

Newcastle City Council/Your Homes Newcastle

Byker District Heating System Upgrade, Newcastle upon Tyne

1. Introduction

In June 2012 a stock transfer from Newcastle City Council to the newly formed Byker Community Trust was completed, with the Trust becoming the owner of the around 1,800 properties. The Byker Estate was designed by the renowned architect Ralph Erskine and in January 2007 was awarded grade II* listed building status.

Following the transfer, the District Heating System was retained by Newcastle City Council, and the Council (assisted by its ALMO - Your Homes Newcastle) began the process of designing and procuring a substantial upgrade of the District Heating System, which provides the 2,000 dwellings on the Byker Estate with heat and hot water.

The Project includes the renewal of 2.5km of secondary mains pipework, the refurbishment of 12 heating substations, the installation of a new Building Management System (BMS), the extension of the primary main to three areas on the Byker Estate (currently served by three group heating systems) and works to internal dwellings.

The Clients for the works are Newcastle City Council and the Byker Community Trust, with Your Homes Newcastle and Capita acting as Client Representatives for the separate contract packages.

2. Overview of upgrade works

The selected procurement route split the Project into three main packages of work, with separate contracts for each package (each subsequently split into multiple phases/sections). The works were structured in this way to reflect the specialist nature of the market and to ensure that the procurement met the objective to deliver best value for the Clients.

The packaging of the works reflected the result of early soft-market engagement with potential bidders. This resulted in the adoption of both the PPC2000 form and the NEC3 form for use across the Project. The key packages of work and the forms of contract are detailed below:

- **Work Package 1:** Secondary Mains Upgrade (under PPC200).
- **Work Package 2:** Refurbishment of Heating Substations, BMS Installation and Extension of Primary Mains (under an adapted NEC3)
- **Work Package 3:** Works to Internal Dwellings (under PPC2000).

Reflecting the ownership structure of the district heating system and the residential units, the Client for Work Package 1 and Work Package 2 are Newcastle City Council and the Client for Work Package 3 is the Byker Community Trust.

Undertaking works of this nature within the Byker Estate is challenging. Vehicular access is restricted, the Estate is listed and the works are potentially highly disruptive to residents. The Secondary Mains works and the Refurbishment of the Heating Substations also require a number of planned shutdowns to the heating network, which (if badly managed) could significantly disrupt the supply of heat/hot water to residents.

The Secondary Mains works required certain roads and footpaths needed to be closed and the appropriate consents obtained. This needed careful management, not only to maintain access to all parts of the Estate, but to ensure that excavations were properly protected and the highest standards of health and safety applied at all times. The requirements for diversions and stopping-up orders also needed to be built into the Partnering and Project Timetables. The pictures below illustrate some of the difficulties, and there were added complications due to the history of the site (requiring adjustment of the heating network route around existing structures, services and ground obstacles).

There were also complications due to the listed status of the Byker Estate. All reinstatement works and alterations to structures needed to be approved in accordance with the conditions of the listing. Again, these requirements had to be clarified and the timescales built into the Partnering and Project Timetables.

The contractual approach required the integration of different works packages and early cross-contract engagement to allow effective risk-management and to effectively plan the specification and requirements for the works packages. This was not just about the effective delivery of a complicated upgrade, but also about minimising disruption to residents and maintaining the supply of heat/hot water throughout the delivery phase.

Trenching works



Secondary mains connections



Footpath closures and access constraints



3. Developing an effective partnering ethos

Alongside the challenging characteristics of the Byker Estate and the nature of the works, there was the potential for significant difficulties due to fragmenting the works across three contracts. Although this fragmentation was driven by the need to deliver best value and satisfying the different requirements of the two clients, it was essential that the team worked together to deliver the overall objectives for the Project. There was therefore a requirement to put in place a strategic framework, which would achieve the following objectives:

- Developing an effective Project-focused team (ensuring that all the parties involved worked together effectively and did not pursue their own self-interests or hide behind the separate package contracts to the detriment of the Project).
- Early engagement in the pre-construction phase (integrating the packages/contracts and limiting any disruption to tenants and continuity of heat/hot water supply).
- Cross-contract risk management (allowing the expertise of the different Clients, Constructors, Consultants and Specialists to be fully utilised to benefit the Project as a whole).

The PPC2000 form of contract provided the bedrock of the partnering process, with the parties ensuring effective integration through the use of a single cross-contract Master Works Programme and Strategic Group. This strategic approach allowed the effective integration of the different project teams, and ensured that a Project-focused partnering ethos developed for the overall benefit of the Project.

3.1 Developing an effective Project-focused Team

To help develop the required approach from project inception, joint Partnering Workshops were held with the Clients, Constructors, Consultants and Specialists working across the three Work Packages. These followed the initial appointments taking place and continued throughout the pre-construction stage. These integrated Partnering Workshops are still held regularly, helping to maintain connections across the teams and providing an effective means of managing interface and risk issues across the three Work Packages.

In addition to the standard PPC2000 partnering terms, Special Terms were included within all the three contracts to help manage the various interfaces effectively. The Special Terms included:-

- The establishment of a Strategic Core Group to oversee the Project as whole. The membership of the Strategic Core Group includes the Clients, Project Managers, Client Representatives and Constructors from each of the three Work Packages.
- A "Related Works" clause, which placed a number of obligations on the Constructors. This included processes to agree, permit and facilitate works being undertaken by other parties on the Estate, to actively co-operate with other parties, to attend meetings with other parties undertaking related works and to co-ordinate the works.

3.2 Early engagement in the pre-construction phase

The parties used the pre-construction processes within PPC2000, and expanded these to effectively allow joint risk management, design development and supply chain selection across the three Works Packages. The key driver for this early engagement and coordination was the need to ensure the continuity of heat/hot water supply for residents, and to minimise the overall disruption to the Estate.

Alongside the standard PPC2000 partnering terms, a Special Term was included within all the three contracts to ensure integrated programming. This relied on the joint development of a Master Works Programme – which provided a detailed integrated timetable governing the activities of all the parties working on the Project.

The Master Works Programme remains a live document, and is regularly reviewed by the Strategic Core Group. It helps to ensure that issues which impact on tenants can be managed effectively across the Project and also provides a useful mechanism for minimising disruption to tenants. For example, system shutdowns are required for Work Packages 1 and 2. By coordinating the work through the Master Works Programme, the number of shutdowns have been reduced - with all shutdown works being planned to be carried out at the same time. This limits the disruption to residents and reduces the usage of expensive oil-fired temporary heating plant.

The Master Works Programme places an obligation on each Constructor to ensure that their Project Timetables comply with the Master Works Programme prior to works commencing. They are also required to notify the relevant Client if there are any inconsistencies between their Project Timetable and the Master Works Programme. This

ensures that the Master Works Programme is kept fully up to date and is able to serve as an excellent planning tool.

3.3 Cross-Contract engagement

Given the number of Clients, Constructors, Consultants and Specialists involved in the delivery of the Project, the team provides a significant pool of experience. Although the works in the three Work Packages are different and distinct, there is significant expertise and skills within each Work Package that are relevant and of value to the other Work Packages.

The inclusion of the mechanisms detailed above has facilitated the exchange of ideas and transfer of knowledge across contracts for the overall benefit of the Project. For example, we are experiencing circulation problems on one of the secondary circuits on the Estate. A specialist Consultant on Work Package 2 has provided ideas and potential solutions to the Constructor delivering Work Package 1. This cross-contract input has assisted the team to identify possible strategies that they had not considered previously to rectify the circulation problem.

Without an effective partnering ethos, backed by strategic partnering provisions in each of the contracts, there would have been a real risk that the team members retreated behind their separate contracts. That this didn't happen is testament to the early cross-contract engagement, and the strategic provisions that continue to promote active participation in the partnering process for the overall benefit of the Project.

4. Benefits to date

The Project remains ongoing, but there have already been a number of significant beneficial outcomes. These include:

- Outturn expenditure remains well within budget, and opportunities to reduce costs and value manage are being maximised across the Project.
- There have been no reported complaints from residents. This is evidence of the benefits of early engagement and planning of the works in the pre-construction stage.
- The teams have developed innovative solutions to a number of complex mechanical and electrical problems. A retrospective upgrade of a district heating system of this scale is highly unusual, with specific challenges. The development of cross-contract teams, with a strong partnering ethos for the overall benefit of the Project has helped deal with issues as they arise during planning and on site.
- Bringing together the Clients and Constructors has allowed an integrated approach to the development of training and employment opportunities. This has maximised the opportunities for local employment, which in turn has helped stimulate local pride and engagement in the Estate and the works.

The final words must go to Jon Mitford of Your Homes Newcastle – who acts as Client Representative on Works Package 1 and sits on the Strategic Core Group:

"The Project is within budget with no complaints from residents to date, which is a considerable achievement on a project of this scale. This is true partnering in action, with all parties making contributions above and beyond their contractual obligations". **Jon Mitford, YHN**