

# **AUDIT & RESOURCES COMMITTEE**

**Monday 23<sup>rd</sup> May 2022**

## **CABINET**

**Tuesday, 24 May 2022**

### **GREEN ENERGY DEVELOPMENT PROJECTS**

#### **Report of the Corporate Leadership Board**

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#### **Recommendations**

**It is recommended that Audit & Resources Committee:**

- (1) consider this report and make recommendations to Cabinet as appropriate.**

**It is recommended that Cabinet:**

- (2) approve an additional budget of development at a cost of £20,336,110, to a full capital cost of £22,490,110, financed by borrowing funded by ongoing revenue income, to enable the construction, installation, and ongoing management of ground mounted solar panels on land owned by the Council.**
- (3) approve the allocation of 5% income (approximately £80,000 pa) from the Solar Farm business case to be earmarked for green community initiatives funded from the income generated by the sale of power.**
- (4) approve additional budget of £4,585,734 financed by borrowing funded by the ongoing revenue, to enable the installation, operation, and ongoing management (required over the life of asset) at a full capital cost of £11,695,734 of a private wire power network to distribute green power from Council-owned solar parks to the One Horton Heath development.**
- (5) Approve additional budget of £11,544,641 financed by grant (recommendation 6), to enable the installation, operation, and ongoing management at a full capital cost of £29,434,641 of a Green Heat Network to distribute Heat to the One Horton Heath Development.**
- (6) approve that the Council submits a grant funding bid for Green Heat Network Funding to support delivery of the Green Heat Network (recommendation 5) including approving funding of £30,000 funded from the Housing Reserve, for specialist input to support the bid and delegate approval of the final bid to the Leader and Chief Financial Officer.**
- (7) approve £50,000 funded from the Housing Reserve for the continued investigation of other sources of renewable 'green' heat to charge the ambient**

**temperature water loops for future phases of the private heat network at One Horton Heath.**

- (8) delegate authority to complete the terms of the actions recommended above within the approved business case and subject to due diligence to the Chief Financial Officer in conjunction with the Leader.**

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## **Summary**

This report seeks approval to deliver an ambitious programme of green energy projects on Council owned land in support of the Council's Climate and Environmental Emergency Action Plan and the One Horton Heath Development Brief.

The purpose of this programme of activity is to address Green Borough objectives whilst futureproofing the energy infrastructure required in support of planned housing growth and employment space. Specifically, the Council's Climate and Environmental Emergency Action Plan states that the Council will investigate business cases for additional solar PV (photovoltaic) installation on its estate including large scale solar farms.

Approval is sought for a total of £36.47M capital funding for new Council owned green energy assets comprising a new solar farm and a ground source heat pump network and private wire network for the first phase of One Horton Heath. The proposal will enable heat to all new buildings and power to non-domestic property. These schemes will be funded by borrowing repaid by income through the sale of green power and revenue generated as outlined in the business cases for each green energy development project alongside income generated from the One Horton Heath (OHH) development as previously approved as part of the OHH business case.

In addition to funding approvals, this report recommends a longer-term strategy of pursuing funding, feasibility, and investment advice for other green energy solutions utilising Council-owned land in support of sustainable development and housing growth across the Borough.

## **Statutory Powers**

Localism Act 2011

## Strategic Implications

1. The proposals in this report address several Eastleigh Borough Council Corporate Plan objectives and strategies, as well as the Project Brief for the One Horton Heath development.
2. The Green Borough Corporate Strategy (February 2018) includes a commitment to seeking opportunities to expand the Council's renewable energy generation systems.
3. On 11 July 2019, Cabinet approved a Project Brief for the One Horton Heath Project, confirming the direction of travel or 'roadmap' for the Council's development team (available at [www.onehortonheath.co.uk/key-documents](http://www.onehortonheath.co.uk/key-documents)). Specifically, One Horton Heath aims to deliver a development which maximises opportunities for sustainable generation of energy onsite.
4. On 18 July 2019, the Council unanimously declared a Climate and Environmental Emergency. This was subsequently supported with a Climate and Environment Emergency Strategy in November 2019 and an updated Action Plan in June 2020. The strategy sets out the Council's aims to be carbon neutral by 2025 and plan for how the Borough of Eastleigh could achieve carbon neutrality by 2030.
5. The action plan identifies a range of initiatives to reduce carbon emissions, increase carbon sequestration (e.g., tree planting), Solar PV (Photovoltaic) installation; rewilding; and nitrate offsetting. Land owned and recently acquired by the Council can be used to deliver many of these proposals with opportunity for some land to offer multiple benefits.
6. Cabinet also endorsed an Eastleigh Homes Delivery Strategy in December 2020, which provides a direction of travel for the Council's Strategic Housing Programme activity from 2021. The Delivery Strategy confirms the Council's aim to enable and encourage green and sustainable lifestyles for all (Aim 4).
7. The Asset Management Strategy (2020-2025) sets out an emerging policy to embed a culture of innovation that maximises best use of appropriate technologies that support new ways of working and protects the environment; utilising available financing to support implementation and meet the objectives of the Climate Change and Environmental Emergency Strategy and Action Plan.
8. Most recently, Cabinet approved consultation on a Biodiversity Strategy (2022-2032) which emphasises the role of planting in building climate resilience, and in ensuring access to nature for residents.

## Introduction

9. This report provides background to green energy development projects being proposed on Council owned land in support of the Council's Climate and Environmental Emergency Action Plan and the One Horton Heath development. These projects are subject to this Cabinet approval and finalising due diligence assessments with the final decision delegated to the Leader of The Council and the Chief Financial Officer.
10. Planning a sustainable new community is shown to help demonstrate low carbon planning and design. The One Horton Heath Project Brief (<https://www.eastleigh.gov.uk/media/5590/87506-west-of-orton-heath-project-brief-v4.pdf>) includes an overarching design aim (AG2) that the development will have a 'reduced energy demand and reduced reliance on unsustainable energy sources'. To guide this aim, the following objectives are stated in the Brief:

**OG 1** Deliver a development which is highly energy efficient with buildings that have minimal energy demand and net carbon emissions.

**OG2** Deliver a development which is not reliant on fossil fuels to meet its heating or energy demands.

**OG3** Deliver a development which maximises opportunities for sustainable generation of energy on-site.

11. This proposal responds to these objectives with a recommended solution to help realise an ambition to generate and sell clean electricity while minimising demand on the National Grid generated by non-residential users of the One Horton Heath development.
12. The planning and design for One Horton Heath also responds proactively to the Government's Future Homes standard, which should ensure all new homes built from 2025 will perform 75-80% better than current building regulation standards. The aim is that all homes built at One Horton Heath will achieve these targets for energy efficient homes, before the updated regulations come into force in 2025.
13. A major step towards realising the vision for green power at One Horton Heath was taken in September 2020, when Cabinet approved the purchase of the Chalcroft Solar Park with the stated aim of incorporating this into a private wire network serving non-residential assets created by the development.
14. In July 2020 Cabinet approved the purchase of strategic land to meet Council objectives, whilst ensuring as a minimum a cost neutrality to the Council, through future income repaying the borrowing and associated

costs. The installation of ground mounted solar was identified as the main opportunity to further improve the business case for these land purchases.

## **Green energy solutions**

15. Electricity usage in homes accounts for six percent of greenhouse gas (GHG) emissions in the UK (UK Housing: Fit for the Future, CCC, 2019). The Government's Net Zero Strategy (October 2021) sets out the role of affordable clean electricity in underpinning the net zero economy. Specifically, action at the local level is considered key to decarbonising buildings, transport systems and energy systems. Renewable energy generation from solar within the Borough can provide a low carbon source of electricity.
16. In 2021, solar contributed to more than 4% of the UK's total electricity generation (Energy Trends, March 2022). To meet the national net zero 2050 target, the Climate Change Committee (CCC) state that solar needs to provide 10-15% of the country's electricity demand. The CCC estimate that land use for large scale solar needs to rise from 290km<sup>2</sup> to 1,500km<sup>2</sup> and an average of three gigawatts of large scale solar needs to be deployed each year.
17. As set out elsewhere (e.g., Nationwide and Ipsos Mori's 2021 'Future of Home Report') making our homes greener (including energy efficiency and energy generation) must be a major part of the transition to net zero. New build homes need to be sustainable and futureproofed. Technologies such as ground source heat pumps and hydrogen boilers are likely to play a large part in decarbonising homes.
18. Currently the heating of homes in the UK accounts for 14% of annual GHG emissions (UK Housing: Fit for the Future, CCC, 2019). As part of the advice accompanying the sixth carbon budget the CCC recommend that no new homes are connected to the gas grid from 2025 and that natural gas use is completely phased out for residential use by 2035. To achieve the national net zero target, 18% of homes need to be connected to a low carbon heat network by 2050.

## **Low Carbon technologies – One Horton Heath**

19. Cabinet will be familiar with the Council's major planned development at One Horton Heath where in line with the Council's commitment to Infrastructure First, the first major pieces of road infrastructure are complete and site preparation has commenced. Subject to issuing of planning consents, the next major piece of road and the construction of new homes at the first phase (Lower Acre) are programmed to commence late 2022. Further updates are online at [www.onehortonheath.co.uk](http://www.onehortonheath.co.uk).
20. In December 2021 Cabinet approved a strategy and associated budget for upfront delivery of site-wide secondary infrastructure at One Horton Heath. The private heat and private wire proposals for One Horton Heath are one

element of infrastructure delivery, and a site-wide approach is required to comprehensively plan this infrastructure provision. In line with ambitions set out in the Project Brief in 2019, an ongoing commitment to infrastructure first and the timeline for delivery of housing at One Horton Heath, now is the critical time to decide the specific energy and heat solutions for the project.

21. Since 2019, the Council has been collaborating with specialist consultants to assess the demands and evaluate potential technological solutions. This report seeks approval to proceed with a strategy of providing 'green' private wire and private heat networks for the whole development. Specifically, it is recommended that the first phase (381 dwellings at "Lower Acre" as detailed in planning application reference F/20/89500) utilise a private heat network served from ground source heat pumps and an ambient temperature loop.

## **Proposals**

22. There are 3 green energy/low carbon projects proposed in this report.
23. Proposal 1 is a large-scale ground mounted solar farm on the Council's strategic land with revenue surpluses realised over the project life based on exporting power to the grid.
24. Proposal 2 is a private wire network connected to the Council's existing and proposed solar farms adjacent to One Horton Heath which would serve the non-residential property and electric vehicle charging demands of One Horton Heath. This proposal safeguards assumptions made in the Chalcroft Solar Farm business case and offers significant financial betterment to the business case underpinning proposal 1 as power generated is charged to end users at retail prices rather than being exported to the grid at wholesale prices.
25. Proposal 3 is a private heat network serving all new property at One Horton Heath. The main driver for this proposal is compliance with the aims and objectives of One Horton Heath in achieving no use of fossil fuels in the completed development and meeting the Future Homes Standard 2025.

## **Solar Farm**

26. Proposal 1 (Recommendation 2) in this report relates to the development of a new solar farm on Council owned land.
27. Eastleigh Borough Council is the freehold landowner of parcels of undeveloped land to the east of Eastleigh town. The land was acquired following approvals in July 2020 to meet various Green Borough strategic objectives, most notably nitrate mitigation. This report sets out a business case for the installation of ground mounted solar panels on two sites within a development area with a generation capacity of 27 megawatts.

28. Whilst the panels will be in multiple locations it will be classified as one solar farm, known as Allington Lane Solar Farm, as it will only have one combined grid connection point.
29. The panels will be located at the following sites:
- i. Land south of the B3037 (Fair Oak Road) (Land to the rear of Chalkhill Meadow) (c.23ha)
  - ii. Land north and south of the railway, Allington Lane (c.25ha) (one solar park covering three parcels of land)
30. A feasibility study carried out by Locogen (a specialist consultancy in the renewable energy sector procured on our behalf by the Southwest Energy Hub) confirms the suitability of the above locations to host one combined solar farm installation, and that the proposal provides a market facing business case.
31. Locogen identified several areas where further due diligence and confirmation of assumptions within the feasibility report are required. All these items have been instructed with results due July - August 2022. It should be noted that final proposals, and indeed ability to deliver this project, could be significantly impacted by the results of this further work. The major risks are perceived to be obtaining planning permission and grid capacity & connectivity.
32. The installation of ground mounted panels as proposed would generate 35.75 gigawatt hours per annum (35,753 megawatt hours) and would be available Q4 2023/2024, subject to grid connectivity. The table below sets out key milestone dates as suggested by Locogen:

<p><b>Grid</b></p> <ul style="list-style-type: none"> <li>• May 2022 - Submit application</li> <li>• Aug 2022 – Receive grid offer</li> <li>• Sept 2022 – Accept grid offer</li> <li>• Oct 2022 – Feb 2023 - Statement of works process (to assess transmission impacts)</li> <li>• Sept 2022 - March 2024 – typical timeframe for DNO to arrange for and complete their grid connection works</li> </ul>
<p><b>Planning</b></p> <ul style="list-style-type: none"> <li>• May – Oct 2022 – Screening works and planning</li> <li>• Nov 2022 - Submit planning (to do this we would need to look at kicking off ecology works needed over Spring/summer period)</li> <li>• April 2023 – Receive planning decision (assuming 6mths timeframe from submission to decision)</li> <li>• April – July 2023 – Discharge of planning conditions</li> </ul>

### **Construction**

- March – May 2023 – Surveys
- May – July 2023 – Procurement of EPC contractors (may need a bit longer accounting for public procurement requirements)
- August – December 2023 construction
- Site operational – dependent on when grid is ready

33. The development of this large-scale solar farm would support the Council's climate and environmental emergency declaration and strategy. A solar farm producing 35.75 gigawatt hours per year would reduce GHG emissions from the generation of electricity for the Borough by around 9% (based on most recent data from 2019), equivalent to powering around 9,500 homes.
34. As a project delivered and managed by the Council, there is an opportunity to demonstrate the benefits of low carbon planning and sustainable design as summarised below:
- (a) Environment – 95% of land in solar farms can support plant growth, as panels are raised off the ground and spaced out to avoid shading. There are opportunities to extensively plant wildflower/species rich grassland mixes and significant amounts of hedgerows. A biodiversity management plan would lay out the objectives, including the protection of existing species.
  - (b) Social – A portion of the surplus income generated will be used to fund green community initiatives such as a grant scheme for local action on climate change, enabling residents to develop projects to benefit their local area. The site could be designed to host visits for school groups or hold open days providing opportunities for education and awareness raising (recommendation 3).
  - (c) Economic – as a large-scale project there is potential for providing local employment and apprenticeships using the social value framework that has already been developed for the One Horton Heath development.

### **One Horton Heath Low Carbon Private Wire Power Network**

35. Proposal 2 (recommendation 4) in this report relates to a proposal for a private wire network at One Horton Heath. Private wire systems are localised electricity grids that, although connected to the local distribution networks, have privately owned central plant that produces electricity (in this case Council owned solar farms).
36. In September 2020 Cabinet approved the freehold purchase of Chalcroft Solar Park and associated operations (Chalcroft Solar Park Limited). The purchases completed in May 2021 and Cabinet was updated on the

business plan in June 2021 following necessary due diligence. The due diligence for this purchase demonstrated the significance of generating demand for the electricity private wire to the non-residential buildings on the One Horton Heath development to support the funding for the purchase and enable the delivery of green energy.

37. The addition of further solar energy supply (recommendation 2), alongside the existing Chalcroft Solar Park, helps further justify investment in a wider supply network. A network could distribute green energy to a greater range and number of end-users than had previously been considered feasible with a single solar park. It is therefore proposed that if the creation of the Allington Lane solar park is approved, it will also be connected to the private wire network serving One Horton Heath. The private wire network would reduce GHG emissions for the supply of electricity from 113,766 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) to 28,841 tCO<sub>2</sub>e, saving 84,925 tCO<sub>2</sub>e over the lifetime of the network.
38. Further benefits and feasibility of a proposed private wire network at One Horton Heath were provided by Ener-Vate, commercial consultants in the low carbon energy sector. Their findings are summarised as follows:
  - Guaranteed Green energy supply for non-residential property at One Horton Heath (i.e., commercial premises).
  - Guaranteed Green energy supply serving Electric Vehicle Charging points to communal parking areas which covers most of all housing and all public and business chargers.
  - Significant long term revenue surpluses derived from prudent forecast need of Electric Vehicle charging. These revenue surpluses help support the business case for private heat, reducing risk to the Council.
39. Any energy generated by the Chalcroft Solar Park or Allington Lane Solar Park which is not consumed via the private wire network at One Horton Heath, will still be available for the Council to explore other private wire benefits and off-takers. It can also be exported to the national grid, generating a guaranteed income but at a much lower level than selling it to end users, the export to grid income rate has been used for the financial modelling as it is the most prudent and secure form of income.

### **One Horton Heath Low Carbon Private Heat network**

40. Proposal 3 (recommendation 5) in this report relates to proposals for a private low carbon heat network.
41. Heat networks deliver heating, hot water, and/or cooling from a central source or sources to domestic dwellings, public sector buildings, shops, offices etc. The Department for Business, Energy & Industrial Strategy (BEIS) is aiming to develop and grow the heat network market and address the challenges of decarbonising the heat sector in the UK. The Government

is investing in heat network projects to incentivise progress towards low carbon supplies of heat at competitive prices to households and businesses.

42. The base option to provide heat and hot water to new build developments is currently to install gas boilers in each property at a significantly lower capital cost. Whilst cheaper, this option does not meet the previously approved OHH brief of no fossil fuels on site or the proposed 2025 energy regulations. The industry reaction to the new regulations is to install the next-least expensive option (Air Source Heat Pumps), however as the Council will retain a proportion of the stock, the ongoing costs of ownership also need to be considered. The estimated full life cost to the Council comparing gas boilers, ASHP and GSHP on a standalone basis i.e., no heat network or long-term securing of revenue, is shown in the table below.

	<b>Gas Boilers £'000</b>	<b>Air Source Heat Pumps £'000</b>	<b>Ground Source Heat Pumps £'000</b>
<b>Installation Cost (all 2,500 homes)</b>	6,250	18,750	33,730
<b>Capital Repair Cost over 50 years (1300 retained homes)</b>	17,776	51,353	38,515
<b>Annual maintenance cost over 50 years (1300 retained homes)</b>	6,336	25,346	19,009
<b>Total</b>	<b>30,362</b>	<b>95,449</b>	<b>91,254</b>

43. Gas boilers will have increased carbon emissions of 197,064 tonnes compared to running the heat network over a 50-year period as demonstrated in the table below. In addition, gas boilers may not legally be able to be installed when building regulations change in 2025.

Heat Source	Average annual carbon emissions (tCO <sub>2</sub> e)	Carbon emissions over 50 years (tCO <sub>2</sub> e)
Individual Gas boilers	<b>4,671.5</b>	<b>233,581</b>
Individual Air source heat pumps	<b>1,024.0</b>	<b>51,201</b>
Individual Ground source heat pumps	<b>904.0</b>	<b>45,197</b>
Heat network using GSHP	<b>730.3</b>	<b>36,514</b>

44. Following extensive research, analysis of trends and current and emerging technologies the Council proposes to deliver a green heat network of ambient temperature water loops within each development parcel, and heat exchange units in each property (replacing a gas boiler).
45. Within context of this report heat for the ambient temperature loops on One Horton Heath is proposed to come from an array of 100m deep boreholes within each development parcel that extract heat from below the earth's surface.
46. The full technical feasibility work was supported by Aecom (an established infrastructure consulting firm) & Genius Energy Lab (ground source heat pump system design consultants) and underpins this proposal.
47. The figures shown at paragraph 42 provide the baseline against which the cost of installing a heat network was considered. A ground source heat pump system will require greater initial capital expenditure and operational expenditure than gas boilers. However, by having a heat network, the Council can benefit from secured income generation to offset the operating cost and most of the installation and repair costs over the 50-year finance period of the project. Furthermore, by creating a heat network grant funding (para 49) becomes available to support the capital financing. This improves the financial position for the Council demonstrating a break-even position. The review of all factors, including financial and the reduction in carbon emissions, has led to a retained private heat network initially fuelled by Ground Source Heat Pumps being identified as the recommended option for delivery (Recommendations 5).
48. Initial discussions with Ener-vate and the Department for Business, Energy, and Industrial Strategy (BEIS) indicate that proposals for a heat network at One Horton Heath is likely to attract up to £15m (50% of the initial capital and commercialisation cost of the project) in grant funding from the government backed Green Heat Network Fund (GHNF).
49. GHNF funding is time restricted and would need to be applied for in stages over the construction life of the project. Recommendation 6 in this report relates to a proposal to apply for GHNF grant funding to subsidise investment in a private green heat network and lower the Council's overall risk.
50. It is proposed that Cabinet support the preparation and submission of an application to secure funding from the GHNF during 2022 (Recommendation 6).
51. The entire heat network model is currently based on using 100m deep boreholes, but it is expected as this industry matures, and technologies evolve the source of heat for the ambient temperature loop in future parcels may change (see paragraphs 55 and 55).

52. Certainty as to the heating technology for the first phase of One Horton Heath (Lower Acre) is needed at this time so that detailed design and procurement of the equipment and supplies can commence, enabling a start on site date for the first phase to be achieved in late 2022.

### **Strategic approach to green energy supply and utilisation**

53. One Horton Heath is a long-term project with a build out programmed until at least 2035. Futureproofing the energy solutions is driving the strategic considerations now and necessitates evaluation of both available and emerging technologies.
54. Green (or 'clean') heat technology is a fast-moving area and the feasibility of different renewable heat technologies over time (as the industry matures and grows) means that the preferred solution for the first phase of One Horton Heath may not necessarily be the same for all future phases.
55. Potential alternative sources include waste heat from large scale PVT, large scale centralised ASHP, large scale centralised solar thermal, waste heat from hydrogen gas production et al. Recommendation 7 acknowledges this and proposes up to £50,000 is approved to allow ongoing research that will validate or lead to varied proposals for heating future phases of the ambient temperature loop at One Horton Heath.
56. Subject to approval and delivery of the solar installations proposed in this report, there are clear opportunities to investigate complementary technologies, investments and long-term benefits to the residents and businesses of the Borough.

### **Legal Structure**

57. Having explored both options, the Council intend to supply the Heat and Power themselves rather than through an Energy Supply Company (ESCO). Legal advice has been sought from Weightmans LLP to ensure the Council is legally allowed to supply power to non-residential users, heat to the residential units and to assess the best corporate structure for doing so. In addition to giving assurance regarding the ability to supply, the Council asked Weightmans to specifically consider the three points below:
- Whether there is a legal requirement to establish a standalone Energy Supply Company (ESCO) to deliver the project.
  - The advantages and disadvantages of establishing an ESCO.
  - Highlight any key legal or regulatory issues which must be considered for the delivery of the project, including whether to establish an ESCO, focusing on procurement, subsidy control and electricity supply regulations.

58. Weightmans confirmed that the Council can supply heat and power using either Section 11 of the Local Government Act 1976 (provided all sources of energy supplied are renewable) or using Chapter 1 of the Localism Act 2011 (providing the purpose for supplying the energy is not primarily a commercial one). The energy the Council will be supplying will all be from renewable sources and the purpose of the supply is to support the Climate Change Emergency actions and to future proof the site from potential legal changes to the use of natural gas to fuel homes. It was confirmed that there is no legal requirement to set up an ESCO for the Council to make the proposed supplies.
59. Having established that an ESCO is not mandatory, the advantages and disadvantages of this option were explored in outline by Weightmans:
- Weightmans advised that the main advantages of an ESCO are the ability to ring-fence the Council's liability and thereby not expose the Council's core business to the risks of the project; and the ease of selling the interest in the project in the future (although this is not contemplated at present).
  - The key disadvantages of an ESCO that were highlighted were: the additional time and expense to establish the corporate structures required; the fact that the Council may be able to access lower cost public sector financing than would be available to the ESCO combined with the fact the ESCO would be liable to Tax could lead to a more expensive service to residents; and the requirement that all solar PV and renewable generation assets would have to sit within the ESCO's ownership – which runs counter to the Council's usual approach of delivering projects directly.
60. There were 3 key legal areas which were highlighted as potential areas of concern and were reviewed in detail. These were: Procurement, Subsidy Control (previously State Aid) and Regulation of Supply.
61. The first element of the review which may impact the decision regarding an ESCO was Procurement. It was confirmed that there were no legal issues regarding procurement which prevented either option. However, it was highlighted that the use of an ESCO would potentially require more than one company to be created to meet all the relevant legal restrictions which would add a degree of complexity to the structure although this is considered manageable.
62. The second element considered was subsidy control (previously referred to as State Aid prior to exiting the EU). Again, there were no significant issues preventing either structure. If an ESCO was created the Council could need to ensure that any funding provided to the ESCO would be at market rates. This could result in higher operating costs and subsequently a higher cost for the customer.

63. The final element was regarding the regulation of the supply of electricity. The key issue explored here was whether there would be a requirement to obtain a supply licence. If this would be required, the administration and potential cost impact would likely mean the scheme could not proceed. This issue had previously been considered by the legal team supporting the purchase of Chalcroft Solar Farm who confirmed their view was that the Council would be exempt. The Electricity Class Exemptions Order 2001 was specifically considered, and the same conclusion was drawn that the Council could use a Class C Exemption in the order. In summary, for this exemption to apply the supply must be self-generated or provided by a licenced supplier and used by consumers located on the same site linked by a private wire: this proposal meets all these requirements.
64. Weightmans did highlight one area on which they recommended the Council took Counsel advice on. This concerned the onward supply of electricity from the Electric Vehicle (EV) chargers as the exemptions do not explicitly cover this supply as it was not in material existence at the time of writing the exemptions. Whilst comfortable with their assessment, which was also in line with advice received when the Chalcroft Solar Farm was purchased this was considered prudent. This advice has been sought but has not been received back at the time of writing.
65. As would be expected advantages and disadvantages were identified within both models, but nothing that would materially impact the final decision. Having considered the risk profile of the project and the regulatory and financial implications of establishing an ESCO it is considered by the project team that at present these outweigh the advantages that could be provided by an ESCO, and it is proposed the supply is provided directly by the Council. This would not preclude an ESCO being established by the Council at a later date if the regulatory environment or risk profile changed.

## **Overall Financial Implications**

66. The financial implications of each independent scheme are detailed in the following paragraphs with the appraisals shown in the appendices 1 & 2. Although the schemes have interdependencies each must be considered on its own merit. Each element of the scheme has been costed separately to clearly detail the individual costs and income. It is anticipated that due to the length of life of the asset and the uncertainty around interest rates, the borrowing for the capital expenditure will be at a long-term fixed rate with income streams contributing towards the cost of debt, this will be agreed with the Treasury Management Group.
67. The current approved One Horton Heath (OHH) development appraisal includes an allowance of £10,000 per unit for providing Heat and Power to the site. As this cost is already financed by the development, this sum is deducted from the capital cost of the Heat and Power Network.

68. The table below details the summary figures for each scheme.

<b>Scheme</b>	<b>Capital Cost</b>	<b>Cumulative Revenue Position</b>	<b>Potential Funding Source (OHH)</b>	<b>Final Cumulative Revenue Position</b>
Solar Farm	£22.5M	£3.7M	-	£3.7M
Heat Network	£29.4M	(£53.4M)	£29.4M	£0.1M
Power	£11.7M	£131.2M	£7.1M	£144M

### **Solar Farm Financial Implications**

69. The Solar Farm has a total capital cost of £22.49M (inclusive of a £2.1M contribution to Strategic Land costs), financed by borrowing repaid over the 30-year life of the asset from the sale of electricity, generating a cumulative revenue surplus of £3.7M (Appendix 1).
70. Included in the capital costs are development costs, such as grid, planning and technical works, the cost of purchasing and installing the ground mounted solar panels, the cost of connecting to the grid, and a 5% contingency on these costs.
71. Additionally, a 10% uplift has been added to the capital costs to take account of the time difference between the issuance of this report, and the construction timeline. This is to mitigate the risk around inflationary pressures over the next 12-18 months considering current high inflationary pressures in the economy. Cabinet will be kept updated of prices through the project board as the project progresses.
72. From the point the project goes live, and electricity is produced, the business case assumes a gross annual revenue income of £1.6M, rising in line with inflation. This is based on a very prudent average export rate of £45 per megawatt hour. Current wholesale electricity prices are showing high volatility due to external factors, such as the COVID 19 pandemic, and the Russia/Ukraine conflict. This has pushed prices to trade more than £100 per megawatt hour over the last 12 months. Energy prices prior were much less volatile, and consistently a rate of £45 per megawatt hour was comfortably achieved. It is therefore deemed to be a prudent long-term price assumption for modelling; however, it is recognised that this rate is likely to be comfortably exceeded over the life of the scheme.
73. Ongoing revenue costs of operating the Solar Farm are calculated to be £332k from Year 1, rising in line with inflation. This includes allowances to fully externalise the operations, management and ongoing routine maintenance of the site, routine replacement of inverters and solar panels, business rates payable, and other operating costs such as insurance and accounting.

74. The following key assumptions have been made in the appraisal shown at Appendix 1.
- Net Energy yield of 35,574 MWh
  - Export rate of £45 per MWh
  - Income inflation at 2%
  - Operating Expenditure inflation at 2.5%
75. In addition to the base model, the following allowances have also been made on an annual basis,
- £50,000 ongoing cost of staff operations – This is to cover the ongoing revenue staff cost to the Council of operating Solar Farms and managing associated contracts.
  - An additional 5% of Gross Income reserved to create a Solar Repairs & Replacement Reserve – This is to ensure there is a reserve built up to cover unforeseen repair and replacement to key Solar equipment.
  - 5% of Gross Income reserved to create a fund for future Green Initiatives to be managed by the Climate Change Board.
76. The structure of the Allington Lane solar farm investment differs from that of Chalcroft Solar Park, whereby the Solar Park had already been constructed and the Council purchased the company from the previous owners.
77. This current structure facilitates a lower capital cost per megawatt produced, but with these lower costs comes additional planning and construction risk. The full costs of planning and construction are included in the capital cost, which also includes a 5% contingency, approximately £870,000 of contingency.
78. Recent changes to borrowing rules from both the PWLB and CIPFA have reinforced that an authority must not borrow to invest primarily for financial return. As spend on the Solar Farm is delivering on the policy of Net Zero Strategy: Build Back Greener pursuant to the Climate Change Act 2008, it will be deemed to be a service investment delivering a policy purpose and meets the requirements of the new borrowing rules.

### **Private Wire Power Network Financial Implications**

79. The Private Wire Power Network has a total capital cost of £11.7M, financed by borrowing and funds already within the OHH business plan (£7.1M) repaid over 50 years. Over the life of the model there is a cumulative revenue surplus of £144M (Appendix 2).
80. It should be noted that if the Private Power Network is not pursued the OHH project would still need to meet the 2021 legislation change to provide EV charging to every new home. This would involve major upgrade to the

adopted power network, estimated to cost in the region of £5-7M, this cost is not included in the current OHH appraisal and would be a pressure on the OHH business case.

81. Also built into the appraisal is the ongoing major Repair & Replacement allowance of £27M (excluding heat pump costs which are included in Heat modelling) over the life of the asset.
82. This business plan includes the purchase of power from Chalcroft Solar Park and thus guaranteeing the business case approved at Cabinet in July 2020.
83. Recent changes to borrowing rules from both the PWLB and CIPFA have reinforced that an authority must not borrow to invest primarily for financial return. As the investment in the Power Network is a direct response to the Sustainability and Climate Change objectives of the Council's Housing Programme, the Project Brief for One Horton Heath, and the Climate Change Emergency, it will be deemed to be a service investment.

### **Private Heat Network Financial Implications**

84. The Heat Network has a total capital cost of £29.5M financed by a contribution included in the approved OHH business plan for provision of heating and hot water and GHNF grant. Over a 50-year period the heat network will generate a small operational revenue surplus, a full financial appraisal has not been shown as there is no borrowing requirement to be assessed.

	<b>£M</b>
Capital Cost	29.5
OHH contribution	(17.9)
GHNF	<u>(11.6)</u>
<b>Total borrowing requirement</b>	<b>0</b>

Additionally, at the end of the 50-year financial model the heat network will have high value assets that will continue to operate many years into the future and generate further income to the Council.

85. Also built into the appraisal is the ongoing major Repair & Replacement allowance of £51.6M over the life of the appraisal (residential and commercial heat pumps).
86. Recent changes to borrowing rules from both the PWLB and CIPFA have reinforced that an authority must not borrow to invest primarily for financial return. As the investment in the Heat Network is a direct response to the Sustainability and Climate Change objectives of the Council's Housing Programme, the Project Brief for One Horton Heath, and the Climate Change Emergency it will be deemed to be a service investment.

### **Ongoing Governance and operation**

87. These projects will fall under the Council’s standard governance processes for projects of this size coordinated by the Project Management Office, but for clarity the project governance structure for each element is shown below.

<b>Role</b>	<b>Solar Farm Project</b>	<b>OHH Heat &amp; Power Project</b>
<b>Programme Board</b>	Climate Change	One Horton Heath
<b>Project Sponsor</b>	Corporate Director (CFO)	Chief Executive
<b>Project Lead</b>	Executive Heads of Asset and Environment	OHH Project Director
<b>Project Management</b>	OHH Team	OHH Team
<b>Project Delivery</b>	OHH Team	OHH Team

88. Ongoing management and delivery will be allocated across the Council into three key areas, Asset Ownership & Operation, Environmental Strategic Delivery and Financial Control & Accounting. These functions will be delivered by Asset Management, Environment and Corporate Finance respectively and where required; additional funding is included within the relevant business case to perform these functions.

89. Further work will be required to determine an appropriate pricing structure for residents, considering fairness and transparency, enabling consumers to make informed choices about their energy usage. For example, options might include fixed fees, variable rate billing based on price per energy unit, maintenance charges, and administration costs. Operating a heat pump system is different to operating a traditional gas boiler, and residents will require training and support to ensure they know how to operate the system efficiently. Recommendations will be brought back for approval as necessary.

90. The anticipated timetable for the 3 proposals covered in this report are as follows:

	<u>Cabinet approval</u>	<u>Next Stage Design</u>	<u>Planning Process</u>	<u>Appoint Contractor</u>	<u>Specialist design and leadin</u>	<u>SoS</u>	<u>Operational arrangements all finalised</u>	<u>Commission Assets</u>	<u>First homes occupied at OHH</u>
Solar Park	May-22	Oct-22	Nov-22 to Apr 23	Apr-23	Jun-23	Jul-23	Oct-23	Apr-24	May-24
Private Wire Network	May-22	May-22	-	Sep-22	Mar-23	Mar-23	Oct-23	Apr-24	May-24
Private Heat Network	May-22	Jun-22	-	Sep-22	Dec-22	Dec-22	Oct-23	Apr-24	May-24

## Risk Assessment

91. The recommendations within this report are significant and it must be recognised that the projects are at an advanced feasibility stage based on modelling using best assumptions and the knowledge and guidance of industry experts to minimise risk. However, as the schemes progress to implementation and operation there will undoubtedly be additional decisions to be made which will be reported through the Council's standard project management process and be formally approved as necessary. Change control and risk management will be key features of the project management and implementation process.
92. When producing a financial model over the long-term there is always a risk that estimates may prove incorrect. However, it is considered that the modelling is suitably prudent and builds in more than adequate provisions for future costs; making sensible assumptions about power generated and usage in line with the expert reports. Due to the long life of these assets and the Council's long-term commitment to climate change the borrowing for these projects will likely be taken at a long-term fixed rate of interest to remove the risk of any potential rate increases.
93. The business case for the heating network is calculated using grant income to fund some of the capital costs. As the grant has not yet been awarded there is a small risk to this income stream. The project team have identified this risk and also potential mitigations which are available through the development of the operating model.
94. Decisions for provision of site wide electricity and heating infrastructure to meet the needs of One Horton Heath are critical. Feasibility and design work for the private wire and private heat networks contained in this report have been progressed at risk in order to keep to current programme for start of construction works later this year.
95. All other electrical infrastructure for the project is well advanced with Southern Electric Services and been progressed on the basis that the majority of EV charging and non-residential power needs will be met off-grid from private assets. A change to this assumption would result in months of delay to the first phase and much higher capital costs across the whole project without the ability recover either from revenue income or operation of retained assets.
96. The nature of the risks associated with the proposed projects are likely to change throughout the development process. For instance, the planning and technical constraints on the development of solar farms, and the mitigation required at the outset. If the projects were to progress, further technology-specific expertise would be sought to assist in risk identification and management at the development stage. By using the Council's proven project management methodology risks and programme changes will be effectively managed, mitigated and reported as appropriate.

97. Construction risks will be considered in the stage following the necessary planning and other approvals but as with all projects at a feasibility stage there is the risk the cost of construction could increase. In addition, the effective use of the green networks is reliant on effective construction of the properties, which will need to be carefully monitored during the build period. Contingencies have been built into the financial appraisals to mitigate risks of increased costs.
98. Once installations and equipment are commissioned, operational risks will be managed, to ensure the assets can generate a reliable supply of energy. Operation and maintenance costs, and repair and replacement costs, are therefore reflected in the financial appraisals. The effective management of the operation of both the solar farm and the private wire network should mitigate any reputational risks. The projects will have an appropriate plan to communicate to all stakeholders including training of new tenants to allow them to fully understand how to use the green technologies.
99. In addition to having a system which is operationally sound, it is very important residents know how to operate the new technology. Operating a heat pump system is different to using a traditional gas boiler. A traditional boiler will produce a lot of heat in a short space of time, while a heat pump produces heat more slowly. Inefficient use of the equipment could lead to higher operating costs for the user but also the Council and the business plan. The funds earmarked for additional staff resource will help support the training and education of residents to ensure that performance levels of the system are maintained.
100. Based on the legal advice received (paras 57-65), having the ability to provide these services direct from the Council reduces the risks considerably and Counsel advice is being taken regarding the one remaining uncertainty regarding the lack of clarity in supply legislation for EV charging points. There is also the risk that Government may change legislation regarding energy generation and supply in the future which cannot be further mitigated at the current time, but all advice provided has noted all known potential changes at the time of writing. Furthermore, future phases will be able to take advantage of emerging technologies should they be available and more effective than those adopted for phase one.

## **Equality and Diversity Implications**

101. The Equality Act is not relevant to the decision in this report because it has been assessed against the criteria and an Equality Impact Assessment has not been carried out. The proposal does not relate to eliminating discrimination, advancing equality of opportunity, or fostering good relations between different people with protected characteristics.
102. Any specific land-use projects approved in future would be likely to address issues around accessibility to the countryside for persons with disabilities, the provision of facilities for younger or older persons, and so on. Similarly,

any commercial decisions regarding services for consumers would likely need to consider impacts. At that stage, a full Equality Impact Assessment (EIA) may need to be carried out if deemed proportionate.

103. It is considered that for this decision the Equality Duty does not need to be addressed and an Equality Impact Assessment (EqIA) has not been carried out.

### **Climate Change and Environmental Implications**

104. The proposals set out in this report respond to the Council's Climate and Environmental Emergency strategy and Action Plan. The recommendations seek to reduce the future GHG emissions of the Borough, supporting the carbon neutral 2030 target.
105. The proposed solar farm at Allington Lane will reduce the GHG emissions from the generation of electricity for the borough by around 9%. Locally emissions from electricity have fallen by 65% since 2005, although more needs to be done as the same progress has not been reflected in the heating of homes. Between 2005 and 2019 GHG emissions from heating homes reduce by only 20%.
106. Developing a low carbon heat network for One Horton Heath helps to address this lag, reducing emissions from the heating of homes by 197,016 tCO<sub>2</sub>e (over 50 years) and aligns with advice from the Climate Change Committee. Decarbonising heat is particularly challenging due to the complexities of retrofitting existing gas/oil fired homes and building a large-scale district heat network enables the flexibility to use a range of low carbon sources, as technology advances.
107. Collectively the two schemes with the private wire network promote environmental resilience and energy security by reducing the requirement for fossil fuels to supply energy to homes and businesses in the Borough. The proposals directly support the mitigation of climate change by shifting users towards a renewable energy supply.
108. Developing the solar farm at Allington Lane provides opportunities to improve biodiversity in the Borough, supporting the environment emergency and potentially local community resilience/action on climate change should a grant scheme be set up.

### **Conclusion**

109. In September 2020 and June 2021 Cabinet approved the acquisition of Chalcroft Solar Park and Chalcroft Solar Park Limited, supported by a business plan for the sale of energy through a private wire to future commercial assets on the One Horton Heath site. Alongside this project, the Council and other specialists have been evaluating the additional opportunities for energy and heat generation and distribution provided by the Chalcroft Solar Park and the recently acquired greenfield land in the

area. The advice received is attached to this report and has informed the recommendations discussed herein.

110. Following approval of a budget and strategy for site-wide secondary infrastructure to deliver the One Horton Heath development, proposals for provision of electrical and heat infrastructure are recommended in this report. The recommendations respond to the existing land and assets held by the Council; the need to future-proof energy supply; the strategic commitments to renewable heat sources for new homes at One Horton Heath; and wider Council decarbonisation plans.

## CORPORATE LEADERSHIP BOARD

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Appendices Attached: Appendix 1: Solar Farm Financial Appraisal  
Appendix 2: Private Wire Financial Appraisal

## LOCAL GOVERNMENT ACT 1972 - SECTION 100D

The following is a list of documents which disclose facts or matters on which this report or an important part of it is based and have been relied upon to a material extent in the preparation of this report. This list does not include any published works or documents which would disclose exempt or confidential information.

**None**