FiberQ
User Guide

A short technical manual for designing fiber optic networks in QGIS

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Website: fiberq.net
Repository: github.com/vukovicvl/fiberq

Document control

Version	Date	Changes	Author
1.0	29 Dec 2025	Initial template	Vladimir Vuković
2.0	31 Dec 2025	Table of Contents added	JG

Audience and scope

This guide is for telecom engineers and GIS users who want a practical walkthrough of FiberQ in QGIS.

Contents

1. Overview

FiberQ is a QGIS plugin for designing, analyzing, and documenting fiber optic networks (FTTH / GPON and similar).

What's new in this release (FiberQ v1.0.0)

- Create a new FiberQ project in QGIS and set up standardized layers for fiber network design.
- Place key network elements on the map (poles, manholes, closures, ODF/TB/OTB, patch panels) with consistent attributes.
- Trace routes and lay aerial/underground cables between elements, including slack/reserve handling and cable parameter metadata.
- Generate project outputs: export selected or all features to **GeoPackage**, **KML/KMZ**, or **GPX**, and create a **BOM report** (XLSX/CSV).
- Track and manage supporting data: link drawings/photos to elements, record fiber-break distances, and create service area polygons.
- Publish the project to a shared **PostGIS + Preview Map** workflow (MapProxy / PHP / pgAdmin4 / Docker), enabling multiple users to review the same up-to-date network documentation.

2. Key capabilities

- Create a project and manage network layers (routes, poles, manholes, cables, elements).
- Place network elements and maintain attributes consistently.
- Preview the designed network on a complete map view.

- Export or publish layers (e.g., to PostGIS) for collaboration and reporting.
- Attach and open external drawings (DWG/PDF) linked to features (if applicable).

3. Requirements

Minimal requirements

- **QGIS:** 3.34+ (recommended: latest QGIS LTR)
- Operating system: Windows / macOS / Linux
- **Permissions:** Ability to install QGIS plugins and write to the project folder (for exports/reports)

Recommended setup

- **QGIS:** Latest LTR + up-to-date Processing and GDAL tools
- **Project CRS:** A local projected CRS in meters (for correct length calculations)

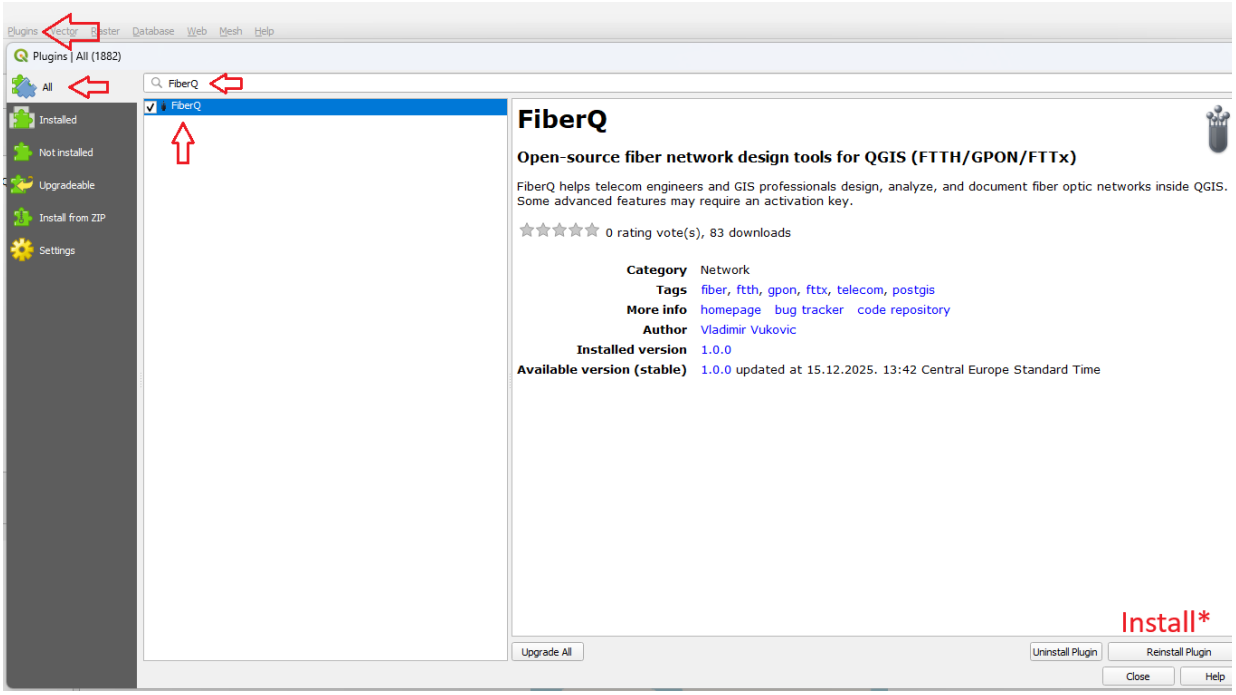
  - **Optional (Publishing / Preview Map):**
  - **PostgreSQL + PostGIS** database connection (to publish layers)
  - **pgAdmin4** for database administration
  - **Docker** for running the Preview Map stack
  - **MapProxy + PHP** backend (used by the Preview Map workflow)

4. Installation

Installation (QGIS Plugin Repository)

Step	Action
1	Open QGIS → Plugins → Manage and Install Plugins
2	Search for: FiberQ
3	Click Install

After installation, you can access FiberQ from the QGIS toolbar/menu (depending on your QGIS layout).



5. Core concepts

Use short definitions. This reduces confusion later.

Term	Meaning
Project	The folder/database context where FiberQ stores layers and settings.
Element	A network object placed on the map (e.g., pole, manhole, cabinet).
Route	The primary geometry representing the fiber path between elements (aerial or underground).
Cable segment	A portion of cable between two elements along a route.
Preview Map	A consolidated map view showing the designed network as final layers.
Publishing	Writing layers to a shared database (e.g., PostGIS) for teams and reporting.

6.1 Typical workflows

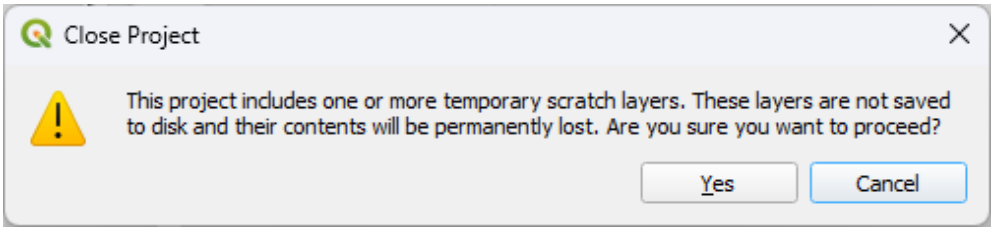
Organize by tasks users actually do. Each workflow should have: goal → steps → output layers.

- Place an element
- Lay route between placed elements
- Lay cable selecting two elements
- Edit or change elements attributes
- Publish elements in Preview Map layers

7.1 Create a new project

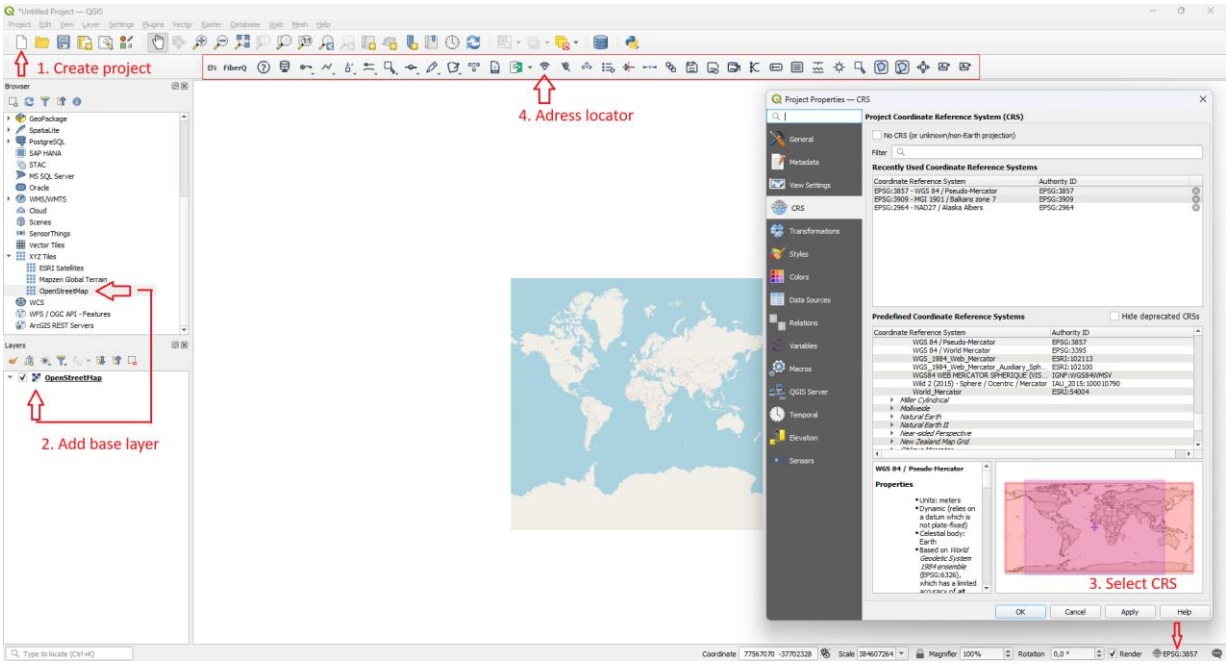
Goal: set up a clean workspace with all required layers and defaults.

- Open FiberQ toolbar/menu.
- Click <New Project> (or equivalent).
- Add base layer to Layers panel
- Select CRS and project storage location
- Confirm layers were created and are visible in the Layers panel.
- Save temp layers in .gpkg file by clicking on toolbar button (or turn on auto save button on toolbar)



Tips:

Always save temp layers in .gpkg file, if you do not save them you will get an error from above.

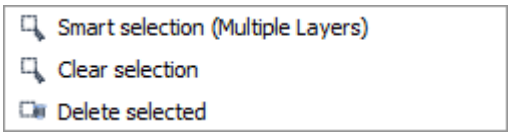


7.1.1 Units

All measurements in the plugin are currently handled in meters (m) and millimeters (mm). Support for additional units (e.g., miles and inches) may be added in a future release.

7.1.2 Select elements

Selection button (FiberQ button)

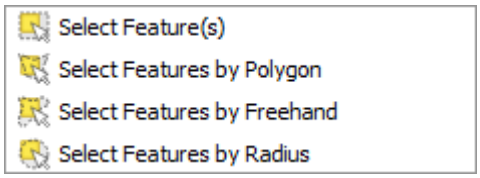


Click the **Selection** button in the FiberQ toolbar to open a drop-down list of options for faster feature selection directly on the map (cables, routes, poles, manholes, network elements, etc.).

Use **Smart Selection (Multiple Layers)** to quickly select features across multiple layers, **Clear Selection** to remove the current selection, and **Delete Selected** to delete the selected features from the layer after selecting them.

Note: You can also select features using the built-in QGIS tool **Select Feature(s)**. Some FiberQ toolbar actions require selection made specifically with **QGIS Select Feature(s)** (Smart Selection is not supported

for those tools). This requirement is clearly mentioned in the relevant tool descriptions below (for example: **Link/Unlink picture**).



7.1.3 Layer management

In the **Layers** panel you can manually **drag and drop created layers** to change their drawing order (layers higher in the list are displayed on top of layers below). This helps control what is visible on the map when multiple features overlap.

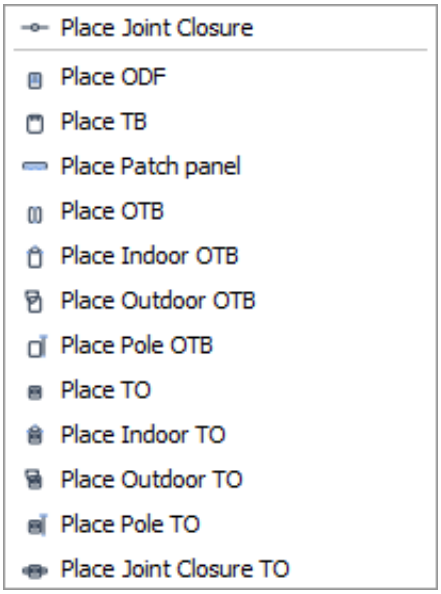
You can also **toggle layers on/off** to show or hide specific elements (cables, routes, poles, manholes, etc.). This is especially useful when several features are located on the same point or along the same line, making it easier to select and edit the correct feature.

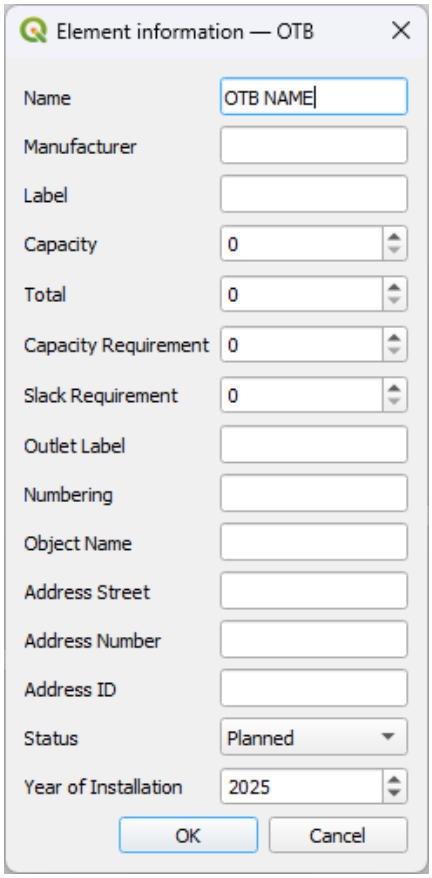
7.2 Place elements on the map from the toolbar

Place network elements on the map (joint closures, cabinets, poles, manholes, pipes, cables, slack loops, etc.) while keeping all attribute data consistent and standardized across layers.

Tips:
To cancel the command, right-click the mouse or press the Esc key. If a dedicated cancel button/function hasn't been added yet, it will be included in the next version. Until then, you can stop the command by switching to the QGIS 'Select Feature(s)' tool.

Placing elements (drop-down selection):



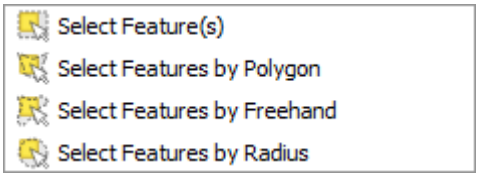


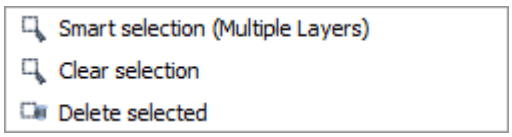
To place any element on the map. Click on the button from the toolbar, click on the map where you want to place an element. Input in new dialog element information. Confirm on the button OK. Now element is placed on the map and the layer is created.

7.2.1 Place and edit elements from the toolbar

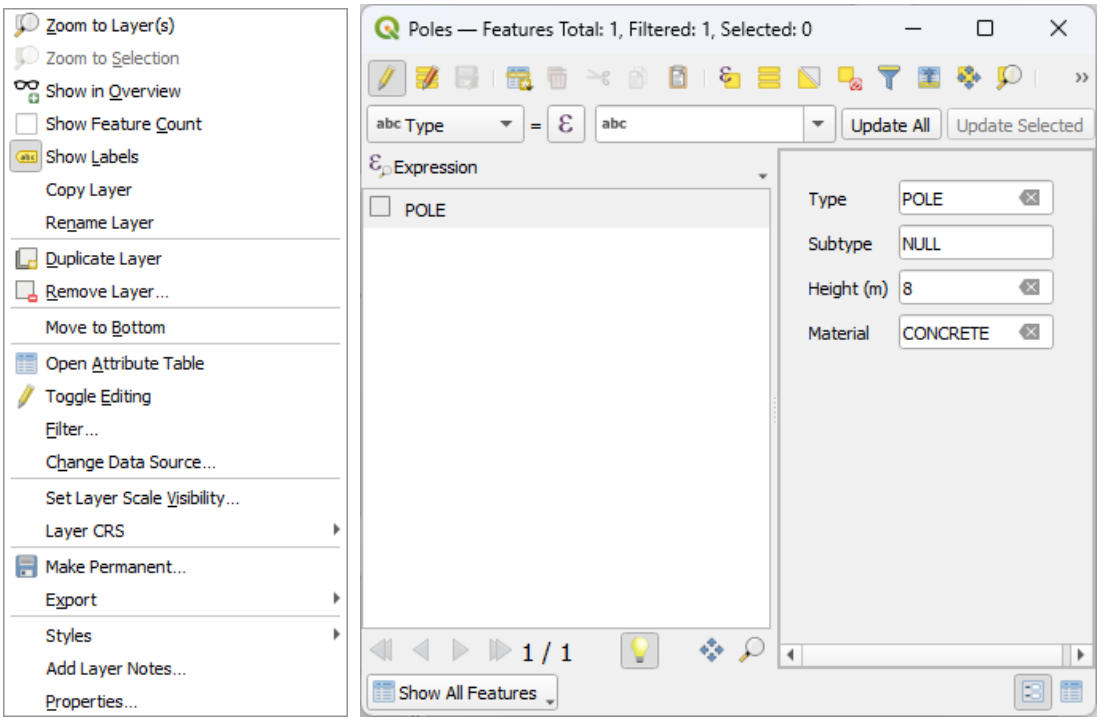
Editing elements

All elements (Poles, Manholes, Objects, Routes, Cables, etc..) from the toolbar placed on the map can be edited in the Layers panel by selecting the element using the QGIS 'Select Feature(s)' tool or the 'Selection' tool from the toolbar. Then, right-click the corresponding layer and open the Attribute Table to edit the element's attributes or delete the element from the layer.





You can use "Toggle Editing" tool to edit elements in attribute table. Also to delete some element from the layer.



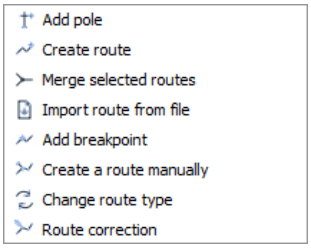
7.3 Laying route on the map (drop-down selection)

You can create a route by selecting the required elements and clicking the ‘Create Route’ button. Alternatively, click ‘Create a Route Manually’ to start tracing a route from the first point of the selected element. Snapping will be enabled automatically to center the route precisely on the element. From there, you can continue tracing manually across the map and/or by snapping to other elements.

Other options for Import route from file, Merge selected routes, etc. will be shown in the next steps.

Tips:

Apply the same principle for route tracing for any element from the toolbar (manholes, poles, joint closures, etc.).



After placing elements on the map (Placing Elements, Add Pole, Ducting), you need to draw/define the route to each element. There are two ways to do this:

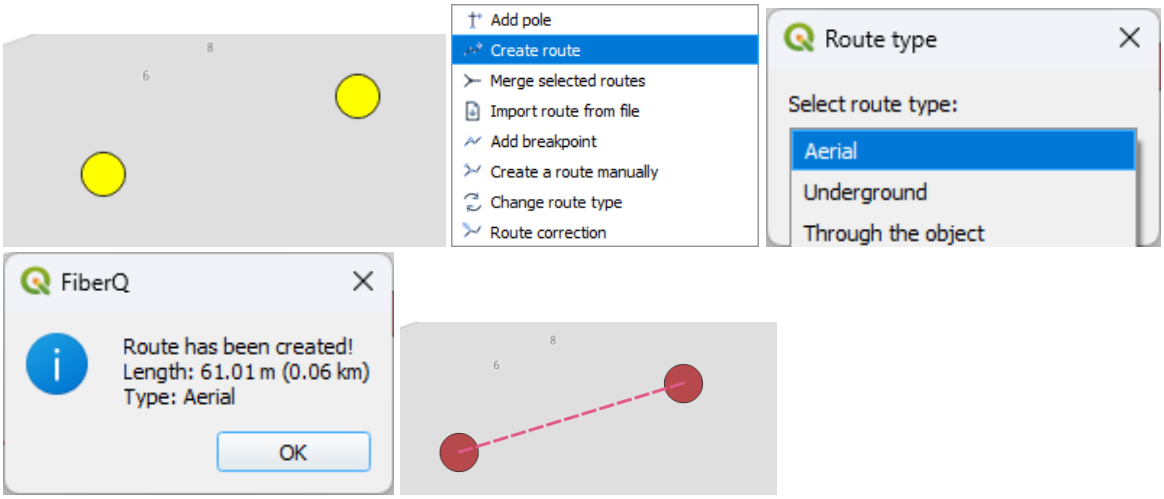
1. With button “Create route”
2. With button “Create a route manually”

Create route

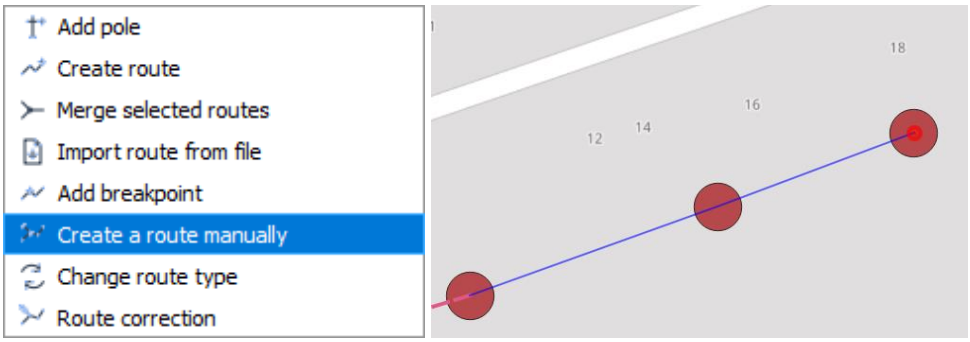
Select two or more elements with built in option from QGIS - Select feature(s) or use Smart selection (multiple layers) button.

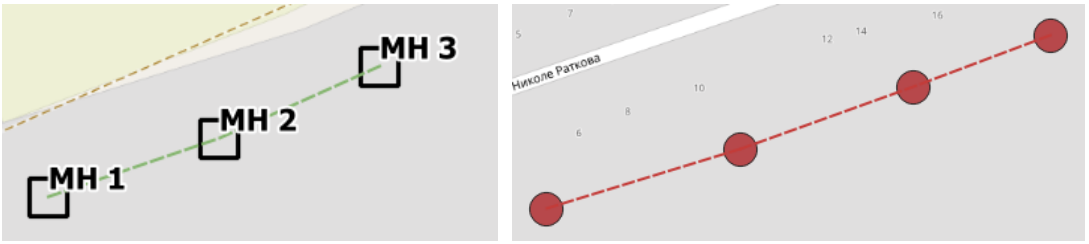
This option to lay route only works with Poles and Manholes. For laying route between elements (OTB, TB, etc.. use other button “Create a route manually”).

Also, you can use “Create a route manually” to lay route between poles or manholes.

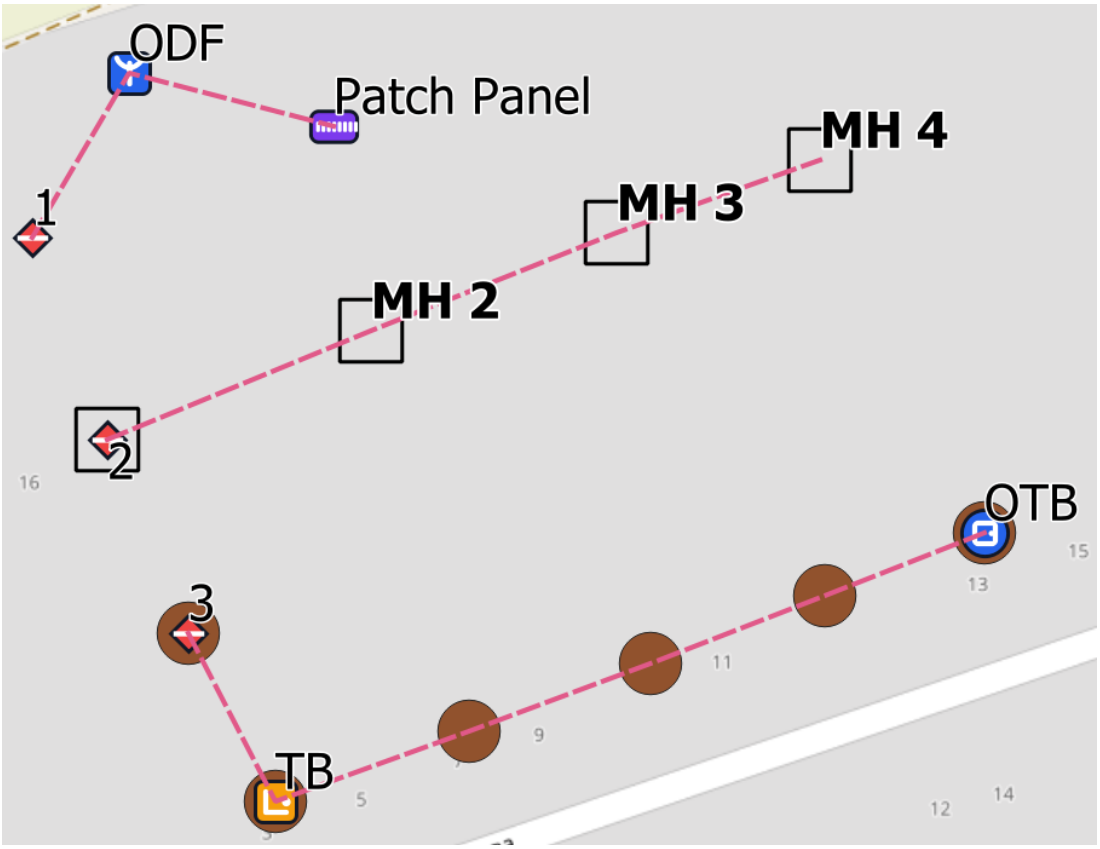


Create a route manually



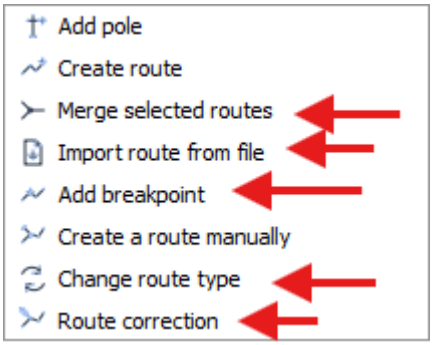


Example of placed elements and the route between elements:



7.3.1 Routing (additional tools)

Below are the Routing drop-down options that are not covered above and how each one works.



Merge selected routes

Use this to combine multiple route segments into a single route feature.

Process

1. Select the **Route** layer in the Layers panel.
2. Select **two or more route segments** on the map (QGIS **Select Feature(s)** or FiberQ Selection tools).
3. Click **Routing → Merge selected routes**.
4. The plugin merges the selected segments into **one route** (with updated geometry and length).
5. **Save edits** (floppy disk icon).

Note: The segments should be connected/end-to-end for a clean merge.

Import route from file

Use this to bring an existing route geometry into your project (for example from a survey or another GIS source).

Process

1. Click **Routing → Import route from file**.
2. Select the file format (typically supported GIS formats like **KML/KMZ, SHP, GeoPackage**, etc.).
3. Choose the source file and the route feature(s) to import.
4. The plugin creates a route in the **Route** layer (or adds to it, depending on your setup).
5. Verify the imported geometry and **save edits**.

Important: This option is intended for **line/polyline** route geometry.

Add breakpoint

Adds a “break point” along an existing route (useful for splitting/marking a route at a specific location).

Process

1. Activate **Routing → Add breakpoint**.

2. Click on the **route line** at the location where you want to insert a breakpoint.
3. The breakpoint is stored/marked for the route and can be used in workflows where route segmentation or event points are needed.
4. **Save edits** if the route is modified.

Change route type

Changes the route's classification (for example, switching between different route categories used by the project).

Process

1. Select the route feature(s) you want to update.
2. Click **Routing → Change route type**.
3. Choose the new route type in the dialog and confirm.
4. The route's attributes/style update accordingly.
5. **Save edits**.

Route correction

Checks and fixes common routing errors—mainly whether route endpoints are correctly connected (snapped) to valid end elements.

Process

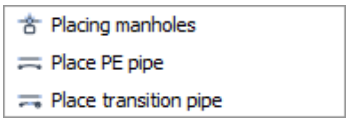
1. Click **Routing → Route correction**.
2. If an issue is found (e.g., *end of route is not on a pole/manhole*), a correction dialog appears.
3. Use:
    - **Select on map** to zoom/highlight the problematic route, and
    - **Correct** to fix the endpoint connection.
4. Repeat until no errors remain, then **save edits**.

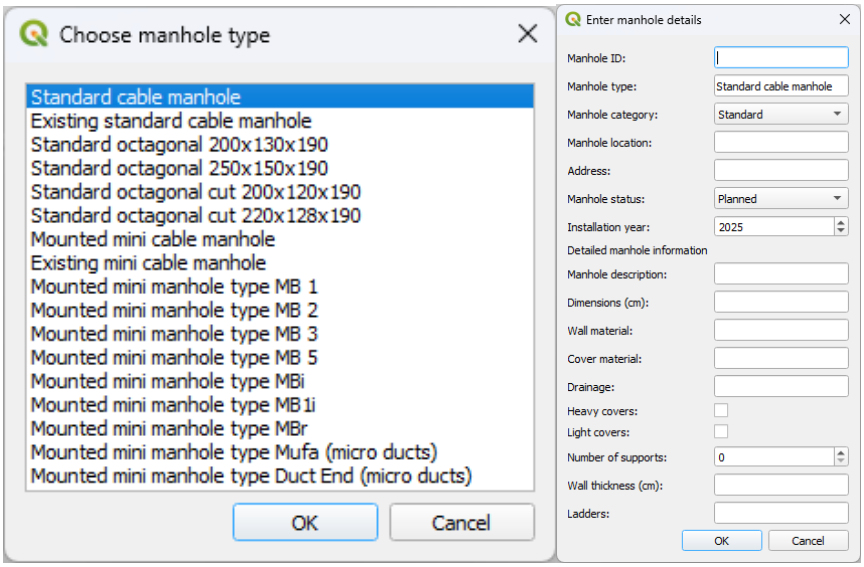
This tool is especially useful before exporting, publishing, or generating reports to ensure topology is consistent.

7.4 Placing manholes and pipes (drop-down selection)

Apply the same principle as for the Placing elements

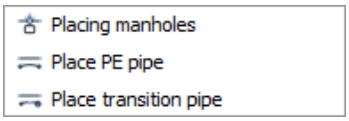
Placing manholes:

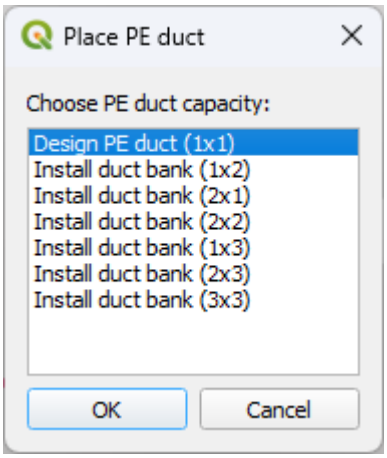




Placing PE pipe:

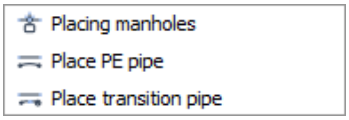
Laying PE pipe from point A to B is working the same as laying route

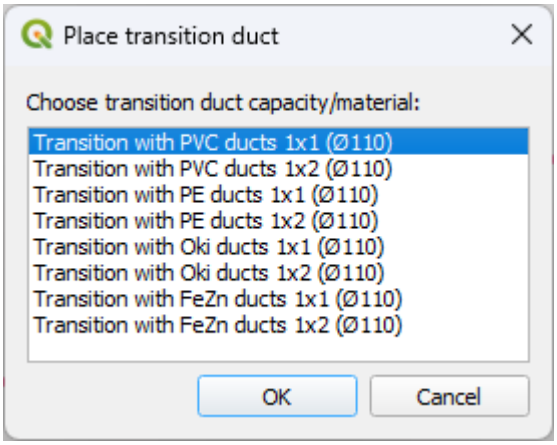




Placing transition pipe:

Laying transition pipe from point A to B is working the same as laying route





7.5 Cable laying

After placing elements on the map (JOINT CLOSURES, OTB, TB, PATCH PANEL, etc.), the next step is to lay a cable connecting one element to another.

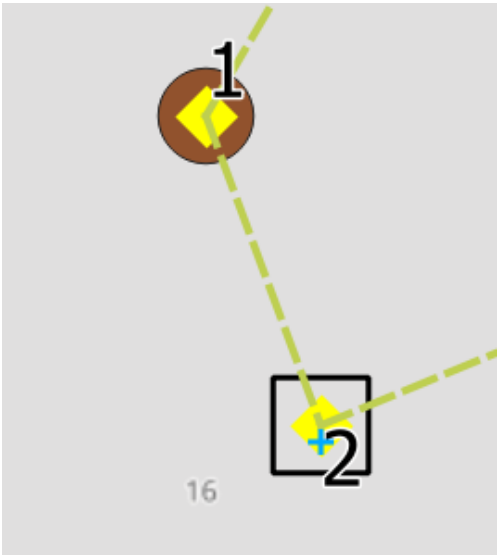
How to lay a cable

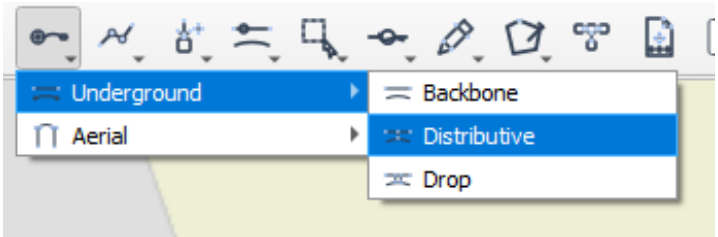
1. **Select two elements** on the map using **Selection → Smart Selection (Multiple Layers)** from the plugin toolbar, or the built-in QGIS tool **Select Feature(s)**.
2. In the plugin toolbar, click **Cable Laying** (drop-down list), then choose:
    - **Underground** or **Aerial**
    - the cable type: **Backbone (Feeder)**, **Distribution**, or **Drop**

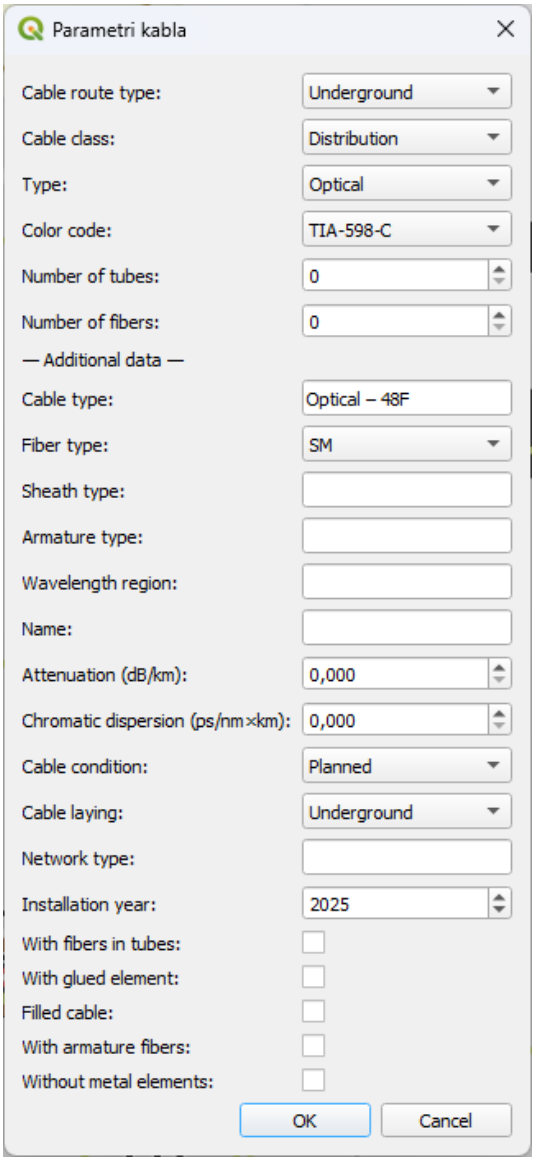
When to use each cable type

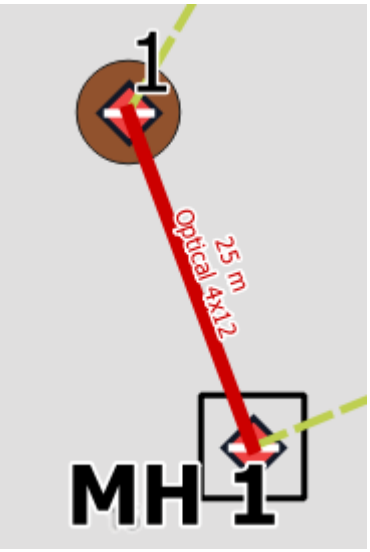
- **Feeder (Backbone):** Used for main transport links—typically from the central office/POP/OLT site to main cabinets, hubs, or primary joint closures. These are higher-capacity trunks that feed the rest of the network.
- **Distribution:** Used to branch out from the backbone to serve neighborhoods/areas—typically from cabinets/hubs/joint closures toward smaller closures and access points closer to end users.
- **Drop:** Used for the final connection to the customer—typically from the nearest access point/joint closure/terminal box to the subscriber premises (home/building).

This workflow ensures cables are properly classified by role (backbone → distribution → drop) and correctly stored in the appropriate layers for documentation and analysis.









After you select **two elements** on the map and choose the cable laying option (route type + cable class), FiberQ opens the **Cable Parameters** dialog. In this dialog you enter and confirm all metadata for the new cable segment—such as **route type** (Underground/Aerial), **cable class** (Backbone/Distribution/Drop), **fiber type** (e.g., SM), **color code standard**, **number of tubes and fibers**, and additional technical fields (attenuation, dispersion, installation year, condition, etc.).

When you click **OK**, the cable is created with the entered attributes and saved to the corresponding cable layer.

7.6 Placing terminal or mid-span slack (optical cable reserves)

Note (Known Issue – Slack Length Calculation):

There is currently a bug in the slack/reserve calculation. When a slack is added, the plugin increases the cable length by more than the actual slack value.

Example: if a cable is **25 m** long and you add **one slack of 20 m**, the total length should become **45 m**. However, due to the bug, the plugin may display **55 m** (both in the Attribute Table and on the map label), meaning an extra **10 m** is incorrectly added.

This issue will be fixed in the next release.

To place an optical slack (reserve) on a cable, follow these steps:

1. From the slack tool drop-down list, select the desired option: **Terminal**, **Mid-span**, or **Auto-generate**.
2. **Auto-generate slacks:**
   Select the cable on the map (make sure the cable layer is active), then click the cable feature to apply the slack.
3. **Terminal** and **Mid-span** slacks:
   You do **not** need to pre-select the cable on the map. The plugin will automatically detect the cable where the slack is being placed.

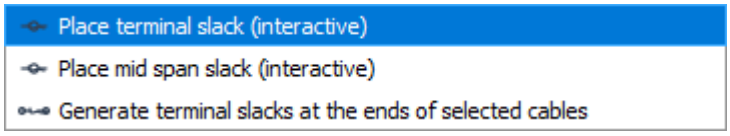
Deleting a slack (Important)

To delete a slack correctly and ensure the cable length is updated:

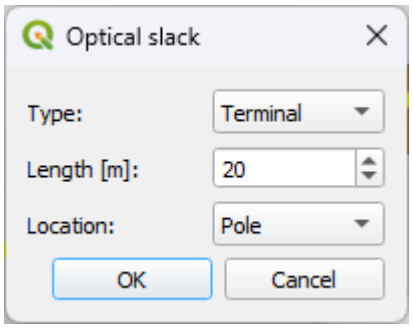
1. Select the **Optical slacks** layer.
2. Select the slack feature using the QGIS **Select Feature(s)** tool.
3. Use **Delete selected** from the toolbar.

This is the only recommended way to remove slacks, because it will correctly reduce the total cable length.
If you delete slacks manually from the map in another way, or remove the entire **Optical slacks** layer, the cable length will remain increased as if the slacks were still present.

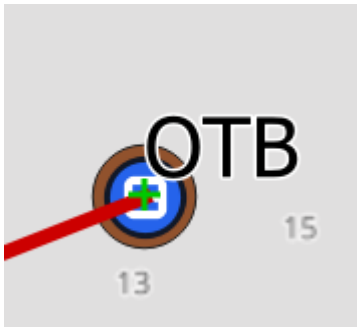
Placing terminal slack (at the end of the cable)



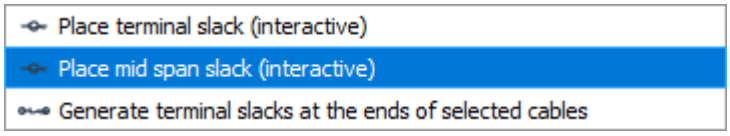
By default length is defined to be 20 meters. And location is set to Auto. You can change that by clicking on the drop down selection and confirm by pressing the button OK.

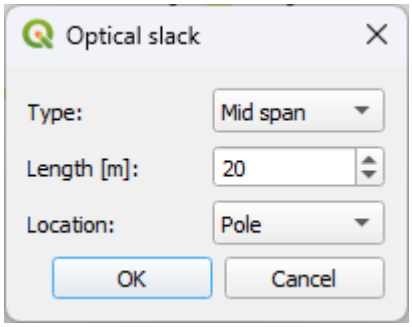


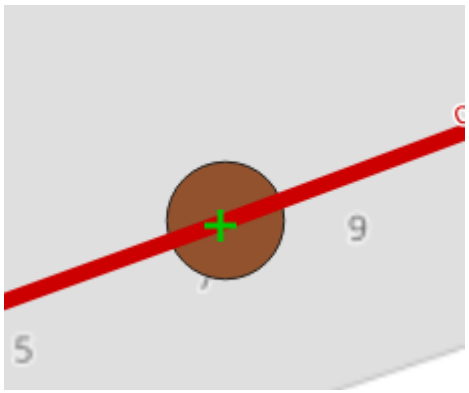
Click with mouse at the end of the cable, and the terminal slack will be placed and the total length of the cable will be added in the attribute table and also on the label on the map.

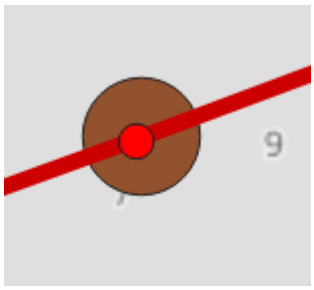


Placing mid-span slack (in the middle of the cable route)

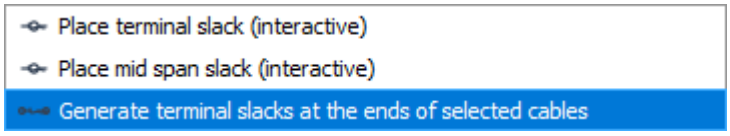


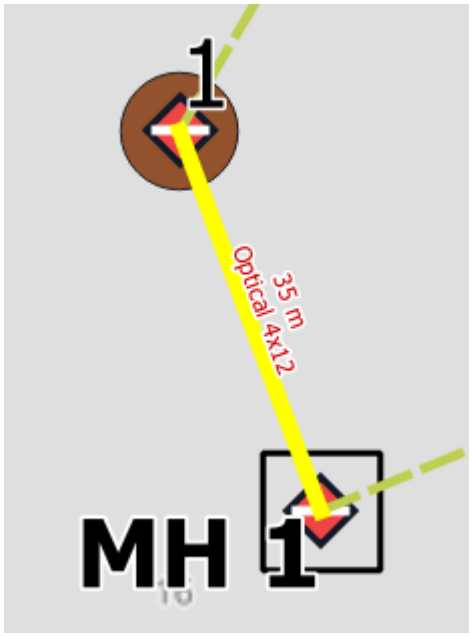


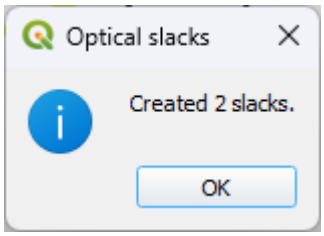


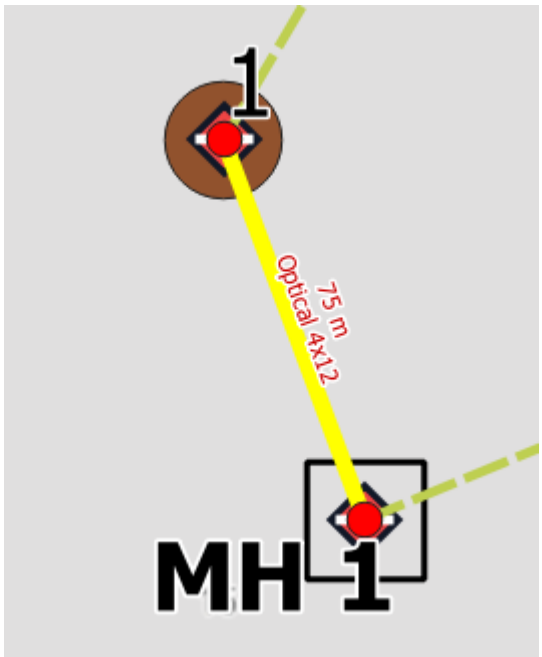


Placing auto end slacks at the ends of the selected cables

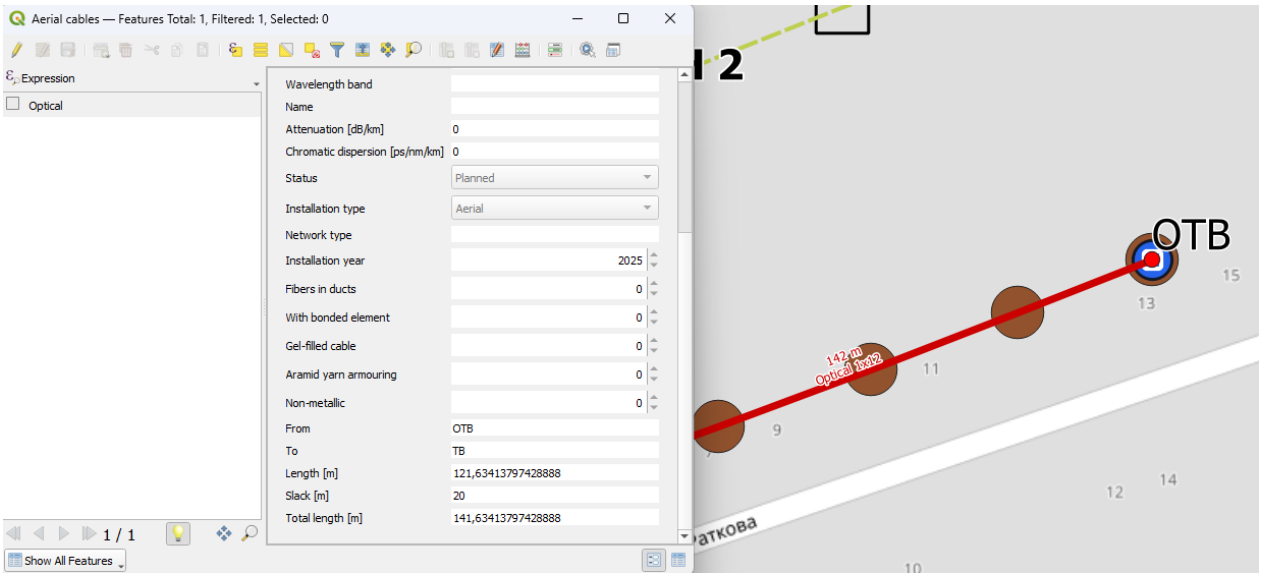








You can edit or change details about cables clicking on the layer name. Right click on the mouse – Attribute table. Select the cable. Click on the pencil symbol to change or delete.



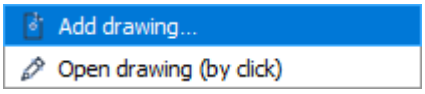
7.8 Attach DWG drawing to any element on the map

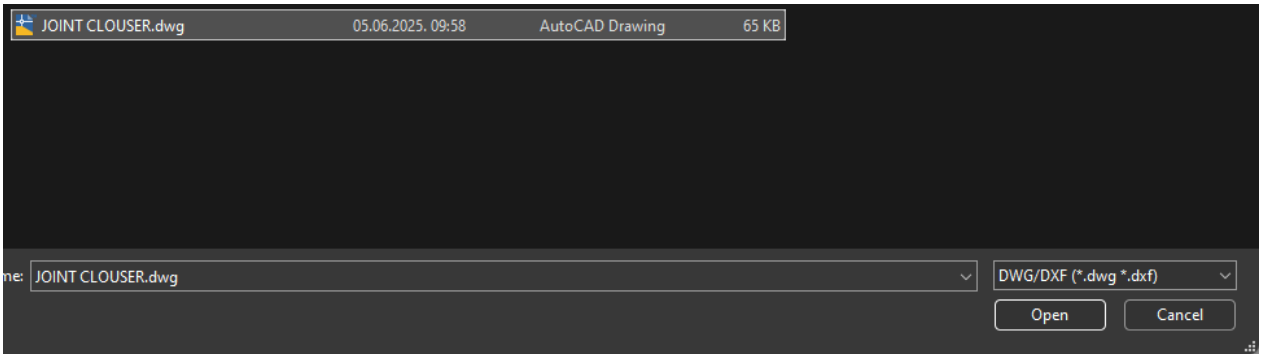
Drawings (DWG links)
To attach a DWG drawing link, first **select the element on the map using QGIS Select feature(s) option** that you want to link the drawing to.

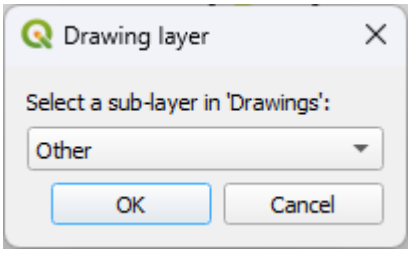
Then click **Add drawing…**. The plugin will create a **Drawings** layer and you can choose which element/group the drawing should be linked to.

To open an attached drawing, click **Open drawing (by click)** and then click the element on the map to open the linked DWG file.

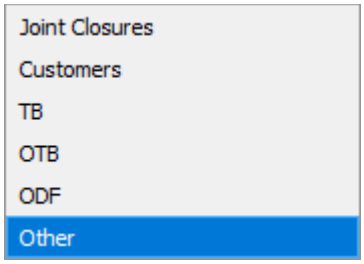
To remove drawing links, delete the **Drawings** layer from the **Layers** panel (this removes the stored drawing links).

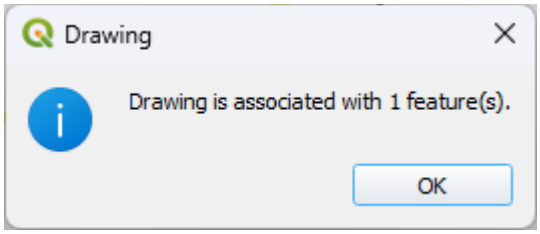


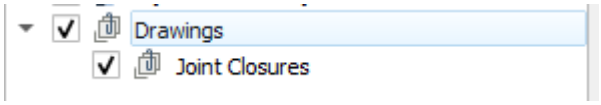




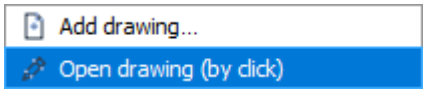
The list of created layers will be displayed in drop down selection.

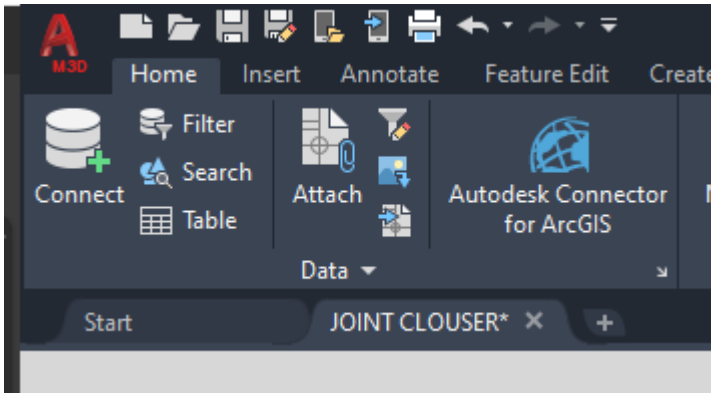




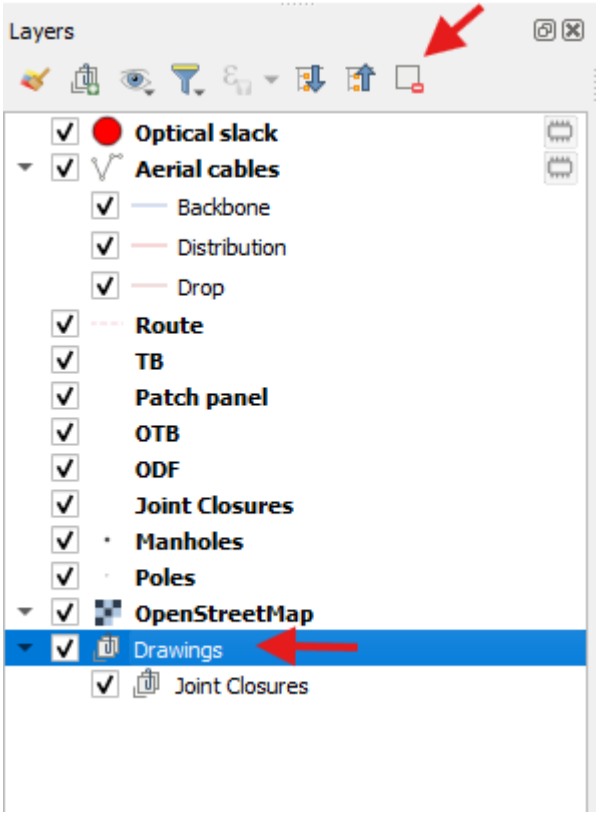


Then click on the button “Open drawing (by click)” from the drop down list, then click on the element on the map where you linked the drawing and the AutoCad will open.

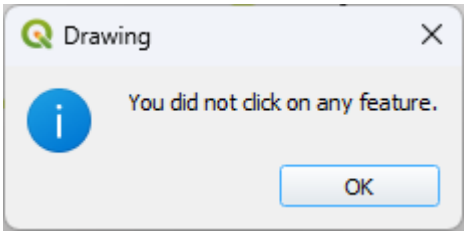




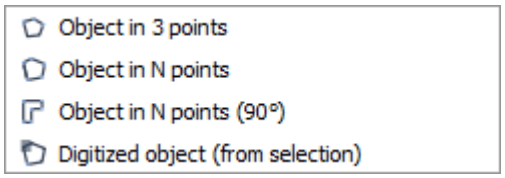
To delete linked drawing, select the layer Drawings from the Layers panel then click to remove selected layer



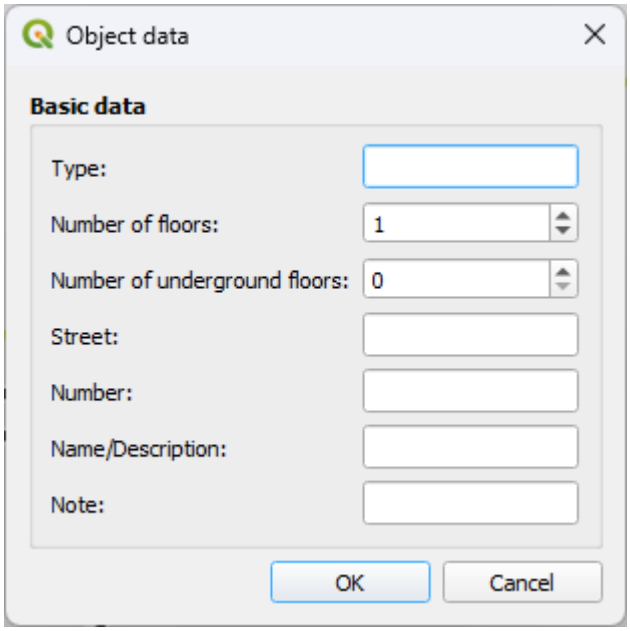
And when you try again by clicking on the button “Open drawing (by click)” and then click on the element on the map you will get the info:



7.9 Objects (Polygon tool)



The **Object** tool lets you create a polygon object on the map (building, house, residential complex, business center, shopping mall, etc.). After drawing the object, an **Object data** dialog opens where you can enter basic information (type, number of floors, address details, description, notes). These values are saved to the Attribute Table in the automatically created **Objects** layer in the Layers panel.



Object in 3 points

Use **Object in 3 points** by clicking **three independent points** on the map to define the polygon. Then **right-click** to finish and open the data dialog, confirm the values, and the object will be created.

Object in N points / Object in N points (90°)

These options work the same way, but you can define the polygon with **any number of points (N)**. The **90°** mode is useful for rectangular/right-angle shapes (typical building footprints). Finish with **right-click** to enter the object data and save it.

Digitized object (from selection)

Use **Digitized object (from selection)** when you already have a drawn polygon on the map. First, create or select the existing polygon, then click **Digitized object (from selection)** to open the **Object data** dialog and store the entered attributes in the **Objects** layer.

8.0 Optical schematic view

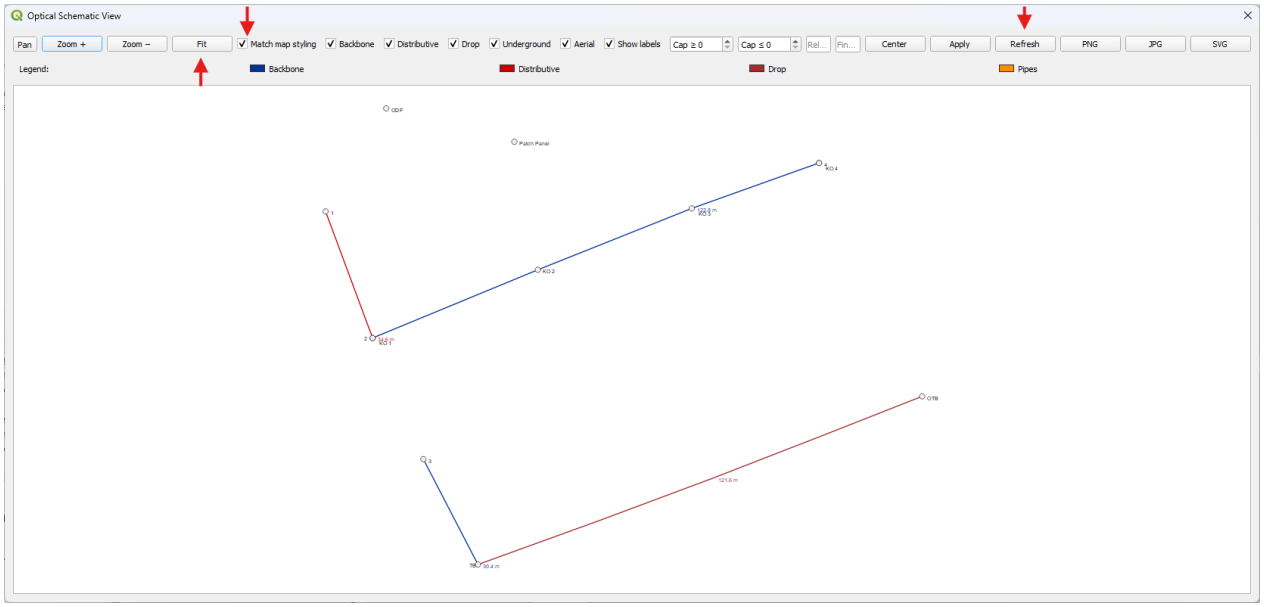
The **Optical Schematic View** generates a simplified, topological diagram of your fiber network based on the elements and cables in the project. Instead of showing the real geographic position, it visualizes the **connectivity** (which element is connected to which) and displays cables by class and laying type. This view is useful for quick verification, reporting, and exporting clean schematic graphics.

- **Nodes (circles)** represent network elements (e.g., ODF, Patch Panel, OTB, closures, etc.).
- **Lines** represent cables between elements. Cable colors follow the legend (e.g., Backbone / Distribution / Drop).
- **Labels** (optional) can show element names/IDs and cable lengths.

Controls and filters

- **Pan / Zoom / Fit**: navigate and fit the schematic to the window.
- **Match map style**: applies map styling rules (where applicable) for consistent appearance.
- **Backbone / Distributive / Drop**: show/hide cable classes.
- **Underground / Aerial**: show/hide cable laying types.
- **Show labels**: toggle labels for easier identification.
- **Layout tools (Relax / Finalize / Center / Apply / Refresh)**: improve spacing and readability of the schematic and re-generate the layout after changes.

Export
You can export the current schematic as **PNG**, **JPG**, or **SVG** for documentation, reports, and presentations.

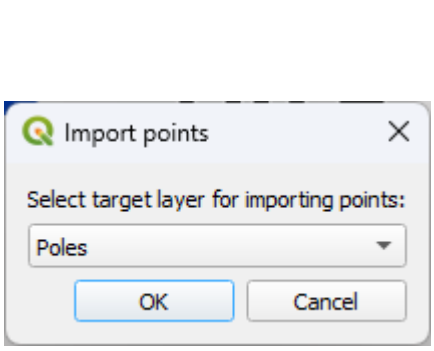


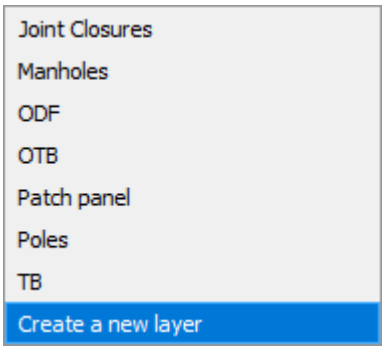
8.1 Import points

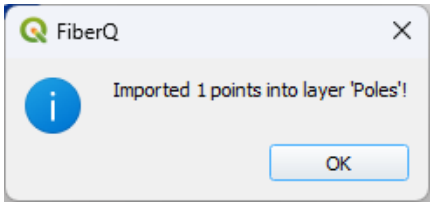
The **Import Points** tool allows you to import point data from external files (e.g., **KML/KMZ, SHP**, and similar GIS formats) and convert them into FiberQ point features.

- You can either **create a new layer** in the Layers panel from the imported points, **or**
- **append the imported points into an existing FiberQ layer** that you already created in the project (for example **Poles** or **Manholes**). In this case, the plugin automatically adds the features to the selected layer and applies the correct **symbol/style** to match that layer.

Important note: this tool works only with **point features**. If you select or import **lines/polylines**, the conversion will not work in QGIS and the plugin will not be able to convert them using this option.

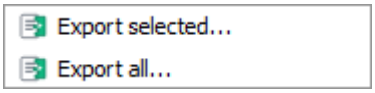






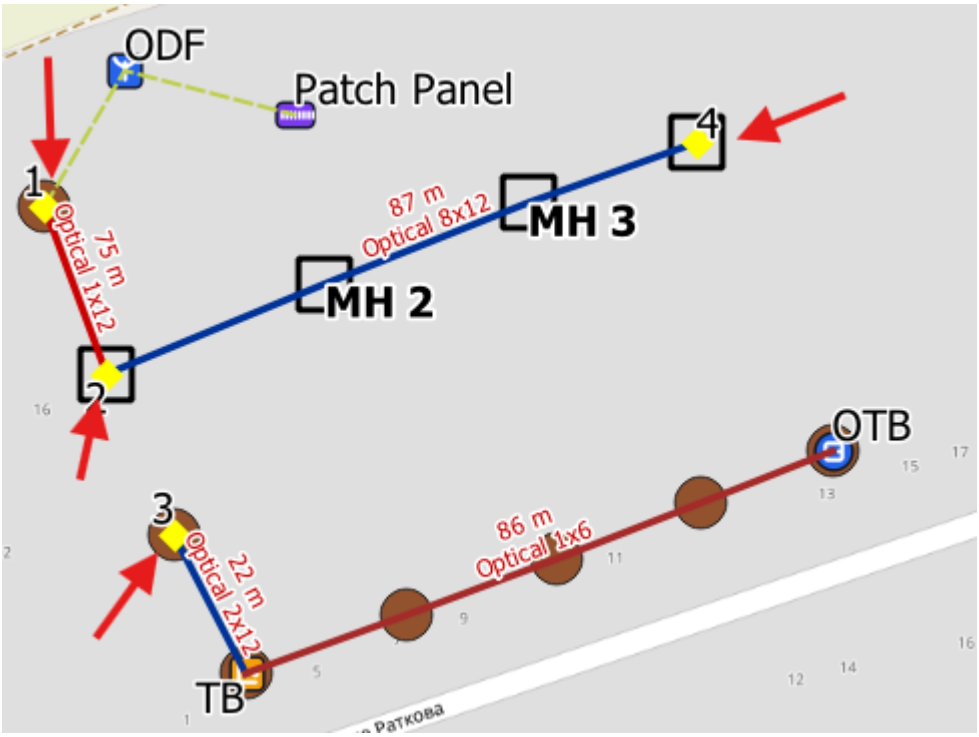
8.2 Export (Selected / All)

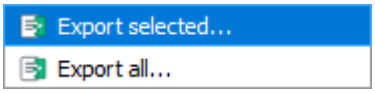
FiberQ allows you to export features from your layers to common formats such as **GeoPackage (*.gpkg)**, **KML/KMZ (*.kml / *.kmz)**, and **GPX (*.gpx)**.

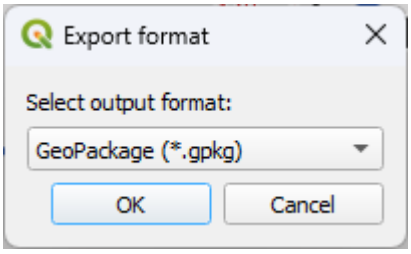


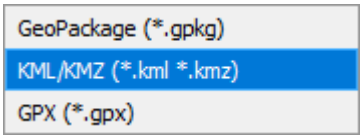
Export selected…

1. In the **Layers** panel, click to make the target **layer active**.
2. Select the required features on the map (they will appear **highlighted in yellow**).
3. Click **Export selected…**
4. Choose the output format (GeoPackage / KML-KMZ / GPX), click **OK**, and save the file.







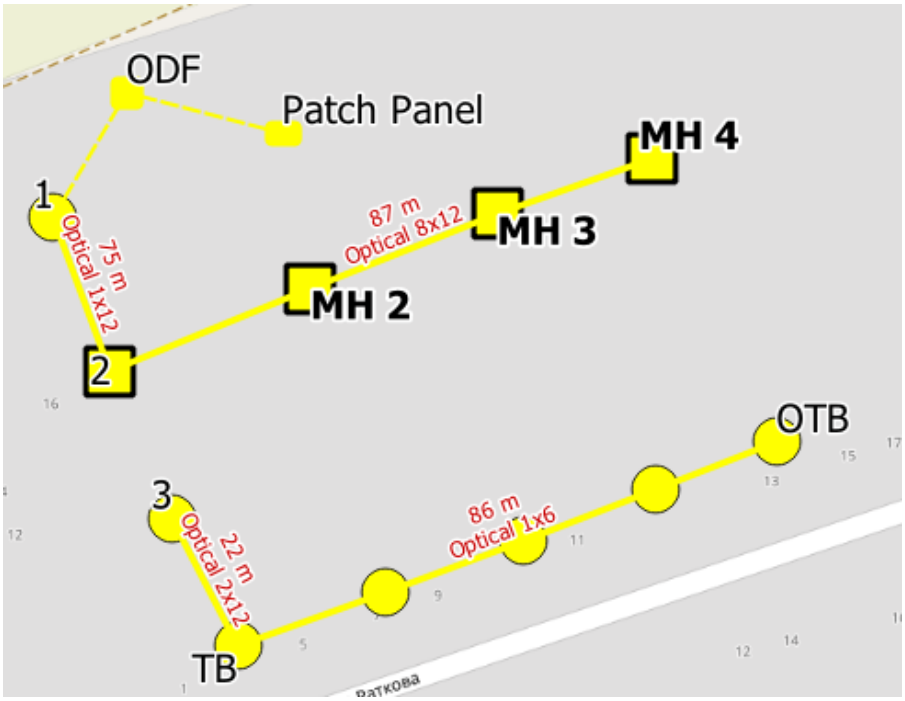


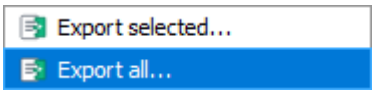
Export all…

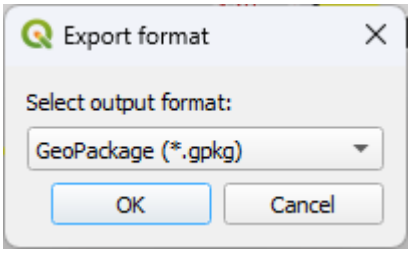
If you want to export everything from the project (from multiple layers):

1. Select each layer in the **Layers** panel one by one and select the features you want from that layer, until you see all required features highlighted in yellow on the map.
2. Click **Export all…**
3. Choose the output format and save the export file.

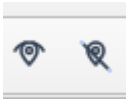
This workflow ensures that exports include exactly the features you selected—either from a single active layer (**Export selected…**) or from all selected features across layers (**Export all…**).





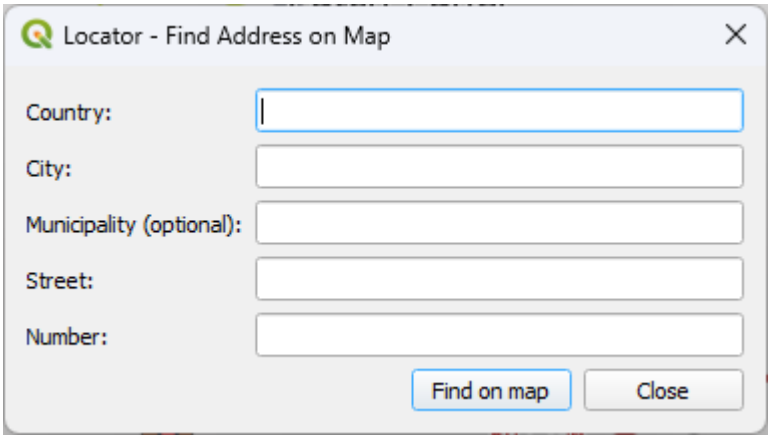


8.3 Address Locator (Find Address on Map)



The **Locator** tool helps you quickly find a location on the map without manually zooming and panning.

- Click the **Locator** button to open the **"Find Address on Map"** dialog.
- Enter the address details (Country, City, Municipality *optional*, Street, Number).
- Click **Find on map**. The map will automatically zoom to the location and place a **red cross (+)** marker at the found address.



Hide Locator

After you finish using the locator, click **Hide locator** to remove the red cross marker from the map.

8.4 Relations (Optical relations management)

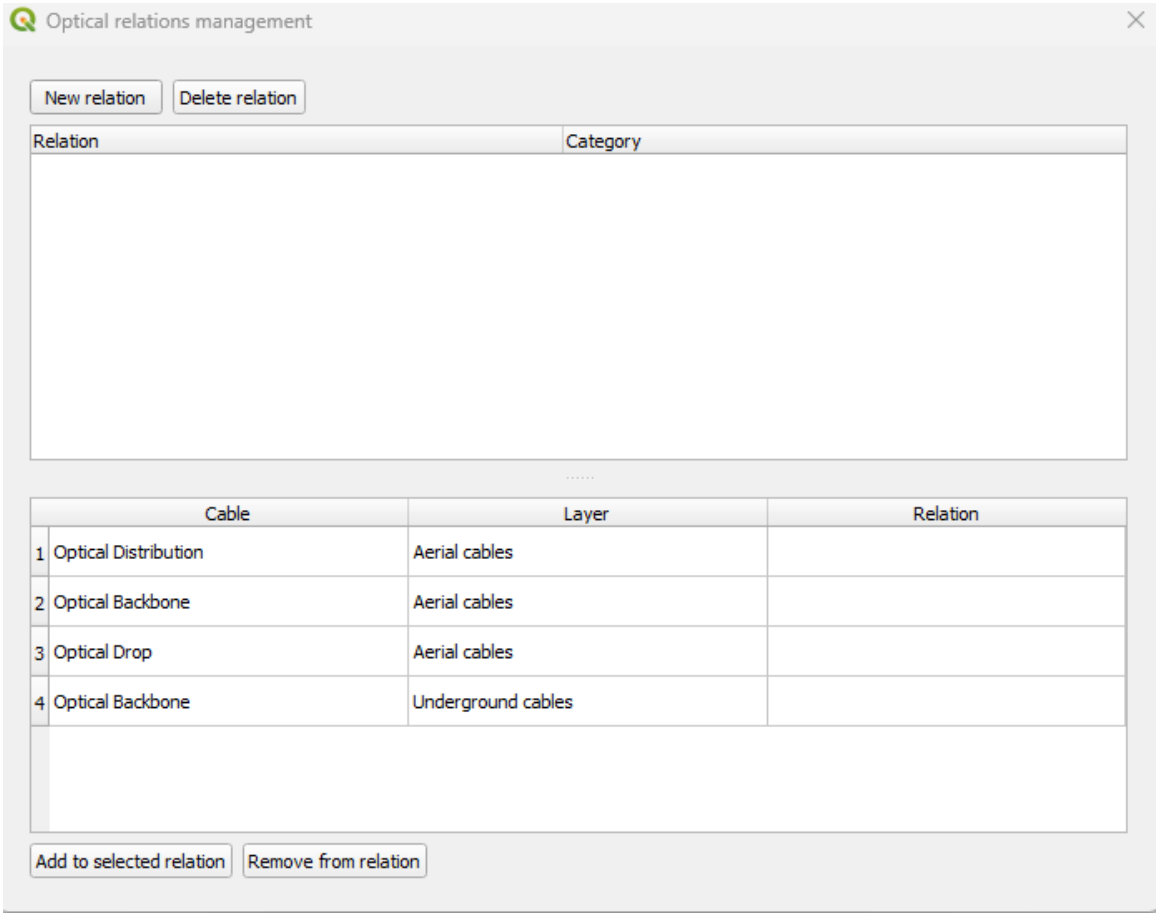
The **Relations** tool lets you define and manage custom relation names that can be assigned to your cables (e.g., “Feeder ring”, “Zone A”, “Cabinet-to-OTB”, etc.). This helps you logically group and track connections across the network.

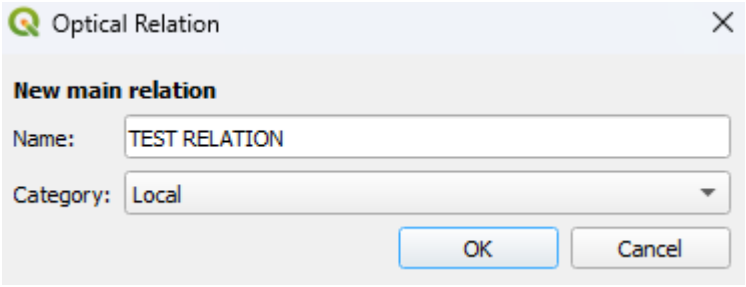
When you click **Relations** in the toolbar, the **Optical relations management** dialog opens, where you can:

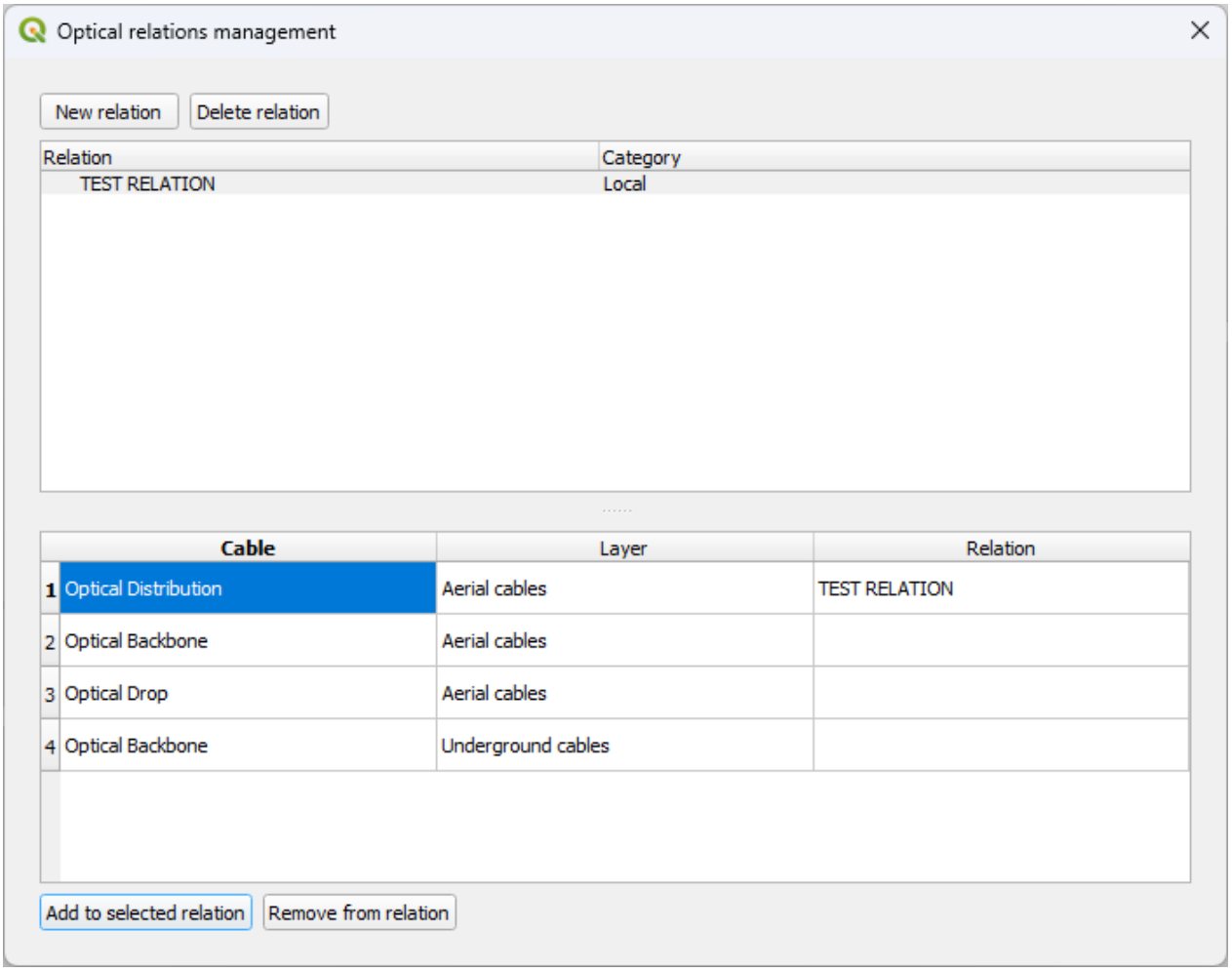
- **Create a new relation** (click **New relation**) and define its name/category.

- **Assign a relation to cables**: select the target cable(s) in the project and click **Add to selected relation** to link them to that relation.
- **Remove a relation from a cable** using **Remove from relation**.
- **Delete existing relations** (click **Delete relation**) if they are no longer needed.

This functionality becomes especially important in upcoming versions, where FiberQ will introduce **fiber/core linking inside elements** and **automatic optical schematics / fiber-occupancy diagrams**, which will rely on clear relation/group definitions.







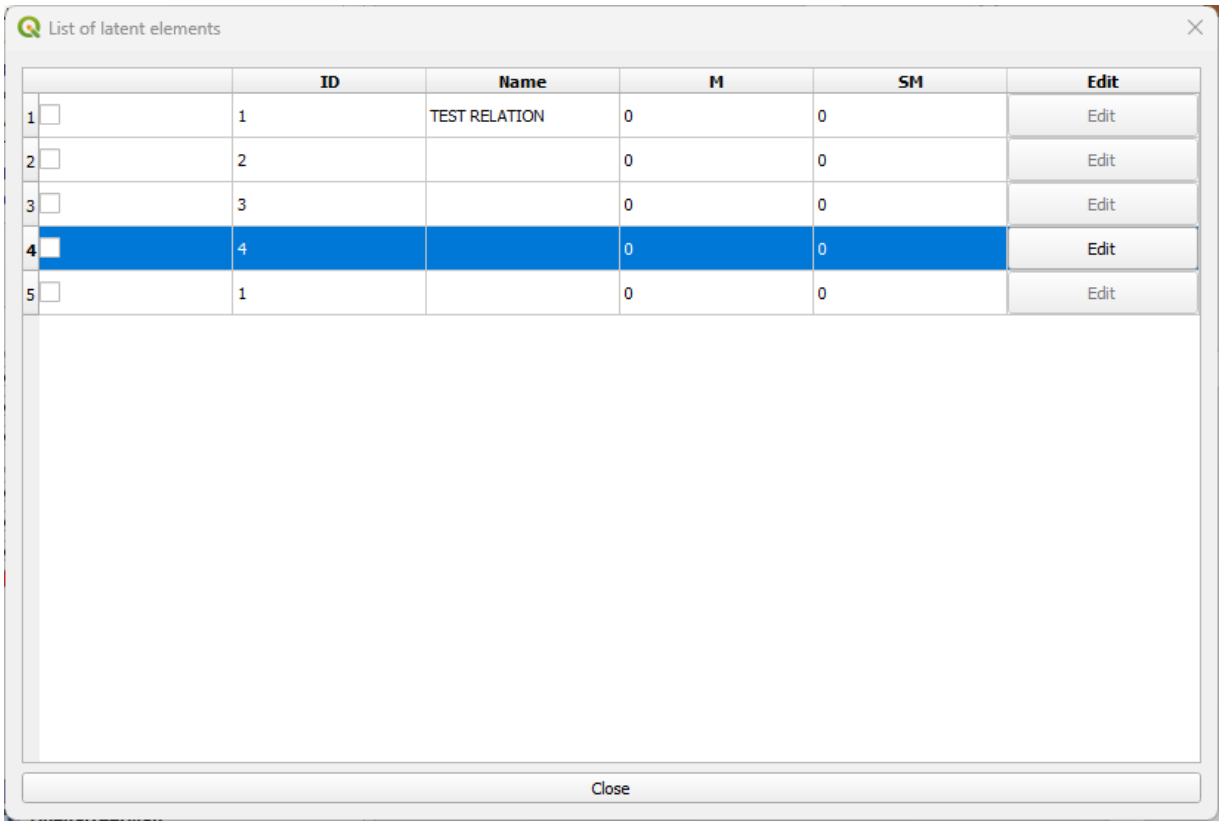
8.5 Latent Elements (Cable passes through vs. bypasses)

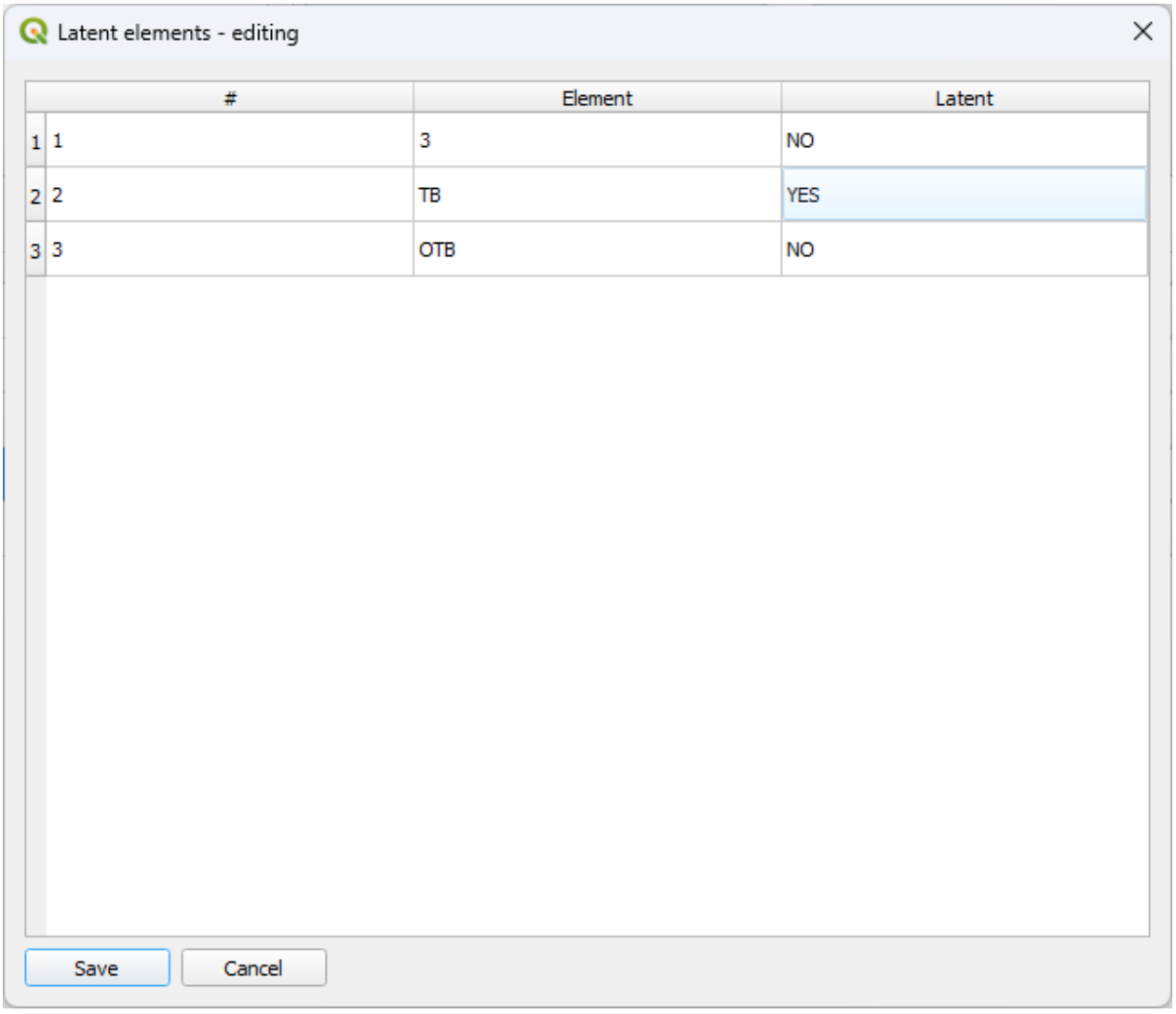
When a cable is routed through multiple elements (for example **A → B → C → D**), FiberQ can store whether the cable actually **passes through** the intermediate elements (**B** and **C**) or if it effectively **bypasses** them (e.g., the element is only nearby or not part of the cable path).

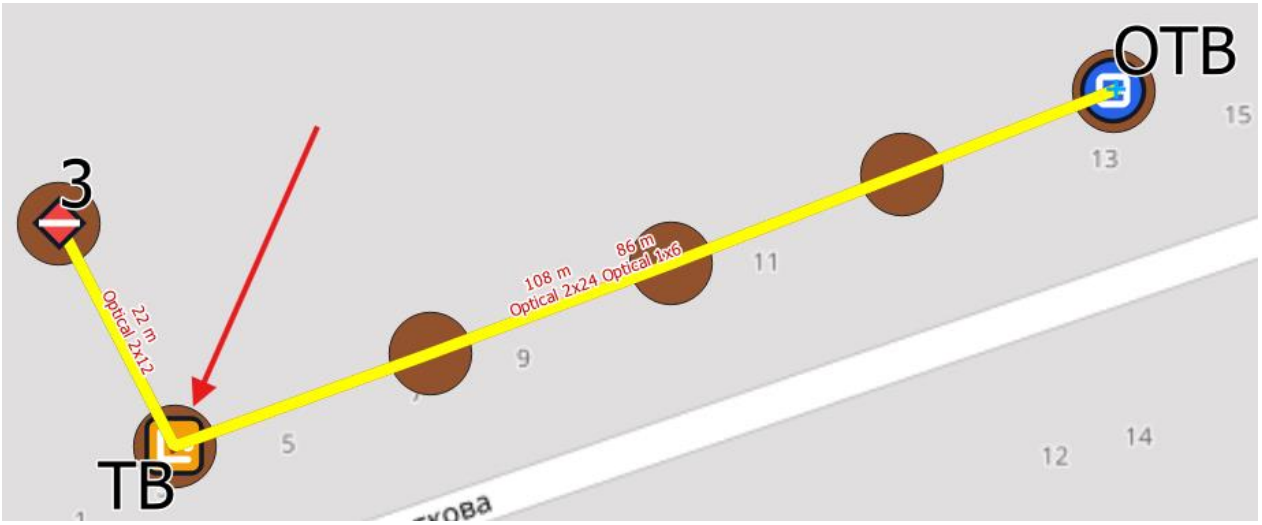
This option is especially useful for future versions, when FiberQ will support **fiber/core linking and splice/termination logic inside elements**, because the software must know which elements are truly part of the cable path.

How to edit latent elements

1. Open the **Latent elements** list.
2. Find the cable you want to manage and click the **checkbox** on the left to select it.
3. If the cable is connected to **more than two elements**, the **Edit** option becomes available.
4. Click **Edit** to open the editing dialog and set **YES/NO** for each intermediate element:
    - **YES** = the cable passes through this element
    - **NO** = the cable bypasses this element
5. Click **Save** to apply the changes.




Latent elements - editing
#
Element
Latent
1
1
3
NO
2
2
TB
YES
3
3
OTB
NO
Save
Cancel


OTB
3
TB
22 m
Optical 2x12
108 m
Optical 2x24
86 m
Optical 1x6
15
13
11
9
5
12
14

8.6 Cut Infrastructure (Split line features)

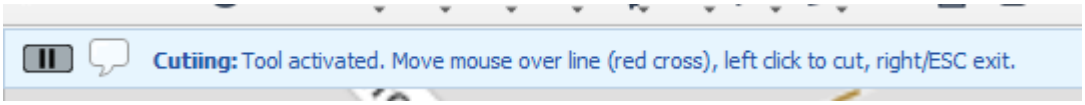
The **Cut Infrastructure** tool lets you split any **line feature** on the map—such as **Routes**, **Pipes**, or **Cables**—into separate segments.

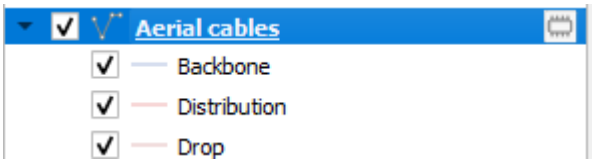
How to use

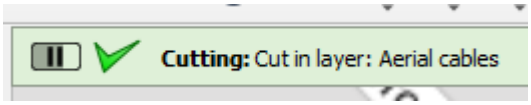
1. In the **Layers** panel, select the line layer you want to cut (e.g., Route / Pipes / Cables).
2. Click **Cut infrastructure**.
3. Move the cursor to the location where you want to split the line and **left-click** to cut it.
4. The selected feature will be split into **two separate parts**. You can verify this by selecting the new segments on the map and checking the **Attribute Table**, where the line is stored as two records with updated lengths (based on the cut location).
5. **Save edits** after cutting by clicking the **Save Layer Edits** (floppy disk) icon.

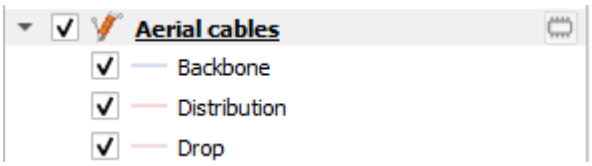
Tip

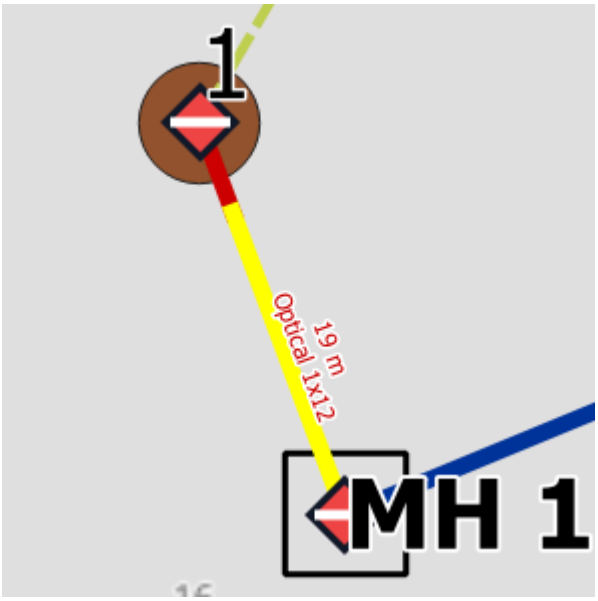
After splitting a cable into two segments, you can place a new element at the cut point (e.g., a **joint closure**) to represent a splice/connection location.

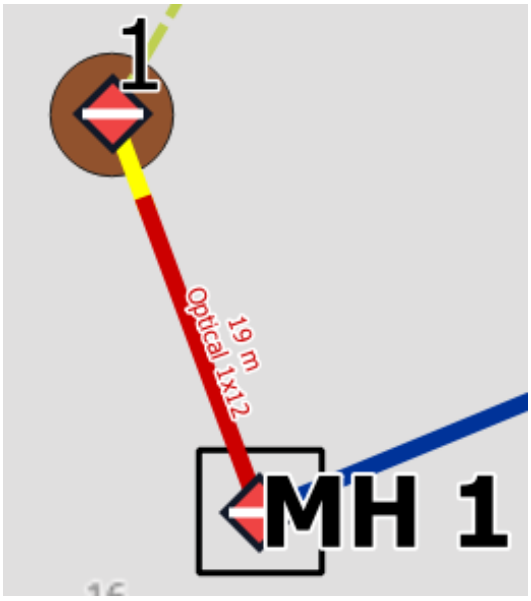


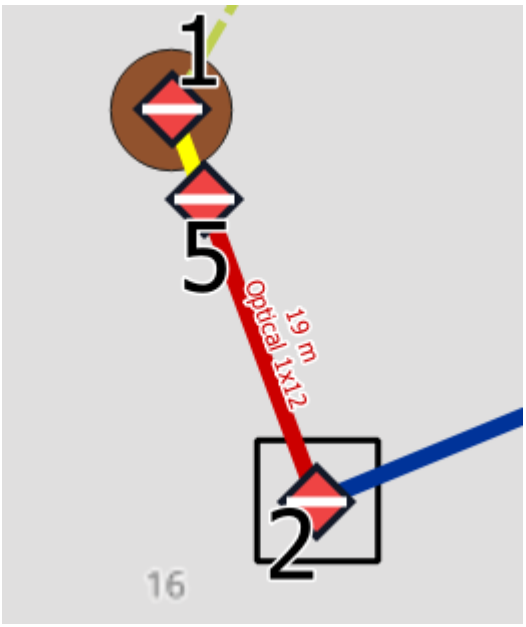







1
19 m
Optical 1x12
MH 1


1
19 m
Optical 1x12
MH 1


1
5
19 m
Optical 1x12
2
16

8.7 Fiber Break (Measure distance along a cable/route)

The **Fiber Break** tool is used to mark and record a “break point” (event point) **along an existing line feature** such as a **Route** or **Cable**. It calculates the **distance from the start of the selected line** to the clicked location and stores that value for documentation and troubleshooting.

How it works

1. Click the **Fiber Break** button in the toolbar.
2. Click on the cable/route on the map at the location of the break (or event).
3. The plugin snaps the point to the line and calculates:
    - **Cable layer** (which layer the line belongs to)
    - **Feature ID** (which line feature was clicked)
    - **Distance (m)** from the start of the line to the clicked point
    - **Segments hit** (internal info about which segment of the polyline was clicked)
4. A marker is placed on the line, and the result is saved so it can be reviewed later.

Where the data is stored

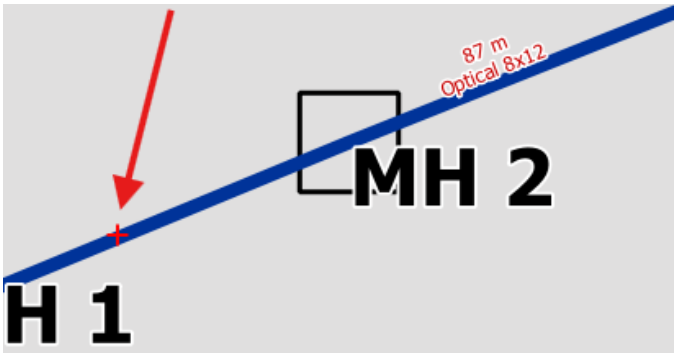
Each click creates a record in the **Fiber break** layer/table. You can open its attribute form (or the layer’s attribute table) to review all stored break points, including:

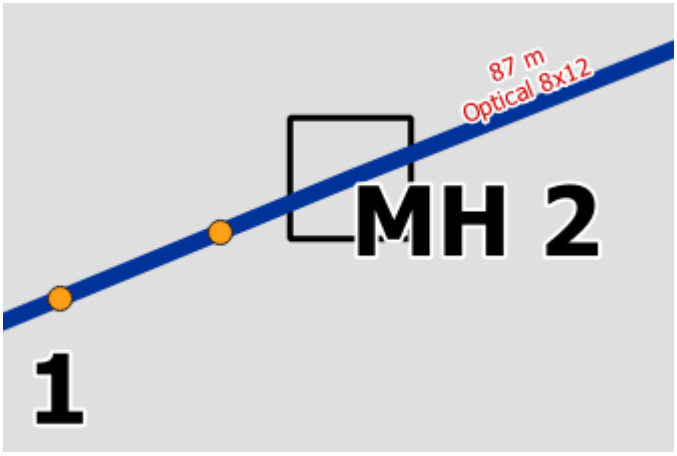
- Cable layer ID
- Cable feature ID
- Distance (m)
- Time (timestamp)

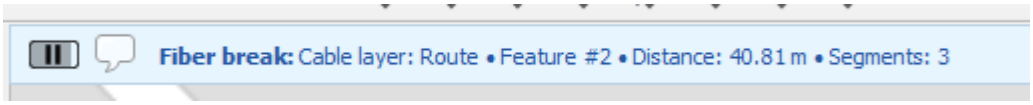
Why it’s useful

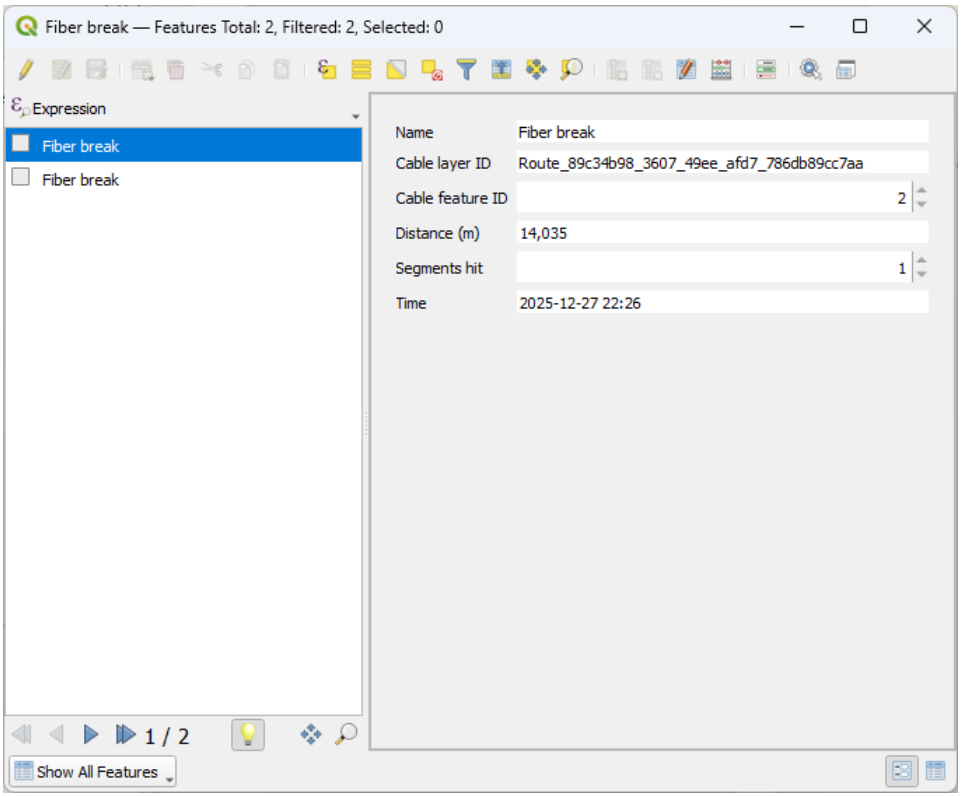
This tool helps you document incidents and field measurements, for example:

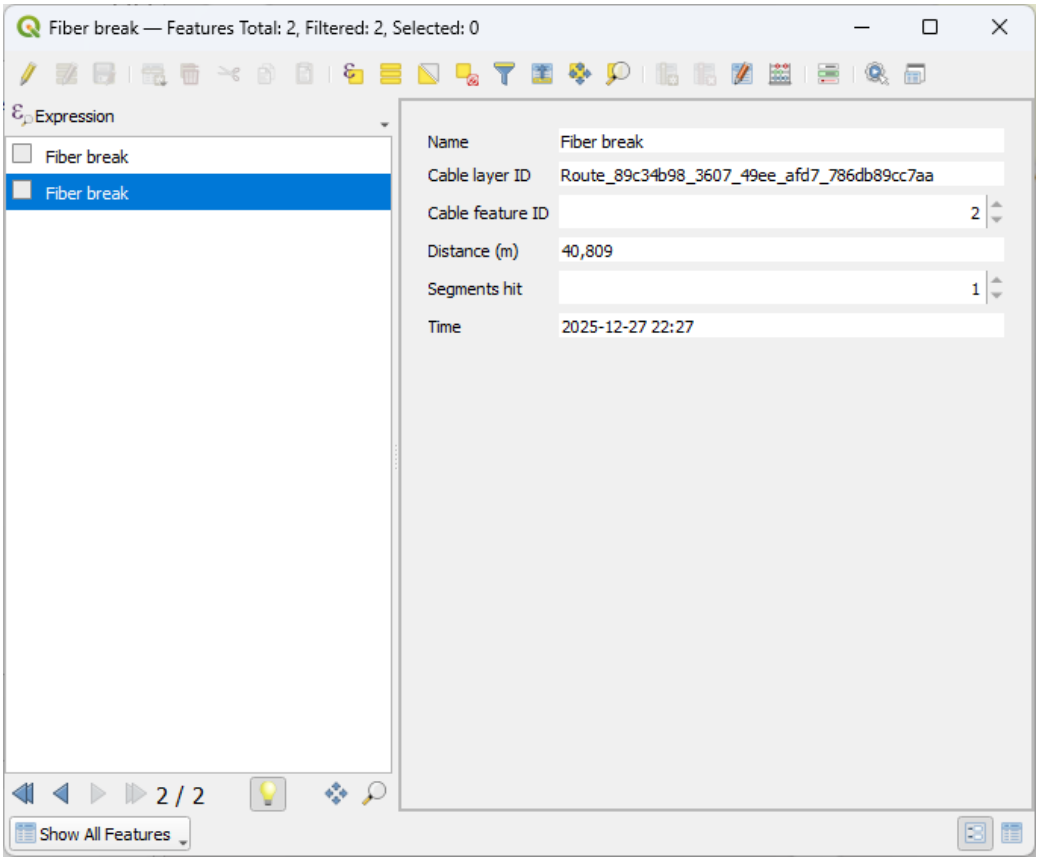
- locating a fault by distance from the start point,
- recording OTDR reported distances,
- creating a list of break/event positions for maintenance and reporting.


87 m
Optical 8x12
MH 2
H 1


87 m
Optical 8x12
MH 2
1


Fiber break: Cable layer: Route • Feature #2 • Distance: 40.81 m • Segments: 3


Fiber break — Features Total: 2, Filtered: 2, Selected: 0
Expression
Fiber break
Fiber break
Name
Fiber break
Cable layer ID
Route_89c34b98_3607_49ee_afd7_786db89cc7aa
Cable feature ID
2
Distance (m)
14,035
Segments hit
1
Time
2025-12-27 22:26
1 / 2
Show All Features


Fiber break — Features Total: 2, Filtered: 2, Selected: 0
Expression
Fiber break
Fiber break
Name
Fiber break
Cable layer ID
Route_89c34b98_3607_49ee_afd7_786db89cc7aa
Cable feature ID
2
Distance (m)
40,809
Segments hit
1
Time
2025-12-27 22:27
2 / 2
Show All Features

8.8 Color Catalog (Fiber & tube color codes)

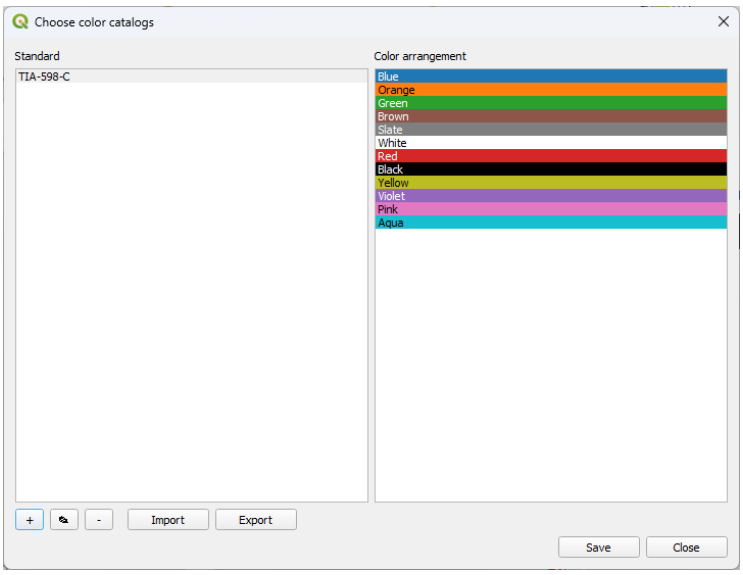
The **Color Catalog** tool lets you manage **color code standards** for fiber optic cables—both **tube colors** and **fiber colors**. When you later lay a cable, you can select the appropriate **color code standard** (for example **TIA-598-C**) in the cable parameters, ensuring consistent identification across the project.

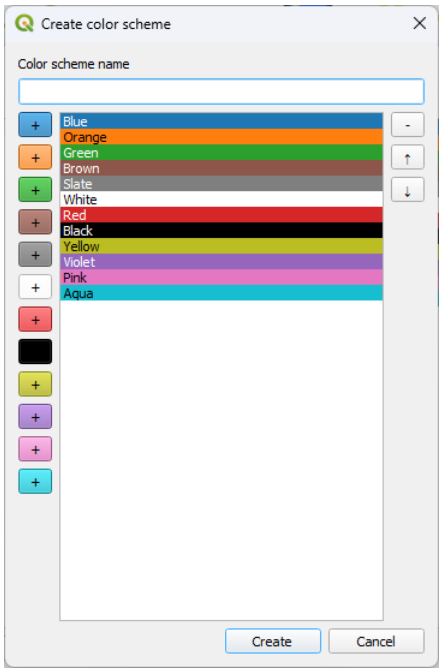
What you can do in Color Catalog

- **Create new color schemes** (define the name and the ordered list of colors).
- **Edit the color arrangement** (add/remove colors, reorder them).
- **Import / Export** color catalogs to reuse the same standards across different projects.
- **Save** the selected catalog so it becomes available in the cable laying dialog.

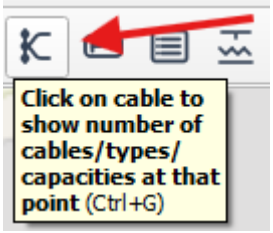
Why this matters

Color coding becomes especially important in upcoming versions, when FiberQ adds **fiber/core linking inside elements** and **automatic optical schematic / fiber-occupancy diagrams**. The color catalog will be used to correctly represent tube/fiber identification and continuity in network documentation.





8.9 Branch Info (Cable summary at click)

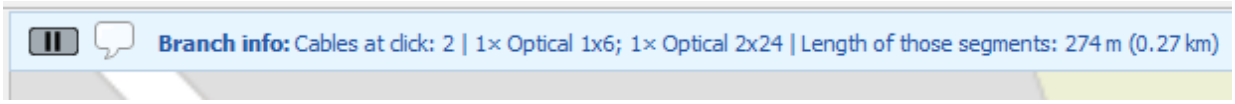


The **Branch Info** tool lets you quickly check how many cables share the same route at a specific point, including their **types/capacities** and the **total length** of the overlapping segment.

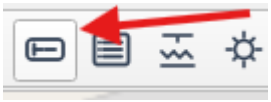
How to use

1. Click the **Branch Info** button in the FiberQ toolbar.
2. Click on the route/cable line **near the middle of the segment** where multiple cables overlap.
3. A small information message will appear at the top of the window showing:
    - the **number of cables** at that click point,
    - a breakdown by **cable type/capacity** (e.g., Optical 1x6, Optical 2x24),
    - and the **length** of the segment(s) where they overlap.

This is useful for quick capacity checks and for verifying shared infrastructure sections in the design.



9.0 Shortcuts button

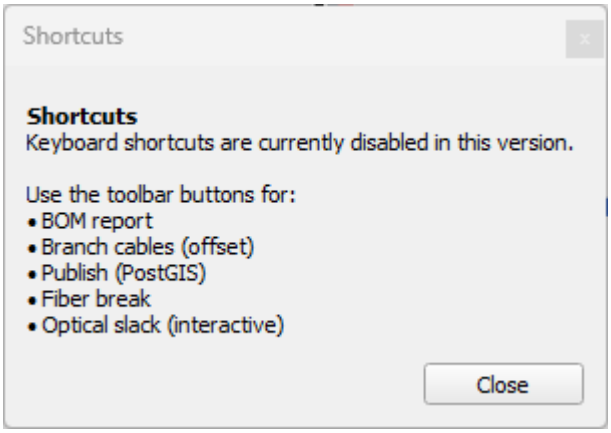


Keyboard shortcuts are currently **disabled** in this version, because QGIS already includes many predefined shortcuts and we want to avoid conflicts.

For now, please use the **toolbar buttons** for the following tools:

- BOM report
- Branch cables (offset)
- Publish (PostGIS)
- Fiber break
- Optical slack (interactive)

Improved shortcut support may be added in a future release, based on feedback and suggestions from testers (so the final shortcut set matches real workflows).



9.1 BOM Report (XLSX/CSV)

The **BOM Report** tool generates a **Bill of Materials** summary for your FiberQ project. It calculates quantities and lengths directly from the layers in your map and lets you export the results to **Excel (.xlsx)** or **CSV (.csv)**.

Report tabs

By Layers
Shows a table for each layer in the project, including:

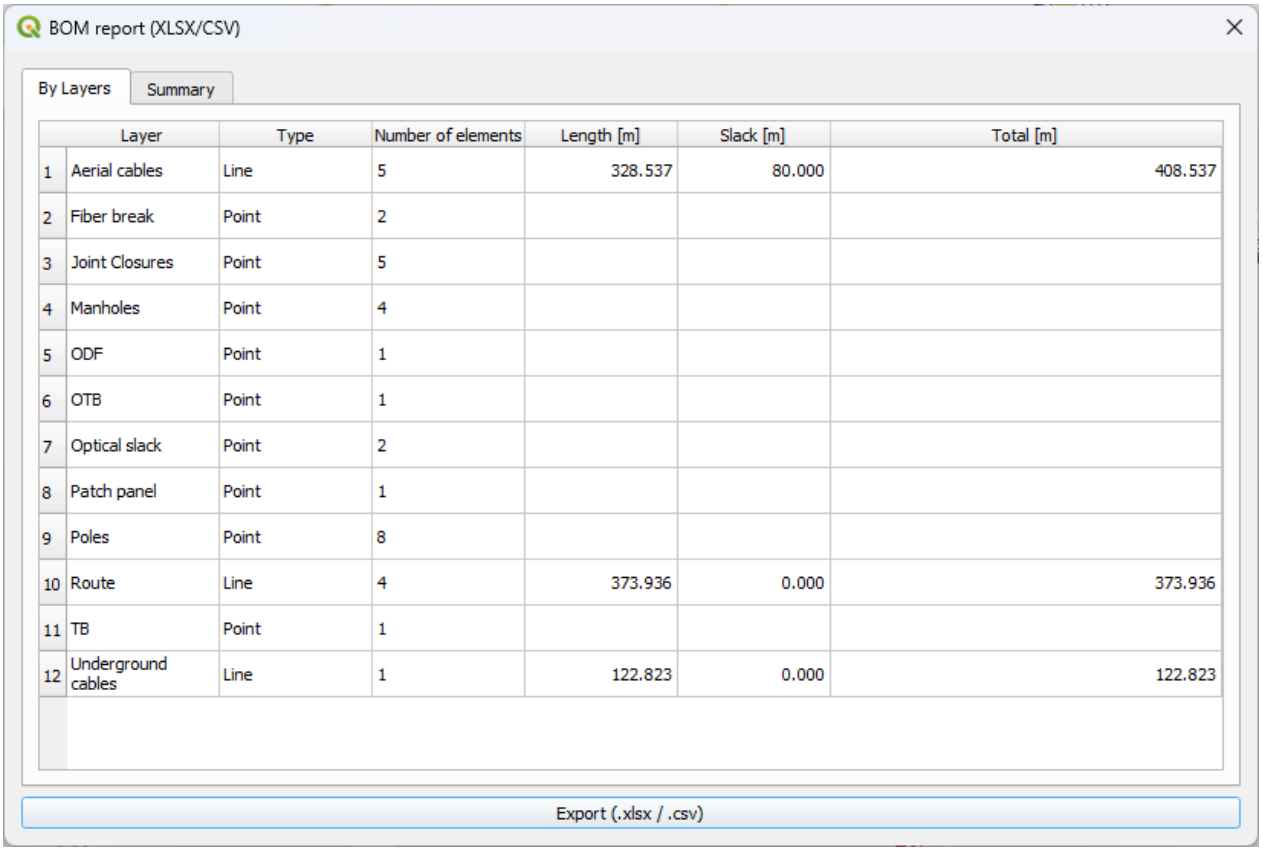
- **Layer** name
- **Type** (Point / Line)
- **Number of elements** (feature count)
- **Length [m]** (total line length for line layers)
- **Slack [m]** (total slack length where applicable)
- **Total [m]** (Length + Slack)

Summary
Provides overall project totals, such as:

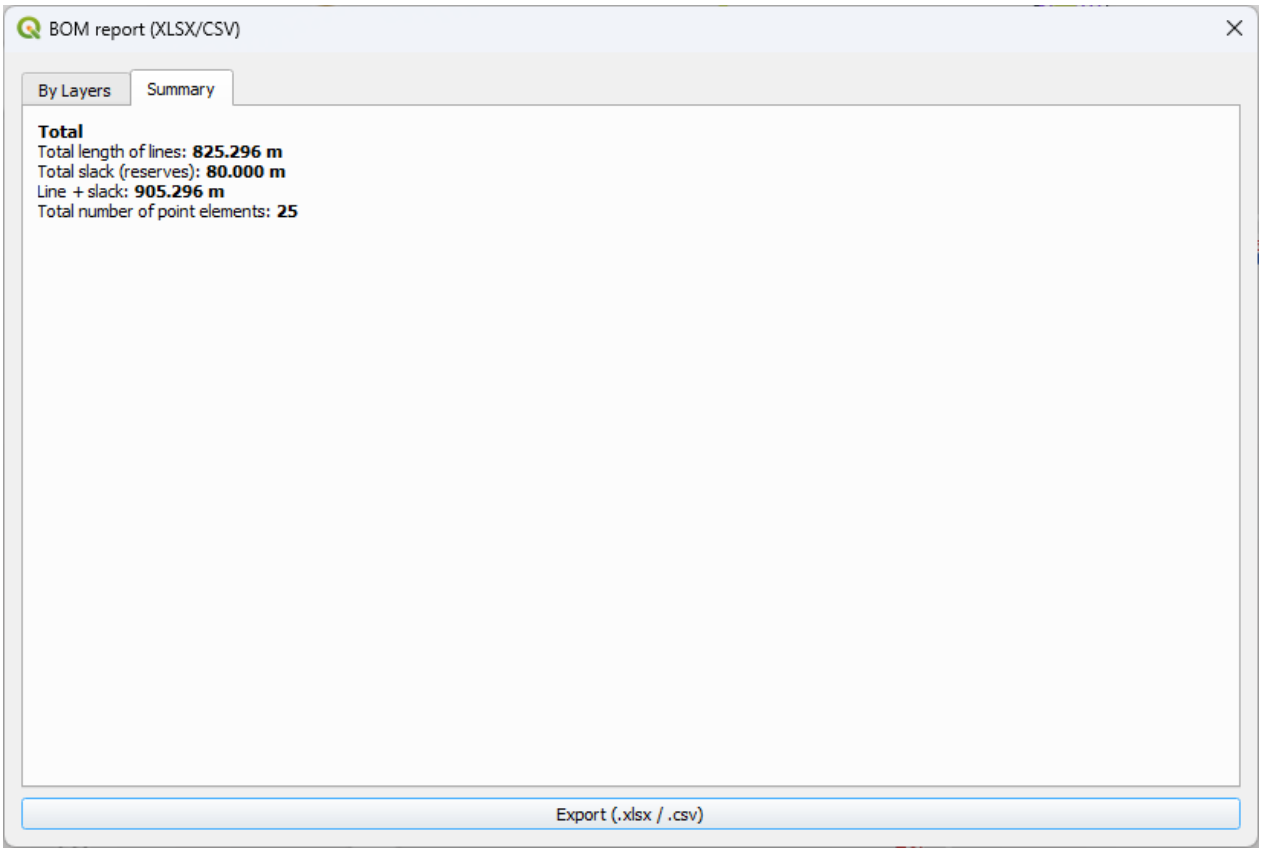
- Total length of all line layers
- Total slack reserves
- Line + slack total length
- Total number of point elements

Export

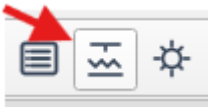
Click **Export (.xlsx / .csv)** to save the BOM report for documentation, handover packages, or cost estimation workflows.



	Layer	Type	Number of elements	Length [m]	Slack [m]	Total [m]
1	Aerial cables	Line	5	328.537	80.000	408.537
2	Fiber break	Point	2			
3	Joint Closures	Point	5			
4	Manholes	Point	4			
5	ODF	Point	1			
6	OTB	Point	1			
7	Optical slack	Point	2			
8	Patch panel	Point	1			
9	Poles	Point	8			
10	Route	Line	4	373.936	0.000	373.936
11	TB	Point	1			
12	Underground cables	Line	1	122.823	0.000	122.823



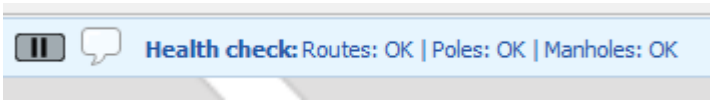
9.2 Check (Health check & Route correction)



The **Check** button runs a quick **health check** of the main project layers and basic routing logic. It helps you catch missing layers or common routing mistakes before exporting, reporting, or publishing.

What it checks

- Whether the main layers exist in the project: **Route**, **Poles**, and **Manholes**.
    - If a layer is missing, FiberQ shows **MISSING** in the blue status/log bar.
    - Note: this is only a warning—**Manholes are not mandatory**. The check is there to remind you in case you intended to use them and forgot to add them.

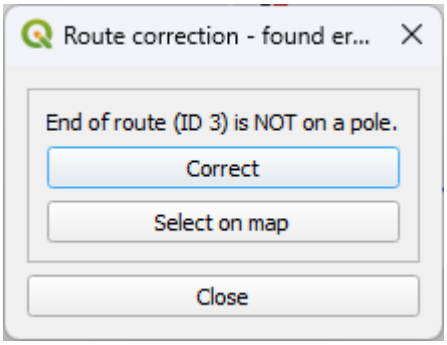


Route endpoint validation

If a route segment does not end on a valid end element (for example, the **end of a Route is not snapped to a Pole or a Manhole**), FiberQ will open a **Route correction** dialog and report the issue (e.g., *"End of route is NOT on a pole"*).
From this dialog you can:

- click **Select on map** to highlight the problematic feature, and/or
- click **Correct** to fix the route connection.

You can also access the same workflow from **Routing → Route correction**.



9.3 Settings (Default values & behavior)

The **Settings** button opens the **FiberQ Settings** dialog, where you can define default parameters that will be automatically applied when using FiberQ tools—especially during cable laying. This helps speed up the workflow and keeps your project data consistent.

Default cable capacity

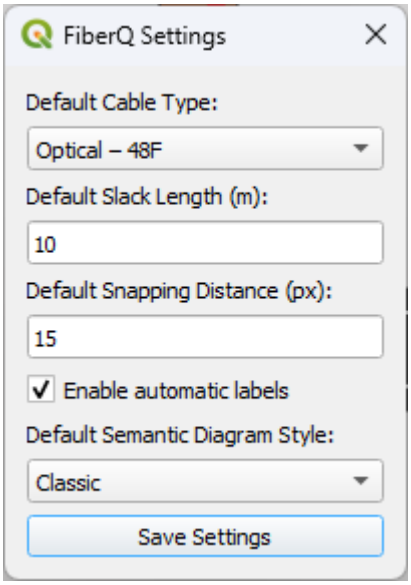
You can set a **Default Cable Type** (for example **Optical – 48F**). When this is configured, the cable laying dialog will pre-fill the cable capacity, so you don't need to manually enter **number of tubes/ducts** and **number of fibers** every time. The selected default cable type will also be reflected in cable labels (e.g., "Optical 1x48").

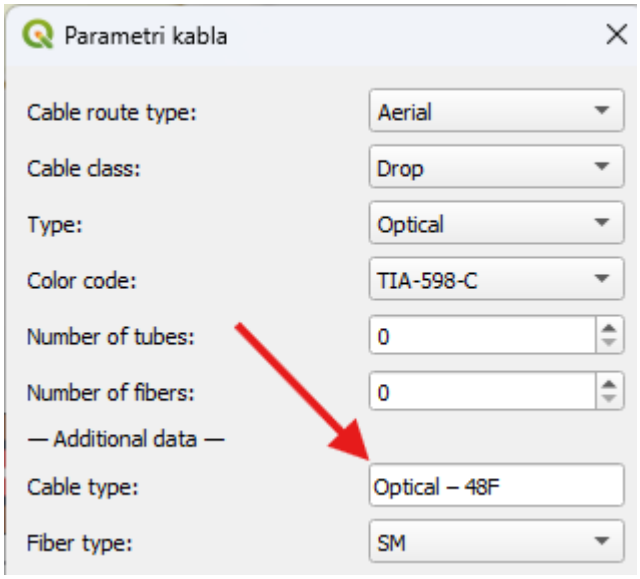
Other settings

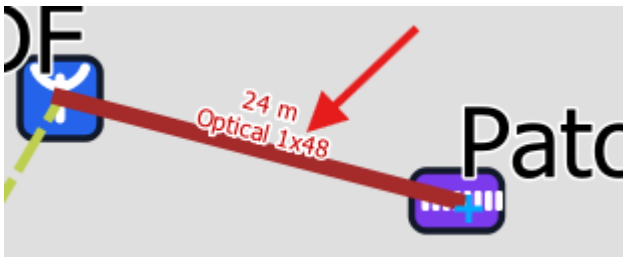
The dialog also includes additional options such as:

- **Default Slack Length (m):** preset slack value used by slack tools
- **Default Snapping Distance (px):** snapping tolerance used when placing elements and tracing routes/cables
- **Enable automatic labels:** automatically display labels on the map for created features
- **Default Semantic Diagram Style:** select the default style for diagram/schematic views

Click **Save Settings** to apply and store the configuration for the project/session.




Parametri kabla
Cable route type:
Aerial
Cable class:
Drop
Type:
Optical
Color code:
TIA-598-C
Number of tubes:
0
Number of fibers:
0
— Additional data —
Cable type:
Optical – 48F
Fiber type:
SM


24 m
Optical 1x48

9.4 Smart Selection + Change Element Type

FiberQ allows you to quickly select elements and (for supported equipment types) change their type after placement.

Supported element types

Change Element Type works only for equipment layers such as **ODF, TB, OTB, Patch Panel** (and related TO/OTB variants).
It does **not** apply to infrastructure/structures such as **Joint Closures, Manholes, Poles**, etc.

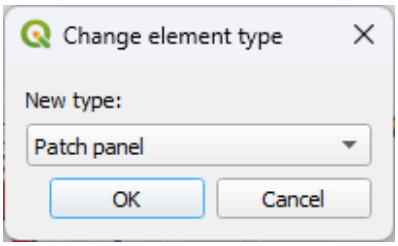
How to change an element type

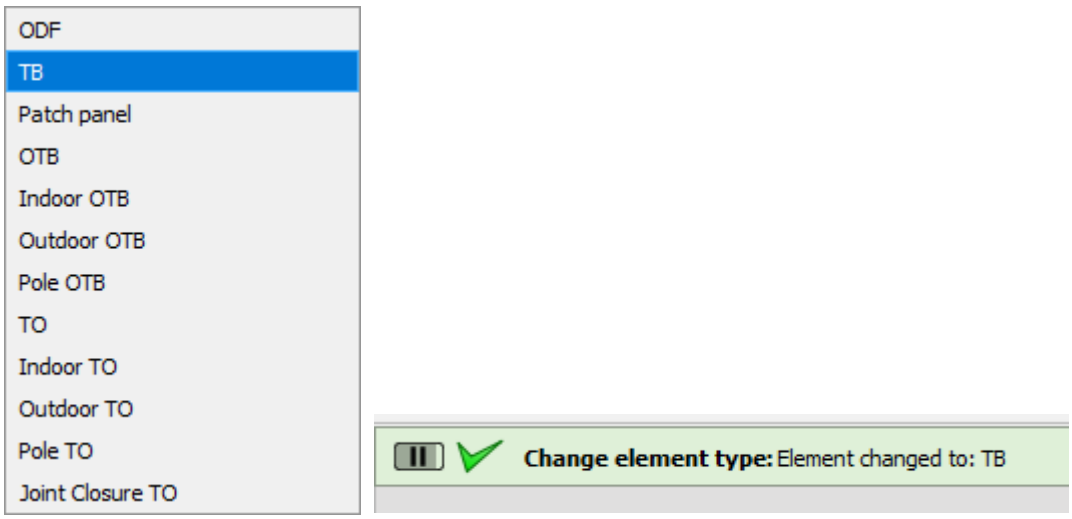
1. Click **Change element type** in the FiberQ toolbar.
2. Use **mouse + left click** to select the element on the map.
3. In the dialog, choose the **New type** (e.g., change **Patch panel** → **TB**) and click **OK**.

What happens after the change

- The element's **icon/symbol** is updated immediately on the map.
- The feature is automatically **moved to the corresponding layer** (e.g., from **Patch panel** layer into the **TB** layer).
    - You can verify this by turning layers on/off: hiding **Patch panel** will not affect the element anymore, while hiding **TB** will remove it from view—confirming it was moved.

Note: the element may keep its previous **Name/label text** (e.g., "Patch panel") after the type change. You can update the name by editing the feature attributes in the **TB** layer Attribute Table.





9.5 Service Area (Create from selection / Manual drawing)

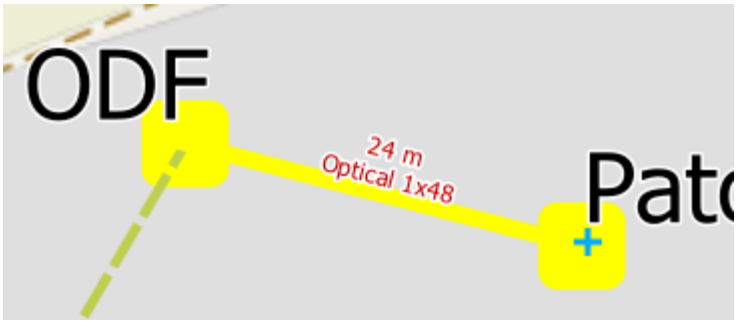
FiberQ can create **Service Area** polygons for selected network parts or for manually defined zones. Service areas are stored in a dedicated **Service Area** layer and can be used for planning, documentation, and filtering/exporting areas of interest.

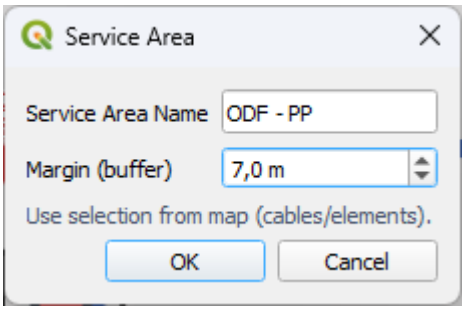
Create Service Area from selection

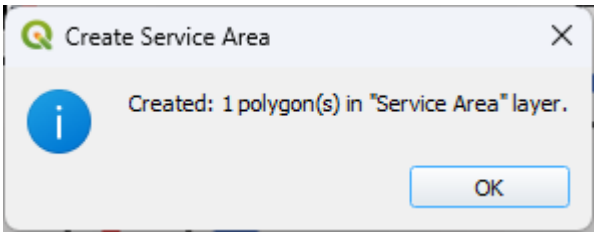
Use this option when you already have cables/elements selected on the map and want FiberQ to generate a polygon around them.

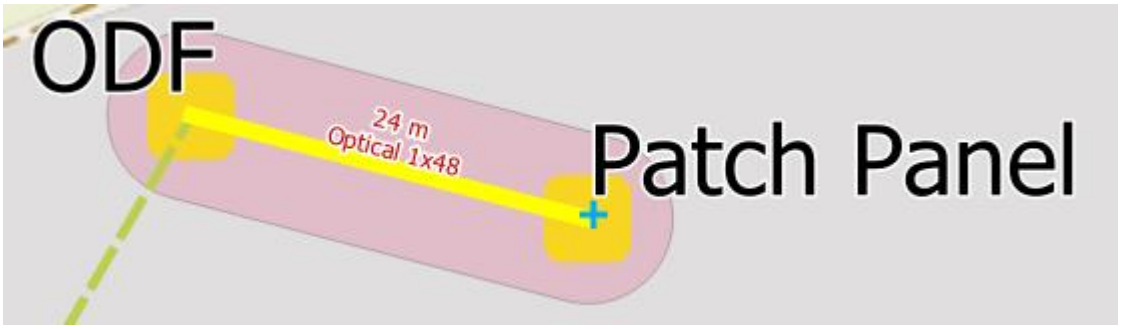
1. Select the required **cables and/or elements** on the map (they will be highlighted).
2. Click **Create Service Area from selection**.
3. In the dialog, enter:
    - **Service Area Name** (e.g., “ODF – PP”)
    - **Margin (buffer)** in meters (the offset distance around the selected features)
4. Click **OK**. FiberQ will generate a buffered polygon around the selection and save it into the **Service Area** layer. A confirmation message will appear (e.g., “Created: 1 polygon(s) in ‘Service Area’ layer.”).

Result: a service area polygon is created automatically based on the selected features and the chosen buffer distance.







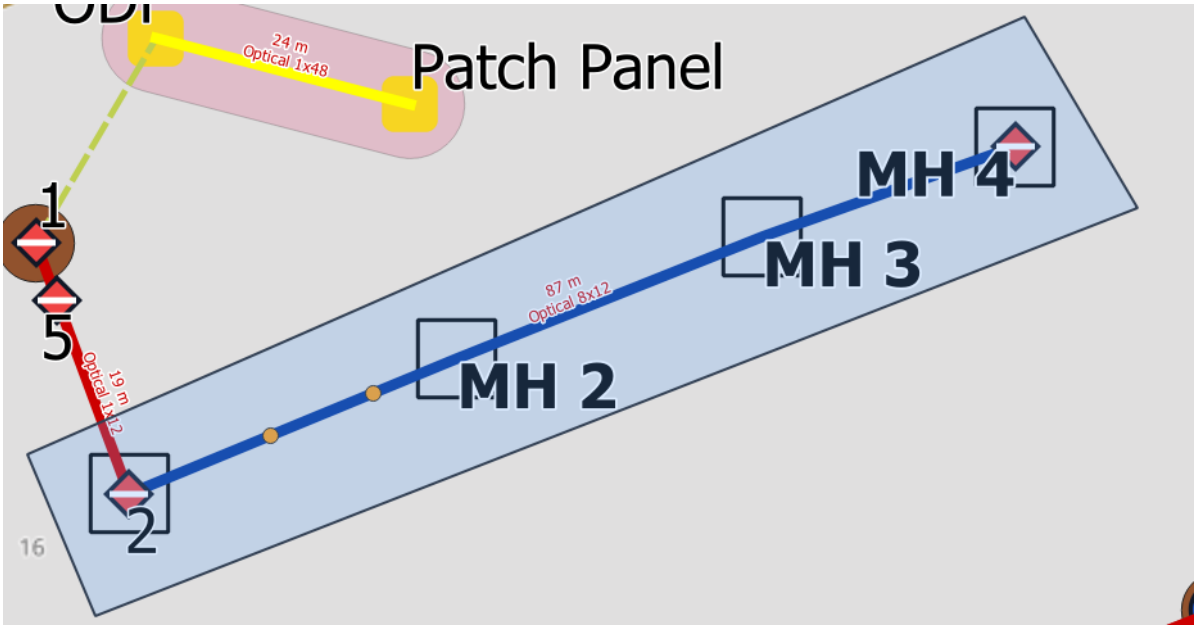


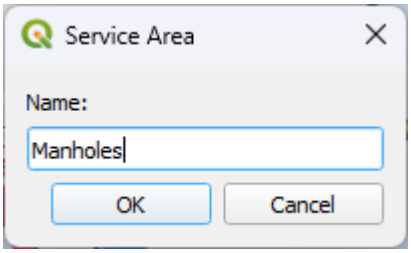
Manual Service Area drawing

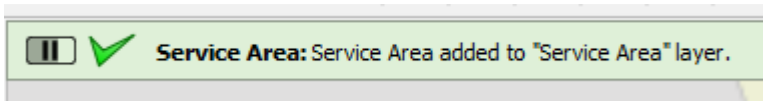
Use this option when you want to draw a custom service area polygon manually.

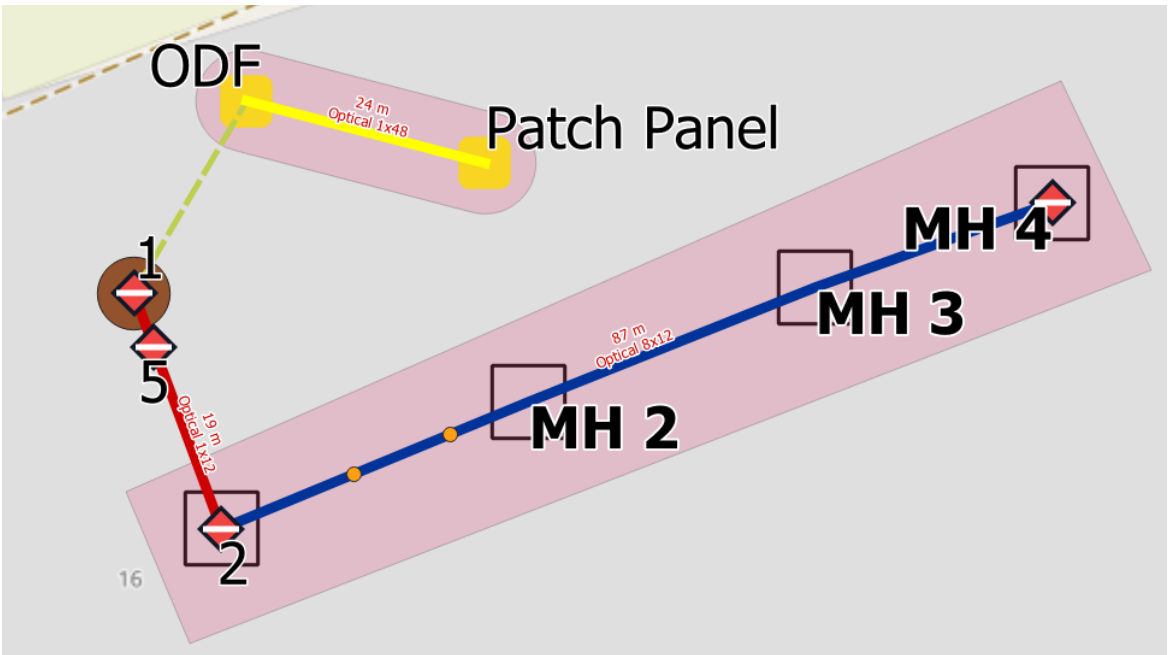
1. Click **Manual Service Area drawing**.
2. Draw the polygon boundary on the map (click to add vertices, then right-click to finish).
3. Enter a **Name** for the service area (e.g., “Manholes”) and click **OK**.
4. The polygon is saved into the **Service Area** layer, and a status message confirms the action.

Result: a custom polygon is created exactly as drawn and stored in the **Service Area** layer.



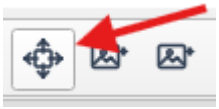






Both methods create polygons in the same **Service Area** layer—choose **from selection** for fast automatic buffering, or **manual drawing** for full control over the area shape.

9.6 Move Elements on the map



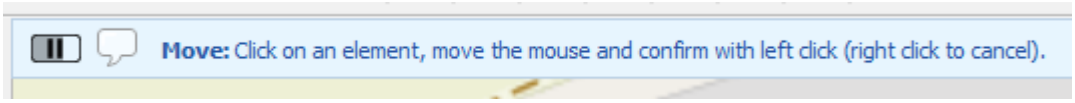
The **Move** tool lets you reposition any point element in the project (closures, cabinets, ODF/TB/OTB, poles, manholes, etc.).

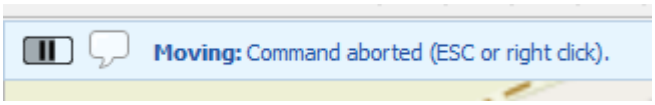
How to use

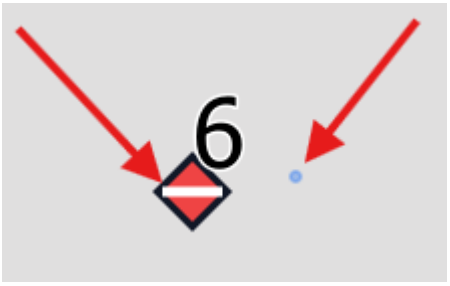
1. Click **Move elements on the map**.
2. Click the element you want to move.
3. Move the mouse to the new location and **confirm with a left-click**.
    - **Right-click** cancels the move.

Tip (when multiple elements overlap)

If several elements are located on the same point, temporarily **turn off (hide) the unnecessary layers** in the Layers panel. This makes it easier to select the correct element before moving it.







9.7 Link / Unlink picture (JPG/PNG) to an element

FiberQ allows you to attach a **.jpg** or **.png** image to a selected map element (for example: a field photo, cabinet label, installation picture, etc.), and open it later directly from the map.

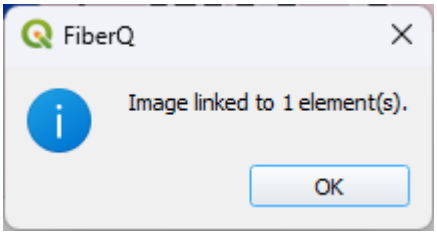
Important selection note

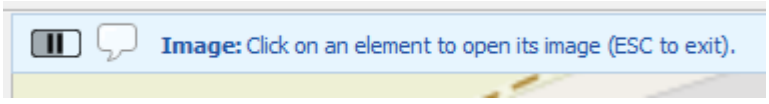
For linking/unlinking images you must use the QGIS tool **Select Feature(s)**.
The plugin **Smart Selection** tool is **not supported** for this action.

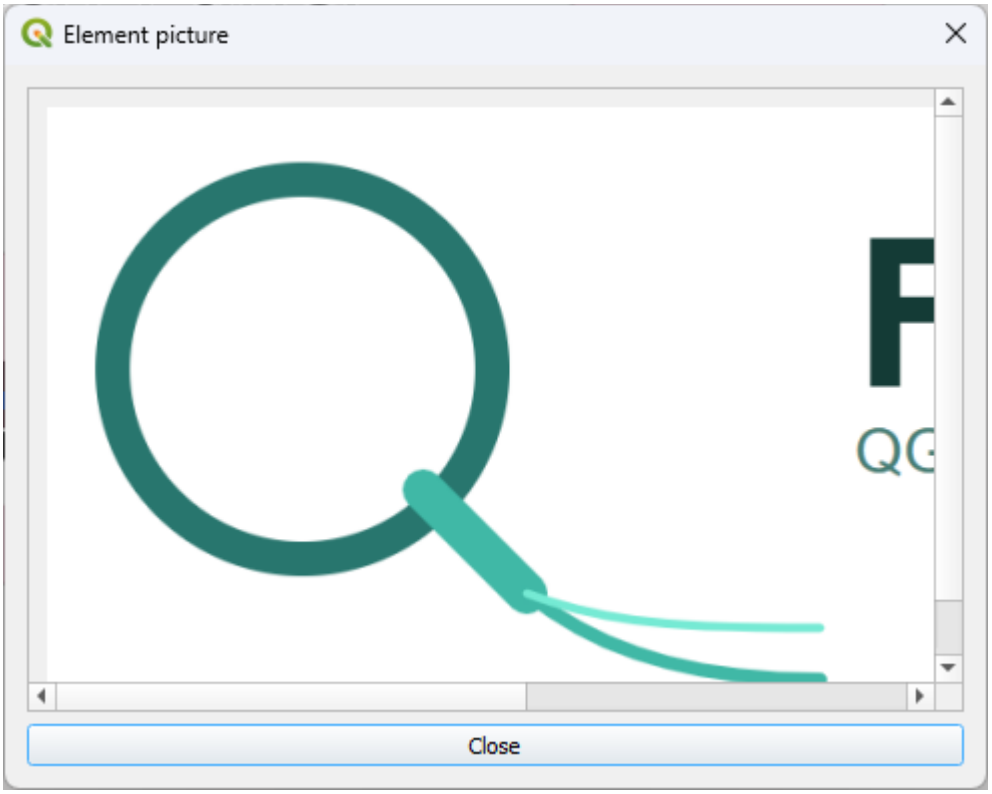
Link a picture to a selected element

1. Activate **QGIS → Select Feature(s)** and select the target element on the map.
2. Click **Link a .jpg/.png picture to selected element**.
3. Choose the image file.
4. A confirmation message will appear (e.g., “Image linked to 1 element(s).”).

To open the linked image, use the **Image** viewer tool and click the element (ESC to exit).



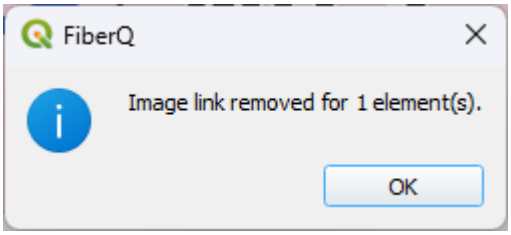




Unlink picture from selected element

1. Select the element using **QGIS → Select Feature(s)**.
2. Click **Unlink picture from selected element** (the toolbar button next to the link option).

This removes the image link from the element.



Appendix A:

Preview Map Setup

A short guide how to setup Preview Map in FiberQ

In FiberQ, the Preview Map is a live, read-only (or lightly editable) web map view of your fiber network that is backed by a PostGIS database and served through the Docker stack

1.1 Request access (Key + folder)

1. Send an email request to the FiberQ team to receive (FiberQ):
    - Unlock Key (enables Preview Map and Publish to PostGIS buttons in the plugin)
    - **telecom-webmap_MAPPROXY** folder (server package)
2. Save the folder to:
    - C:\telecom-webmap\telecom-webmap_MAPPROXY

Keep this folder path exactly as shown to avoid path/config issues.

1.2 Install Docker

- Download and install **Docker Desktop** for Windows (Docker Desktop: The #1 Containerization Tool for Developers | Docker)
- Restart the PC if Docker requests it.
- Start Docker Desktop and make sure it is running.

1.3 Start the server stack (PowerShell)

1. Open:
    - C:\telecom-webmap\telecom-webmap_MAPPROXY
2. Right-click inside the folder → **Open in Terminal / PowerShell**.

3. Run:

   docker compose up -d

4. Check container status:

   docker compose ps

5. You should see containers running (PostgreSQL/PostGIS, pgAdmin4, and MapProxy/PHP components depending on your stack).
6. Optional:

   docker compose down - for removing containers

1.4 Open pgAdmin4 (Docker)

1. pgAdmin will install with the Docker software
2. In Docker Desktop → **Containers**, locate the running stack.
3. Find the published port **8085** and click the link.
4. pgAdmin4 will open in your browser.

Default pgAdmin4 login

- Email: admin@example.com
- Password: admin

You can change these defaults later inside the configuration files in the **FiberQ** folder or in **telecom-webmap_MAPPROXY** (depending on your setup package).

1.5 QGIS + FiberQ connection to PostGIS

1. Start **QGIS**.
2. Enable the **FiberQ** plugin.
3. Open **Data Source Manager → PostgreSQL**.
4. You should see a preconfigured connection entry.
5. Click **Connect** and enter database credentials when prompted.

Default PostGIS credentials

- User: gis
- Password: gis

You can change these credentials later inside the configuration files (FiberQ / telecom-webmap_MAPPROXY).

Security note:

For production use, change default passwords immediately

1.6 Verify database structure (pgAdmin4)

In **pgAdmin4**, you should find:

- Database: gis
- Schemas: fiberq
- Tables: FiberQ layers (currently table names are in Serbian; naming will be improved in a next version)

Preview Map in FiberQ

1.7 Load layers into your QGIS project

When you open **Preview Map** in FiberQ:

1. In the preview list, select the layers you want (multi-select with mouse).
2. Click:
    - **Load selected layer into project**

Now you can work with those layers directly inside your QGIS project.

1.8 Sync edits with the server (add / delete)

- Add or delete elements in your QGIS project as usual.
- Click **Refresh layers** in FiberQ to update the Preview Map view.

Behavior:

- New elements added in QGIS appear in the Preview Map after refresh.
- Elements deleted in QGIS are also removed from the server and disappear from the Preview Map after refresh.

1.9 Delete element from Preview Map

To delete a feature that was added to a layer loaded from the Preview Map, first select the feature in your QGIS project. You can do this using the standard **QGIS "Select Features"** tool, or by using FiberQ's **Smart Selection** option. Once the feature(s) are selected, click **Delete selected** to remove them.

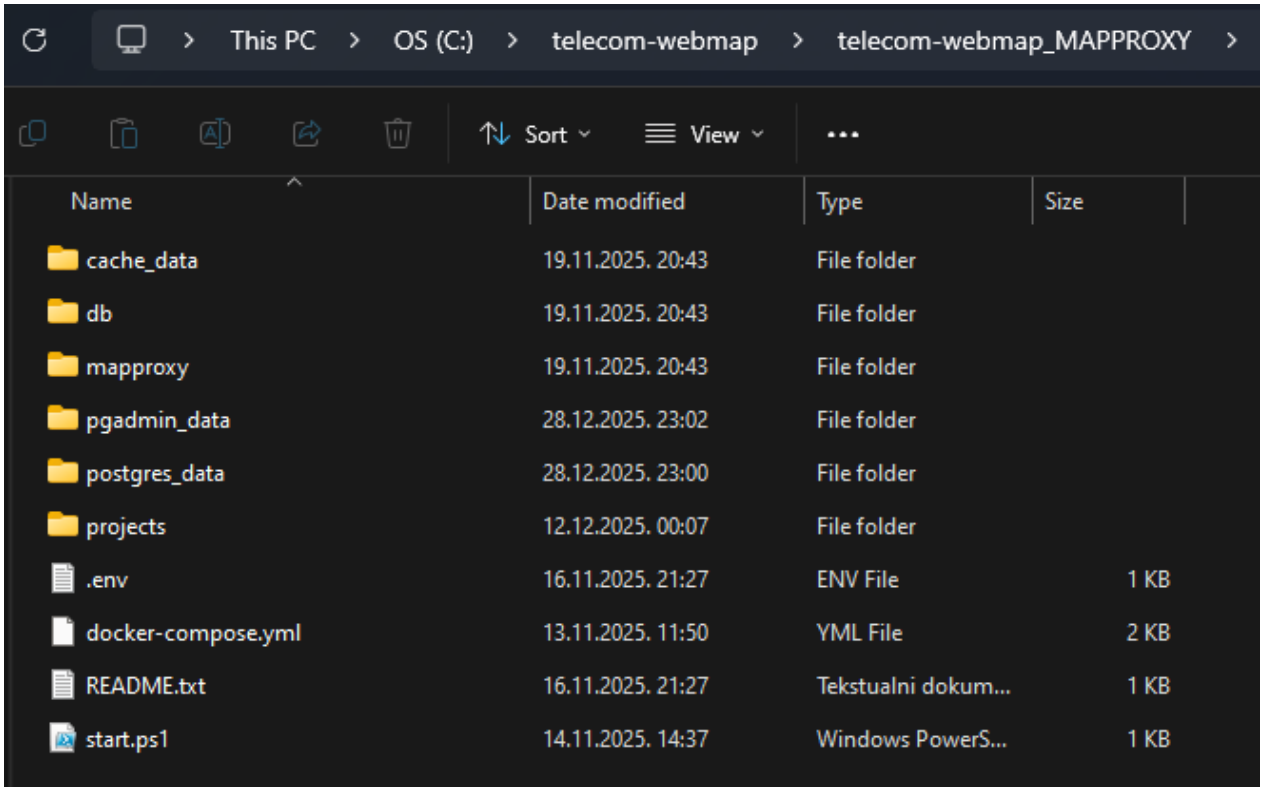
Alternatively, you can delete features directly from the **Attribute Table** of the selected layer (select the row(s) and delete them there).

As soon as the deletion is applied, the Preview Map updates accordingly — after refreshing, you will see that the feature is removed and only the unchanged elements remain visible.

Note:

In the example below, we will walk through the complete Preview Map workflow from start to finish — including requesting access (key + server package), starting the Docker stack, connecting QGIS to PostGIS, loading the preview layers into the project, and then adding and deleting features. You'll also see how changes are synchronized to the server and become visible in the Preview Map after refreshing the layers.

Example workflow (screenshots and step-by-step visuals)



1.2 Docker

FiberQ uses Docker to run a self-contained PostGIS + web map backend that enables shared Preview Maps and collaborative publishing, without requiring users to manually install or manage server infrastructure.

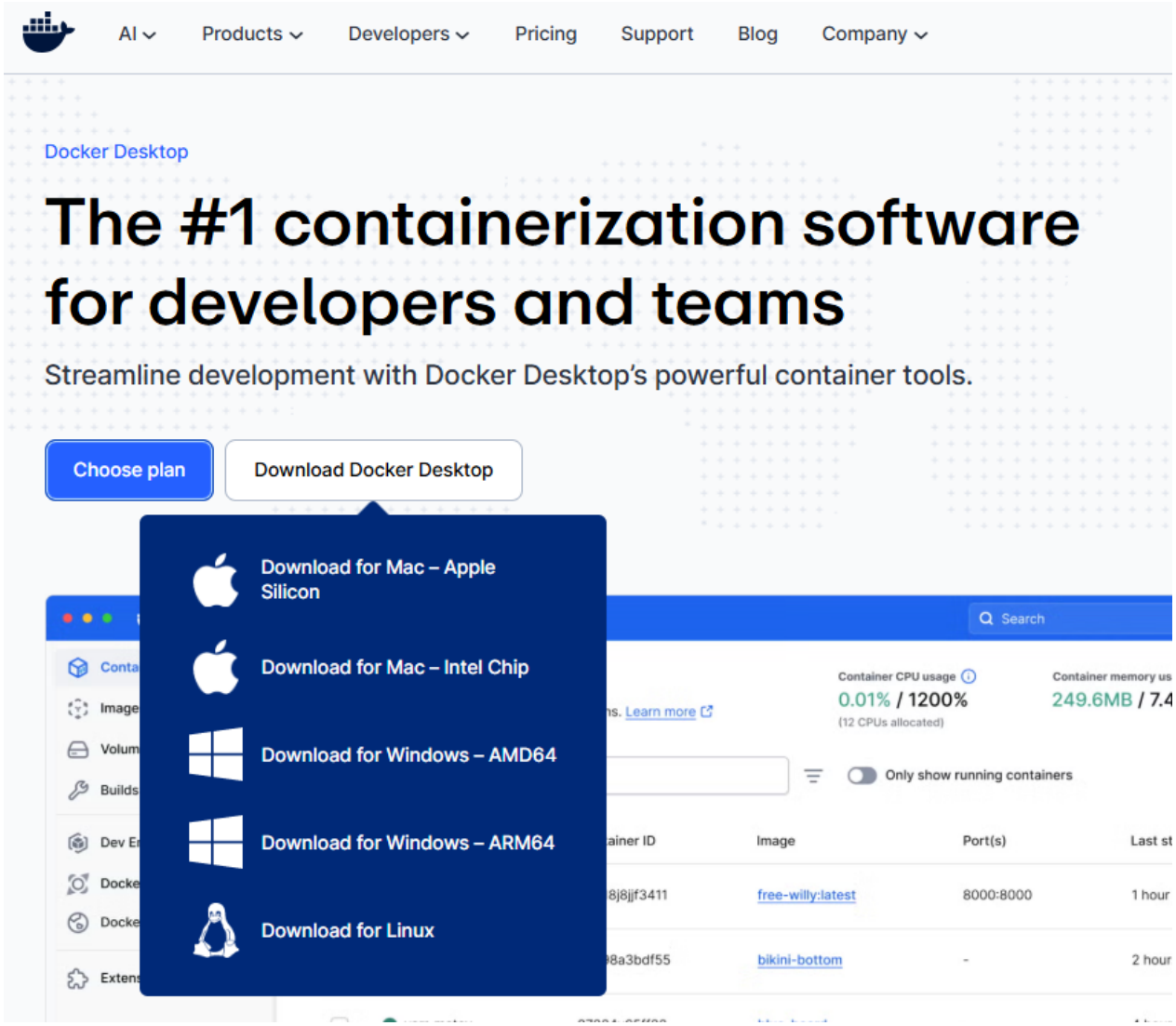
Use Docker to run a **local, self-contained server environment** that includes:

- **PostgreSQL + PostGIS** → shared spatial database
- **MapProxy + PHP** → web map preview services
- **pgAdmin4** → database administration UI

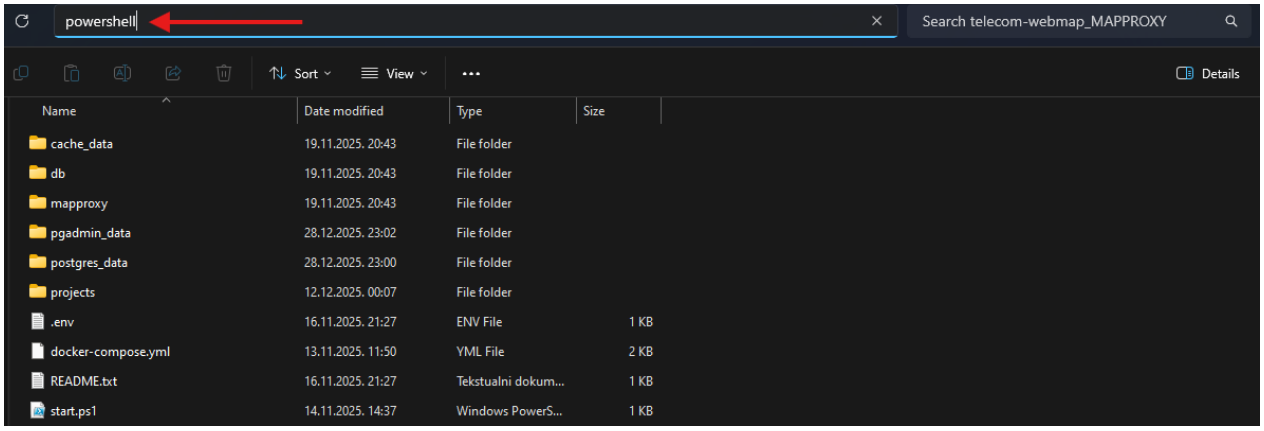
All of this runs locally on your PC (or a server) using Docker, instead of installing and configuring each component manually. Packaging the entire Preview Map infrastructure into a ready-to-run bundle. You run one command, and everything comes up correctly.

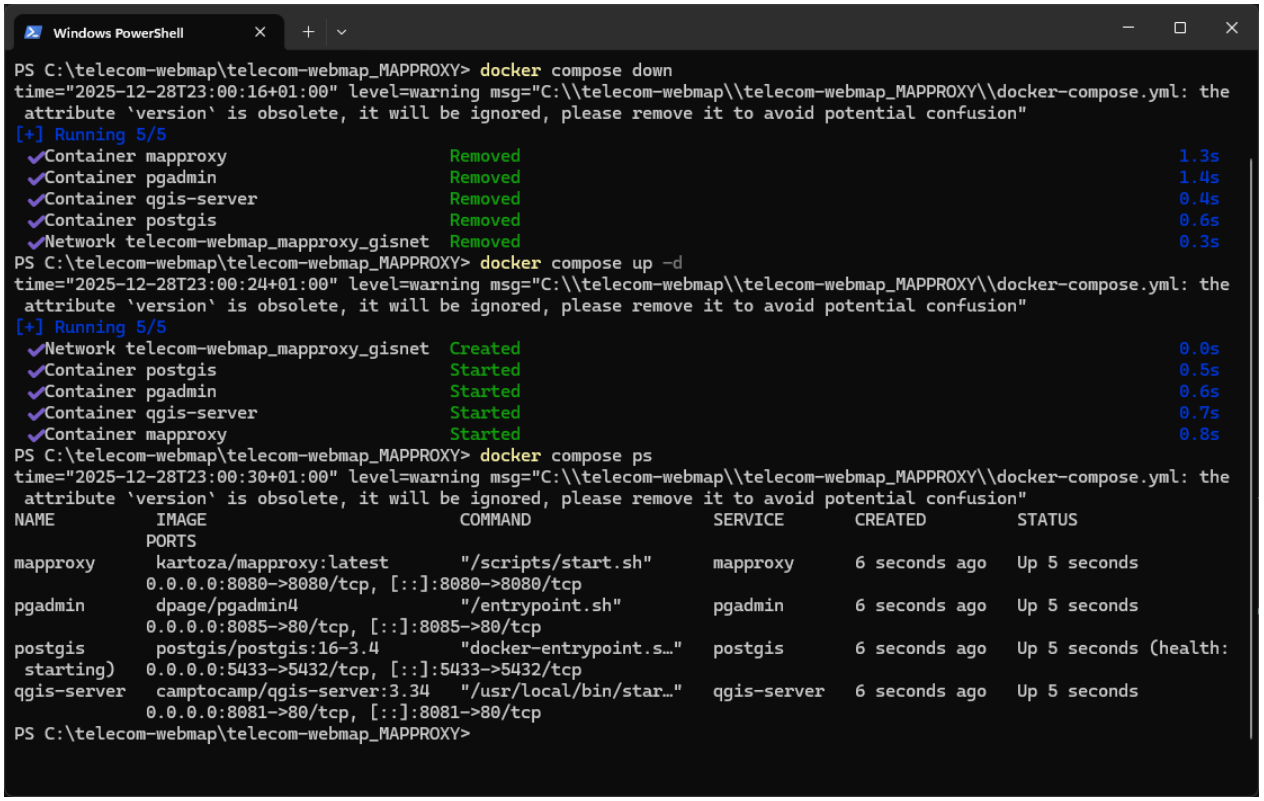
1.21 Docker – Desktop Setup

Docker Desktop: The #1 Containerization Tool for Developers | Docker – Click on the link


AI
Products
Developers
Pricing
Support
Blog
Company
Docker Desktop
The #1 containerization software for developers and teams
Streamline development with Docker Desktop's powerful container tools.
Choose plan
Download Docker Desktop
Download for Mac – Apple Silicon
Download for Mac – Intel Chip
Download for Windows – AMD64
Download for Windows – ARM64
Download for Linux
Search
Container CPU usage
0.01% / 1200%
(12 CPUs allocated)
Container memory us
249.6MB / 7.4
Only show running containers
Image
Port(s)
free-willy:latest
8000:8000
1 hour
bikini-bottom
2 hour

1.3 Docker - PowerShell



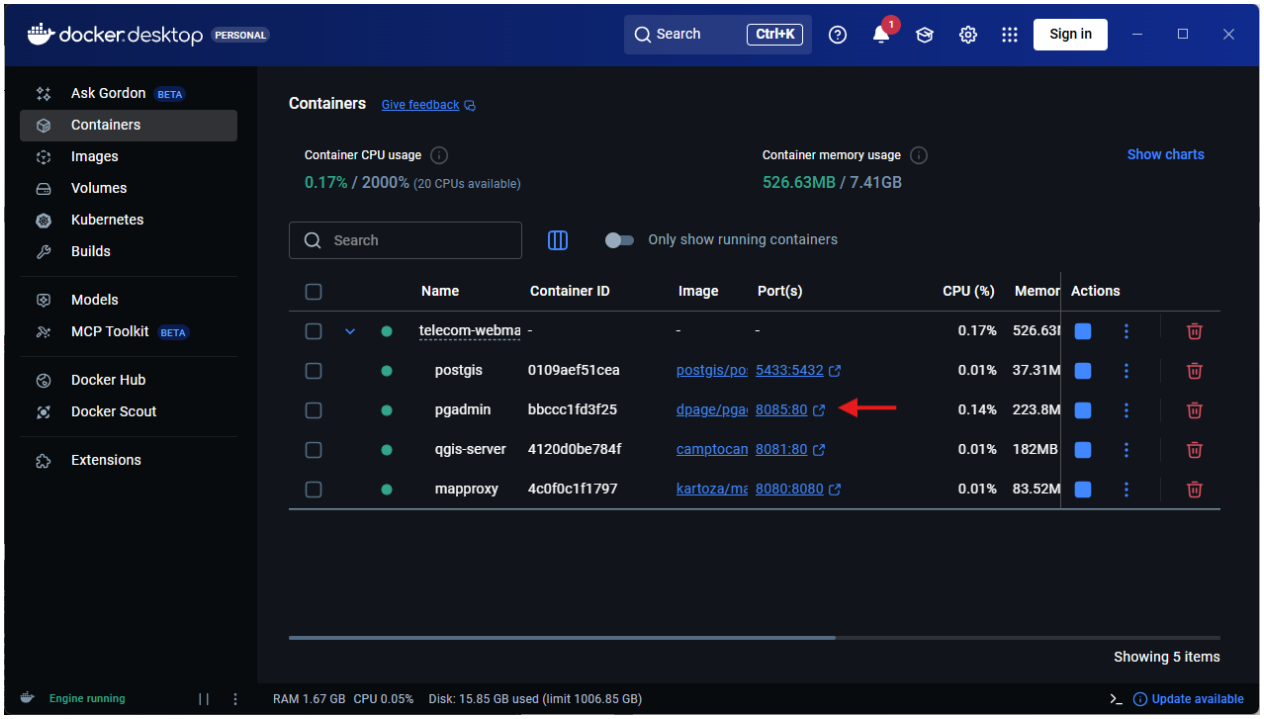


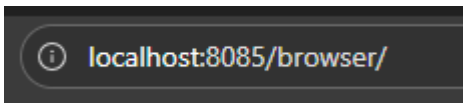
If you want to remove previously created containers you can delete them in Docker app, or removed them in powershell using: docker compose down.

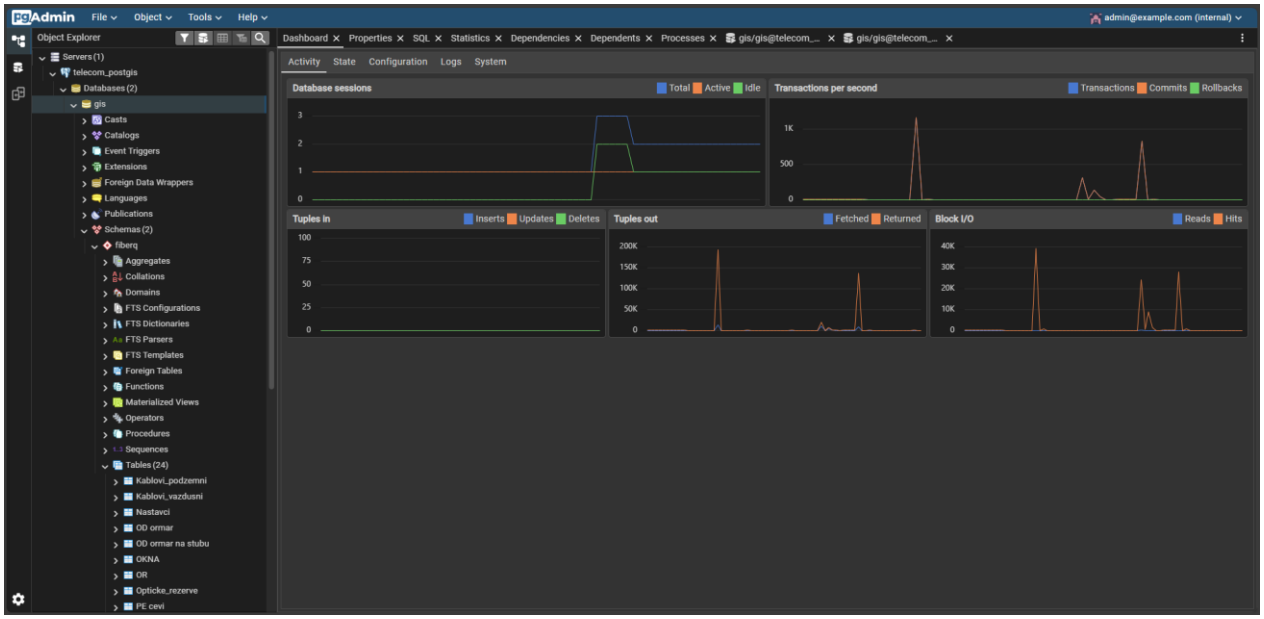
Then repeat:

docker compose up -d, docker compose ps.

1.4 Docker – Application Interface



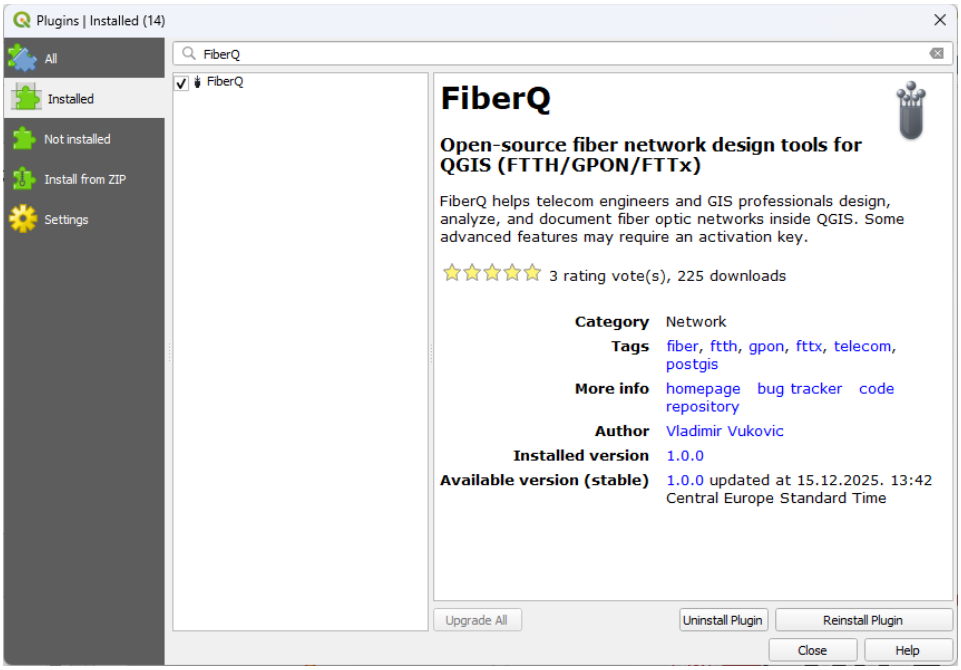


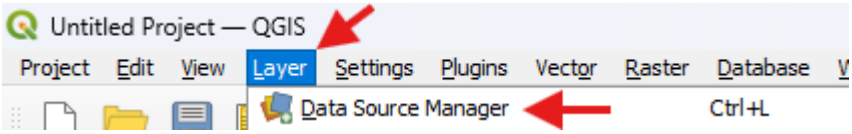


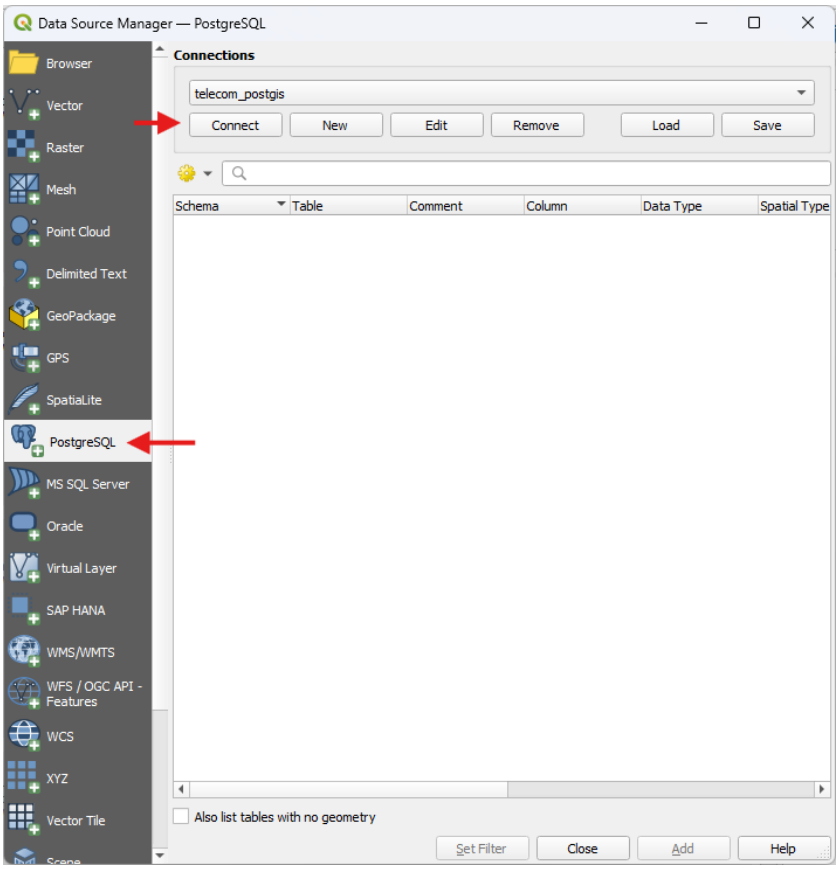
If the link is broken or does not open. Probably something is not setup in the file:

docker-compose.yml

1.5 Docker - QGIS

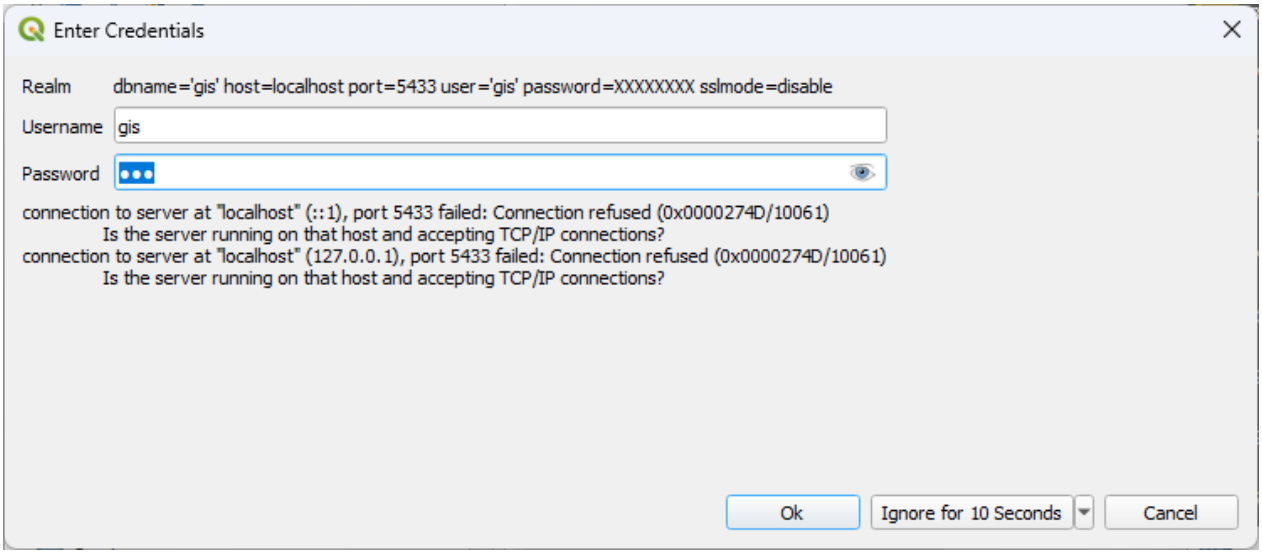


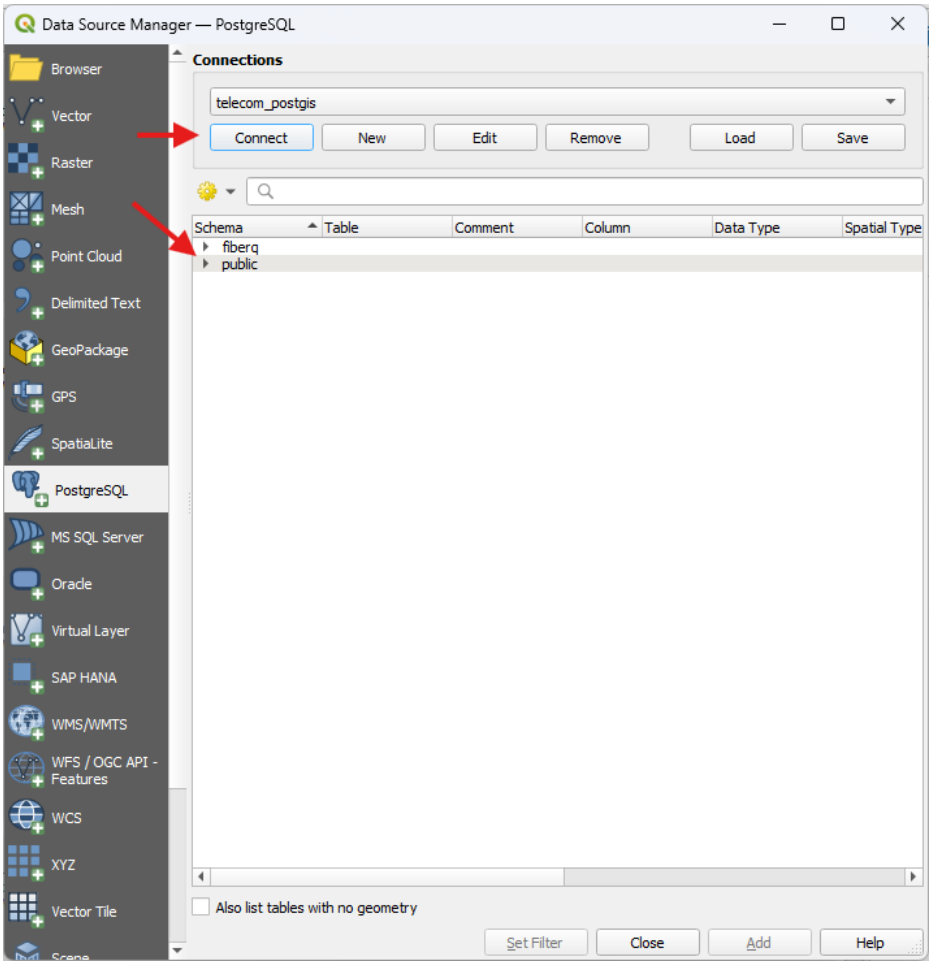




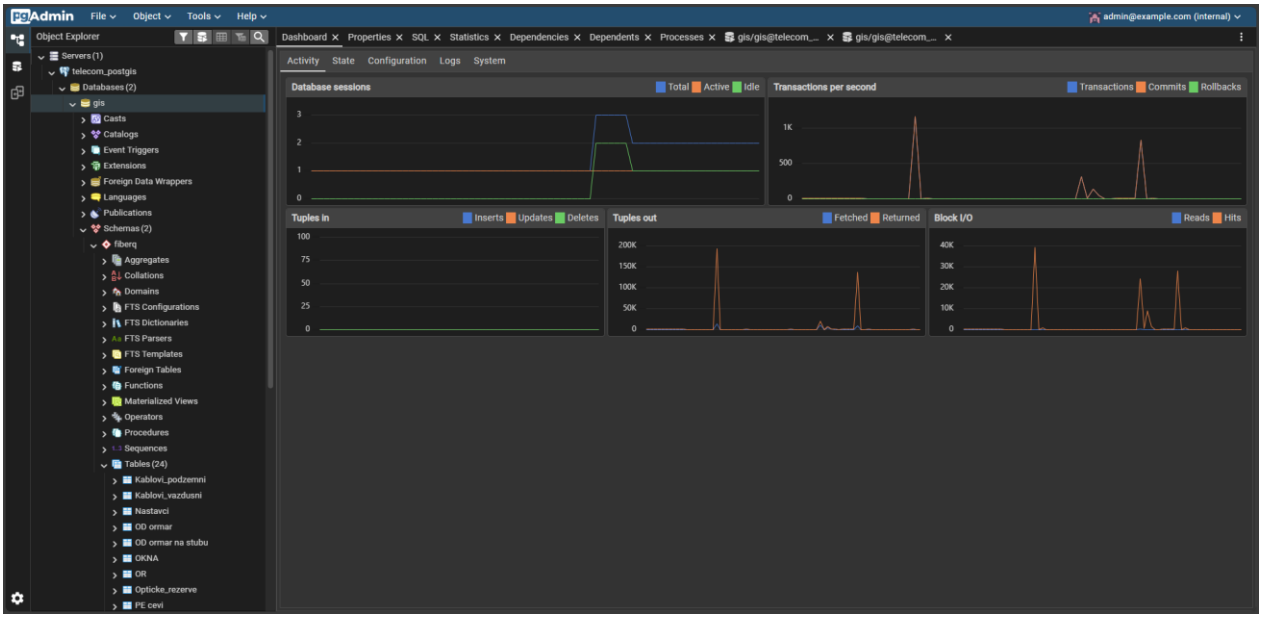
If you got this pop up window after clicking on the Connect button you need to create containers in Docker with command:

docker compose up -d



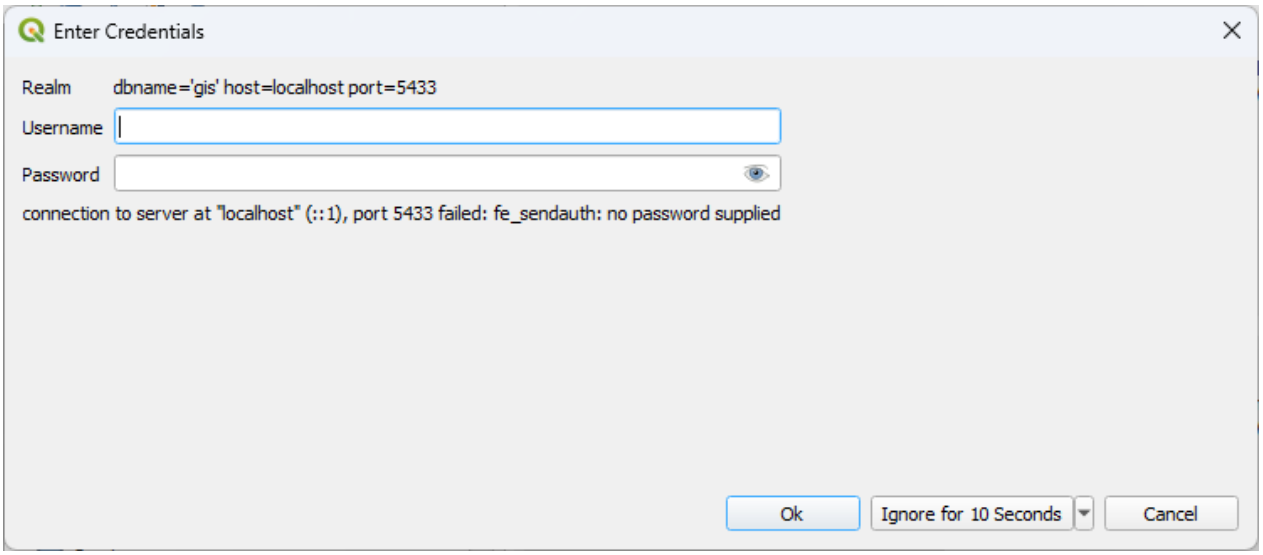


1.6 Docker – PG Admin



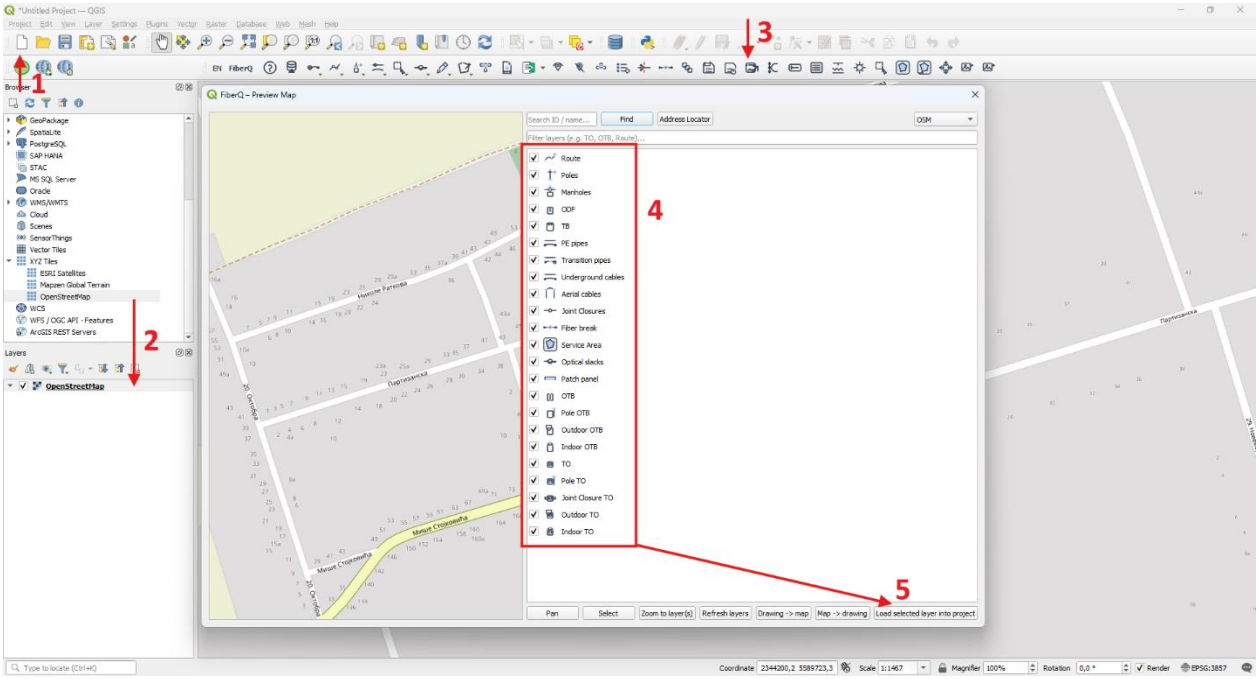
1.7 QGIS – POSTGIS DB Connection

After creating new project and importing the base layer (example: Open Street Map) you can click on the Preview Map button on the plugin bar and the pop up window appears to enter credentials for connection to PostGIS

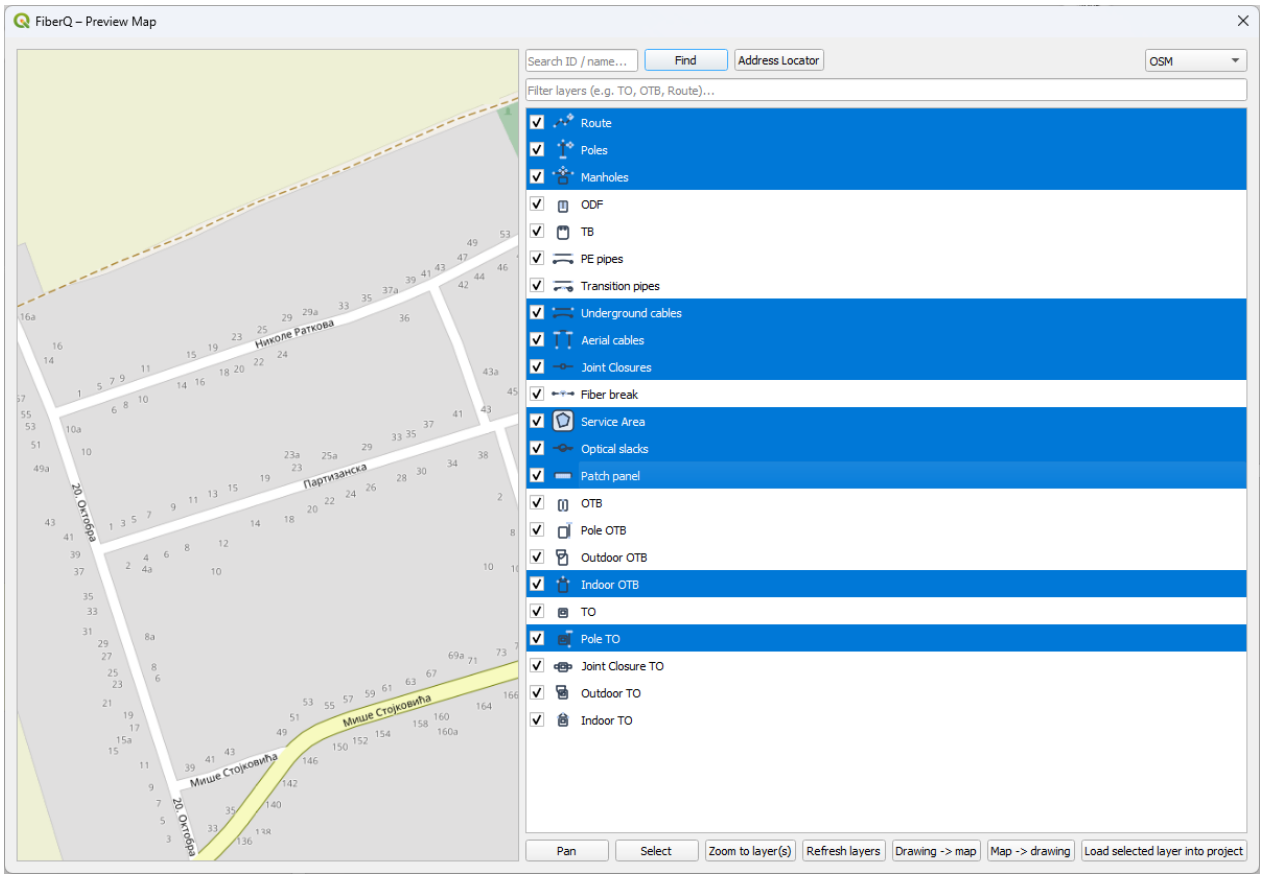


After that Preview Map opens, and from now on, you bo longer need to enter KEY or user/pass for connection as long as Docker containers are UP!

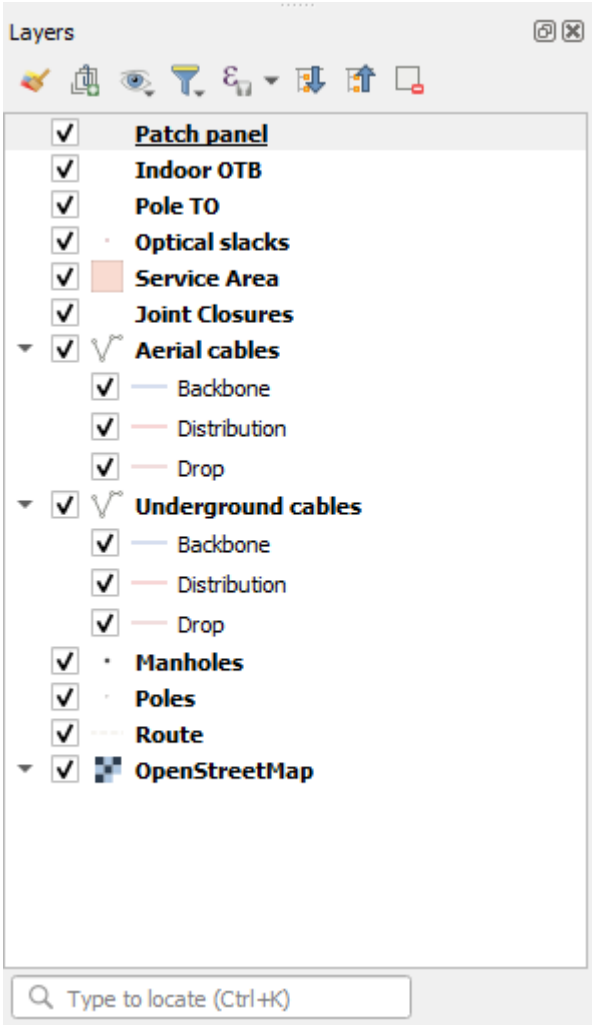
1.8 QGIS – Preview Map



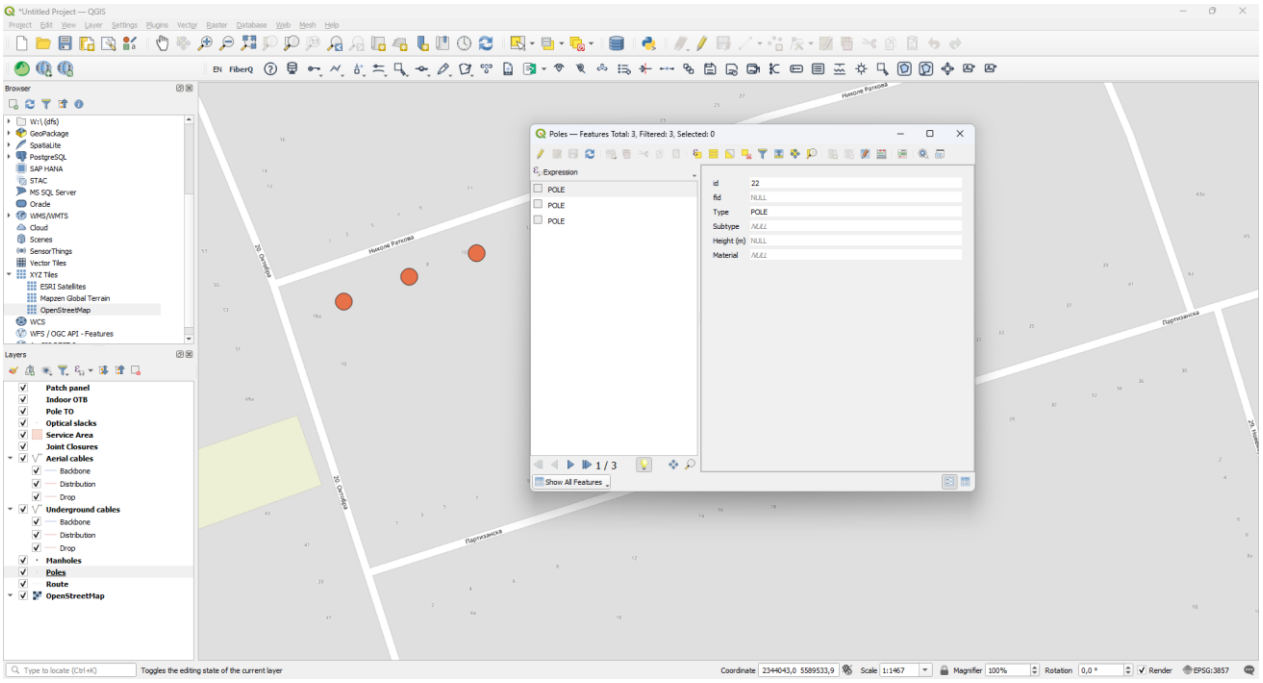
To select layers for export in Preview Map left click on the mouse, or use CTRL + mouse for multiple selection, or SHIFT + mouse.



After selection click on the button “Load selected layer into project”.



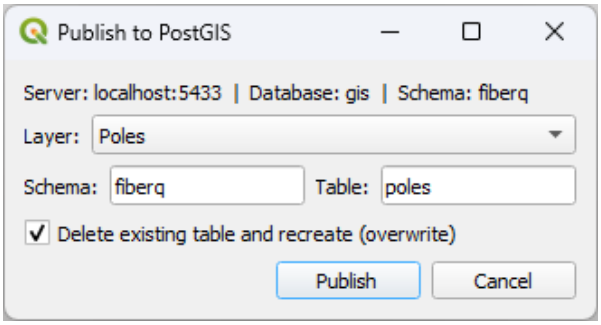
When you use FiberQ toolbar tools (for example Add Pole), new features are added to the active working layer in your project (usually the layer without the “(Database Layer)” suffix).



If you want to edit the live server layer directly, select “<Layer name> (Database Layer)”, enable Toggle Editing, and save edits. Alternatively, work locally and then use Publish to PostGIS to upload/overwrite the server table used by the Preview Map.

1.9 QGIS - Publish to PostGIS button

What “Publish to PostGIS” is used for (and why it’s different from Preview Map editing)



At first glance, **Publish to PostGIS** may look redundant because you can already add and delete features after loading layers from the Preview Map. However, these are two different workflows with different purposes:

1) Loading layers from Preview Map (Load selected layer into project)
This is used to **edit existing server layers** that already exist as tables in PostGIS (the live Preview Map dataset).
When you load a layer from the Preview Map into QGIS and start editing, you are working on the **same PostGIS table**, so changes (add/delete) are reflected in the Preview Map after refresh.

2) Publish to PostGIS
This button is used to **upload (deploy) a layer from your QGIS project to the PostGIS server**. It is intended for layers that are not yet published as PostGIS tables, or when you want to replace/reset an existing table.

That is why the dialog includes the option:
☑ **Delete existing table and recreate (overwrite)**
This does **not** delete a few features — it **drops the entire table and recreates it** from the selected QGIS layer.

When you typically use Publish to PostGIS

- To publish a layer to the server **for the first time** (so it becomes a server layer used by Preview Map)
- To **overwrite/reset** the server table with the current state of your project layer
- When you changed the layer structure (fields/attributes) and want to **recreate the table**
- When importing data from other formats (GeoPackage, Shapefile, KML/CSV, etc.) and you want it available in PostGIS/Preview Map

In short:

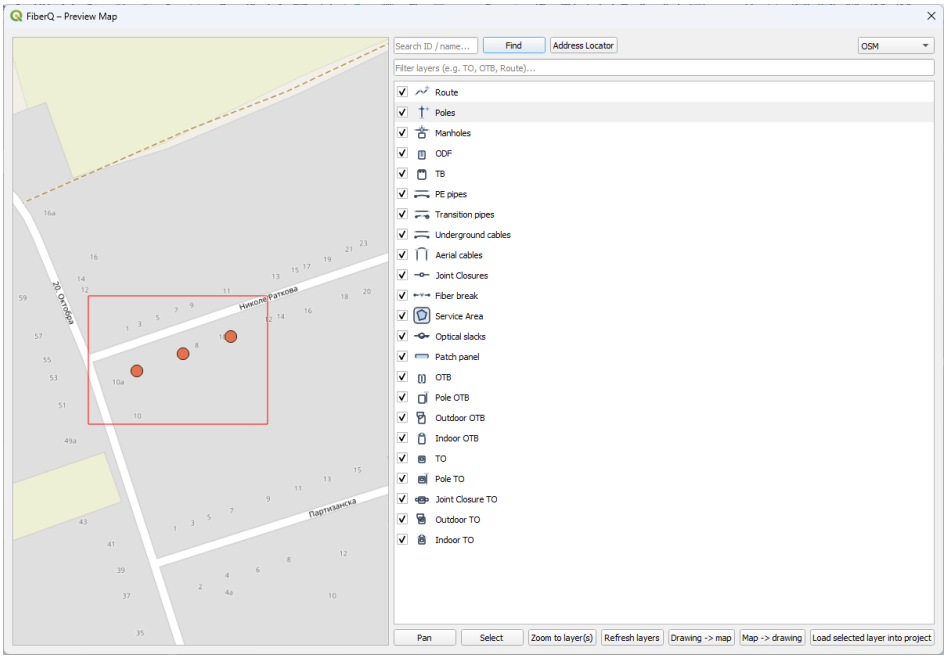
- **Preview Map export/load = editing existing server data**
- **Publish to PostGIS = uploading/overwriting a project layer to create/update the server table**

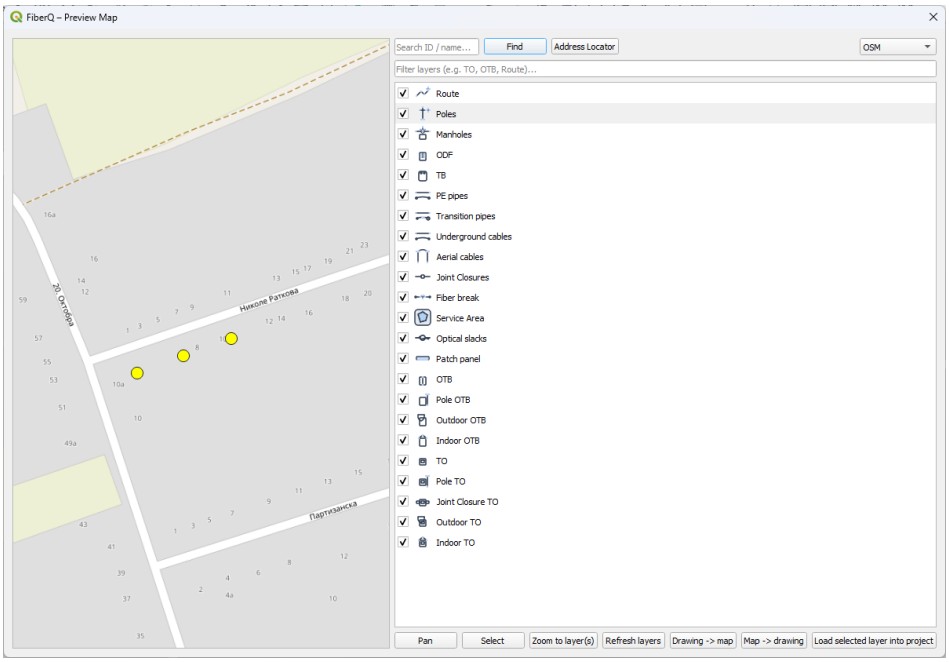
Notes about layers loaded from Preview Map using Select button

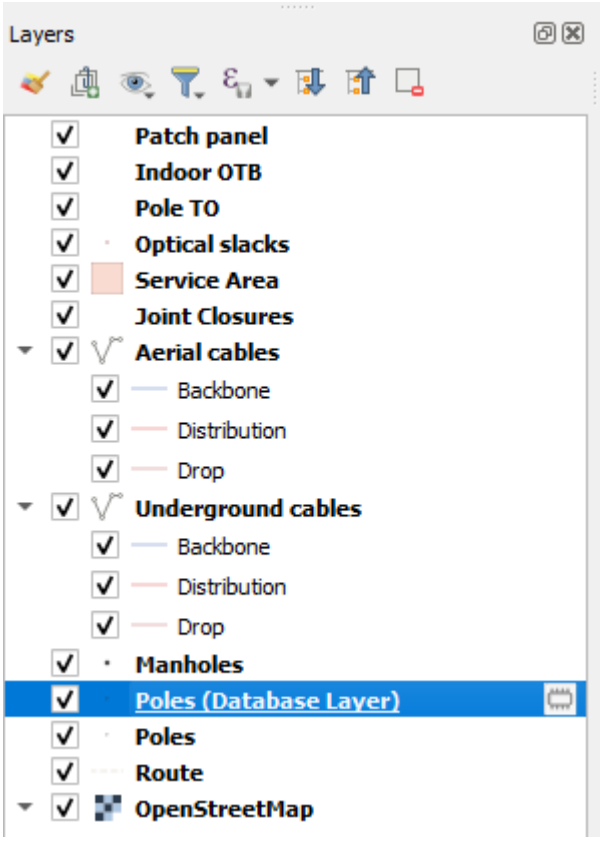
- **(Database Layer)** = the live PostGIS layer on the server (the Preview Map source layer).
- **Layer without the suffix** = a local/snapshot working layer created in the project.
- The **FiberQ toolbar** adds new features to the **working (local) layer**, not directly to the **Database Layer**.

To make your changes visible in the **Preview Map**, you can either:

- edit **directly on the (Database Layer)** by enabling **Edit mode** (Toggle Editing) and saving edits, **or**
- work locally and then use **Publish to PostGIS** to upload/overwrite the server table.







2.0 Troubleshooting

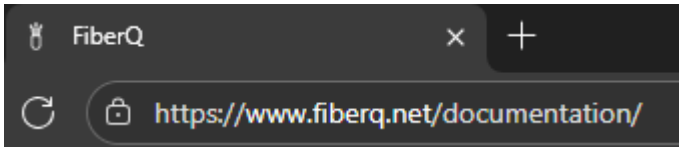
Symptom	Likely cause	Fix
Preview Map button is disabled	Project key/config missing or project not initialized	Create/open a FiberQ project and verify settings
Publish to PostGIS fails	Wrong credentials, schema permissions, or network issue	Test connection in QGIS first; verify write access
Fields appear in the wrong language	Old layer template or cached export mapping	Regenerate/export layers again; update plugin version
Snapping feels inconsistent	Snapping options not enabled for all layers	Enable snapping in QGIS project settings and review FiberQ rules

3.0 Keyboard shortcuts and productivity tips

- Use QGIS snapping + topological editing for clean routes.
- Name layers consistently from day 1 (project name prefix).
- After big edits, regenerate Preview Map to avoid stale outputs.

4.0 FiberQ Documentation

For the most up-to-date FiberQ documentation: FiberQ – Click on the link



5.0 Support and feedback

- Website: fiberq.net
- Issues: github.com/vukovicvl/fiberq/issues
- Email: vukovicvl@fiberq.net