Report to:	**Cabinet**
Date:	**11 September 2019**
Title:	**Sovereign Energy Centre**
Report of:	**Director of Regeneration and Planning**
Cabinet Member	**Councillor Jonathan Dow**
Ward(s):	**All**
Purpose of report:	**Approval to progress a renewable energy centre**
Decision type:	**Key**
Officer recommendation(s:	**Agree a budget of up to £115k to carry out additional feasibility and design work for a stand alone energy centre at the Sovereign Centre site; this could potentially provide low carbon heat sourced from the embedded energy in the nearby sewer network. If viable, a decision to invest will be considered at the February 2020 Cabinet.**
Reasons for recommendations:	**To invest in solutions that will reduce the town's overall carbon footprint whilst also enabling an income generation.**
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1 Introduction

1.1 The December 2018 Cabinet agreed to investigate the feasibility of a number of clean-energy solutions that could reduce the overall carbon impact of the Sovereign Leisure Centre. This work has been carried out and concludes that it could be financially viable to meet the heat requirements of the leisure centre by extracting the embedded energy in the local sewer system. However, further detailed design work and contractual discussions need to take place to ensure this continues to be an investable solution.

2 The Potential Heat Solution

2.1 The December 2018 Cabinet report suggested the leisure centre made some high level assumptions on standard leisure centre heat demand. Following detailed design iterations for the leisure centre the full heat load requirement is estimated at 6.6GWh and a peak demand of 2MW.

2.2 The potential solution to meet this heat demand would be to install a 2MW heat pump system in a stand-alone building (energy centre) that will extract the embedded energy from the nearby sewer system, convert it to usable heat and then pipe this to the nearby Sovereign Leisure Centre. A standalone energy centre provides future resilience and flexibility to the development of the site.

2.3 The heat pump system would comprise of two 1MW heat pumps which taken together will be able to meet the varying demands of the leisure centre. This configuration also builds in resilience should one of the individual heat pumps fail or need to be serviced.

2.4 The heat is obtained by taking the liquid sewage and passing it over a heat exchanger which, with a separate loop, extracts this heat and pipes it to where it is needed.

2.5 The energy centre would be suitably located so it is able to expand to accommodate any potential increases in future energy demands i.e. additional heat requirements, or batteries to store PV generated electricity. For the additional heat demand you would just need to increase the number of individual heat pumps, a modular based design. The amount of heat that could be extracted from this point in the sewer network could be up to 6MW.

2.6 The energy centre usage is not limited to providing heat resource to a leisure facility but could be developed as it will be able to provide energy for other types of development.

2.7 Solar PV has not been incorporated into the design of the main building as there was not a clear cost-benefit but this technology could be revisited in the future for solar based car parking canopies, and the energy centre would be ready to support this.

3 Potential Structure & Operation

3.1 The preferred solution would be for the Council to own the system and have contracts in place to ensure (i) the leisure centre and/or other developments have a continuous supply of heat and (ii) the energy centre remains operational and viable, thus protecting our investment. We need to finalise the terms, contracts, design and governance arrangements before making the decision to invest and the list of the respective parties we need to contract with is as follows:

(a) Sewer Owner (Southern Water) – to ensure we have continuous access to the sewer and the expected levels of embedded energy
(b) Equipment Provider – to maintain the energy centre and deal with any operational issues
(c) Site Operator – to agree long term purchase of heat
(d) Ofgem – to obtain RHI payments
(e) Electricity supplier – to maintain supply to the energy centre and obtain most competitive price

4 Initial Financial Appraisal & Business Case

4.1 The proposed energy centre would only viable due to (i) the level of Renewable Heat Incentive (RHI) cashback available and (ii) there being a market to sell the heat to which acts as both a revenue stream and a passport to obtain the RHI

4.2 A 2MW heat system could cost £2.3m. With heat being purchased and RHI recovered, the £2.3m investment will give an IRR of 0.4% but if you count the cost of carbon saved this will give an IRR of 1.7%. These rates should increase as it is based on outline costs which will be subject to further scrutiny as we move through the design process.

4.3 The 2018 Cabinet report cited a capital cost of £750k which was the cost of a 1MW heat system less the £350k saving from the reduced centre cost. The £2.3m investment is for a larger system.

4.4 The supply of heat is not fully regulated for either domestic or non-domestic buildings, unlike the supply of electricity and gas; the only regulation is heat metering. The Government is exploring how the supply of heat should be regulated and it is likely it will require suppliers to follow the methodology set out by the Heat Trust – ultimately being transparent on costs and billing.

4.5 The actual price we would charge for a unit of heat would be slightly higher than what an operator would pay for a unit of gas, as gas boilers are generally only 90% efficient and it includes and adjustment for equipment maintenance. We would follow the Heat Trust guidelines and ensure that any price is transparent and competitive.

4.6 The RHI cashback initiative has a limited shelf-life. If we wanted to guarantee the tariffs we would receive (and at the highest rate) then the energy centre would need to be commissioned before the end of January 2021. If the system is not commissioned by this date then we would obtain whatever tariffs are in place at the time - currently the RHI scheme is underutilised which if this continues will mean we should still obtain a healthy rate however if there is a sharp uptake or if Government policy changes then the RHI rate could drop or be withdrawn.

5 Additional Feasibility & Design Work

5.1 From the initial feasibility work, a sewage based heat system should be viable however additional work is required to ensure this remains the case. This will be treated as Stage 0 or pre-New Project Request work within the Clear Sustainable Futures (CSF) framework, and could cost up to £115k to complete. This budget will primarily pay for detailed plans and schematics, ground and utility investigations and further modelling work.

5.2 This work and the structure discussions mentioned in Section 3 will take time to complete however we will be in a position by February 2020 to know if the proposed renewable energy centre remains viable, and if it is a report will be made to Cabinet.

6 Environmental impact analysis

6.1 The embedded sewage energy will be extracted by electrically powered heat pumps and if this electricity is from a green source then all of the heat supplied to the Sovereign (a significant amount) will be 100% renewable, and help towards the 2030 carbon reduction target.

7 Legal implications

7.1 Legal advice on the intended scheme can and will be given once the precise nature of the development to be served by the renewable energy project is determined.

8 Risk management implications

8.1 A risk analysis will provided as part of the New Project Request (NPR) and CSF project process.

The equipment should be soured from the UK so we are not expecting any issues resulting from Brexit; however this will be kept under review.

9 Equality analysis

9.1 No relevance

10 Appendices

None

11 Background papers

None