



Geospatial Net

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|| USING MERGIN MAPS FOR BROWNFIELD FTTH PLANNING AND DOCUMENTATION

A Real-World Case Study by Geospatial Net



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Introduction

FTTH brownfield projects are rarely straightforward. Instead of working from a clean slate, teams must interpret outdated records, inconsistent asset information, and gaps in historical documentation. Ducts, poles, chambers, and address data often do not match reality, which slows planning, increases costs, and leads to avoidable rework during construction.

At Geospatial Net, we understand these challenges first-hand because we deliver both full FTTH planning and enterprise geospatial solutions. Through years of experience on complex brownfield networks, we have refined a workflow that removes guesswork and gives teams the clarity they need to make confident decisions.

By using tools like Merjin Maps and QGIS, we build a seamless environment where:

- field teams capture accurate information the first time
- designers receive updates instantly in a shared project
- managers maintain full visibility from survey through construction
- all data remains consistent across planning, as-built, and network inventory systems

Our configuration of smart forms, data models, integrations, and planning logic transforms these tools into one connected workflow that increases productivity and reduces friction across the entire FTTH lifecycle.

This case study shows how we validate addresses, verify existing assets, collect structured field photos, and feed all information directly into the enterprise systems we build for our clients.

The result is a simple, predictable workflow that supports teams from the first field visit to final as-built documentation.

1. The Realities of Brownfield FTTH Work

Brownfield FTTH projects always start with partial knowledge of the existing network. Typical issues include:

- poles, chambers, ducts, cabinets, or closures that do not match documentation
- outdated or incomplete address registers
- GIS layers that have not been updated after previous works
- aerial networks with unknown capacity or deteriorating structures
- undocumented customer connections



These conditions require a workflow where surveyors and designers work from the same data model. The ideal process is one where:

- data is collected once
- synced automatically
- visible immediately in QGIS
- maintained consistently across teams
- integrated into wider web GIS and network inventory systems

Mergin Maps is designed to support exactly this workflow.

2. The Challenge: Disconnected Data, Slow Surveys, and Inconsistent Records

Before implementing Mergin Maps, brownfield FTTH projects often face the following problems:

2.1 Outdated and unreliable asset information

Legacy records rarely show:

- blocked or collapsed ducts
- cracked or unsafe poles
- damaged or full chambers
- inactive or abandoned routes
- incorrect cable paths

2.2 Slow and manual survey methods

Traditional surveys rely on printed maps, mobile photos, and handwritten notes, often resulting in:

- inaccurate asset positions
- photos without context
- delayed data transfer
- lost or duplicated information

2.3 Limited collaboration between field and office

Survey data is shared through email, messaging apps, or cloud folders, requiring designers to manually merge everything.

2.4 No real-time visibility

Designers often wait days or even weeks for survey data, delaying planning decisions and reducing project momentum.



These inefficiencies are particularly painful in large brownfield areas.

3. The Solution: A Connected Merjin Maps Workflow

By adopting Merjin Maps, Geospatial Net created a unified, streamlined environment where all project data lives in a single shared QGIS project. This includes addresses, existing assets, proposed designs, photos, maintenance records, and anything needed for accurate FTTH planning.

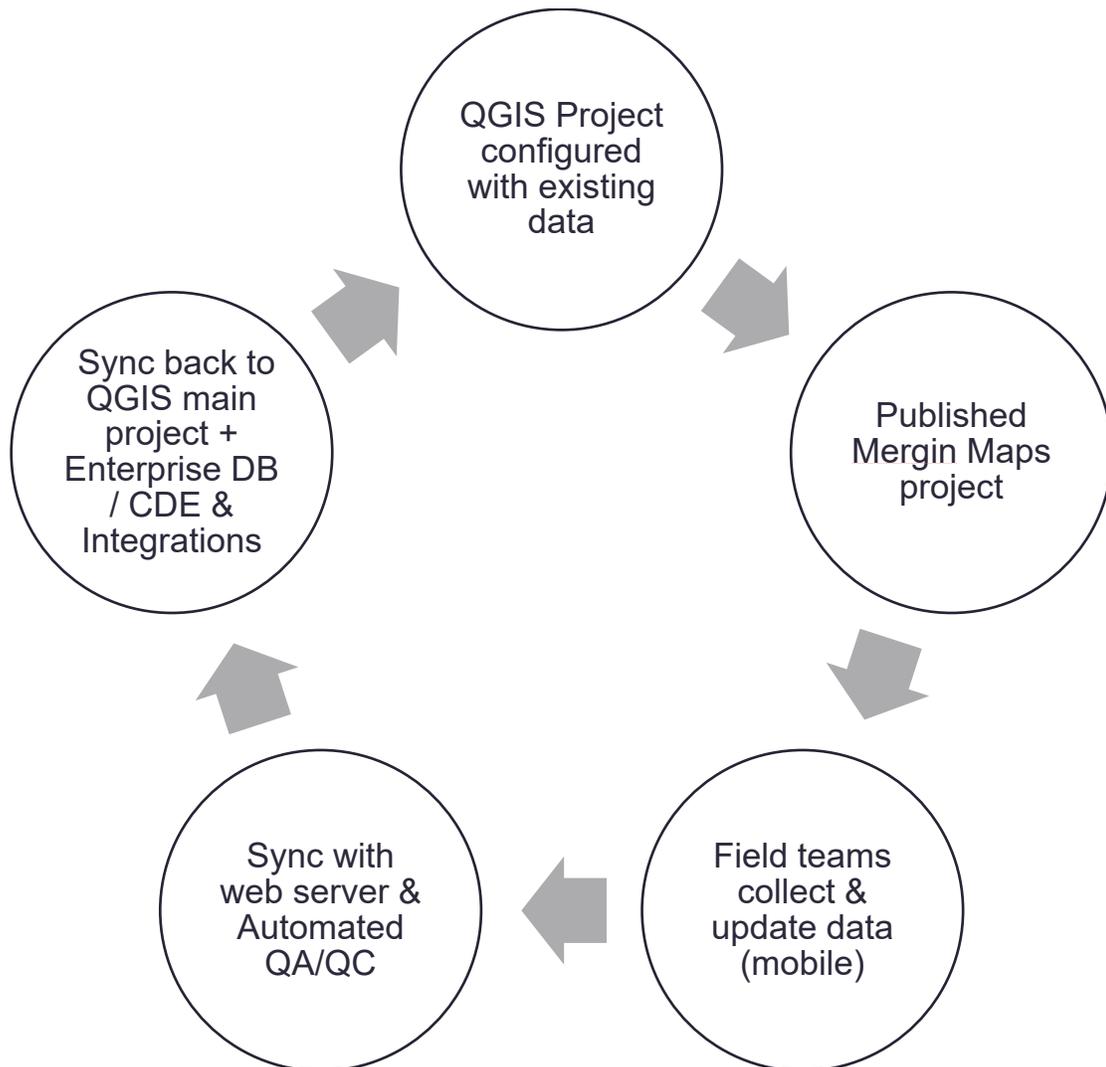


Figure 1 - End-to-end field-to-office workflow for brownfield FTTH projects, using QGIS, Merjin Maps, and an enterprise Connected Data Environment (CDE).



3.1 Offline-first mobile data collection

Survey teams capture accurate information even in rural or low-signal areas. They can record:

- Existing poles, ducts, chambers, anchors, cable routes
- Structural condition of each asset
- Photos with location metadata
- Notes and assessment categories
- Address validation data
- Centimetre-level accuracy by using external GNSS receivers within Mergin Maps

Once connected to the internet, the data is synchronized with the central project.

3.2 Automatic versioning and conflict resolution

Every update is tracked, ensuring safe and transparent collaboration.

3.3 Smart forms optimized for telecom and utilities

Depending on the project requirements, our forms typically include:

- Pole ID/Barcode, height, material, condition
- Duct availability and blockage checks
- Chamber condition and accessibility
- Building entry points
- Photo attachments
- Asset status and reuse feasibility

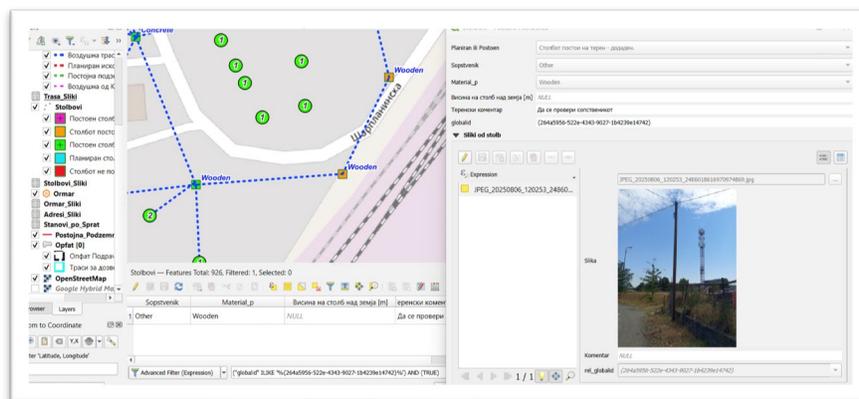


Figure 2 - QGIS form showing the updated asset details and the attached field photo captured through Mergin Maps.



3.4 Instant updates in QGIS

Designers see updates in seconds:

- Photos open directly inside QGIS
- Attributes update instantly
- Asset positions are corrected on the map
- Validation scripts flag inconsistencies

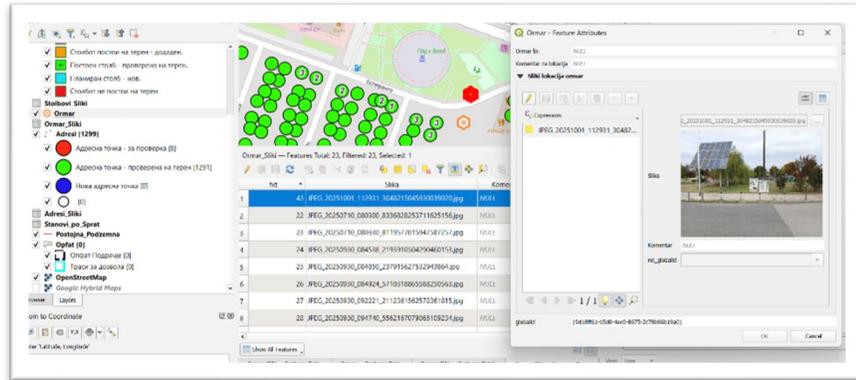


Figure 3 -Newly captured cabinet-location photo synced instantly to the correct feature in QGIS.

3.5 Consistent QGIS Symbology and an Intuitive, Modern User Experience

Mergin Maps displays the exact same symbology used in QGIS.

There is no conversion, no misunderstandings, and no extra formatting.

Field teams, subcontractors, and inspectors all work with a modern, intuitive interface that requires minimal training.

Everyone sees the same map and understands the same data structure.





4. Use Case: Address & Asset Validation in Brownfield FTTH Projects

4.1 Preparing the base project in QGIS

We create a QGIS project with:

- Existing network layers
- Address register
- Proposed planning layers
- Field data collection forms
- Symbology, validation rules, and domains

This project is then linked to a Merjin Maps workspace.

Attribute	Value
За проверка	Проверена на терен
Проверена на терен	Проверена на терен
Нова адресна точка	Нова адресна точка
Status	(NULL)
Име на улица	(NULL)
Куќен број	(NULL)
Додаток на куќен број	NULL
БРОЈ_НА_ВЛЕЗ	NULL
Старо име на улица	NULL
Стар куќен број	NULL
Стар додаток на куќен број	NULL
Број на катови	NULL
Број на резиденцијални НР	NULL
Број на бизнис НР	NULL
Намена на објект	(NULL)
ГРП	(NULL)
ZABELESKA_TEREN	NULL

sbbi

Expression: [Empty field]

Stanovi po kat za Kolektivni

Expression: [Empty field]

OK Cancel



4.2 Validating the address register in the field

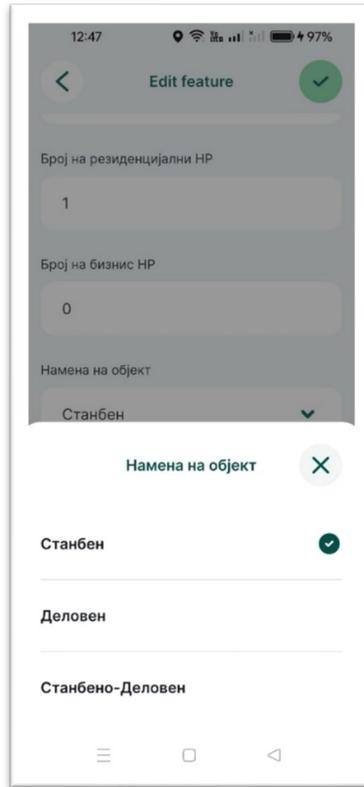
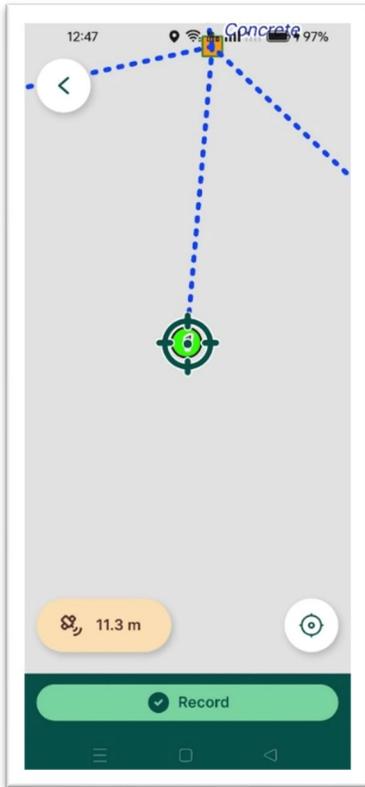
Surveyors confirm:

- Whether the building exists
- Whether the street numbering is correct
- Whether the building contains one or multiple households (HP)
- Whether there are missing units or newly constructed residences
- Whether the building requires migration from older broadband technologies
- What the building type is and how complex the future connection will be, so potential users can receive accurate installation time and cost estimates, and operational teams can plan resources more efficiently
- The type of property (residential, commercial, mixed-use)
- The correct HP count per building, which is essential for dimensioning the fibre distribution network
- If the HP count differs from the official register, the correct number is captured directly through the Mergin Maps form
- A representative photo of each building to support planning, coordination with construction teams, and long-term as-built documentation
- The precise service drop or connection location for the address

This HP (household) information is especially important in brownfield FTTH planning because it directly affects:

- Feeder and distribution cable sizing
- Splitter and closure placement
- Drop fibre allocation
- Cost and material estimates
- Expected take-rate and network capacity
- Long-term network scalability

By validating the HP count in the field, planners avoid overestimating or underestimating network requirements. This leads to more accurate designs, better forecasting, and significantly reduced rework during construction.



4.3 Verifying existing network assets and assessing reuse

Survey teams assess:

- duct reusability or blockages
- pole suitability or damage
- chamber accessibility and condition
- accuracy of documented cable routes
- height clearance and line-of-sight conditions
- availability of space for new infrastructure
- any visible hazards

Photos are captured to support planners with visual context during the design process, to help construction crews understand the location of planned network elements and identify potential hazards, and to enrich network inventory systems with information that assists future maintenance activities.



4.4 Syncing survey data into QGIS

As soon as data is synced:

- Designers see real-time updates
- Asset locations are corrected
- Photos are accessible directly from QGIS
- All information is ready for immediate planning

There is no manual merging, renaming of photos, or spending days to decipher the field notes.

4.5 Using verified data for planning and for enterprise network inventory

The workflows we build for our projects, and for our clients, are centered around an enterprise database that forms part of a Connected Data Environment (CDE) acting as the single source of truth. This environment is designed with data sovereignty and redundancy in mind, ensuring that information is protected, independently controlled, and recoverable. The central database is then integrated with additional applications and systems, giving everyone involved in the project access to accurate and consistently updated information.

Typical connected applications include:

- Web GIS portals
- Enterprise network inventory systems
- Construction dashboards
- As-built automation
- QA/QC automation
- Maintenance and inspection records
- Automatic routing calculations
- Automatic generation of Bill of Materials and Bill of Quantities
- Integration with external systems (ERP, ticketing, CRM, SCADA, or contractor systems)

These integrations allow verified field data to flow seamlessly into all parts of the organisation, supporting planning, construction, documentation, and long-term network operations. With a consistent, verified dataset feeding every system, teams can finally work with clarity and predictability. The impact is visible across the entire project lifecycle.



5. Results Achieved

5.1 Faster surveys and planning cycles

Teams work 40 to 60 percent faster because they collaborate on a shared dataset.

5.2 Reduced errors and inconsistencies

With verified assets and accurate photos, planning becomes significantly more reliable.

5.3 Improved communication between survey and design

No more emails, ZIP files, or duplicate data.

5.4 Better decision-making

Planners use real-world photos to make accurate routing and asset-reuse decisions. The consistent, structured data captured in the field also enables full automation of analytics dashboards, Bill of Materials and Bill of Quantities, cost-per-home calculations, and other reporting processes. Decision makers can rely on these automatic and consistent analytics to monitor progress, plan resources, and make informed decisions based on real project data.

5.5 Lower project risk and cost

Less rework, fewer unexpected issues during construction, and fewer field revisits.

6. Why Merjin Maps Is Ideal for Brownfield Telecom, Utility, and Infrastructure Projects

- QGIS-native
- Offline-first mobile workflow
- Safe versioning and collaboration
- Smart forms
- Low cost and scalable
- Easy transition from Esri or other mobile apps
- Perfect fit for enterprise-level systems
- Compatible with RTK-enabled GNSS receivers, allowing centimetre-level accuracy during field data collection



Conclusion

Brownfield FTTH projects run smoothly only when the underlying information is accurate, verified, and continuously updated. By combining Merjin Maps with QGIS, organisations gain a modern workflow that improves field surveys, address validation, asset checks, and planning decisions. When connected to an enterprise geospatial environment, the entire network lifecycle becomes easier to manage and scale.

At Geospatial Net, we design and deliver complete solutions that cover every step of the process. We configure the tools, build the data model, set up integrations, and ensure the workflow operates as one reliable system.

We support organisations with:

- FTTH brownfield and greenfield workflows
- QGIS data models, rules, and smart forms
- Address register validation
- Automation and plugin development
- Migration from Esri
- Network inventory platforms
- Team training and onboarding
- API integrations and workflow automation
- Dashboards, reporting, and ETL processes
- Full open-source geospatial deployments

We also provide turnkey FTTH delivery including planning, engineering, permitting, and, in some regions, field survey work. This gives clients one dependable partner with both telecom engineering expertise and advanced geospatial capabilities.

If you want a reliable FTTH workflow that works from the first survey to the final as-built, we can deploy the complete environment for you.

 contact@geospatialnetworks.com

 **[Book an intro meeting](#)** with our team to explore how we can support your next project.