



### PROJECT SUMMARY:

#### CLIENT

Nottingham City Council

#### PROJECT

Alarm Reconfiguration and Joint Replacement

#### TIMESCALE:

June 2016 - October 2017

#### CONTRACT VALUE:

£963,000

## PROJECT OVERVIEW

The Nottingham District Heating scheme is one of the largest of its kind in the UK and consists of approximately 80KM of district heating pipework which are all at differing stages of their life span, some in excess of 20 years old. The scheme has over 11,000 joints fitted using the old Steel Taper Lock and Bolt Jointing System which is no longer produced.

Vital Energi were contracted to update and reconfigure the Leak

Detection System to the latest cloud based technology, along with identifying and systematically replacing aging joints to new Fusion and Extrusion Welded Joints. Nottingham City Council and Enviroenergy commissioned Vital Energi to survey the scheme and produce a lifecycle plan that assessed its current condition and make proposals as to how the lifespan could be extended without extensive replacement.

## VITAL'S SOLUTION

Following our inspection, we concluded that by updating and reconfiguring the Leak Detection System, and by carrying out a number of targeted joint replacements and repairs, the lifespan of the scheme could be extended by a possible 15 - 20 years.

*Efficiently identifying areas for improvement*

We were tasked with identifying the existing Fault Locators on the project and reconfiguring the Leak Detection System to reduce the numbers required across the scheme. This was combined with the need to target the old Taper Lock Joints and Jumper Cables that were in need of replacement or repair.

Using the as-built drawings, we were able to locate the aging equipment that required replacing.

### THE BENEFITS:

- > Improved leak detection and monitoring of the scheme from any location via the cloud
- > Improved management and control of the overall maintenance
- > Reduced maintenance costs
- > Extended lifespan of the current scheme, negating the need to replace the district heating pipework

▶ Ww replaced the old Taper Lock Joints and Jumper Cables (below) with new Fusion and Extrusion Welded Joint and Jumper Cables (right).



“ Vital are keen to work with us as a team, they have a good flexible and proactive approach. Vital also manage our civils teams which works great, they have developed good working relationships and work together well. They are competent, professional and structured and we have a good working relationship. ”

MARK BRADBURY, INFRASTRUCTURE DELIVERY MANAGER, NOTTINGHAM CITY COUNCIL

As the old Fault Locators were installed inside weather proof boxes along the district heating route and their operational efficiencies reducing over time, it was decided to relocate and install the new Fault Locators into the substations sited across the scheme. The alarm wiring within the joints were reconfigured to allow the Fault Locators to monitor larger areas. This is more beneficial as they are now situated in more effective locations that will cover a wider area than the previous units to provide greater monitoring and maintenance of the scheme.

#### **Minimising disruption by using the latest technology**

The aged Jumper Cables were a weak point in the system, and so were updated and replaced with the latest Fusion Welded Jumper Cable solution. This will benefit the scheme as it will enhance its lifespan through the use of updated technology.

During the process of reconfiguring the Leak Detection system, old Taper Lock Joints that

were identified by our in-house Alarm Engineers as becoming redundant were replaced by utilising the Extrusion Welding Jointing System. This allows us to remove the old Steel Muffs and replace them with a Fusion and Extrusion Welded Joint without the need to cause disruption by arranging a shutdown at each location.

By targeting and removing the aged Jumper Cables, Fault Locators and Taper Lock Joints, we systematically reconfigured and updated the Cloud-based Leak Detection system with newer and more efficient technology to maximise its monitoring capabilities.

#### **Cloud Technology to benefit scheme management**

These updates will result in Nottingham City Council having the ability to easily monitor the entire scheme from a single location, and remotely view any issues before they occur. Complications can be prevented through the ability to monitor potential issues, such as

moisture within a given joint or length of a pipe, from the point at which the system registers any changes before there are any significant problems. These can then be monitored up to the point when any repairs need to be actioned. This allows Nottingham City Council to improve their planning and management of their maintenance budget and repair schedule through having knowledge of issues before they develop into larger complications, and therefore preventing the need for larger emergency actions.

Once all of the Fault Locators have been systematically reconfigured with improved Leak Detection Equipment, and aging Jumper Cables and Taper Lock Joints replaced, Nottingham City Council should see the lifespan of the scheme significantly extended. This will result in a stronger, proactive maintenance regime as this new system will allow for centralised monitoring, and therefore more targeted upkeep.