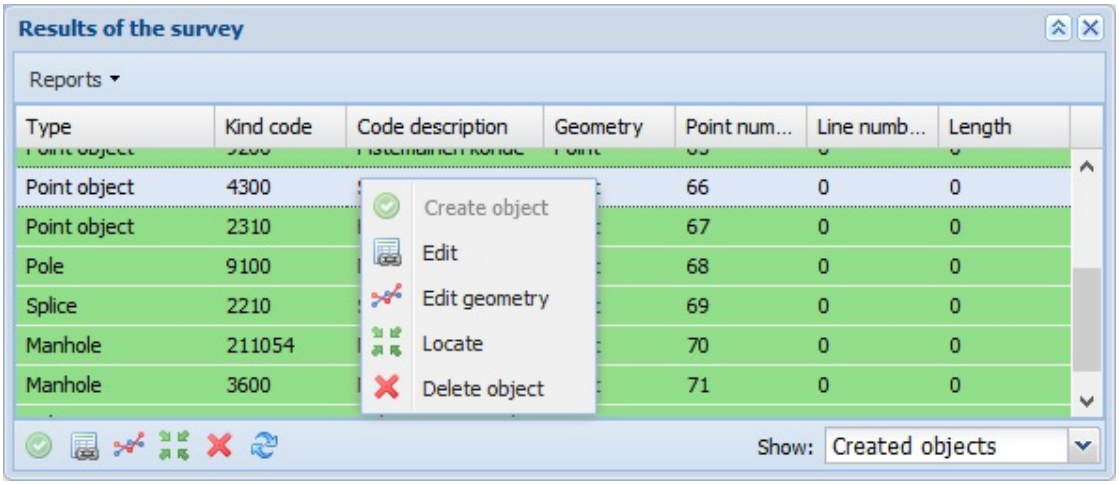
You can create an **Excel** report on the survey objects, including the applicable codes, their number, and the total length per code.

Start creating a report by clicking **Survey results report** in the **Reports** menu.

Code	Code description	Amoun	Length (m)
110	Duct route continues	1	73,01
2110	Cable route begins	1	73,01
211054	Manhole	1	0
2111	Cable route continues	1	73,01
2112	Cable route continues	1	73,01
2210	Splice	1	0
2310	Hank	1	0
3510	Telecom premise/distributor	1	0
3600	Manhole	1	0
4300	Sign antenna	1	0
9100	Mast	1	0

Editing the created network objects.

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



Editing the geometry of survey objects

1. Select the object whose geometry you want to edit.
2. In the context menu, click **Edit geometry** , or select **Edit geometry**

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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

Admin users can define 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 in the figure below. The land survey file includes one manhole (3600), one duct route (2510), and two cables (2111), as illustrated in the code set on the next page.

```
9       0       3600        1   6928056.458   3601047.489        33.230
9       0       2510        2   6928110.768   3600973.089        33.330
9       0       2510        3   6928127.305   3600965.519        33.217
9       0       2510        4   6928057.033   3600989.882        33.371
9       0       2510        5   6928056.119   3601047.476        32.217
9       0       2510        6   6928056.762   3601047.280        33.217
9       0       2510        7   6928035.609   3601002.283        33.217
9       0       2510        8   6928035.633   3601002.528        33.217
9       1       2111        9   6928057.119   3600989.852        33.217
9       1       2111       10   6928057.281   3600988.209        33.217
9       1       2111       11   6928059.221   3600986.229        33.217
9       1       2111       12   6928066.109   3600982.931        33.217
9       1       2111       13   6928077.171   3600977.830        33.217
9       1       2111       14   6928086.852   3600973.691        33.217
9       1       2111       15   6928095.727   3600970.387        33.217
9       1       2111       16   6928100.522   3600968.236        33.217
9       2       2111       17   6928100.540   3600968.314        33.217
9       2       2111       18   6928102.333   3600967.980        33.217
9       2       2111       19   6928105.390   3600968.861        33.217
9       2       2111       20   6928108.454   3600971.387        33.217
9       2       2111       21   6928110.244   3600972.999        33.217
9       2       2111       22   6928110.764   3600973.094        33.217
```

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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 code set is applied to the example:

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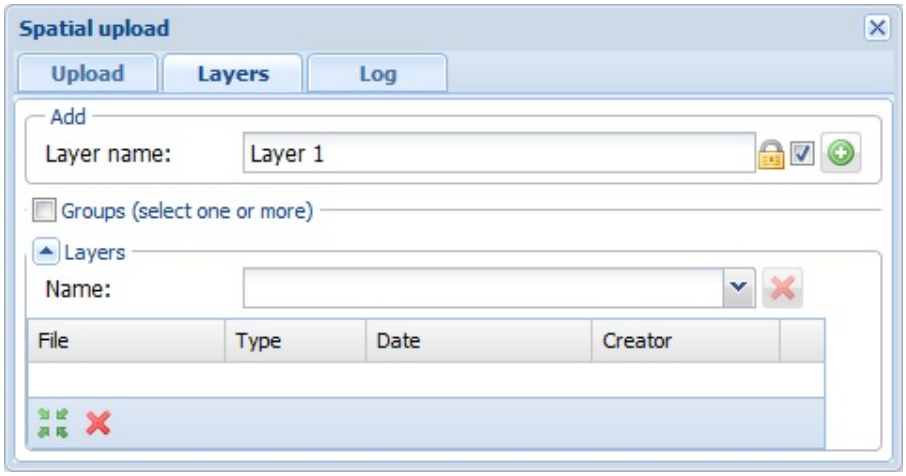
Point	2210	Splice
Point	2310	Loop/coil
Point	3100	Pole
Point	3510	Telecom premises
Point	3600	Manhole
Point	4100	Sign pillar
Point	4300	Sign antenna
Point	4400	Cable sign
Point	4500	Sign plate
Point	4600	Direction sign
Point	9100	Mast
Point	9200	Point of reference
Point	211054	Manhole
Line	110	Duct route continues
Line	2110	Cable route begins
Line	2111	Cable route continues
Line	2112	Cable route continues
Line	2510	Duct route begins
Line	2511	Duct route continues
Line	2512	Duct route continues
Line	7403	Duct route continues
Line	212052	Duct route continues

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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:

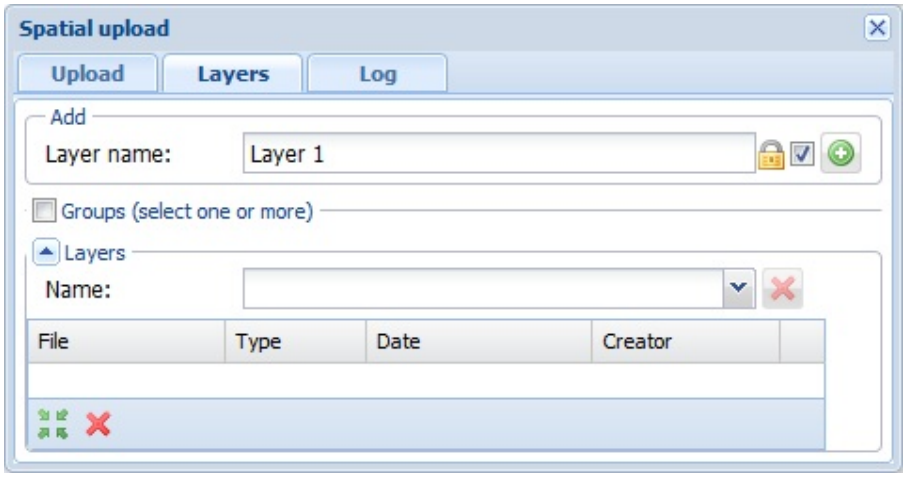
- Esri™ SHP
- Bentley MicroStation™ DGN (V8)
- Autodesk AutoCAD™ DWG
- CSV files (X;Y; name; color; size), see the chapter CSV file format.

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.).

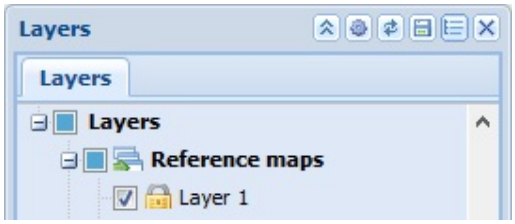
Managing layers

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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.

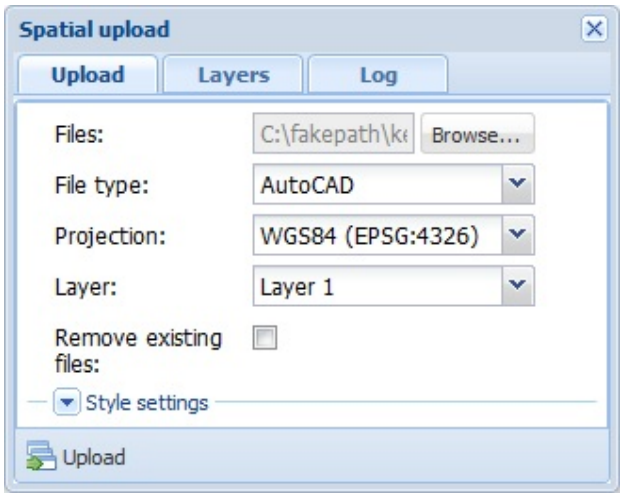


You can create user-specific or group-specific background maps. Any layers you create will be shared by default and will be marked with the unlocked lock icon . You can define a layer as private by selecting the checkbox. The icon will be replaced with a locked lock and the layer you created will not 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.

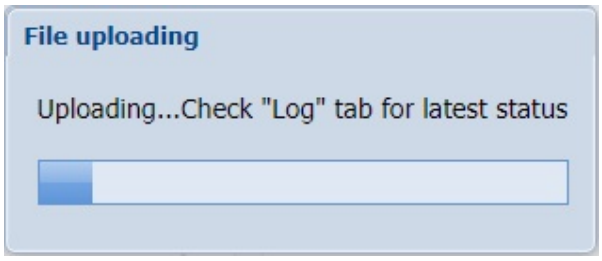
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2. Click **Browse** and select the file you want to upload.
3. If you are uploading an ESRI **shp** file, also select the **dbf** file.
4. Check the file type before uploading. This field is usually filled in automatically so that it matches the file 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).**

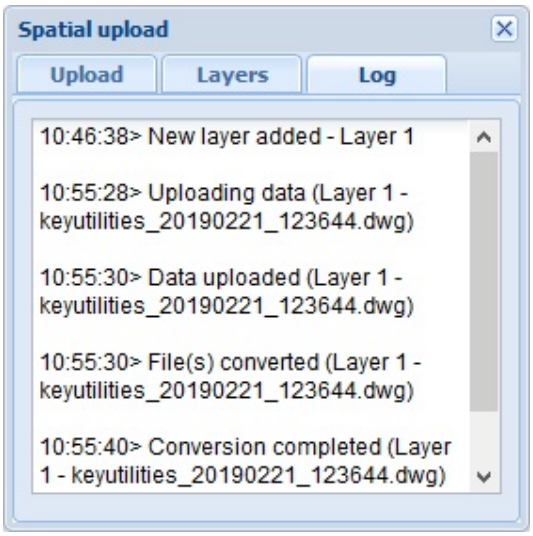
TIP: If your file includes objects with various style settings, you might have to separate them into different files based on their symbology.

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.



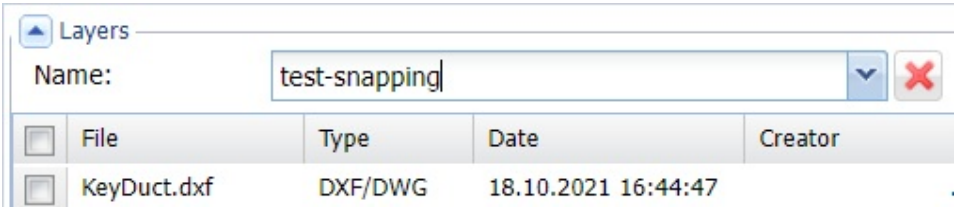
2. Browse the Log tab for a file upload.

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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:

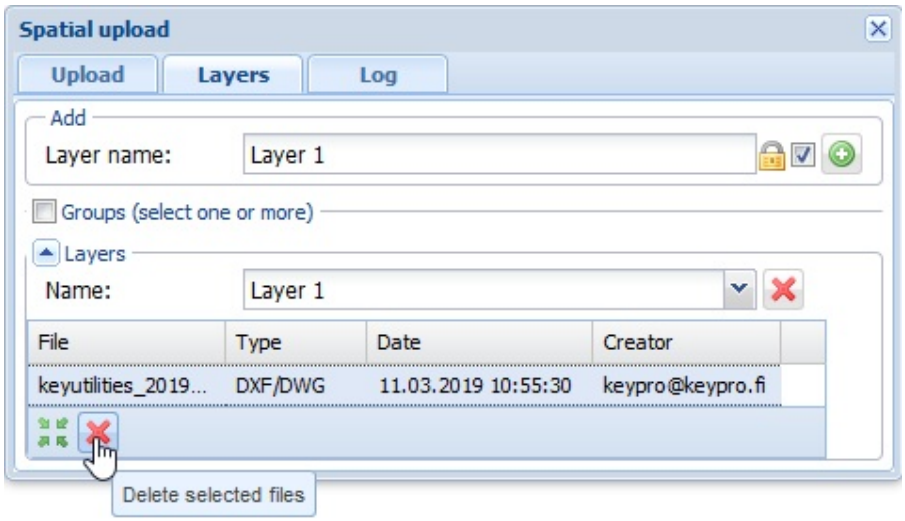


Note! When you create new network objects, you can use the snapping function on the background map.

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** .

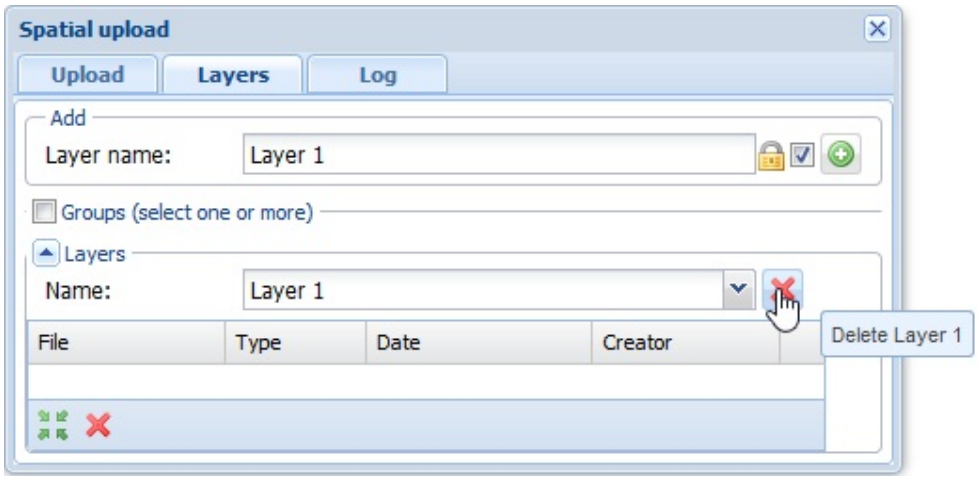
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5. Confirm and check the result on the map.

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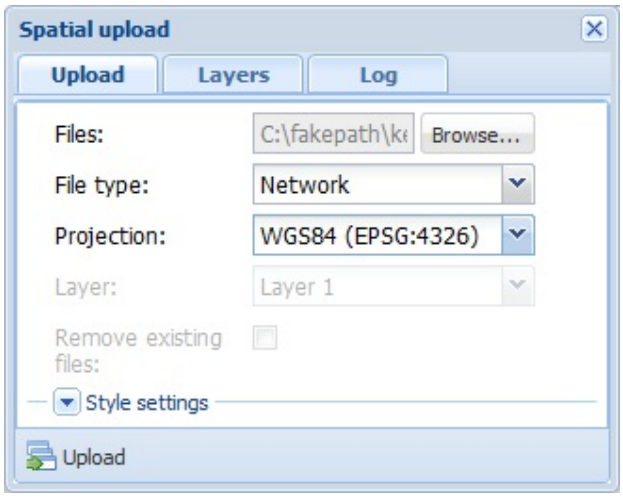
3. Rows are in the following format: X;Y;[TEXT];[COLOUR];[SIZE]
4. The TEXT, COLOUR, AND SIZE columns can be empty.
5. If TEXT is empty, a point object is created. Otherwise, free text is created.
6. If COLOUR or SIZE is empty, default values are applied.
7. COLOUR is an RGB value, such as “255 255 0”.

```
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.

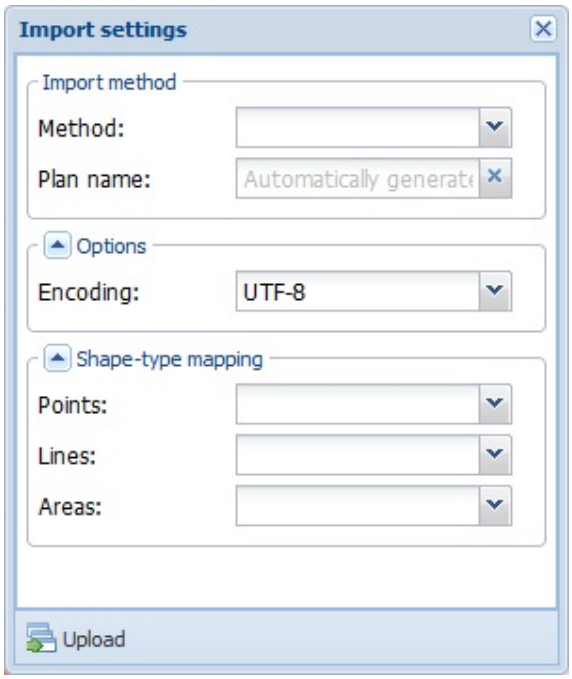
Uploading network objects (Settings must be configured through the admin user interface.)

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**.

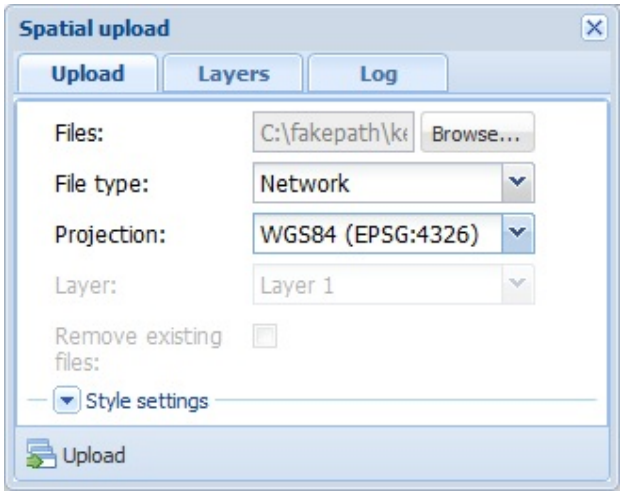
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5. Check that the mappings are correct.
6. Click **Upload** . The progress bar indicates the status of the file upload. Note that it could take several minutes to upload a large file.
7. When the file upload is complete, the following notification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

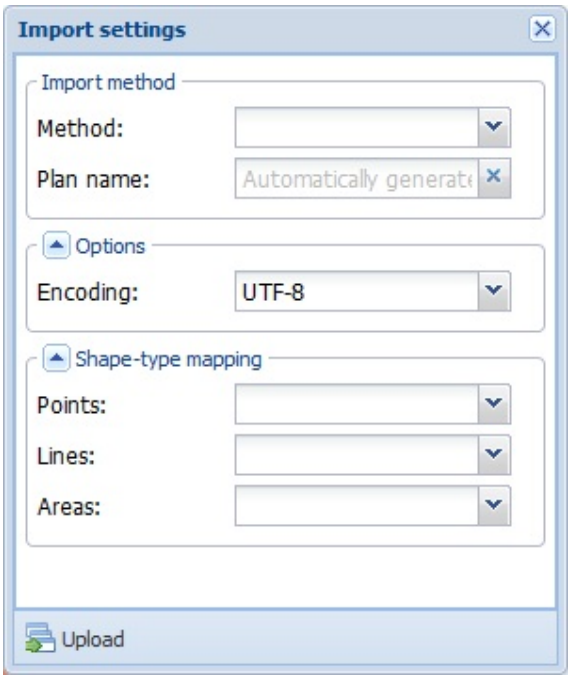
Uploading network objects by using Area import (Settings must be configured through the admin user interface)

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**.

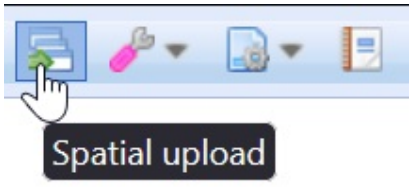
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5. Check that the mappings are correct.
6. Click **Upload** . The progress bar indicates the status of the file upload. Note that it could take several minutes to upload a large file.
7. When the file upload is complete, the following notification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

Spatial upload for consumer points

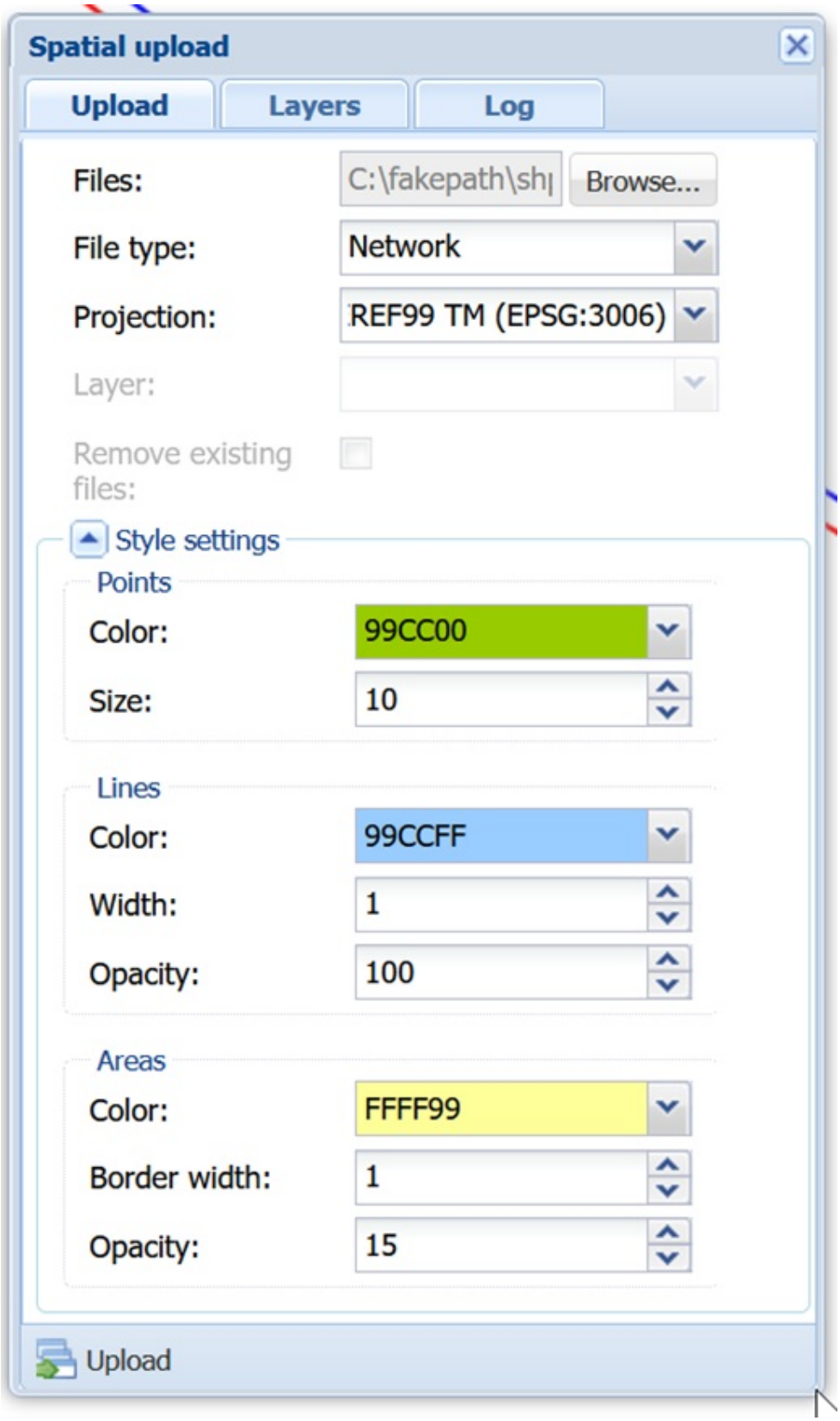
This chapter describes how to use **Spatial upload** tool for importing consumer points. The **Spatial upload** tool can be found from the main toolbar.



Importing the consumer points

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

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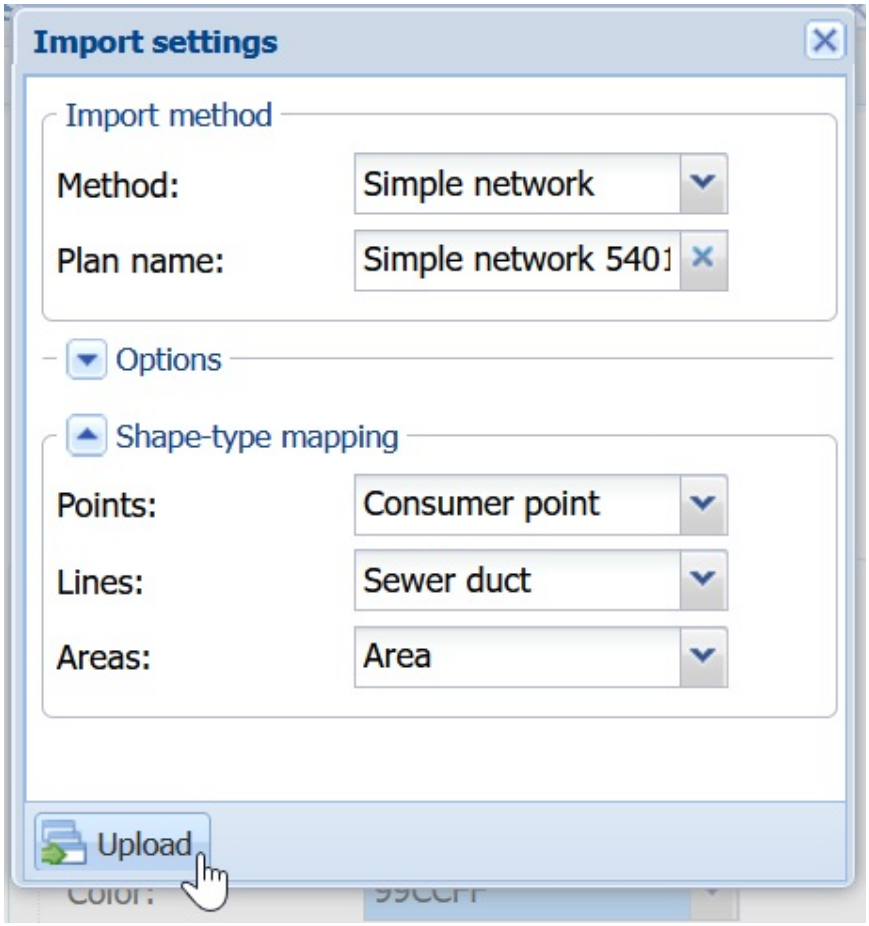
2. In the **Upload** tab, fill in the following fields as described:

- **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.

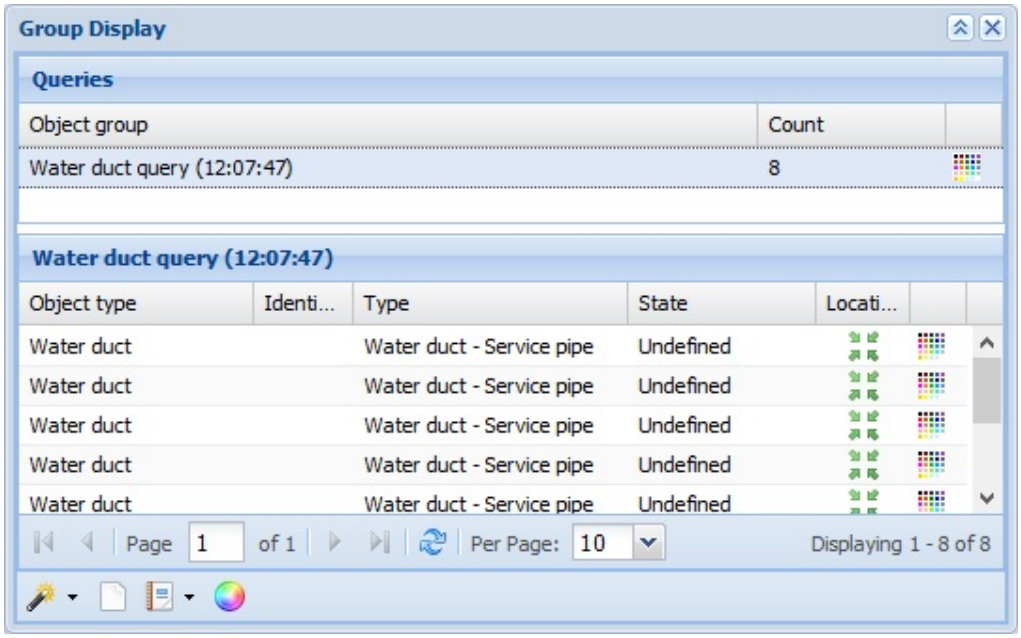
Lines and Areas: Can be left as they are (they are not used in this type of import).

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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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

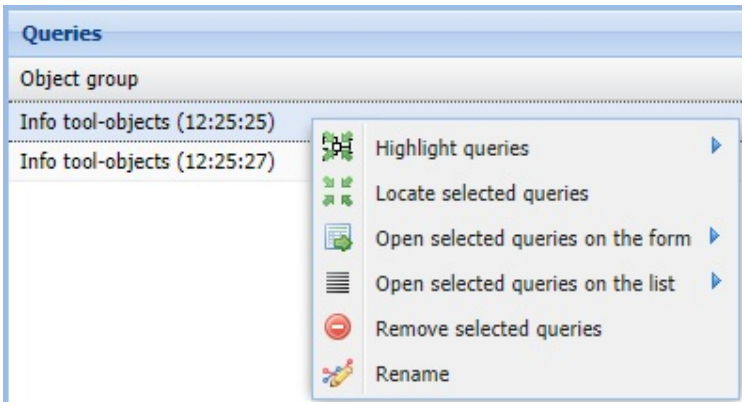
Groups can be created in many ways:

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:

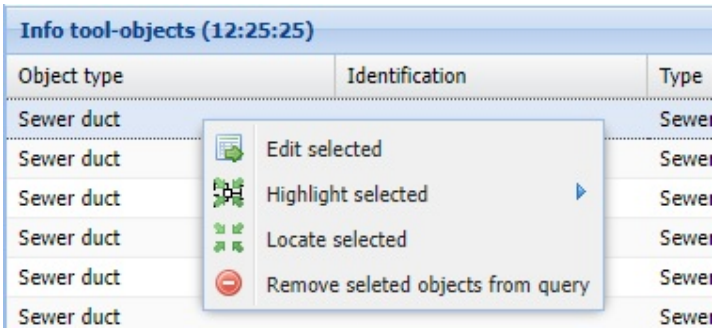
b) In the sub-menu, open a single group of search results.

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.



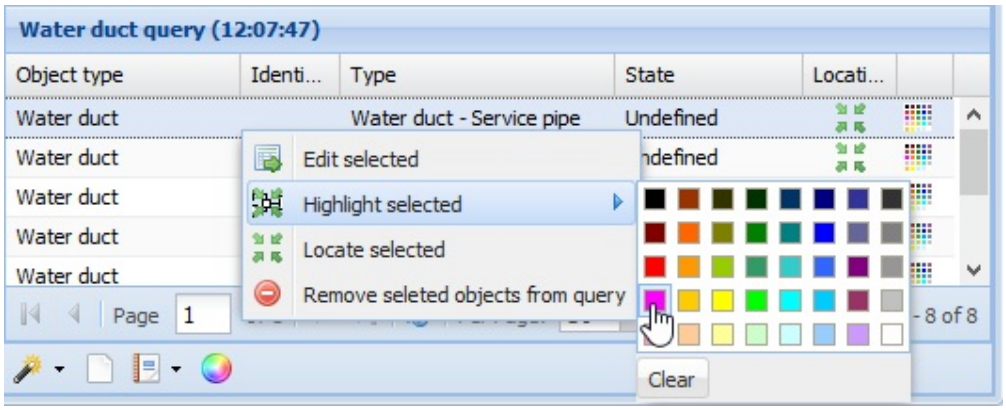
Highlighting individual objects in a group display

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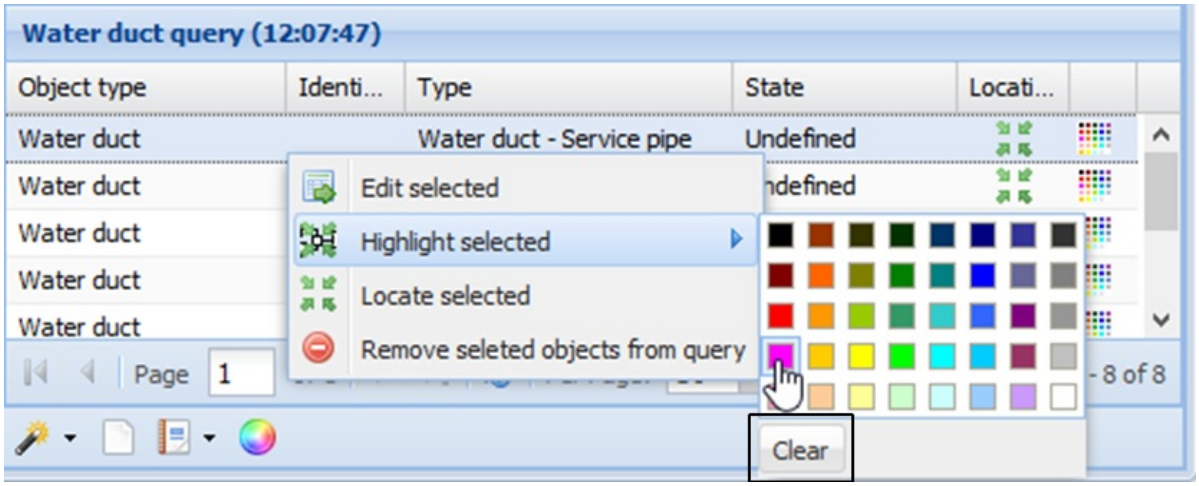
objects using the default colour, unless you have defined a colour for the row in question. b) Highlight all selected objects using the same colour by selecting the colour in the sub-menu.



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

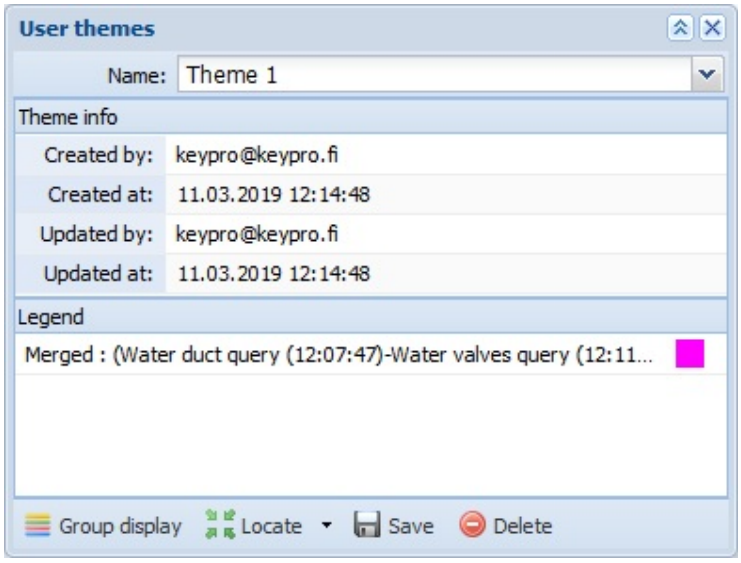
1. Create object groups in the **Group display** . For more information, see the chapter Creating groups.
2. Select the highlight colour for each group.
3. Click **Save as new theme** .
4. In the dialogue box that is displayed, enter a **name** for the theme and click **OK**.

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

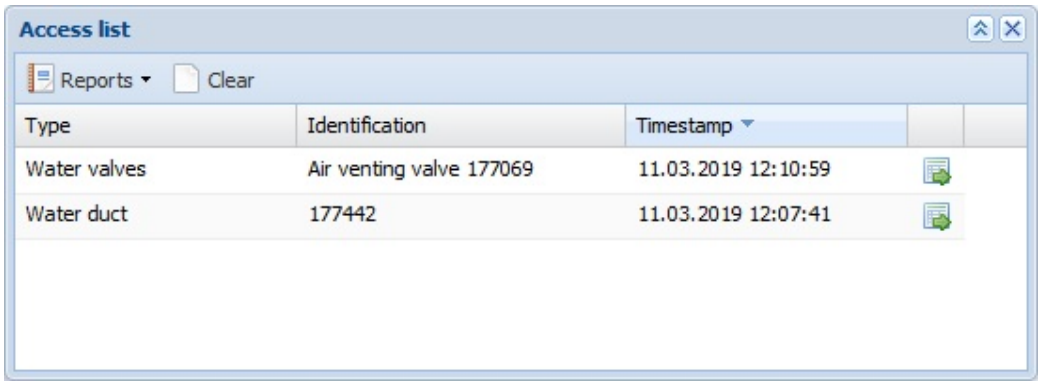
1. On the **User themes** form, on the list in the **Name** field, select the theme you want to delete.
2. Click **Delete**  . You will be asked to confirm the deletion of the theme. Click **Yes** to delete the theme.

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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.



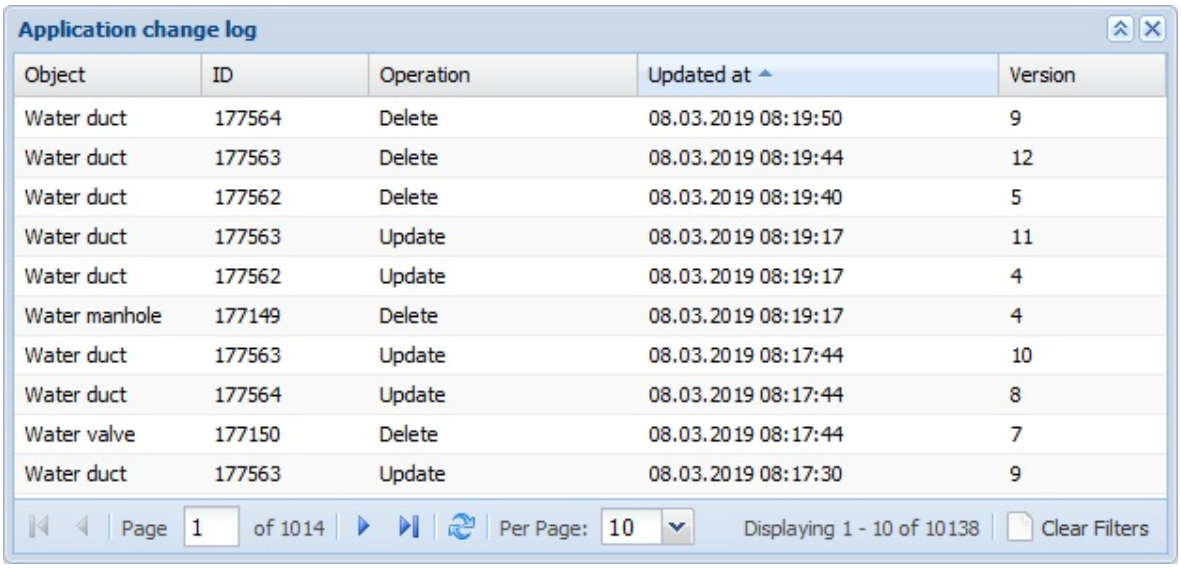
TIP: If you have deleted an object, you cannot retrieve it to an object form by clicking the Open button. Instead, use the Global change list function.

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 list

To view the global change history, click **Global change list** . 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 object's **Change history** form is displayed with the row in question pre-selected.

Restoring changes

To restore changes, take the following steps:

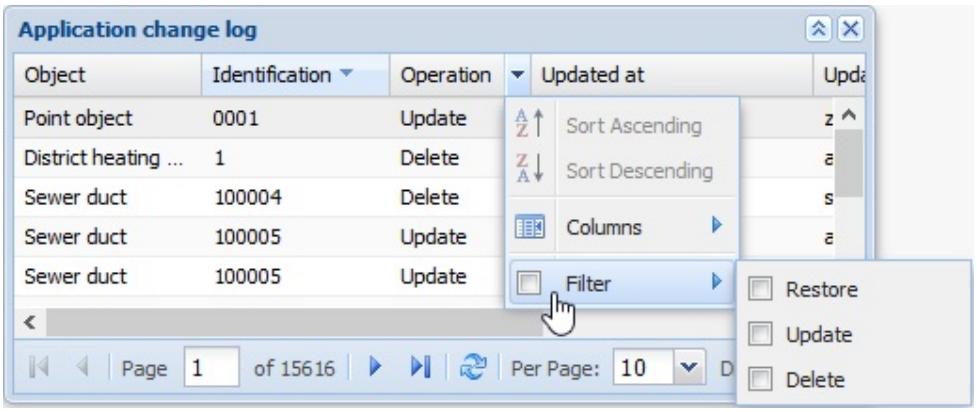
1. On the list, select the changes you want to restore.
2. In the context menu, select **Restore selected changes**.
3. In the **Report on restored changes** that is displayed and that includes separate fields for **Restored** and **Failed**, check that the change was restored successfully.

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

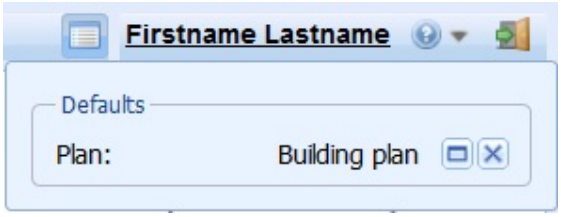
Admin users can save default values for an object by clicking **Save as default** in the menu for **Save** . The defaults are then available to all users. The **Save as default** function is only displayed for admin users, and it is active when a form has been cleared or an unsaved object is open on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

This section discusses **KeyLight** system features that are not directly related to the other categories.

KeyLocator (this function is subject to a separate order)

The idea of KeyLocator is to save objects at layers configured by the customer. The objects to be saved are annotations, dot objects, text, lines, or polygons.



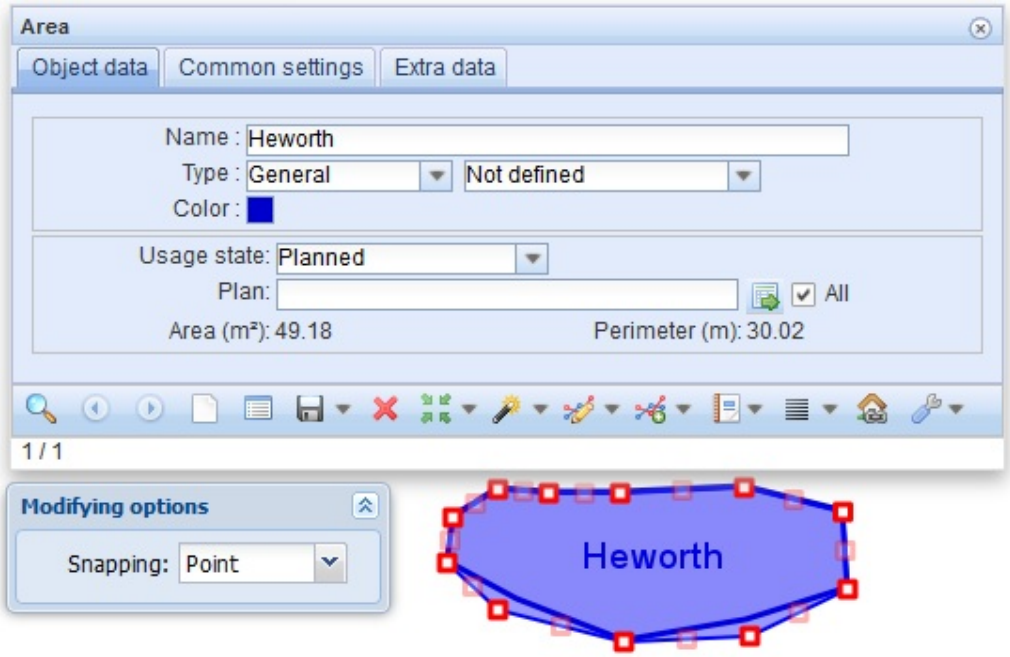
KeyLocator differs from KeyLight in that KeyLocator allows the user to select the layer of material on which the network object is created and saved. For example, Pole is a network object that is part of the Pole layer in the KeyLight dataset. In KeyLocator, a pole is a dot object that is stored in its own layer group with its own symbols configured.

Adding an area

To add an area with the required shape on the map, go to the main toolbar 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.

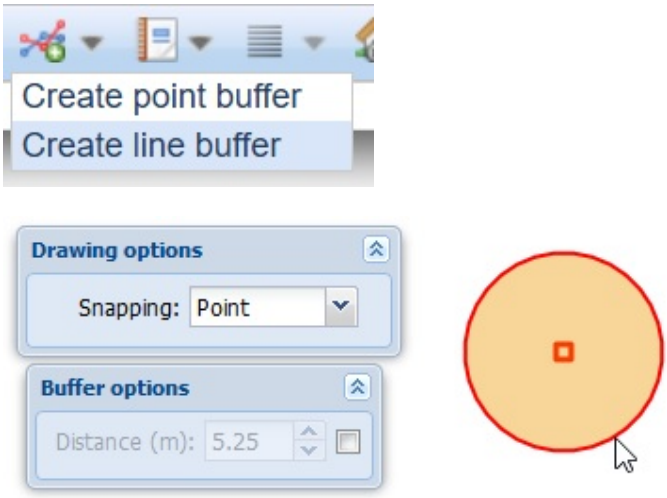
The are in the illustration below has been selected for modification. The points of the area have been highlighted.

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Adding a point buffer

An area can also be created as a circular area. Start the creation by selecting **Circle area** in the drop-down menu for **Create new**. Click the left mouse button on the map to point at the center of the point buffer. To specify the radius, either click at the required distance from the centre of the area or select the **Distance** checkbox in the **Buffer options** dialogue box and define the radius in the field.

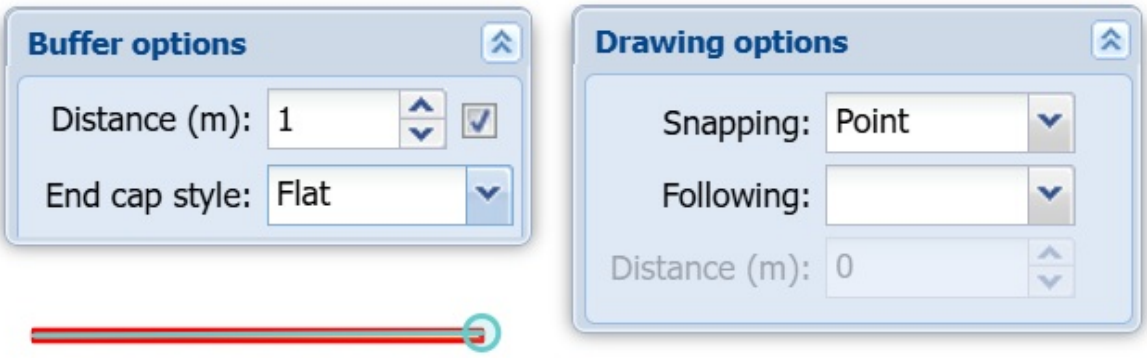


Adding a line buffer

1. In the drop-down menu for **Create** , select **Create line buffer**.
2. Specify the distance in meters, or deselect the checkbox next to the **Distance** field.

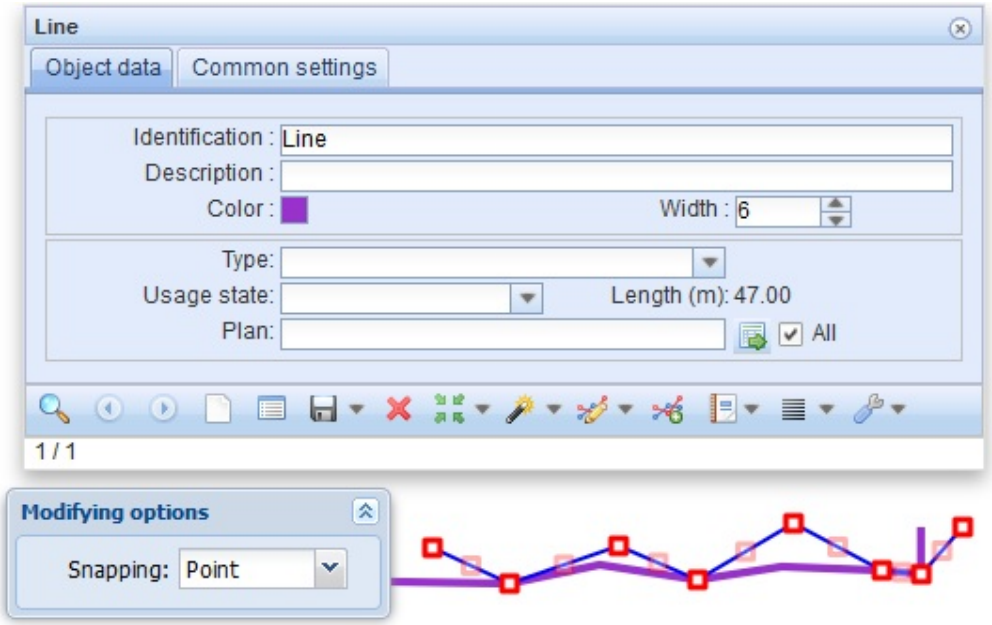
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3. Select the **End cap style** for the line's end points: round, flat, or square.
4. Draw the line on the map. If you cleared the checkbox for distance, define the distance by moving the mouse.



Adding a line

You can freely add lines of various thickness and color on the map, for example, for a print-out. This you can do with the **Line** button whose form buttons work the same way as on other forms (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 color or thickness of the lines you searched and picked** from the map. Click **Save** to apply the changes to the map. The **Lines** layer is activated in the **Layers** selection when the **Create** and **Pick** tools are used.



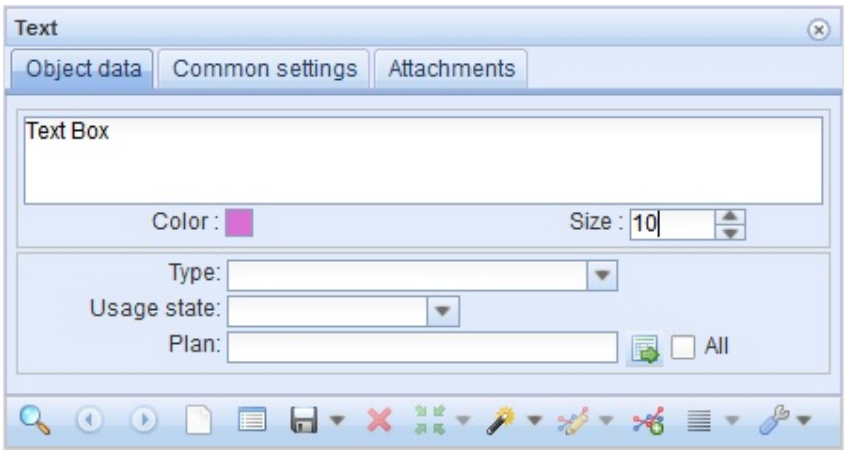
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If you want to create a new line, **first** select the **color and thickness**. To start the creation of a line, click **Create** . Then move your mouse pointer across the map and click the left mouse button at the appropriate location to create the **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** dialog is displayed. You can specify 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 free text to the map, open the appropriate form by clicking **Text** on the toolbar at the top of the map view. You can add text on the map, for example, for a print-out.

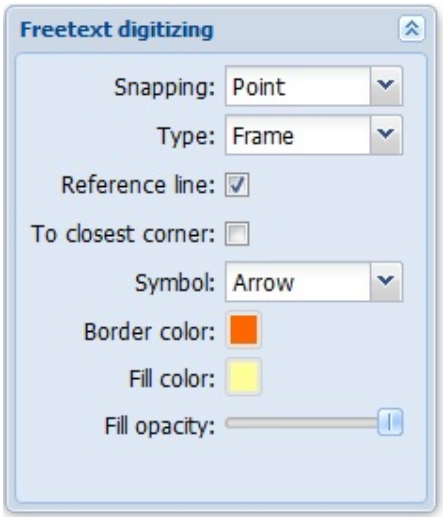


Select the **color and size of the text**. To place text on the map, click the **Create new** button, which opens the **Text drawing options** window, where you can specify the formatting of the text:

- **Snapping** – Either to a point object (**point**) or to the nearest object (**nearest**).
- **Type** – Produces text, a text box, or underlined text.

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- **Border color**, **Fill color**, and **Fill opacity** – Determine the appearance of the frame.
- **Other drawing options** will affect text with annotation lines. When you have configured the formatting options, you can place the text on the map by clicking the left mouse button at the desired location. You can change the location by dragging the text placement point. To finish adding text, click the **Save** button.





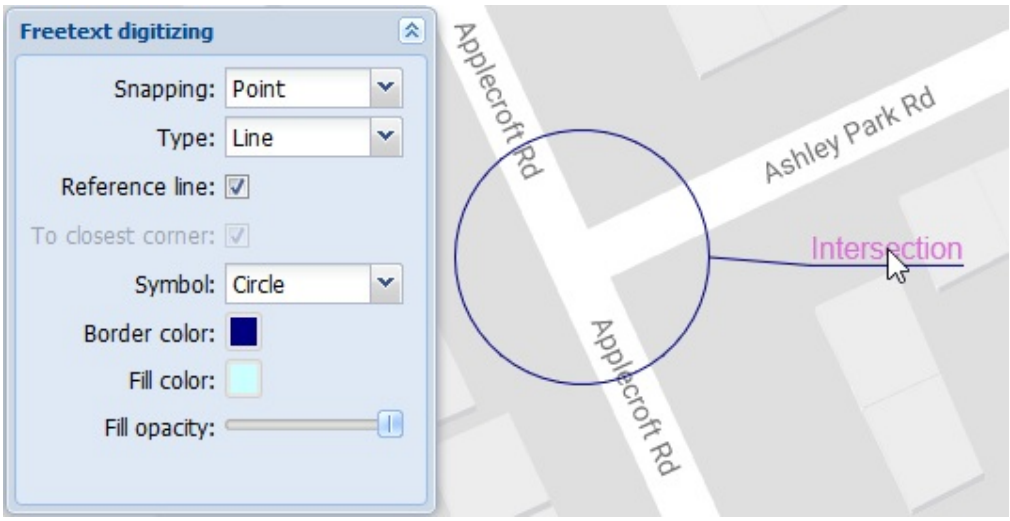
To search for text that has already been placed, enter the text you want to search for in the text field and click **Search** . You can edit searched texts or text you selected from the image in the text field and then save the changes by clicking **Save** . You can also delete or locate text retrieved to a form. To change the position of the text, click the **Edit** button, and then click the location of the text on the map. You can move the point to the desired location using the left mouse button. Click **Save** to save the change.

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

Adding text with an annotation line on the map

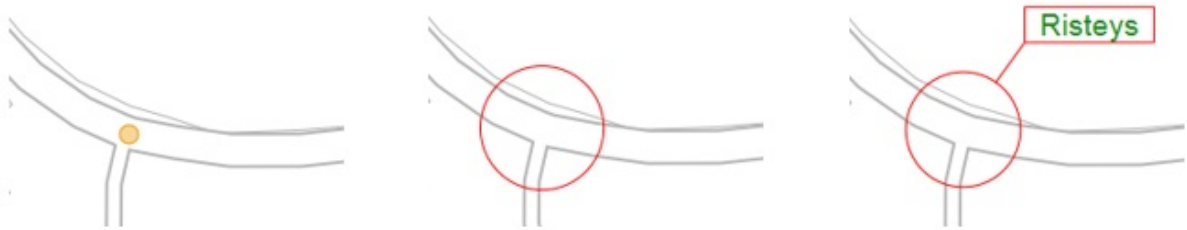
Adding text with an annotation line starts the same way as with regular text. In Drawing options, select either **Frame** or **Line** as the text type. In the **Symbol** menu, you can select an **Arrow** to be used at the end of the annotation line. When placing text, first select the annotation line target with the left mouse button and then mark the location of the text. The annotation line can be used to snap to objects while pressing **Shift**.

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Adding text with a circle reference line on the map

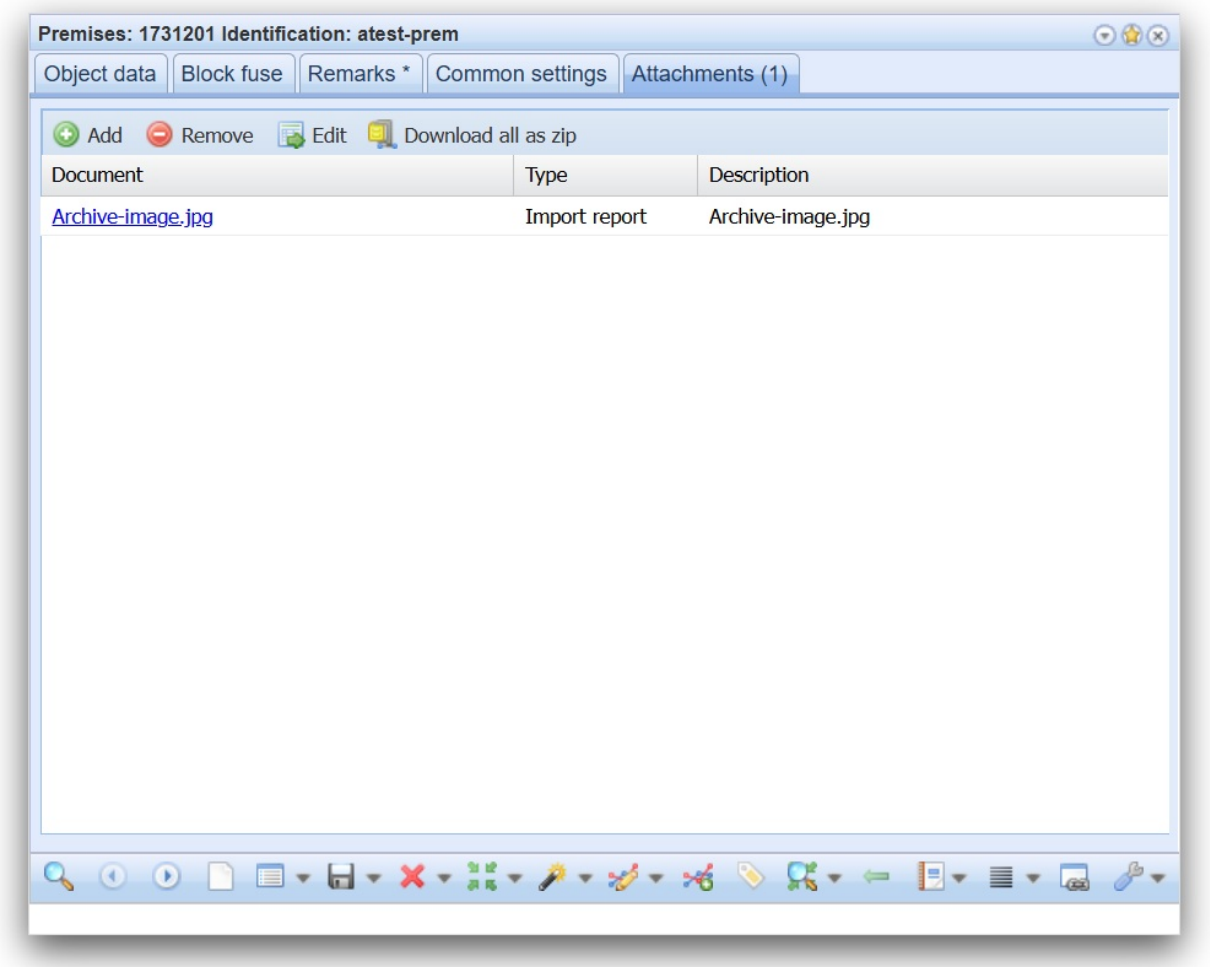
Text with a circle annotation is added in the same way as text with an annotation line. In **Drawing options**, select **Circle**. When placing an annotation, first click the mid-point of the circl with the left mouse button and then specify the radius by clicking the map. Finally, click the text location and save the text by clicking the **Save** button.



External documents

You can add **attachments** to almost every **KeyLight** object. Attachments can be added and viewed on the **Attachments** tab of the forms. The header 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.

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Adding an external document

To add a new attachment, click **Add** on the form, which will display the **External documents** form.

1. If you want to add a file, click **Browse**.
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 external document.

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To open an attached document, **click it** with the left mouse button. This opens a window in which you can choose whether to open the file or save it. If you want to save the file, a new window will open for you to specify the location for saving the file and the name of the file. The URL link will open on a new tab in your browser.

To download all attached files to your device, select **Download as zip** .

Viewing external documents

To select an attached file **for editing**, select it from the list with the left mouse button and then click **Modify** . By default, the information of the attachment will open on the **External documents** form. Alternatively, you can open the window by clicking **External documents** on the toolbar. Click **Save form** to save changes.

Deleting an external document

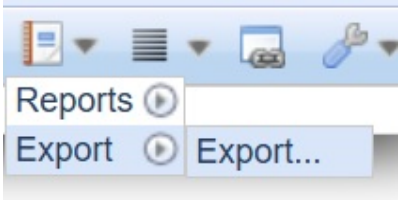
Click **Delete** to **delete** an attachment. If the document has been attached to an object, you will be asked to confirm the deletion.

Exporting objects to external file formats

KeyLight objects can be exported to **AutoCAD** (dwg, dxf) formats. You can also export **diagram objects**, **area objects,** and the **area borders of plans** to **AutoCAD** formats. (License customers can use this function if the application server is allowed to open connections.)

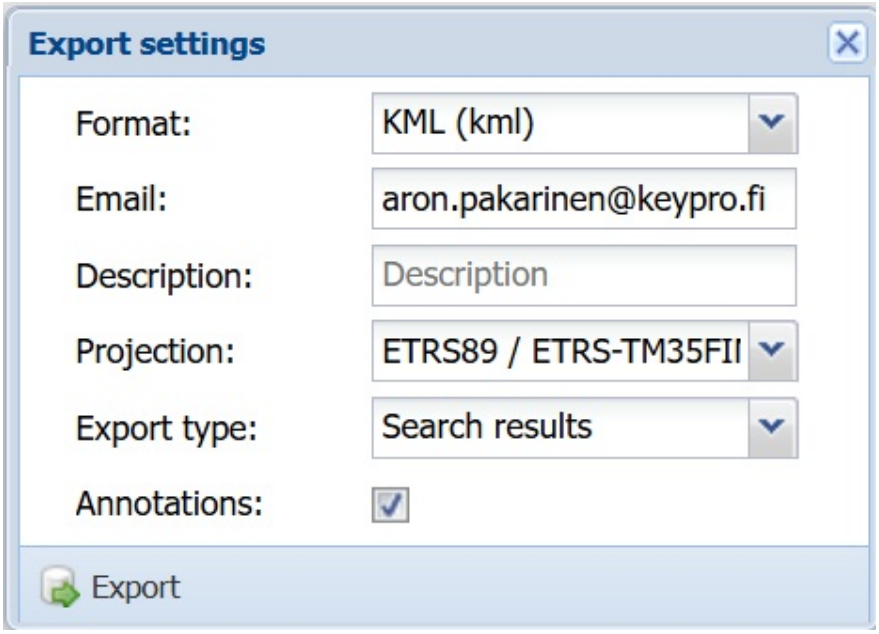
Use either the **Info** form or the **object forms** to export network and annotation data to an **AutoCAD** file. The link for downloading is sent to the user's email address.

To export the objects to another file format, click **Export settings** in the drop-down menu under the **Export** button.



1. On the **Export settings** form that appears, select the export **Format**. Specify the **email** to which the file will be sent.

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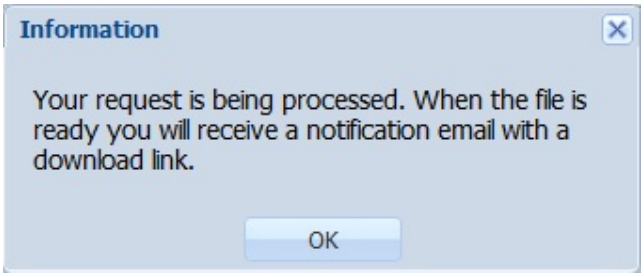


2. Enter a **Description** the object and select the required coordinate system for the file to be created.
3. Use the **Crop to border** option to include only items within the boundaries of a specific area.
4. Select whether **annotations** are exported.

Note! Email addresses are configured/linked to user IDs through the **Admin** user interface. If the intention is that a user does not have rights to use this function, the email address field must be left empty.

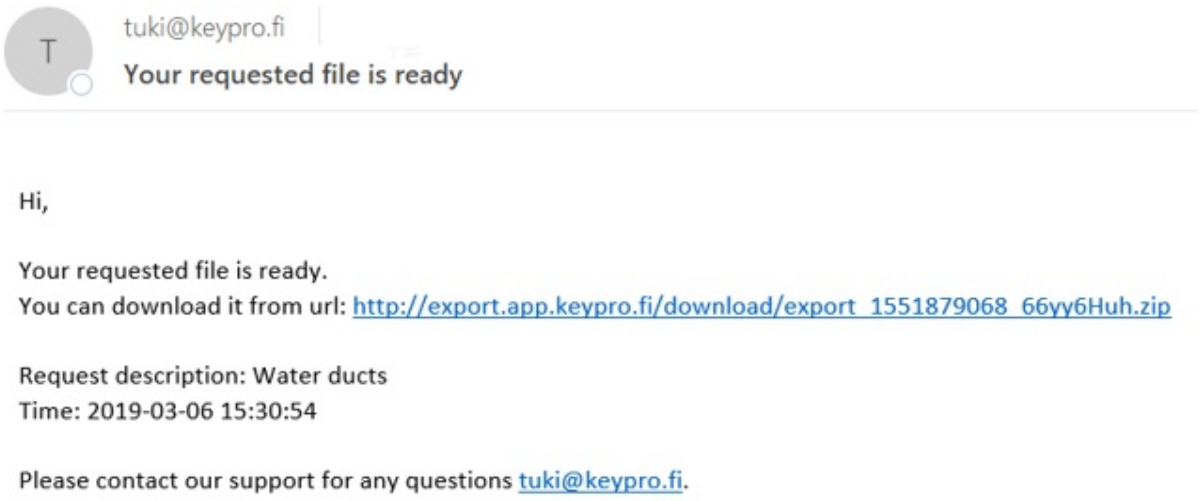
Admin users can edit the email address to which the link for downloading data is sent.

1. Click **Export** to **accept the data export.** The system displays a notification that your request is being processed.



When the file has been processed, the system will email the user a link for downloading the file.

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Access area

The **Access area** tool exists in the **KeyLight admin** view. For instructions on the tool, see the **KeyLight setup guide**.

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GLOSSARY

B measure

The B measure indicates the horizontal location of a duct in a conduit as measured from its left side.

Digitizing

Objects are created in electronic format by digitizing them, meaning location information is created on a computer screen.

Geometry

The geometry data of an object means the coordinate points and information on the geometric shape (point, line, area, or a group of such shapes).

H measure

The H measure indicates a duct's vertical location in a conduit, as measured from the ground level. In other words, the H measure is a negative figure.

Search criterion

A search criterion is an attribute value that is entered on a form or selected in a menu and then used for searching for a specific object type in the database. There can be one search criterion (for example, an address) or several (for example, a cable made of specific material that is installed in a specific year).

Cross-section illustration

On the Conduit form, the location of ducts and cables in a conduit is illustrated in a cross-section illustration.

Map object

Objects that can be located on the map, such as premises, splices, poles, free areas, exchange/telecom areas, annotations, and free-form text.

Field

Reserved space on forms for entering property values, such as year or the name of the party making the entry.

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Centering the map

When an object is located on the map, it is used as the map center. The map is also zoomed in to the object.

Object layer

Objects on the map view are presented on various layers. For example, conduits and cables are on their own layers, as are items such as addresses, land survey objects, and annotations. Object layers can be activated and deactivated as required.

Coordinate

Coordinates indicate an object's location on the earth or in a map coordinate system. Map coordinates are coordinate values, and in a projected coordinate system they are specified as X and Y values, meaning the northing and easting. The Z coordinate indicates elevation information.

Zooming out

Changing the map view so that it covers a larger area. In other words, zooming out changes the map scale so that it is smaller, and the map objects are, therefore, displayed in a smaller size.

Form

Network objects are created, viewed, and edited on forms. Forms are used for creating an object on the map and for adding property values to the object. There is a separate form for each network object, and objects are managed using these object-specific forms.

Form button

At the bottom of each form, there are buttons for managing the object, and the functions of these buttons are similar on all forms. The buttons can be used, for example, to locate an object, update object data or geometry, and delete an object from the database.

Zooming in

Changing the map view so that it covers a smaller area. In other words, zooming out changes the map scale so that it is greater, and the map objects are, therefore, displayed in a smaller size.

Scale

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Scale indicates the proportion of the object representation's size to the actual object. Maps are scaled when the objects are too small or large to be presented life-size.

Default values

Default values are an object's property values that have been defined in the system. They are pre-completed on a form, or they can be restored to a form from the system. Default values specified in the system can include, for example, the most common property values for an object. Default values for various forms can be set in the Admin interface.

Property value

Property values provide information on an object's properties, such as what the object is or what it is like. The property values of objects can be edited on forms. For example, information on an object's construction year or address can be added.

PDF document

PDF documents can be created for the various events. The documents are opened in a new browser window. These documents can be saved or printed using the browser's printing tools. PDF documents saved on a workstation can be viewed using a program such as Adobe Acrobat Reader.

Point object

A point object refers to an object called a **Point object**, or it can mean network objects whose location is indicated with one coordinate point. Examples of such objects are poles, splices, and photos.

Location information

Location information refers to information on a geographical location defined based on coordinates, address, or other location data (such as an area name). The location of objects can be indicated in various ways. For example, an object may have been created on the map, in addition to which its address has been defined.

Database

A database is a collection of data. Data has been organised so that it can easily be managed and the required information can be found quickly. The data in a database has been organized in a specific logical way, in order to make data retrieval as efficient as possible.

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Identifier

Each network object is assigned a unique identifier. Even though objects may have identical property values, they can be identified based on their identifier.

Type

Network objects are managed on object-specific forms, such as the form for splices or the form for conduits. More detailed type information can be added to each object's property values. For example, the type of pole can be configured as street light, traffic light, or streetlight pole.

Menu

Reserved space on forms for selecting property values based on pre-defined options. Examples of such information include location accuracy and material.

Line object

Network objects whose location is defined using at least two coordinate points are line objects. Cables are one example of such objects.

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