Leeds CITY COUNCIL

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Report of Head of Sustainable Energy and Climate Change

Report to Scrutiny

Date: 21st October 2014

Subject: District Heating

Are specific electoral Wards affected? If relevant, name(s) of Ward(s): See map in Appendix 1	☒ Yes	☐ No
Are there implications for equality and diversity and cohesion and integration?	☐ Yes	☒ No
Is the decision eligible for Call-In?	☐ Yes	☒ No
Does the report contain confidential or exempt information? If relevant, Access to Information Procedure Rule number: Appendix number:	☐ Yes	☒ No

Summary of main issues

1. The Recycling and Energy Recovery Facility currently being constructed at Cross Green is already designed to generate enough electricity to power over 22,000 homes. There is a further opportunity to harness the heat that is also produced whilst processing the waste, and develop a District Heating Scheme.

2. The report outlines the next steps to realise the first of an ambitious three phase project that will look at supplying heat from the Recycling & Energy Recovery Facility to a number of council owned tower blocks and operational buildings, as well as public and private sector commercial buildings and to significant development sites in the city centre.

3. It is estimated that more than 2,000 flats in parts of the city where fuel poverty is most prevalent could have their heat supplied direct during the first phase of the scheme. This first phase would build the foundations for a wider district heating network that can be developed in the future and also create confidence in the principle of heat networks and possible further schemes.

Recommendations

4. Scrutiny to note the contents of the report and comment on potential district heating connections along the proposed route.

1 Purpose of this report

1.1 To update scrutiny on work currently underway to develop an ambitious city wide district heating network and to provide scrutiny members with an opportunity to comment on these plans.

2 Background information

2.1 The Council aims to reduce carbon emissions by 40% by 2020 across the city. This requires us to take every opportunity to reduce carbon, including the development of a sustainable, modern, decentralised energy infrastructure for the city where energy generation can be shared at a local level through public and private partnerships.

2.2 The Recycling and Energy Recovery Facility currently being constructed at Cross Green is already designed to generate enough electricity to power over 22,000 homes. There is a further opportunity to harness the heat that is also produced whilst processing the waste, and develop a District Heating Scheme.

2.3 The report outlines the next steps to realise the first of an ambitious three phase project that will look at supplying heat from the Recycling & Energy Recovery Facility (RERF) to a number of council owned tower blocks and operational buildings, as well as public and private sector commercial buildings and to significant development sites in the city centre.

2.4 It is estimated that more than 2,000 flats in parts of the city where fuel poverty is most prevalent could have their heat supplied direct during the first phase of the scheme. This first phase would build the foundations for a wider district heating network that can be developed in the future and also create confidence in the principle of heat networks and possible further schemes.

3 Main issues

3.1 Current Work on District Heating

3.2 The Council has been aware of the benefits of heat networks for some years and already operates several small networks within tower blocks, such as at Saxton Gardens, Cottingley Heights and Ebor Gardens. A biomass network supplying 231 flats in the two Clydes multi-storeys and the Phil May Court sheltered housing block are due to start construction this year.

3.3 The Council promotes heat networks to private sector developers, with new networks being recently approved for both housing and commercial properties. The Council has included a specific district heating enabling policy within the draft Core Strategy (EN4) which has been examined in public and will be adopted this year, subject to the planning inspector's approval.

3.4 In addition, it is a requirement of the contract with Veolia that the RERF be combined heat & power (CHP) enabled. This essentially means that the RERF be designed such that the necessary works and installation of infrastructure required

to take heat for a district heating scheme can be completed without significant disruption or modification of the RERF.

3.5 Veolia's proposals envisage that the turbine at the RERF (as well as being capable of producing electricity) incorporates space for an additional piece of equipment known as a grid control valve in order to provide for a more efficient off-take of heat as part of any CHP scheme. This, along with additional components, can be retro-fitted to the RERF to allow the simultaneous production of both electricity and useful heat. This makes the RERF both more environmentally beneficial as the heat can replace gas and other fossil fuels currently used to provide heating and / or cooling to commercial, public sector and/or residential properties, and more cost effective as the heat generated is likely to be worth more than the sacrificed electricity.

3.6 Aims and Benefits of District Heating

3.7 In summary, the primary aims are:

- To reduce vulnerable residents' fuel bills by c10% to tackle fuel poverty;
- To maximise CO_2 emissions reduction opportunities associated with the RERF to contribute to our citywide target of 40% CO_2 reductions between 2005 and 2020;
- To establish the first phase of a city-wide district heating network to stimulate additional investment in heat networks as a way to provide low carbon heat from the perimeter to the city centre.

3.8 In addition to the benefits implicit in the aims, the principal anticipated benefits are:

- Creation of construction and maintenance jobs;
- Greater retention of wealth within the local economy;
- Demonstration of the benefits of district heating with a view to persuading public and private sector partners to connect;
- Initiation of a strategic network to allow us to implement policy EN4, requiring new developments to connect and providing an outlet for heat from proposed waste/energy activities in the Aire Valley;
- Removable of outdated storage heaters leading to improved comfort levels in flats and more controllable heating;
- Further enhancement of the environmental performance of the RERF, and clear benefits of using the heat locally.

3.9 Heat Mapping and Energy Masterplanning

3.10 Leeds City Region (LCR) commissioned Ramboll in September 2013 to undertake heat mapping for all 10 LCR authorities, and energy masterplanning in Kirklees

and Leeds. The energy masterplanning in Leeds city centre and the Aire Valley has involved the following stages:

3.10.1 Mapping existing and future heat demands

3.10.2 Identifying the technical and economic viability of a number of potential low carbon heat supply opportunities;

3.10.3 Establishing and testing the economic potential of possible heat network configurations around the known demands, the existing supply assets and future low carbon supply opportunities;

3.10.4 Establishing the extent of a viable heat network opportunity and an outline strategy for delivery, including phasing. This is summarised in the map included at Appendix 1of this report.

3.11 The energy masterplan (soon to be published on www.leedscityregion.gov.uk) identifies a realistic strategic network that could be developed over the long-term to supply c150MW of peak demand with c40MW of heat capacity from low carbon generation sources. Ramboll have identified a wide range of heat sources for this long-term project including other Energy Recovery Facilities, data centres and industrial processes and hundreds of development sites and existing buildings that could connect to make use of the heat. In simple terms, 40MW of low carbon generation would provide enough heat for approximately 48,000 average homes, equivalent to all the houses in a city the size of Exeter. This is an important piece of work as it articulates how a critical piece of infrastructure could help deliver the Council's carbon reduction ambitions. However, the short-term priority for the Council is to build an initial network to supply heat from the RERF in order to generate confidence in heat networks and create an oversized spine heat network that can then be developed over future phases.

3.12 The district heating project has therefore been split into three distinct phases. The first of these is to supply heat from the RERF to a number of Council owned multi storey flats, public sector buildings, private sector commercial buildings and significant development sites in the city centre.

3.13 Heat Network Delivery Unit (HNDU) Application for Grant Funding

3.14 The Council now needs to undertake further techno-economic feasibility work and detailed project development for this first phase. To help fund this work, the Council has applied for £210k from the Government's Heat Network Delivery Unit (HNDU). If successful, this will allow the completion of all the work required to procure delivery partner(s) for this first phase. Ramboll and the Carbon Trust have worked with the Council to identify the key tasks and associated timelines, and have produced an implementation plan which would allow the Council to complete the phase 1 heat network by late 2017.

3.15 More work needs to be done with the HNDU funding to make sure that the district heating provides maximum social benefits to the city. This will include building a social impact plan into the delivery phase to quantify the number of local jobs and training opportunities that will be created and critically work to understand the

needs of the tenants who will be connected. Initial estimates are that the c2,000 flats that we aim to connect will each save around £60-80 pa, a total of c£140,000 pa, and tenants will benefit from modern, effective and controllable heating systems. In addition, we will aim to provide energy efficiency advice to residents to maximise their savings and are investigating how we can include wifi and smart technologies as part of the retrofit programme to save more energy and improve access to council services.

3.16 In terms of the commercial delivery vehicle for the future installation and operation of a district heating network, officers are now undertaking options appraisal work to determine the most beneficial model.

3.17 Next Steps

3.18 The council has established a project team comprising officers from the Public Private Partnership Unit, Sustainable Energy and Climate Change, Housing Leeds and Waste Management. This is supplemented by ad hoc support from other teams including Asset Management, Highways, Planning and Finance. This team has established the draft project plan shown in Appendix 2.

4 Corporate Considerations

4.1 Consultation and Engagement

4.1.1 Tenant consultation and stakeholder engagement regarding district heating forms a key part of the work we have sought HNDU funding for. This will take place in late 2014 / early 2015.

4.2 Equality and Diversity / Cohesion and Integration

4.2.1 An Equality, Diversity, Cohesion and Integration Screening was undertaken in August 2014 for the District Heating Project. This concluded that district heating would have an overwhelmingly beneficial impact, by reducing fuel costs for tenants in some of the more deprived parts of the city, with consequent positive impacts on fuel poverty and cold related ill health.

4.3 Council policies and City Priorities

4.3.1 The district heating project supports delivery of the Best Council Objective, 'Supporting communities and tackling poverty' by reducing fuel costs and cold-related ill health.

4.3.2 The inclusion of district heating with the RERF clearly supports the Visions for Leeds aim to ensure that "all homes are of a decent standard and everyone can afford to stay warm" and several Best City objectives:

- Best city… for business:

    1. Support the sustainable growth of the Leeds' economy;

    2. Improve the environment through reduced carbon emissions.

- Best city… to live:

    1. Maximise regeneration investment to increase housing choice and affordability within sustainable neighbourhoods;

    2. Improve housing conditions and energy efficiency.

4.4 Resources and value for money

4.4.1 Although at an early stage of development, providing district heating from the RERF could increase income from the Project as well as reduce fuel bills for tenants and commercial sites by around 10% per annum. This will be defined using HNDU funding as the next stage of the programme

4.5 Legal Implications, Access to Information and Call In

4.5.1 n/a

4.6 Risk Management

4.6.1 The project team established to take forward the district heating work are currently developing a full project plan and risk register.

5 Conclusions

5.1 The council has a unique opportunity to create a citywide district heating network over the next 10-15 years. This will connect some of the relatively small scale district heating networks already in place and allow new networks to expand rapidly to enable existing buildings to connect and new developments to be built with district heating connections in place.

5.2 This network will be based upon a first phase which connects thousands of council flats and large public and private sector buildings in the city centre and will make use of low carbon heat generated by the RERF.

5.3 Although the detailed feasibility and business planning is still in the relatively early stages, the energy masterplanning undertaken by Ramboll has provided confidence that the network is both technically feasible and financially viable. A strong project team has been put in place and if HNDU funding is secured, will be well resourced to quickly take the project to the next stage.

6 Recommendations

6.1 Scrutiny to note the contents of the report and comment on potential district heating connections along the proposed route.

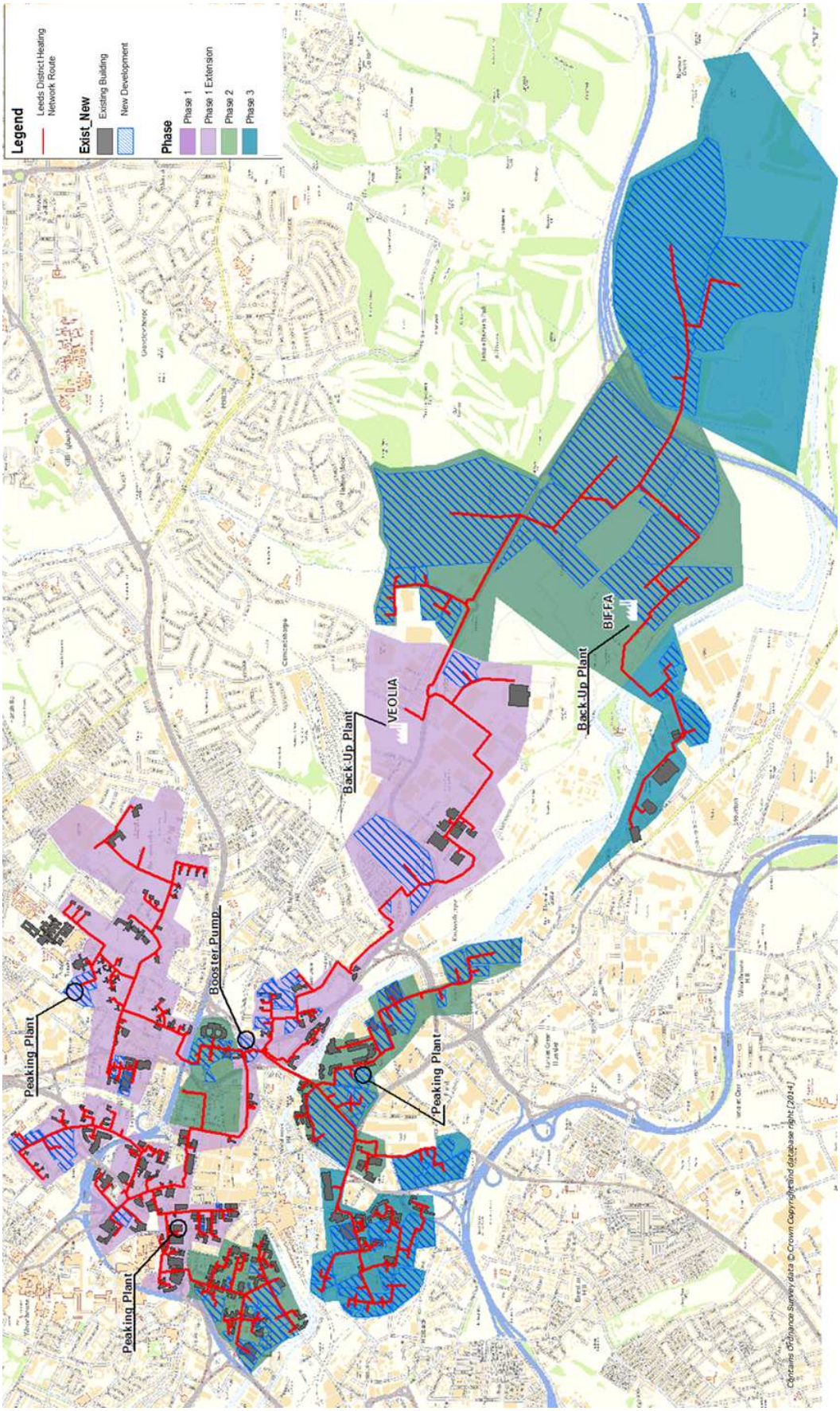
7 Background documents[1]

7.1 Energy Masterplan (Ramboll, 2014)

[1] The background documents listed in this section are available to download from the Council's website, unless they contain confidential or exempt information. The list of background documents does not include published works.

7.2 HNDU grant applications, June 2014

Appendix 1 – outline network



Appendix 2 – draft project plan

32					
33	**Stage 2 - Procurement of advisors**	**20 days**	**Wed 17/09/14**	**Tue 14/10/14**	
34	**Procurement of technical advisor**	**20 days**	**Wed 17/09/14**	**Tue 14/10/14**	
35	ITT issued	0 days	Wed 17/09/14	Wed 17/09/14	8,19,3
36	Mini-competition	10 days	Wed 17/09/14	Tue 30/09/14	35
37	Evaluation	5 days	Wed 01/10/14	Tue 07/10/14	36
38	Contract awarded	5 days	Wed 08/10/14	Tue 14/10/14	37
39					
40	**Procurement of legal advisor**	**20 days**	**Wed 17/09/14**	**Tue 14/10/14**	
41	ITT issued	0 days	Wed 17/09/14	Wed 17/09/14	8,19,3
42	Mini-competition	10 days	Wed 17/09/14	Tue 30/09/14	41
43	Evaluation	5 days	Wed 01/10/14	Tue 07/10/14	42
44	Contract awarded	5 days	Wed 08/10/14	Tue 14/10/14	43
45					
46	**Stage 3 - detailed feasibility study (DFS)**	**115 days**	**Tue 21/10/14**	**Tue 31/03/15**	**44**
47	Initiation meeting	0 days	Tue 21/10/14	Tue 21/10/14	44FS+5
48	Detailed feasibility work	75 days	Wed 22/10/14	Tue 03/02/15	47
49	DFS submitted	0 days	Tue 03/02/15	Tue 03/02/15	48
50	Review of DFS & feedback from project team	15 days	Wed 04/02/15	Tue 24/02/15	49
51	Finalisation of DFS	10 days	Wed 25/02/15	Tue 10/03/15	50
52	Options appraisal - DFS outputs	10 days	Wed 11/03/15	Tue 24/03/15	51
53	Project board receive executive summary of DFS and a report regarding options identifying the preferred route	5 days	Wed 25/03/15	Tue 31/03/15	52
54	Project board approves preferred procurement option	0 days	Tue 31/03/15	Tue 31/03/15	53
55					
56	**Stage 4 - procurement of preferred option (model)**	**240 days**	**Wed 11/03/15**	**Tue 09/02/16**	
57	Development of PQQ	19 days	Wed 11/03/15	Mon 06/04/15	51
58	Advertisement of tender opportunity via YORtender (PQQ published)	0 days	Mon 06/04/15	Mon 06/04/15	57
59	PQQ period	30 days	Tue 07/04/15	Mon 18/05/15	58
60	Evaluation of PQQs	10 days	Tue 19/05/15	Mon 01/06/15	59
61	Preparation of ITT documentation	40 days	Tue 07/04/15	Mon 01/06/15	57
62	Publication of ITT	0 days	Tue 02/06/15	Tue 02/06/15	61FS+1
63	ITT period	140 days	Wed 03/06/15	Tue 15/12/15	62
64	Evaluation of bids	30 days	Wed 16/12/15	Tue 26/01/16	63
65	Evaluation report with recommendations sent to project board for their final decision	10 days	Wed 27/01/16	Tue 09/02/16	64
66	Decision made to award to preferred bidder	0 days	Tue 09/02/16	Tue 09/02/16	65
67					
68	**Stage 5 - delivery of scheme**	**233 days**	**Wed 10/02/16**	**Fri 30/12/16**	
69	Construction of pipework and related infrastructure	233 days	Wed 10/02/16	Fri 30/12/16	66
70	Development of ESCO	233 days	Wed 10/02/16	Fri 30/12/16	66