FLAXBY PARK NEW SETTLEMENT

ALLERTON WASTE RECOVERY PARK LINKED DISTRICT HEATING PROPOSAL

PURPOSE OF THE REPORT

The purpose of this report is to explore the feasibility of harnessing the heat by-product of the incineration plant at the Allerton Waste Recovery Park (AWRP) to provide a district heating scheme to serve the 2750 new homes and up to 16,200 sq m (174,375 sq ft) of communal facilities proposed at the Flaxby Park New Settlement (FPNS) and potentially the 53,882 sq m (580,000 sq ft) of employment buildings at Flaxby Green Park (FGP).

We understand that this would cause some relatively small reduction in the amount of electricity capable of being generated at AWRP, but a significant reduction in the use of gas/electricity that would be needed to heat the proposed new settlement and business/science park, through the use of the waste heat that is currently being lost to the atmosphere at AWRP.

This summary report has been prepared in conjunction with Vital Energi of Blackburn, district heating design and build specialist contractors and assisted by Wildblood Macdonald, Architects and Master-Planners with regard to FPNS site specific requirements and general background.

A DESCRIPTION AND THE RELATIVE LOCATIONS OF FPNS, FGP AND AWRP

FPNS is a proposed new settlement to provide up to 2750 new homes and up to 16,200 sq m (174,375 sq ft) of associated retail, school, communal, hotel, health-care and sports facilities. It is the subject of an outline planning application to the Harrogate Borough Council (HBC), reference 17/05234/EIAMAJ, submitted in November 2017, yet to be determined.

Its site extends to some 174 hectares and is located adjacent to and in the NW quadrant of A1(M) Junction 47, where the motorway and parallel A168 service road are crossed by the A59 Harrogate to York Road.

FGP is a strategic business and science park, for which planning approval, HBC reference 16/05647/OUTMAJ, was granted in September 2017 for up to 54,000 sq m (581,250 sq ft) of buildings.

Its site, including woodland, extends to 40 hectares and is located alongside FPNS in the SW quadrant of the same A1(M) Junction 47.

AWRP, which commenced operation in the Autumn of 2017, is the site of;

- A mechanical treatment plant that receives general waste, mainly originating from household bins and household waste recycling centres, and removes any remaining metal, paper, card, glass and plastics for recycling.

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1 Taken from North Yorkshire County Council (NYCC) web-site – Allerton Waste Recovery Park
- An anaerobic digestion plant that treats the organic waste part and produces a biogas which generates renewable electricity and

- An energy from waste plant (EFW) that burns the waste which remains after the separation of the recyclables and treatment of organic waste, producing steam to feed an electricity generating turbine that produces enough electricity to supply about 40,000 homes.

It is situated on the east side of the A1(M) and A168 approximately 2.5 km to the north of J47 and approximately 500 m north of the northern boundary of FPNS. It is accessed from the A168.

**AWRP’s OBLIGATIONS**

The Allerton Waste Recovery Park (AWRP) is situated at Allerton Quarry (National Grid Reference E440 578 N 459 959) approximately 2 KM north of Allerton Mauleverer and 1.2 KM east of Clareton. The AWRP plant will be operated by AWRP (ODC) Limited (AmeyCespa).

AWRP is subject to the planning consent issued under section 78 of the Town and Country Planning Act (1990) which includes a number of conditions.

Planning Condition 42 relates to the review of potential heat use near the plant. It states:

“Commissioning shall not commence until a CHP Feasibility Review assessing potential commercial opportunities for the use of heat from the development shall be submitted to and approved in writing by and deposited with the County Planning Authority. This shall provide for the ongoing monitoring and full exploration of potential commercial opportunities to use heat from the development and for the provision of subsequent reviews of such commercial opportunities as necessary. Where viable opportunities for the use of heat in such a scheme are identified, a scheme for the provision of necessary plant and pipework to the boundary of the site shall be submitted to and approved in writing by and deposited with the County Planning Authority. Any plant and pipework installed to the boundary of the site to enable the use of heat shall be installed in accordance with the agreed details”.

The Environmental Permit for the plant (EA/EPR/NP3034CG) states a requirement to review and report on options for heat recovery and utilization prior to commissioning.

Pre-operational measures requirement PO02 states:

“Prior to the commencement of commissioning of the incineration process, the operator shall send a report to the Environment Agency which will contain a comprehensive review of the options available for utilising the heat generated by the waste incineration process in order to ensure that it is recovered as far as practicable. The review shall detail any identified proposals for improving the recovery and utilization of waste heat and shall provide a timetable for their implementation”.

AmeyCaspa previously commissioned a report from Urban Mines which summarised 52 potential heat users within an approximate 10km radius of the plant. The users can be loosely split into three categories, public buildings, commercial buildings and industrial units.

Two studies have been produced to review the feasibility of utilising heat produced by the AWRP plant, which includes a review of the data included in previous reports for the current market and available heat from AWRP.

The practicality of recovering and using heat has to be reviewed every two years in accordance with the Environmental permit. This means that any emergent projects are likely to be assessed from a firmer basis. This requirement avoids the need to assess every eventuality (which have no factual basis) at this time.

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2 Taken from Fichtner’s Report for AmeyCespa AWRP (ODC) Ltd ‘Feasibility Study for the Recovery and Supply of Heat’, Issue 2, 14/07/2017
CLIMATE CHANGE LEGISLATION, TARGETS AND POLICIES

The starting point for current targets and policies is The Climate Change Act 2008 (The Act) that passed into law on the 26th November 2008. It made it a duty of the Secretary of State to ensure that the net UK carbon account for all six Kyoto greenhouse gases for the year 2050 is at least 80% lower than the 1990 baseline, toward avoiding dangerous climate change.

The policies contained in the National Planning Policy Framework 2018 and the local policies and steps taken by NYCC and HBC emanating from The Act can be found at Appendix 1.

THE HEAT AVAILABLE FOR RECOVERY

The heat available to be extracted from the AWRP steam turbine bleeds is assessed to be of the order of 13 MWth.

The heat available from the exhaust from the steam turbines is assessed to be of the order of a further 49 MWth providing a total 62 MWth.

It is considered that the derivation of latent heat within the flue gases from the boilers and the use of waste heat from the biogas engines is unfeasible and should be discounted.

THE END-USER REQUIREMENT FOR HEAT

FLAXBY PARK NEW SETTLEMENT

Subject to the grant of planning permission (17/05234/EIAMAJ), heating would be required for the following;

HOUSING

| 2750 Homes | (C3) | up to 275,000 sq m |

OTHER USES

| Retail and offices | (A1, A2, A5, B1) | up to 5,000 sq m |
| Pub and restaurant | (A3, A4, A5) | up to 1,000 sq m |
| Hotel | (C1) | up to 6,000 sq m |
| Schools | (D1) | up to 4,400 sq m |
| Health Centre | (D1) | up to 800 sq m |
| Community Hall | (D2) | up to 1,000 sq m |
| Sports Buildings | (D2) | up to 7,500 sq m |

FLAXBY GREEN PARK

Outline planning permission has already been granted (16/05647/OUTMAJ) for the following;

| Offices, laboratories etc | up to 54,000 sq m |

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3 Taken from Fichtner’s Report for AmeyCespa AWRP (ODC) Ltd
Feasibility Study for the Recovery and Supply of Heat’, Issue 2, 14/07/2017
ESTIMATED HEAT LOADINGS

Annual Heat demand (at full build) 18,800 MWh/year
Large diversity in annual and peak loads
Estimated peak load  FPNS 16-20 MWth
Estimated peak load  FPNS + FGP 18-23 MWth

PHASING

It is assumed that the district heating would be constructed in two principal phases;

Phase 1 for the construction of up to circa 1,000 homes and circa 40,000 sq m of communal/commercial accommodation over a 5 year period on the south west quadrant of the FPNS site and part of the FGP site.

Phase 2 for the construction of the remaining 1750 homes on the FPNS site over a further 10 years and the 40,000 sq m balance of the communal/commercial accommodation on both the FPNS and FGP sites over a further 5 years.

OUTLINE DESCRIPTION OF DISTRICT HEATING PROPOSALS

ULTIMATE PHASE 2 SCHEME

- The development described above is to be supplied with heat from the Amey operated AWRP

- An Energy Station is to be located on the AWRP site in the location identified in the Fichtner Report

- The Energy Station is to incorporate gas-fired resilience boiler plant.

- Flow and return heating pipes are to be taken from the Energy Centre, to pass below the open space on the south side of the AWRP Visitor Centre, under the A168 and thrust bored below the A1(M) to the farmland directly opposite the AWRP plant.

- At this point, the bored pipes would emerge in farmland owned by one of the FPNS Applicants.

\[\text{Taken from Fichtner's Report for AmeyCespa AWRP (ODC) Ltd 'Feasibility Study for the Recovery and Supply of Heat', Issue 2, 14/07/2017}\]
• From this point the pipes would travel in a southerly direction alongside the A1(M) western boundary to the northern tip of the FPNS site boundary. From here they would follow the western boundary of the former golf course to the northern end of the proposed central linear park.

• Again in a southerly direction, the pipes would be routed below the full length of the proposed central linear park to the point where the park adjoins the A59. From here they would be integrated into the design of the bridleway standard bridge proposed to be located alongside the existing access roundabout, potentially to enable them to serve FGP.

In this manner the pipes would be routed centrally through the FPNS development, allowing branches/loops to be taken from them to serve development to the east and west.

Each residential unit and commercial building is to be fitted with a heat interface unit or heat station.

It is suggested that this ultimate phase 2 scheme be brought into operation after year 5, that is after the completion of circa 1000 homes and circa 40,000 sq m of commercial/community accommodation.

INITIAL PHASE 1 SCHEME

It is suggested that up to the fifth year of development of the FPNS site, the initial phases, to be constructed in the SW part, be heated with pipework that can be connected to the ultimate proposal, but fed from gas-fired boiler plant to be housed either in a temporary building or the shell of the proposed community hall.

It is further proposed that the gas-fired boiler plant in this temporary location be of the modular type, capable of being re-located to the ultimate energy station on the AWRP site, described above.

For a graphical depiction of this phasing, see Fig 3.
CONCLUDING REMARKS

The foregoing is intended to set the background for dialogue between the developers for both the FPNS and FGP sites and Amey, the operators of AWRP and future negotiations.

At present it takes no account of any loss in the electricity generating capacity at AWRP.

It assumes from the outset that the end users’ heating costs, both initial and on-going will need to be at a discount relative to the market price of gas-fired heating and that end-user contracts will need to reflect this assumption. Green credentials will not be a sufficient attraction for the adoption of the proposed use of energy from waste.

It takes no account at the present of any central government or other grants that may be available for the design, build or operation of energy from waste district heating projects. These will need to be investigated as part of the dialogue and negotiations.

Wildblood Macdonald, Architects
Vital Energi, Specialist District Heating Design and Build Contractors

30th August 2018
APPENDIX 1

Relevant Planning Policies and Steps taken to meet the Act by NYCC and HBC

The starting point for current targets and policies is The Climate Change Act 2008 (The Act) that passed into law on the 26th November 2008. It made it a duty of the Secretary of State to ensure that the net UK carbon account for all six Kyoto greenhouse gases for the year 2050 is at least 80% lower than the 1990 baseline, toward avoiding dangerous climate change.

The North Yorkshire County Council endorsed that target in its report; ‘Delivering on Climate Change, December 2009’.

Also in 2009 the Harrogate Borough Council adopted its Core Strategy. Core Strategy Objective 17 was to provide enhanced care for the environment, with particular emphasis on the reduction of waste and CO2 emissions, climate change and renewable energy.

Core policy EQ1 requires the planning, design, construction and subsequent operation of all new development to seek to minimise, inter alia, energy and water consumption and the use of natural non-renewable resources.

In recent months the Harrogate Borough Council has reaffirmed its commitment to the reduction of greenhouse gas emissions. In September 2017 it agreed a target of reducing the District’s CO2 emissions by 40% by 2020 and the Council’s own emissions by 40% by 2020 and 80% by 2050 (relative to 1990 levels). On the 20th May 2018 it posted a commitment to promote and support activity within the Harrogate District as a whole to achieve emissions’ reductions of 57% by 2030.

The aims of the The Act were taken into account in chapter 10 of the National Planning Policy Framework (The NPPF) that was published in March 2012.

Paragraph 93 of the NPPF states that Planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development.

Paragraph 94 requires local planning authorities to adopt pro-active strategies to mitigate and adapt to climate change.

Paragraph 95 requires local planning authorities to support the move to a low carbon future by, inter alia, planning for new development in locations and ways which reduce greenhouse gas emissions.

Paragraph 96 states that in determining planning applications, local planning authorities should expect new development to comply with adopted local plan policies on local requirements for de-centralised energy supply (unless the applicant can demonstrate that this is not feasible or viable).

Paragraph 97 requires local planning authorities to recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources and, inter alia, identify opportunities where development can draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.