Report to the Cabinet

28 March 2022

Wards: Central, St. Andrew's and Docklands, Drypool

Hull District Heating Project

Report of the Assistant Director - Major Projects, Culture & Place on behalf of Corporate Director of Regeneration

This item is not exempt
It contains information relating to the financial or business affairs of any particular person (including the authority holding that information)

Appendix B and C are exempt

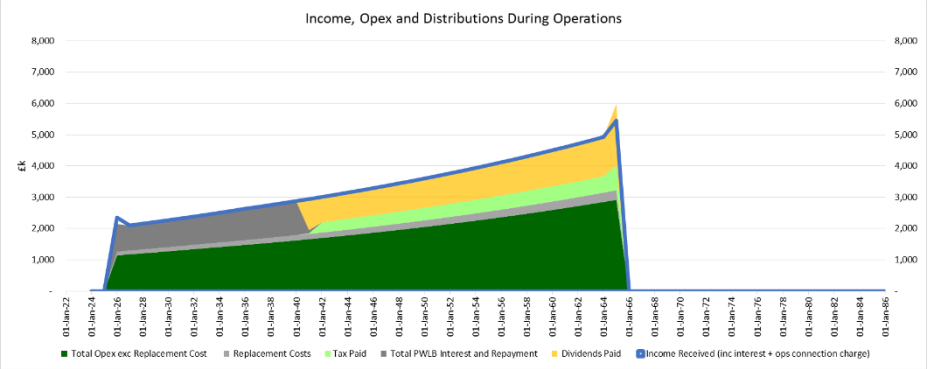
This is a key decision. The matter is in the Forward Plan
0007/22

1. Purpose of the Report and Summary

1.1 The Report details the outcome of the Detailed Project Development (DPD) and accompanying Outline Business Case (OBC).

1.2 The OBC identifies that the development of Phase 1 (Appendix A) of the Hull District Heat Network (HDHN) is both technically and financially viable.

1.3 A comprehensive financial model has been prepared for the project and the detailed outputs of this model are included in Appendix B (exempt). The model demonstrates that the project will require a capital investment of £22m for Phase 1 with an Internal Rate of Return (IRR) of 3.06% over 40 years before grant funding and connection charges. With a projected capital investment of 50% through the Green Heat Network Fund (GHNF) and connection charges this increases to 8.64%.



1.4 An allocation of £17m has already been identified within the capital programme for the HDHN (Cabinet 11.9.2018 Minute 45). Expenditure will primarily be over the period 2022/23, 2023/2024 and 2024/25.

1.5 The recommended commercial structure for the project is through a Council owned Special Purpose Vehicle (SPV) that will own and operate the assets. The SPV will receive a loan from the Council to undertake the development of the heat network with the Council receiving future dividend payments following the repayment of the loan.

1.6 The delivery of Phases 2 and 3 will require additional capital investment which will be considered at a later stage.

1.7 Phase 1 will deliver between 98,000 to 126,000 tonnes of CO2e saving over 40 years of which 27,500 and 36,000 tonnes are from Council properties alone.

1.8 The use of district heating to provide heat and hot water to connected properties is the most cost-efficient net zero solution compared to the alternative of individual air source heat pumps (ASHP).

1.9 The OBC meets the Councils critical success factors of:

- Delivering significant carbon savings - Phase 1 is expected to deliver 98,000 to 126,000 tCO_2e savings over 40 years
- Safeguarding customer heat costs – district heating is the most cost-efficient net zero solution compared to the alternative ASHP
- Renewable heat generation and future proofed for carbon neutral heating – the Phase 1 network sources energy from waste and will be future proofed to allow expansion.
- Project is economic - by creating and sustaining employment opportunities in the city.
- Network development timing in line with planned developments where possible – the scheme aligns with

Albion Square and other private sector development planned for the city.

2. Recommendations

2.1 That the outcomes of the Detailed Project Development (DPD) and Outline Business Case (OBC) stages are supported, and the Assistant Director for Major Projects, Culture & Place (ADMP&I) is authorised to progress the delivery of Phase 1 of the District Heat Network, which supports the Council's vision to become a leading carbon neutral City within the United Kingdom by 2030 and meets the Council's 2040 net zero target and 2045 net zero target for the city.

2.2 That the Assistant Director Major Projects, Culture & Place, in consultation with the Director of Finance & Transformation and Director of Legal Services & Partnerships is authorised to prepare and submit a bid to the Department of Business, Energy and Industrial Strategy for Green Heat Network Fund (GHNF) grant to support development and commercialisation of Phase 1 of the District Heat Network

2.3 That, subject to GHNF grant being received to a level that meets the viability assessments of the DPD and OBC, the Assistant Director - Major Projects, Culture & Place, in consultation with the Director of Finance & Transformation and the Director of Legal Services & Partnerships is authorised to develop the Full Business Case (FBC) and commercialisation strategy for Phase 1 and to report further to Cabinet

2.4 That, in order to support formulation and submission of a GHNF bid and FBC and commercialisation work, the Assistant Director Major Projects, Culture & Place, in consultation with the Director of Legal Services & Partnerships, is authorised to procure such specialist technical, financial and legal support as they consider necessary, using either existing national framework contracts, open procedures or, where permissible under Contract Procedure Rules and the terms of current contracts, extending the commissions of specialist service providers who have worked on the DPD and OBC. An allocation of £100k has already been secured for this work as part of the DPD (50% was secured from the Heat Network Delivery Unit), however a further £100k should be allocated to support the commercialisation stage.

2.5 That the Director of Legal Services and Partnerships is authorised to enter into the necessary funding agreements with BEIS in the event of a successful GHNF bid.

2.6 That the Trippett Street car park, which is owned by the Council and has been identified as the ideal location for a backup energy centre due to its size and location, is held by the Council for the purposes of this project until the outcome of GHNF has been determined and the Full Business Case progressed. The site is currently allocated for disposal with a target capital receipt of £200k.

3. Reasons for Recommendations

3.1 The Council has a commitment to become carbon neutral by 2030 and net zero by 2040 at the latest, with the city aiming for net zero by 2045.

3.2 The HDHN provides the most affordable way for buildings in the City Centre and their occupiers (businesses/ residents) to obtain net zero heat and hot water compared to the counterfactual of an air source heat pump.

3.3 The DPD and OBC are predicated on a substantial portion of the capital costs being sourced from the Green Heat Network Fund established by BEIS. Confirmation of this funding will enable FBC to progress on the viability and IRR assumptions made in the work undertaken to date and provide support at national government level for the strategic direction and commercial model for the DHN, including establishment of an SPV. The model can be rolled out to further phases of the network.

3.4 The approach provides clear community leadership by the Council and sets a clear direction in enabling both itself as a business and other businesses and residents in the city to meet their net zero targets.

4. Impact on other Executive Committees (including Area Committees)

4.1 The development of the HDHN will impact certain wards within the Riverside and Wyke Area Committee areas. However, submission of the GHNF bid and FBC work will have no immediate direct impact, other than some local stakeholder consultation and continuing engagement with potential heat off-takers.

5. Background

5.1 Led by the United Nations, more than 130 countries have now set or are considering a target of reducing emissions to net zero by 2050. While net zero is the critical long-term goal, steep emissions cuts are imperative in the next 5 to 10 years to keep global warming to no more than 1.5 °C and safeguard a liveable climate for the future.

5.2 On 19th March 2019, Council resolved to progress a strategy to achieve carbon neutrality by 2030 and in February 2020, approval was given to the allocation of capital funding to deliver schemes that would contribute towards that objective.

5.3 On 27th June 2020, Cabinet approved the 2030 Carbon Neutral Hull Strategy Hull 2030 Carbon Neutral Strategy | Hull City Council providing the strategic framework for the reduction of carbon emission from production and consumption emission to zero by 2030 to reduce the impact of climate change on the city.

5.4 The approval of 2030 Carbon Neutral Strategy has enabled the Council to begin its journey to reduce its carbon emissions through several carbon neutral initiatives including the installation of a district heat network.

5.5 In 2021 Government launched the £270m Green Heat Network Fund Green Heat Network Fund: proposals for the scheme design - GOV.UK (www.gov.uk) as part of a bid to heat more homes from green sources. For the first time, the government's heat network fund will only fund heat networks which use low carbon technologies such as heat pumps, waste heat and energy from geothermal sources. This is a critical part of the UK Net Zero Strategy and the requirements in the Climate Change Act (net zero amendment) 2019.

5.6 During 2021, the Council appointed technical, financial, and legal consultants to progress the Detailed Project Development (DPD) of the Hull District Heat Network (HDHN). The results of the DPD have been positive and an OBC has been prepared for the project.

5.7 The Council has been developing the HDHN for several years working through a logical set of assessments from city scale heat mapping to techno-economic assessments to the current DPD stage. This is an established and robust 5-case approach agreed with the Heat Network Delivery Unit of Government and approved by CIBSE.

6. Full Business Case / Detailed Project Design

6.1 In conjunction with retained project consultants, the Council has developed the DPD and OBC. The results of this work are summarised below.

Technical and Economic Considerations

6.2 The DPD has explored in depth several technical and economic considerations in relation to the heat source, network size and route, carbon emissions and location of a backup energy centre.

6.3 Following a detailed assessment of several heat sources, Energy from Waste (EfW) has been identified as the preferred heat source for Phase 1 of the HDHN as it provides the greatest economic advantage compared to alternate heat sources. It also provides a large-scale supply of renewable heat, utilising an existing heat source and generates significantly lower carbon emissions than gas, with an estimated reduction of at least 76% over a 40-year period. This preferred heat source can provide enough heat for the proposed Phase 1 network with additional heat sources to be explored for future phases of the network. It must be noted at this stage that this is the outcome of technical analysis and the Council must source its heat supply competitively.

6.4 Phase 1 of the network has identified 51 connections, including Hull City Council properties, Hull College, private stakeholders, and several planned developments in the City Centre. Whilst this first phase has been mapped out, it is likely the proposed network will change over time with some properties retracting from the proposal and other properties and developments coming on board.

6.5 Pinch points for the proposed network have been identified, which include routes under the River Hull and across the A63, however surveys of the Scott Street tunnel and early engagement with National Highways and the A63 Contractors has minimised the risk of delivering the network within these areas.

6.6 Peak and reserve heat will be provided by a 10MW energy centre that will ensure supply in the event of exceptional demand and during energy from waste plant maintenance shutdowns. Trippet Street car park, which is owned by the Council, is the ideal location for the backup energy centre due to its size and location. Preliminary discussion with Planning has indicated that an application for an energy centre on the site would be looked upon favourably subject to the normal planning permission process. Therefore, the intention is to progress this site as the preferred site for the backup energy centre.

Commercial Considerations

6.7 The DPD has explored in depth the commercial aspects of the project including the commercial and contractual structures, commercial return, the pricing strategy, value for money assessment and the potential for external funding.

6.8 A number of commercial structures have been considered for the project with the preferred structure being that of a 100% Council owned SPV who will own and operate the assets. This option was chosen as it gives the Council the greatest control over the critical success factors listed in 1.9 and requires the lowest commercial return and therefore provides the best chance of maintaining lower prices for customers. This option does not exclude other options such as a joint venture being progressed in the future.

6.9 A comprehensive financial model has been prepared for the project and the outcomes of this model are included in Appendix B. The model demonstrates that the project will require a capital investment of £22m for Phase 1 with a positive Internal Rate of Return (IRR) over 40 years. This includes a capital investment of 50% through the GHNF.

6.10 The model further demonstrates that the HDHN (phase 1) would be able to return a dividend to the Council over time and this is set out in Appendix B.

6.11 The proposed pricing strategy is to charge customers a connection fee, a variable heat charge based on p/kWh usage and a fixed charge based on £/KW capacity. The combined levelized cost of heat from the HDHN should be lower than the alternative low carbon heat sources (ASHP) with an average saving of 22%. This comparison includes the avoided costs of maintaining and replacing a standalone ASHP.

6.12 The majority of developments included within the Phase 1 network are commercial customers, however there are residential units included within the mixed-use developments planned for Phase 1 of the network. In these instances, the proposal is for the SPV to sell the heat to the bulk substation at the building with the heat being distributed and retailed to residents via a landlord service of the building owner. Whilst it is likely that there will be some additional charges required for the distribution of heat, the commercial and financial appraisal shows that the HDHN still provides VFM to the customer in comparison to the alternative ASHP (Appendix C).

Financial Considerations

6.13 The DPD has explored in depth the financial aspects of the project, including the capital requirements and contingency, projected income from variable and fixed heat tariffs, and the funding required to deliver the project.

6.14 The capital expenditure required to deliver Phase 1 network is estimated to be circa £22m. This includes costs for the heat offtake, energy centre, network pipes, building connections, surveys, and professional fees. This cost includes some contingency and some additional costs for any optimism bias.

6.15 A number of detailed sensitivity analyses have also been undertaken on the financial aspects of the project, including construction costs, heat demands, standing charges, connection charges, utility purchase costs, opex, remex and inflation to assess the impact of the moveable variables in the project.

6.16 The financial model as shown at Appendix B demonstrates that even after optimism bias, contingency and sensitivity analysis have been applied, the project will still provide a positive Internal Rate of Return (IRR) over 40 years. This includes a capital investment of 50% through the GHNF.

6.17 The sources of funding identified to deliver this project include capital funding from the Council by way of a repayable loan, grant funding through the GHNF and some connection charges during construction phase.

Social Value

6.18 An energy from waste heat source provides wider social and environmental advantages by diverting waste from landfill, reducing waste transportation miles, and returning local 'black bag' waste to local homes and businesses in the form of usable heat energy.

6.19 Addressing fuel poverty is a key outcome for the scheme. A number of high and low-rise residential blocks have been identified for connection into future phases of the network. Although the first phase of the network will predominantly be commercial connections, this core network will be built and future proofed to enable connections to wider social housing in subsequent phases.

6.20 The project will generate local jobs and apprenticeship opportunities during its construction, operation and maintenance. The location of the energy centre on Trippet Street also provides the opportunity for students at Hull Training and Enterprise and Hull College to obtain experience of an energy centre and its design and operation "on their doorstep". This will support the green jobs transition within the city.

Network Expansion

6.21 Phase 1 of the HDHN includes 51 connections, including Hull City Council properties, Hull College, private stakeholders, and several planned developments in the City Centre. Whilst this first phase has been mapped out, it is likely the proposed network will change over time with some properties retracting from the proposal and other properties and developments coming on board.

6.22 As part of the DPD, the future expansion of the network, to include a Phase 2 and Phase 3, has also been considered. This includes expansion West towards Hull Royal Infirmary and expansion South towards the Humber (Appendix D). Whilst the capital costs for these phases have not been included within this project, the network route and sizing of the pipes has been designed to allow future expansion opportunities.

6.23 The future expansion of the HDHN would require additional heat sources to be identified. Future expansion could include a variety of low carbon heat sources such as heat pumps, solar, and energy from geothermal sources. These could all be connected to the same heat network as Phase 1. Further DPD work would be required to identify additional heat sources and to develop the future phases of the network.

7. Financial Implications

7.1 The Council has allocated £17m which is ring-fenced for this project (Cabinet 11.9.2018 Minute 45) to progress.

7.2 Phase 1 of the Network is expected to cost £21.8m to build of which £10.9m will be sought from the GHNF with £0.5m funded by initial connection charges.

Council Loan

7.3 According to the DPD/OBC, the SPV would need to be funded at £10.4m by way of a commercial rate loan from the Council.

7.4 This loan would need to be made at a rate that covers the Council's costs, which will include a margin of a minimum of 0.75% above borrowing rates prevailing at the time. This has been modelled at 3.5% which is in line with loans the Council has previously made to the Goodwin Trust and Fruit Market LLP.

7.5 The modelling assumes that this loan would be repaid with any surplus cash generated in the business with no early redemption payments in line with other loans. Any surplus cash would be used to pay dividends thereafter. This will be the subject of a separate report to Cabinet following the outcome of the GHNF bid and completion of FBC.

Council Buildings

7.6 The cost of plant room upgrades to enable the connection of the Hull District Heat Network into Council buildings is included within the capital costs of the project. However, to ensure that these buildings maximise the benefits of the low carbon heat, improvements to the wider heating systems are also required. Feasibility assessments of each individual building is required to understand the exact costs of these works, however, it is estimated that the costs of the works could be in the region of £3m.

Energy Centre Site Acquisition

7.7 As set out earlier in the report Trippett Street car park, which is owned by the Council, has been identified as the ideal location for a backup energy centre due to its size and location. This is presently allocated for disposal

with a target capital receipt of £200k allocated to this site. It is proposed that the site is transferred to the project at this cost.

Financial Summary - Capital Costs Phase 1(based on DPD):

7.8

	£'m
Budget allocation	17.0
Estimated Construction Cost	21.8
- Anticipated Grant	-£10.9
- Estimated Connection Charges	-0.5
Balance to be Funded through recoverable loan to the SPV	10.4
- upgrades to Council buildings	3.0
- acquisition of Trippett St	0.2
- develop DPD for phases 2 & 3	0.2
	13.8
contingency - 10%	1.4
Total Council Funding	15.2
Headroom in Capital Programme Allocation	1.8

Green Heat Network Fund

7.9 This budget allocation assumes the success of the £10.9m application to the Green Heat Network Fund. An application can be compiled based substantially upon the DPD/OBC work and the aim is for this to be considered in the first funding round of 2022-23. Some specialist professional support may be required to fully inform the bid and the ability to build upon the work already undertaken by contracted DPD professional team should be maximised in order to achieve speed and efficiency, as well as to keep costs lower. However, the work would need to remain within their current scope, therefore the recommendations of this report also seek authority to appoint additional expertise should this be felt necessary in order to assemble the optimum bid within the timescale.

8. Options and Risk Assessment

Option 1 – GHNF bid and FBC for delivery of the Phase 1 HDHN

8.1 The Preferred Option, on the basis of the viability, strategy and indicative costings evidenced by the DPD and OBC, is to progress with the delivery of the Phase 1 District Heat Network by putting together and submitting a bid for £10.9M to the GHNF and, subject to the outcome of the bid, completing Full Business Case including a commercialisation model, prior to a further report to Cabinet to authorise construction phases procurement and establishment of an SPV.

8.2 The capital cost of the Phase 1 network is £22m, with 50% being sought through the GHNF. The financial model demonstrates that even after optimism bias, contingency and sensitivity analysis have been applied, the project will still provide a positive Internal Rate of Return (IRR) over 40 years

8.3 Phase 1 will deliver carbon reductions of at least 76% over a 40-year period supporting the Council's commitment to become carbon neutral by 2030 and net zero by 2040 and will support the City's aim of being net zero by 2045

Option 2 – Do nothing

8.4 The do-nothing approach will mean that the Council and the City will not make progress towards its targets and vision *"Our vision is for Hull to become a leading carbon neutral city within the United Kingdom (UK) by 2030, to have taken all possible action, under its control, to reduce emissions so that Hull becomes fully carbon neutral by 2030".* The Council will also not be taking the required steps to meet its net zero 2040 target.

8.5 In addition to this, the cost of heat will continue to rise due to the increased cost of gas as a result of increased supply costs and the transition of taxes onto gas prices as set out in the Heat and Buildings Strategy. The net zero agenda will require the Council and wider City developments to look for alternative individual heat sources which will be of a higher cost. The combined levelized cost of heat from the heat network (connection, service charge and usage) will be less than the counterfactual solution of individual ASHP.

9. Consultation

9.1 Consultation has been undertaken with the 2030 Carbon Reduction Project Board led by the Assistant Director Major Projects, Culture & Place and includes representatives for the Councils Property and Assets Service, NPS Humber, Climate Change Manager, finance and legal services. This has influenced the project as it has developed.

9.2 Consultation has also been undertaken with the Councils Bridges Team, Highways team, Housing Service and Planning Service. In addition, discussions have been held with future customers, external funders, heat providers to the network and Highways England, Heat Network Delivery Unit of Government.

9.3 Cabinet, Portfolio Holder, Energy and Infrastructure Scrutiny Commission and the Corporate Strategy Team have been kept informed through regular reports as well as through informal meetings.

10. Comments of the Monitoring Officer (Director of Legal Services and Partnerships)

10.1 Under s. 11 Local Government (Miscellaneous Provisions) Act 1976, the Council may generate and sell heat, or purchase and supply heat. If it intends to undertake the generation and sale/supply of heat on a commercial basis, this must be done using an incorporated company structure, as required by ss. 93 and 95 Local Government Act 2003. Together these statutory powers facilitate the development of the HDHN and delivery through an SPV structure. Although much of the DPD work has focussed on the optimal option being the local EfW installation, public procurement rules will require that the heat source is procured competitively. This will also comply with UK Subsidy Control requirements. It is highly likely that the procurement and Subsidy Control aspects will need to be addressed in the GHNF application. In procuring the network, the Council will become a contracting authority for the purposes of the Utilities Contracts Regulations 2016, as it will be providing and operating a fixed network for the production, transport or distribution of heat as a public service.

10.2 Consultants have been competitively procured to provide the technical, financial and commercial input for the DPD. Subject to confirmation that the work required to compile the GHNF application falls within the scope of their contracts, it would offer best value to retain the expertise and detailed knowledge of the current professional team. Dispensations from Contract Procedure Rules would need to be approved to allow this. If new procurement procedures need to be commenced these should align with CPRs and suitable frameworks considered first. [CA]

11. Comments of the Section 151 Officer (Director of Finance and Transformation)

11.1 The financial implications of these proposals are outlined at section 7 of this report in detail, alongside Appendix B.

The Director of Finance and Transformation supports the project and has been actively involved including the development of the outline business case, which demonstrates that a city centre network maybe financially beneficial to the Council . As gas and electricity prices continue to rise benefits to the customers will continue to grow compared to present heating solutions.

As set out in the report, the model is predicated on receipt of a grant from the Green Heat Network Fund (subject to the application being successful) and a loan from the Council to the SPV .

Subject to a successful grant award, the Final Business Case will be developed for Member consideration which will include a detailed assessment of the capital and commercial risks and mitigations.

The network has been developed with a number of key customers including the Council being the anchors, alongside new developments such as Albion Square, in order to provide a level of financially stability to the proposals. This scheme would then provide a solid base to expand either westwards (as currently being investigated) or eastwards in due course subject to a review of the commercial and risk factors pertaining at that time.

12. Comments of Assistant Director of OD & HR and compliance with the Equality Duty

12.1 There are no Human Resource or Equalities issues arising from this decision which supports the council targets set out within the Corporate Plan. KH

13. Comments of Overview and Scrutiny

13.1 This report is due to be considered by the Infrastructure & Energy Overview and Scrutiny Commission at its meeting of 23 March 2022 and the Finance and Value for Money Overview and Scrutiny Commission at its meeting of 25 March 2022. Any comments or recommendations made by the Commission will be tabled alongside the report at Cabinet. Ref: Sc6738 [MK].

14. Comments of Councillor Hale - Leader of the Council

14.1 I fully support this decision.

15. Comments of Councillor Nicola – Portfolio Holder for Environmental Services

14.2 I fully support the decision to progress the delivery of Phase 1 of the District Heat Network Project. It is essential that a city like Hull takes immediate and positive action towards slashing emissions and achieving our net zero targets. A project of this nature is a significant step in that direction and gives a clear lead to other organisations in both the public and private sectors. If we are serious about helping to challenge climate change, we must be proactive, and the Heating District Project demonstrates the Council's commitment.

Director of Regeneration

Contact Officer: Claire Bradbury Project Manager
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Officer Interests: None

Background Documents: - A list of background documents must be included. These documents are then available (if not exempt) for public inspection.

Implications Matrix

This section must be completed and you must ensure that you have fully considered all potential implications

This matrix provides a simple check list for the things you need to have considered within your report

If there are no implications please state

I have informed and sought advice from HR, Legal, Finance, Overview and Scrutiny and the Climate Change Advisor and any other key stakeholders i.e. Portfolio Holder, relevant Ward Members etc prior to submitting this report for official comments	Yes
I have considered whether this report requests a decision that is outside the Budget and Policy Framework approved by Council	Yes
Value for money considerations have been accounted for within the report	Yes
The report is approved by the relevant Assistant Director	Yes
I have included any procurement/commercial issues/implications within the report	Yes
I have considered the potential media interest in this report and liaised with the Media Team to ensure that they are briefed to respond to media interest.	Yes Please see attached Communications Plan
I have included any equalities and diversity implications within the report and where necessary I have completed an Equalities Impact Assessment and the outcomes are included within the report	No No Implications
Any Health and Safety implications are included within the report	Yes
Any human rights implications are included within the report	No No Implications
I have included any community safety implications and paid regard to Section 17 of the Crime and Disorder Act within the report	No Not implications
I have liaised with the Climate Change Advisor and any environmental and climate change issues/sustainability implications are included within the report	Yes

I have included information about how this report contributes to the City Plan/ Area priorities within the report	Yes The project supports 2030 Carbon Neutral Hull Strategy
I have considered the impact on air quality, carried out an appropriate assessment and included any resulting actions or opportunities necessary to improve air quality in the report.	Yes
I have considered the impact on Children Looked After and Care Leavers and any resulting actions/implications have been included within the report.	No No implications