EXETER CITY COUNCIL

SCRUTINY COMMITTEE – ECONOMY
17 JANUARY 2013

REPORT OF THE EXETER AND EAST DEVON LOW CARBON TASK FORCE DISTRICT HEATING NETWORKS IN EXETER

1.0 PURPOSE OF REPORT

1.1 This report advises Members of recent progress in establishing heat networks (also known as district heating) in the Exeter area and of the potential for a significant expansion of such networks.

2.0 BACKGROUND

2.1 Members will be aware that a heat network and Combined Heat and Power (CHP) plants provide a very efficient means of generating heat and electricity which overcomes the inherently wasteful use of energy associated with conventional power stations. Up to 60% of the input energy used in conventional power stations is currently lost in the conversion process and there are further losses through transmission over many miles to local customers. The carbon advantages of CHP, arising from their much greater efficiency in the use of input energy, are such that CHP is one of the preferred parts of a comprehensive low carbon strategy. Because the UK faces the prospect of needing to invest up to £200 billion in energy infrastructure in the next 20 years, it is important that appropriate long term investment decisions are taken now which can address spiralling energy prices and excess dependency on energy imports. Moreover, investment in such technology has been recognised by the CBI as being a prime driver of much needed economic growth (see their recent report 'The Colour of Growth').

2.2 A heat network is already operating as part of the Cranbrook scheme. Eventually, there will be a 75 km network of pipework, carrying heat from a CHP plant at Skypark and serving all of the dwellings in the new community and Skypark. The agreement to deliver district heating was a product of public sector leadership, tough bargaining and quite significant grant aid from the Homes and Communities Agency and the three local authorities. Future roll outs of CHP and district heating will need to rely on the first two of these but without the benefit of the third. There is however the prospect of limited grant aid through the Regional Growth Fund. The primary mechanism which proactive local authorities have used in facilitating the expansion of District Heating has been through the establishment of Energy Service Companies (ESCOs), often in conjunction with a private sector partner. An ESCO is seen by these authorities and, indeed by their private sector partners, as a vehicle for taking the lead in long term investment in a market which is not currently regulated by OFGEM – the energy regulator. The merits of local authority participation are that they can help reduce scheme risk – because they are key project partners – and thereby enable schemes to proceed with private sector funding, despite having less commercial rates of return. From citizens' perspectives, public sector involvement also helps guarantee that the 'public good' is represented. The report below outlines recent progress in taking forward District Heating (DH) initiatives in Exeter.

3.0 DISTRICT HEATING DEVELOPMENTS IN EXETER

3.1 The City Council's approved Core Strategy has a range of policies which set out how low carbon development should be delivered. There is a particular emphasis on CHP and district heating in Core Policy 13, with decentralised energy networks being seen as the preferred solution within large scale developments, particularly for the strategic allocations as Monkerton, Newcourt and Alphington/SW Exeter. The most progress has been achieved at Monkerton where some 2000 dwellings are expected to be built over the next decade or so. Here, the Low Carbon Task Force and Growth Area team have worked closely with EoN to bring forward proposals for the area. Meetings with the key landowners have been very positive and a formal proposal now rests with them for decision. One of the principal elements in reducing risk with the scheme is guaranteeing that a site is made available for a CHP plant. Devon County Council's Executive agreed at its meeting on 14 November that it would make sites available within its ownership at Monkerton for a temporary and for a (later) permanent CHP plant. Other work is proceeding to ensure that planning conditions for individual applications are consistent across the whole area and can ensure the effective installation of a heat network across a number of ownerships. Indeed, planning for the long term has also led to the specification of a CHP plant and heat network that can link developments on both sides of the M5 which will make for a more economic and efficient energy solution. As the development at Monkerton is new build only, there is no obvious need for a leading role for the local authority in an ESCO. The ESCO in this case, if the deal is successful, would be an EoN Company. It is clear however that the developers see the involvement of the local authority as being important for the longer term for householders who the developers feel will want some form of collective representation for dealing with EoN over the lease life for the district heating network.

3.2 The second main focus of the Task Force and Growth Area Team's work has been on what is generically termed the City Centre heat network. This network would serve a number of existing larger heat users as well as new development and is therefore more complex than the Cranbrook/Skypark or Monkerton schemes. Members may recall that the City Council and Land Securities commissioned a piece of work in 2010 which established that a city centre CHP and district heating network focused on the bus station site and key developments along Heavitree Road would be likely to be a viable scheme. Members will also be aware that the Energy from Waste Plant now under construction at Marsh Barton had a 'best endeavours' clause included (at the City Council's request) within the planning consent (issued by DCC, as waste management authority). This obligated DCC to ensure that best endeavours were made to use the energy from the Marsh Barton Plant. The default operation of the EfW plant is to produce electricity only with an overall efficiency in the order of 20%. However, if the plant exports heat to a heat network the overall efficiency could improve to 60%. "Best endeavours" is therefore a powerful incentive for the use of heat. There has been close co-operation with DCC over the last year in seeking to ensure that the EfW contractor (Viridor/Tiru) does fulfil its best endeavours obligation. One further change in the 'landscape' since 2010 is that the RD&E now has a substantial requirement for investment in heating and has a strong commitment to providing low carbon energy systems. Putting these elements together has resulted in four partners commissioning detailed engineering costings and financial evaluations for a range of potential heat

networks from specialist consultant Parsons Brinkerhof, working with Northcroft. The partners are the City Council, Devon County Council, the University and the RD&E. That work is close to completion and will be reported more fully to Members later in the Spring. The following paragraphs summarise the key emerging evidence and conclusions.

3.3 There are a number of significant heat users who could be served by a heat network. The challenge is to reach a view on which combination of users presents a viable starting point for an ESCO to sign up those heat users and construct a core heat network. It is worth pointing out that experience from other cities, such as Southampton, is that systems have often started with only a small core of customers and have expanded from that base over time. In Exeter, the key potential target customers would be:

- the bus and coach station re-development
- the four sites for new student accommodation in the city centre
- Waitrose – which already has a section 106 contribution to facilitate DH connection
- John Lewis
- the Civic Centre
- the St Luke's campus
- Heavitree Hospital
- the RD&E
- County Hall
- Matford Business Park
- the south west Exeter urban extension

3.4 There are a number of other sites whose heat requirements have been calculated in order to see what optimum routeing and length a potential heat network should have. The study has also assessed options for energy centre locations in the city centre and at the RD&E, as well as using the heat from the EfW to drive a substantial part of the system. The latter could produce a very large amount of heat – equivalent to around one tenth of Exeter's current gas demand at a relatively low heat price (in the order of 1p per kWh – which is one third of the gas equivalent). As highlighted above, it would also take the EfW plant from being around 20% efficient to up to 60% efficient and in the context of the national policy to dramatically reduce carbon emissions, use of heat from the EfW plant therefore seems to be a proposal which is worth expending considerable collective effort to help deliver. Whilst this would be a significant environmental gain, it also needs to be an economic one too. Thus, the core of the technical and financial evaluation by the consultants is to see which network options have the best returns. The emerging results indicate that a network based on the City Centre/Heavitree Road/Wonford corridor has the best result, but that one which linked across the river to the EfW plant would also produce a positive rate of return, assuming the current level of government support for renewable heat continues. It should be added that, in the latter case, demand would be such that a heat network would be powered by a new energy centre and by the EfW plant – with the former acting as a back up for the latter, as no EfW plant has 100 % availability.

3.5 With regard to implementation, the consultants set out the key attributes of ESCOs which have been established elsewhere to facilitate implementation of heat networks. The involvement of local authorities is seen as positive by the consultants and by the industry because it is viewed as a valuable means of reducing risk. Access to lower cost borrowing is seen as a key advantage, as well as co-ordination of the consent process which crosses a range of boundaries – planning, highways and environmental health. Local authorities are also seen as key partners for the very practical reason of using their general powers to enable heat main installation. In a number of cases, ESCOs have been established with significant local authority involvement and whilst some have continued with full control (e.g. Woking), others have reduced and sometimes eliminated their participation over time (e.g. Southampton). Several other local authorities – Sheffield, Leicester and Birmingham – are now looking at strategic heat network expansion through ESCOs in which they have an equity stake.

3.6 It should be noted that DCC's Cabinet have approved the establishment of a District Heating Group, comprising core stakeholders, to take this work forward. They have also agreed to carry out work on the principle of establishing an ESCO and that soft market testing is undertaken, once the consultants' work is completed.

4.0 NEXT STEPS

4.1 The study will be completed later in January and will be reported to Members a little later in the Spring. It is apparent that a viable scheme for a significant heat network is likely to emerge and that one which also uses the waste heat from the EfW plant is also expected to be viable. The establishment of an ESCO with public sector participation is believed to be the most effective way forward in delivering the city centre scheme and collaboration with other public bodies the best way of delivering the necessary leadership. Members are asked to support officer participation in this work and to report back on progress later in the Spring.

4.2 Whilst the principal focus of the heat network proposals has been the significant carbon reduction benefits that will arise, there is an important Economy dimension to such developments. It has recently been highlighted by the CBI in its report 'The Colour of Growth' that the low carbon economy could be a real engine of growth in Britain. Although some people have argued that we can't afford to address green issues in current economic conditions, the CBI is unequivocal: 'the business response is definitive and emphatic: green is not just complementary to growth, but a vital driver of it'. The UK's green business economy is worth over £120 billion a year and a recent Regen SW report showed that the south west has been a major beneficiary of this and has good prospects for further expansion. For Exeter, an expanding low carbon energy network will mean less exposure to international volatility in energy supply and prices (through greater efficiency in fuel use and the expanded use of biomass) and the advantage of a more resilient local supply in a situation where en energy supply gap may open up nationally in future years. This developing infrastructure will help support the inward investment message for the City.

5.0 RECOMMENDATIONS

5.1 It is recommended that Members:

(i) note the progress on negotiations for a CHP plant and heat network at Monkerton;

(ii) endorse the principle of developing a detailed proposal for an ESCO to deliver a City Centre heat network through a District Heating Group;

(iii) approve joint working with other public sector bodies in the Growth Area to devise a viable scheme for this network;

(iv) approve market testing for this network to establish the likely level of private sector interest; and

(v) support the commissioning of a city wide Energy Strategy.

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Local Government (Access to Information) Act 1972 (as amended)
Background papers used in compiling this report:-
1. The Colour of Growth, Confederation of British Industry, 2012