### Acceptance Testing and Heat Network Operation

#### What is Acceptance Testing?

This Carbon Bite focusses on problems that heat networks have had in the United Kingdom (UK). Heat networks can and should perform well. However, a lack of skills and regulation has led to poor performance, which in turn leads to high bills and increases the risk of overheating. This is a significant issue, as we know that heat networks are likely to be a key tool for decarbonising heat. This is because of their flexibility in heat generation, which makes them “technology agnostic”.

In the last few years, considerable strides have been made in improving design standards. For instance, the release of the Chartered Institution of Building Services Engineers Code of Practice 1 (CIBSE CP1) in 2015 has helped to normalise design philosophy and key principles. However, there remains a significant performance gap between design and operation, which means that well-designed systems are still at risk of poor operation. The root cause of this can be attributed to incorrect commissioning and a lack of independent witnessing.

In response to this issue, FairHeat has developed an Acceptance Testing procedure. This is a collaborative process between the Developer, Mechanical and Electrical (M&E) Consultant and M&E Contractor with a focus on network efficiency, regulatory compliance, resident comfort and reduction of post-occupancy cost. The Acceptance Testing process consists of independent inspections and testing of 100% of Heat Interface Units (HIUs) at a site, in order to verify correct installation and performance in all modes of operation. Testing of every HIU ensures that no issues slip through the net. This is especially important, as a small percentage of poorly performing HIUs can significantly raise return temperatures.

Acceptance Testing is now a well-established process, with thousands of homes tested and delivered. Most developments where Acceptance Testing has been completed have achieved network return temperatures at or lower than design. For this reason, Developers who have utilised Acceptance Testing are now integrating this process into the delivery plan throughout their entire portfolios. The benefits of this process have also been recognised by industry. For instance, Acceptance Testing has been included as a minimum requirement in the updated CIBSE CP1.2 Heat Network Code of Practice.

Tom Burton and Ryan Harris, FairHeat, September 2019

### Key Points to Consider

- Collaboration between all parties is important to achieving the same common goal of minimising return temperatures and heat losses.
- Acceptance Testing should be carried out in tandem with plant room and network commissioning checks to ensure the entire heat network, and not just the HIUs, is performing well.
- Correctly commissioned HIUs, with performance compared to Building Engineering Services Association (BESA) test results, ensure that there are no Quality Assurance (QA) issues.
- Secondary circuits are often unbalanced, thereby leading to poor heat delivery to residents and elevated network return temperatures.
- Witnessing a percentage of HIUs is often not enough to ensure that all HIUs are performing in accordance with the design intent.
- Terminal runs make up approximately 50% of total network length. Therefore, good insulation is important in reducing network losses.