

# Playing a part in Ireland's fibre revolution

## 4site



### CASE STUDY: SIRO

*"Our original approach (Survey, Design & Build) often required multiple design revisions. It was hard to see us scaling up to 100,000 homes per year with that kind of constraint, With 4site it's just one revision. We get there much quicker than before."*

Aaron O'Reilly  
Engineering Manager, SIRO

### *SIRO project showcases 4site excellence in fibre-to-the-building (FTTB) survey and design*

SIRO, a joint venture of ESB and Vodafone, was established in 2015 as a new national "Fibre To The Building" (FTTB) communications network in response to the poor infrastructure that existed in regional Ireland.

ESB was already running fibre optic cable over its transmission network for internal operations and had a telecoms division that supplied high capacity connectivity to major centres. After trials and cost modelling, ESB had sought a partner with retail telecom expertise and chose Vodafone to be its joint venture partner.

The SIRO plan, a €500m investment, aims to connect c.450,000 homes and businesses in Ireland across 50 regional towns with a high speed FTTB, gigabit network which is open to all retailers on an open access basis.

### CHALLENGE

Given the scale of the engineering challenge and the demanding roll out timetable, SIRO initially tendered for contract partners to survey, design and build the networks. The plan was to have one-stop providers whose primary proficiency was in electrical networks and meeting rigorous health and safety requirements. They could subcontract for expertise in fibre optic design as required.

By the end of 2016 SIRO had built a network of over 40,000 homes across 10 towns which was impressive from a standing start but with an ambition to deliver 80-100,000 homes per year all aspects of the build life cycle were reviewed for efficiencies.

Aaron O'Reilly, Engineering Manager at SIRO, explained: "We began to question if the design process was as efficient as it could be. Was the one stop shop working as efficiently as we'd hoped? We decided to take back control of this phase."

The survey/design challenge is to ascertain the best way to deliver fibre to buildings in each town. The two options are going overground using poles, or underground through existing network ducts. Each brings its own level of complexity. Some poles provide bundled connection to the



## CASE STUDY: SIRO

*"We began to question if the design process was as efficient as it could be. Was the one stop shop working as efficiently as we'd hoped? We decided to take back control of this phase."*

Aaron O'Reilly  
Engineering Manager, SIRO



end of a terrace, for example, from where a cable runs across the facade with taps off for each house; underground variables are enormous, from cable in the ground without ducts to ducted cables without access points. The only way to get to them is through digging. "Then you're into unpredictable costs that get very high, very quickly," said O'Reilly.

The decision was taken to tender for a specialist survey and design partner. 4site had worked for some of the original contractors at the start of SIRO and had the engineering competencies. The firm was already well known to Vodafone having helped design its 3G network. "So, from the outset there was already a level of comfort that 4site could deliver," said O'Reilly. "We evaluated their capabilities, resources and were happy with their approach."

4site won its first SIRO contract for survey and design in Kilkenny. It would be the first of many, as 4site's SIRO Project Manager, William Tobin, recalled: "We were given the town as a trial and turned out more designs than the build contractor could handle. Before we'd finished SIRO had awarded us other towns."

### SOLUTION

ESB has a record of every town's distribution network, which provides the starting point for each rollout. Networks built in the last 25 years are well documented in terms of overhead and underground infrastructure, but older records (which can date back to when ESB was founded in 1927!) can be less detailed.

Armed with a High Level Design (HLD) of varying details, 4site embarked on a three-step survey and design process:

#### STAGE 1: Town survey

4site carries out its own physical survey across all infrastructures. Overhead connectivity is visible and considered proven, but every single pole is tested for structural integrity. Rot can be a problem, particularly with older network. A report is issued to the ESB if they must replace or fix a pole before it can be used.

## CASE STUDY: SIRO

*4site carries out its own physical survey across all infrastructures. Overhead connectivity is visible and considered proven, but every single pole is tested for structural integrity. Rot can be a problem, particularly with older network. A report is issued to the ESB if they must replace or fix a pole before it can be used.*



For underground, if there are vaulted ducts the vaults are opened and inspected. The time this takes will depend on the size of the town and the availability of up to date records. Kilkenny, with 15,000 premises, took around 3 months. Engineers use the 4survey App, on Apple iPads mostly, to record the survey data as they go along.

### STAGE 2: Feeder proving and site investigation

Next, 4site establishes the critical feeder routes, the network spines that will carry the fibre. In areas where there are no vaults, site investigations and strategic digs will check for ducts. The endgame is proving fibre connectivity is possible, with estimates of what type and volume of sub duct is likely to be needed.

*Feeder routes are also 'proved out' from the local internet access point, or PoP (Point-of-Presence). This may involve digging and pushing in sub ducts. Towns are divided into clusters where 2,000-3,000 premises are fed from one SIRO underground cable.*

### STAGE 3: Distribution design

With feeders in place and damaged poles swapped out, the distribution design starts, collating the trunk network and splitter locations into a single line diagram. A splicing schedule is also drawn up, detailing where a single fibre cable can be split to serve 4,000 homes. This gives the contractor all the information they need to start the build. But 4site's work is not necessarily over.

Revisions and changes may be required during the build phase, so engineers are on standby and available to go onsite and troubleshoot. It might be a wayleave issue, someone not allowing access to an estate for a dig, for example. When all issues are resolved and the build complete, 4site transfers the final design record into the ESB database where it is accessible for future requirements.

## CASE STUDY: SIRO

*"Our original approach (Survey, Design & Build) often required multiple design revisions to get what we wanted. It was hard to scale up to 100,000 homes per year with that kind of constraint."*

Aaron O'Reilly  
Engineering Manager, SIRO



### BENEFITS

4site has played a key role in the rollout of a pioneering FTTP project. A rich mix of inhouse skills has been instrumental for making it happen, from project managers, engineers and site surveyors to specialists in fibre optics and GIS. Skills are one thing but it's the 4site ethos that has been key to success, according to Project Manager William Tobin,

*"Safety and quality is our number one priority," he said. "My job is to hit dates and targets. But coming up through 4site it's embedded in me that quality is more important. You might be a day late, but it's always better to get it right."*

SIRO certainly noticed the difference. "Our original approach (Survey, Design & Build) often required multiple design revisions to get what we wanted. It was hard to scale up to 100,000 homes per year with that kind of constraint," said O'Reilly. "With 4site it's just one revision. We get there much quicker than before."

Efficiency in the design process is important to SIRO, but so too is 4site's team-player approach. "I like that they are willing to work in partnership. We come to an agreement about things very quickly which is a refreshing change from what we had before," said O'Reilly. "They are easy to get along with and the quality of work is of a very high standard."

4site has also helped to make the rollout more innovative. If a better way of doing things is discovered, the SIRO team wants to be able to implement it quickly – whether it's a new kind of cable or a different type of duct enclosure. "Innovation was more difficult under our old model, 4site are flexible, work quickly, and are always willing to try new ideas," he said.