

**Report to:** Cabinet  
**Date of Meeting:** 10 July 2019  
**Public Document:** Yes  
**Exemption:** None  
**Review date for release:** None



**Subject:**

**Zero Carbon Development in the West End**

**Purpose of report:**

To set out the key issues associated with achieving large scale zero carbon development in the West End of the District  
To propose a way forward to address these issues  
To seek endorsement for undertaking a market engagement exercise in conjunction with Government

**Recommendation:**

**It is recommended that members;**

- **Note the key issues associated with achieving zero carbon development in the West End of the District**
- **Commit funding of up to £30k to support an application to Round 9 of Heat Networks Delivery Unit funding**
- **Endorse undertaking a market engagement exercise in conjunction with Government**
- **Receive a further report setting out a proposed pathway to zero carbon including detailing the potential role for the Council**

**Reason for recommendation:**

To ensure that there is a clear pathway for achieving large scale zero carbon development in the West End of the District.

**Officer:**

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**Financial implications:**

The report is requesting a £30k supplementary budget to meet the Council's requirement to match funding. This will be met from existing funds; s106 and Enterprise Zone funding.

**Legal implications:**

The report does not raise any specific legal implications requiring comment.

**Equalities impact:**

Low Impact

**Risk:**

High Risk

Achieving zero carbon development on a large scale is a long held objective for the West End of the District. The achievability of this objective is subject to the intricate interplay between a variety of policy, technical and commercial factors most of which lie outside of the Council's direct control. Nevertheless there is a need for local leadership and to establish a clear path way towards achieving this objective.

**Links to background information:**

- [Cranbrook Development Plan Document](#)

**Link to Council Plan:** Encouraging communities to be outstanding; Developing an outstanding local economy; Delivering and promoting our outstanding environment; Continuously improving to be an outstanding council.

## **Report in full**

### **1.0 Background**

1.1 In recognition of the large scale and long term nature of the developments in the West End of the District, the need to factor in increasingly stringent environmental and carbon performance standards has been a key tenet of the approach adopted. In the case of Cranbrook the initial planning took account of the Code for Sustainable Homes and the anticipated timetable for progressing to Code 6 and net zero carbon development in 2016.

1.2 Element Energy were commissioned in 2008 to undertake a study to understand how best to meet these standards over time. This study demonstrated that it would be much more cost effective to install a district energy network to meet the zero carbon standard rather than rely on fabric and renewable energy measures on each home. Subsequently a requirement for all homes to be connected to a district heating network became a key part of the planning strategy for Cranbrook and the neighbouring Skypark commercial development. Funding made available by the Regional Development Agency to bring forward key infrastructure (such as St Martin's school) was also made contingent upon this network being rolled out.

1.3 Following a competitive exercise EON were procured as the preferred energy company/operator for the network. It should be remembered that such a large network on a relatively low density greenfield site had never been delivered before in the UK. This was very much viewed as a 'lighthouse' project and significant public sector investment was required to make the scheme viable. This took the form of a £3.8m grant from the Low Carbon Infrastructure Fund plus a further £100k each from the Council, County Council and City Council.

1.4 A second network serving the Monkerton/Pinhoe/Mosshayne area together with the Science Park was negotiated in 2013. This was achieved on a purely commercial basis with no grant. Together there are now over 100km of heat pipe in the ground with a capex of circa £50m. The first permanent energy centre at Skypark was commissioned in 2013 and a second energy centre, currently under construction at Monkerton, is due to be commissioned later this year.

1.5 Ultimately it is expected that over 12,000 homes and 2m sq.ft of commercial space will be served by these networks. This is a long term commitment as the concession agreements last for an 80 year term. It should also be remembered that these heat networks are effectively local monopolies – it is only EON that can supply the heat and, unlike the electricity network, there is no ability for heat customers to swap to a different provider.

### **2. Current position**

2.1 Whilst the wider legislative backdrop for and pathway towards zero carbon development has been set back in the intervening period since construction of Cranbrook started in 2011, not least through the abolition of the Code for Sustainable Homes and the scrapping of zero carbon homes target in 2015, the availability of a decentralised energy network is nevertheless a core credential in terms of moving forward. Clearly this in turn relies on a zero carbon energy source to provide both the heat and the power that is generated. This is particularly the case given the decreasing carbon factor of the wider electricity grid as, for example, coal is phased out and additional large scale offshore wind and other renewable electricity generating capacity is brought on stream.

2.2 In recognition of the need to ensure that the district heating network would meet increasingly stringent carbon performance standards, the s.106 agreement attached to the planning permission for the EON energy centre at Skypark included the following provisions;

1. The Facility is to be a solid biomass Combined Heat and Power (CHP) system with supplemental gas boilers and supplemental gas combined heat and power engines (definition of District Heating Facility).

2. Clear direction that the facility shall supply 'heat' to the whole of both Cranbrook and Skypark (paragraph 6.1).
3. Clear direction that the biomass CHP shall be constructed as part of the Facility (para 6.3). It is acknowledged that temporary facilities may have needed to be provided during construction depending how quickly Cranbrook / Skypark developed (paragraph 6.2) but this didn't avoid the need to construct the facility with the biomass CHP as part of it.
4. The Facility needs to be supplying 'heat' to the majority of the buildings granted permission at Cranbrook and Skypark prior to or at occupation of 2,000 dwellings at Cranbrook (definition of Fully Operational and paragraph 6.6).
5. By the same time, the biomass CHP needs to be of sufficient capability (capacity) to be able to supply electricity (2MWe) and heat (2.4MWth), although the latter is predicated on the demand for the heat being sufficient to warrant the capability (paragraph 6.4).
6. If the heating demand is such that running the biomass CHP would result in '*wasting excessive quantities of heat*' then the supplemental gas boiler / gas combined heat and power engines can be used to provide heating to Cranbrook (paragraph 6.5). Once there wouldn't be excessive wasted quantities of heat then the biomass CHP should be used to provide the base heat load with the supplemental equipment being used to provide heat at peak times or during maintenance / repair of the biomass CHP.

2.3 Of particular significance is the 2,000 occupations trigger which we are now very close to at Cranbrook. In anticipation of reaching this trigger discussions have been ongoing over the past 18 months to understand whether there is a technically and financially feasible solution to meeting the obligations of the s.106 agreement, essentially a solid biomass fuelled combined heat and power plant capable of generating 2MW electric and 2.4 MW thermal.

2.4 With the benefit of further technical advice there is acceptance that the gasification and pyrolysis technologies, which it was hoped would be scalable to 2MW as well as being more efficient and lower cost than traditional steam based technology, have not matured sufficiently in the decade since the s.106 agreement was negotiated to provide a reliable way forward. However, the expansion of Cranbrook to circa 8,000 homes in line with policies set out in the Local Plan and Cranbrook Development Plan Document and the potential for further strategic development coming through the Greater Exeter Strategic Plan gives the opportunity to look for a future proof solution by considering a larger scale steam based biomass CHP plant which should be more cost effective than a smaller plant in the Cranbrook energy centre.

2.5 Whilst EON currently has large scale steam based biomass plants in a number of locations across the UK, they have recently provided evidence as to why, in their view, a large scale biomass solution in the West End is currently financially unviable. This is primarily down to the rising cost of biomass feedstock and the lack of a sufficiently supportive government policy and incentive framework for biomass relative to other renewable energy technologies.

2.6 On a more positive note the existence of the heat network has created the opportunity to harness waste heat from the converter station for the proposed France-Alderney-Britain (FAB) Connector project. This was simply not on the radar when the network was originally planned and is particularly attractive as the heat would otherwise be lost to the atmosphere. However, FAB Link is dependent upon the outcome of the Brexit negotiations and approval from the French regulator.

### **3. Assessment**

3.1 Given the current uncertainties there is a pressing need to establish a clear pathway towards achieving zero carbon development. Simply kicking the can down the road and hoping something will turn up, for example by varying the s.106 agreement to push back the current trigger, is not a credible way forward. This is though, a complex area with a variety of inter-related technical, commercial and policy considerations. Despite wider announcements, such as the banning of fossil fuel based heating for new build housing from 2025 and the commitment to net zero greenhouse gas emissions by 2050, there is a policy gap that needs to be filled. In the

absence of clear direction from central government this will require local leadership with a clear vision and an adaptable strategy for delivering it.

3.2 The negotiations with EON have also flagged the need for a sturdy commercial partner who is able to commit over the long term. The majority of new housing and commercial space in the District will be delivered in strategic sites serviced by EON's network. Whilst we have no direct contractual relationship with EON, in terms of the supply of heat for example, there are as a minimum shared reputational issues around the success of the approach.

3.3 There have been major structural changes within the big 6 energy companies in recent times. Nevertheless we clearly need a commercial partner who shares the vision for delivering large scale zero carbon development. For the first time we now have an incumbent provider and experience more widely suggests that it will be important to test the market to ensure that the best possible solution is being delivered.

3.4 It should not be forgotten that the West End of the District has the potential to be one of if not the largest zero carbon developments in the country. In the context of a declared climate emergency this is a considerable attribute. Looked at positively, the current uncertainty is an opportunity to drive innovation. In recognition of this the part of the evidence base underpinning the Greater Exeter Strategic Plan relating to energy has investigated proposals to designate an Energy Innovation Zone. This would help to create a positive policy framework for testing new technologies that will help to deliver zero carbon development.

3.5 Looking forward there are significant opportunities to harness waste heat, not just from the FAB Link project but also the Met Office super computer. The Skypark Energy Centre also provides the electricity for the LIDL distribution centre through a private wire arrangement. In future local zero carbon electricity generation could also help to support the electrification of distribution vehicles. The Government has recently consulted on a new national aviation strategy to 2050. This includes reference to Norway's ambition for all electric short haul flights by 2040. Given the proximity of Exeter Airport and that it is home to one of Europe's largest short haul airlines, this would seem to be a further area of opportunity. This includes in relation to the emerging Local Industrial Strategy for the Heart of the South West area and the emphasis being placed on clean growth.

3.6 Overall there is an important opportunity to restate an ambitious vision for the West End, building from the foundations that were laid 10 years ago. Alongside this, it is clearly essential that credible policies and proposals are in place to achieve it. Policy CB13 of the Cranbrook DPD already sets out a vision to deliver a truly zero carbon new town and includes a requirement to connect to District Heating. In turn this will necessitate a costed proposal that can be evidenced during the examination of the DPD during the examination stage later in the autumn.

3.7 We also need to consider the potential wider corporate role for the Council including what other financial incentives can be brought to bear locally, for example through the Enterprise Zone programme to incentivise heat users or to support the roll out of low carbon infrastructure. Finally there is likely to a need for the Council to play a more direct role in terms of enabling and underpinning delivery. For example the City Council established the Monkerton Heat Company to help provide a long management framework for district heating after the development of homes has been completed. There are numerous examples of municipal energy companies being established. This approach could extend to include bringing forward green investment projects such as large scale battery storage for example.

#### **4.0 Proposed way forward**

4.1 As set out above the delivery of large scale zero carbon development is a complex area but it is also an important opportunity to demonstrate local leadership. Having a robust evidence base is an important ingredient in understanding how to move forward. To date the Centre for Energy and the Environment at the University has played a vital role in providing this evidence. Further technical work is currently being commissioned, paid for from the Cranbrook s.106 agreement which includes monies towards the production of a low and zero carbon strategy for the area.

4.2 Given that initial decisions were taken in the context of national policy at the time, central government clearly has a very significant influence on how zero carbon development is achieved. The Heat Networks Delivery Unit (HNDU) is part of, and directly funded by, the Department for Business, Energy and Industrial Strategy (BEIS). The Unit was established as part of the Government's decarbonisation strategy. It provides funding and specialist guidance to Local Authorities who are developing heat network projects, supporting them through a number of project development stages. Since its inception in 2013, HNDU has awarded support to over 200 schemes across 140 Local Authorities in England and Wales, including over £19 million of grant funding.

4.3 There is a specific opportunity to bid in to round 9 of HNDU funding to support further feasibility work. At the time of writing the intention is to submit an application to the next wave which has a deadline of the 28<sup>th</sup> June. The process requires a commitment from the Authority to meeting one third of the total cost which is anticipated to be in the region of £90k. It is a specific recommendation of this paper that the match funding commitment of up to £30k is confirmed. The HNDU programme also provides fully funded project management support.

4.4 A market engagement event was recently undertaken for the roll out of a district heating network to serve the planned 2,500 home South West Exeter development in Exeter/Teignbridge. This was supported by the HNDU team and attracted interest from eight potential commercial partners. It would therefore seem sensible to run a similar event for the Cranbrook expansion proposal. This will help to test the potential for innovation and also ensure that a competitively priced solution comes forward. It is a recommendation of this paper that such an exercise is undertaken. This in conjunction with the further feasibility will also help to determine the scope for capital support from Government in term of the Heat Network Investment Project programme.

4.5 Whether it is through the passage of the Greater Exeter Strategic Plan or our own Local Plan review there will be a need to accommodate further development. The case for carbon emission reduction from concentrating development can be made for both transport and buildings. The opportunity to build from the platform already started in the West End and to set out an ambitious vision for the future is very significant. This will also need to align with the Climate Change Action Plan that is currently under development.

4.6 As mentioned above, establishing a clear pathway to zero carbon development is a complex area with a variety of policy, technical and financial considerations. Despite this, clarity and direction is required which helps to both de-risk the uncertainty and create the long term conditions for investment to flow. In recognition of the above the following are considered to be the key steps going forward;

- Commission further technical study work with support from the HNDU programme
- Define approach to s.106 agreement trigger
- Hold market engagement event - September
- Follow up paper to Cabinet – by the end of 2019

Ultimately achieving zero carbon development will require a clear corporate approach which covers both the strategy/policy aspects and the wider role that the Council will need to play.

## **5.0 Conclusion**

5.1 The West End has the potential to deliver zero carbon development on a very large scale. Having two district heating networks is a vital ingredient of this. Whilst there is current uncertainty about the technical solution for reaching zero carbon there is the opportunity to create the conditions for innovation to flourish and to demonstrate real leadership in responding to the climate emergency. This will continue the journey stated 10 years ago and make a major contribution to achieving sustainable development in the District.

