



<b>Subject:</b>	Belfast Stories – Update including shallow geothermal feasibility study
<b>Date:</b>	09 June 2022
<b>Reporting Officer:</b>	Wendy Langham, Programme Director, Belfast Stories
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<b>Restricted Reports</b>	
<b>Is this report restricted?</b>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>If Yes, when will the report become unrestricted?</b>	
<b>After Committee Decision</b>	<input type="checkbox"/>
<b>After Council Decision</b>	<input type="checkbox"/>
<b>Sometime in the future</b>	<input type="checkbox"/>
<b>Never</b>	<input type="checkbox"/>

<b>Call-in</b>	
<b>Is the decision eligible for Call-in?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/>

<b>1.0</b>	<b>Purpose of Report or Summary of Main Issues</b>
1.1	The purpose of this report is to: <ul style="list-style-type: none"><li>- Update Members on the Belfast Stories (BS) programme as part of the Belfast Region City Deal.</li><li>- Provide Members with an update on the ambition for net zero including the findings from the Belfast Stories shallow geothermal feasibility study.</li></ul>
<b>2.0</b>	<b>Recommendations</b>
2.1	The Committee is asked to: <ul style="list-style-type: none"><li>- Note the contents of this report.</li><li>- Receive a presentation and update on the net zero ambitions for Belfast Stories.</li><li>- Note the findings from the shallow geothermal feasibility study.</li><li>- Following the presentation, discuss and agree the next steps.</li></ul>

<b>3.0</b>	<b>Main report</b>
3.1	<p>Members will be aware that Belfast Stories is the Council's flagship project under the Belfast Region City Deal and is due to open in 2028. Located in the city centre on a strategic site of 5,000sqms with the estimated indoor space 8,500sqms and outdoor space 2,500sqms. Several important milestones in relation to the project have been achieved including the acquisition of the site for Belfast Stories in October 2021, the signing of the Deal Document for the BRCD and the Belfast Stories press announcement in December 2021.</p>
3.2	<p>Strategic Policy and Resources Committee agreed at its meeting on 19th November 2021 to progress a number of key pieces of work, in order to meet the 2028 anticipated opening date including the appointment of the integrated design team and the exhibition design team and to progress the Belfast stories collection.</p>
3.3	<p>A progress update was provided to CG&amp;R Committee 11<sup>th</sup> May 2022 including the thematic Story Collection Framework and plans for engagement including a public consultation August – October 2022.</p>
3.4	<p>Included in the work programme was the completion of shallow geothermal energy feasibility study and presentation on the findings from this study was made to the Climate and Resilience Board on 5<sup>th</sup> May 2022.</p>
3.5	<p>Belfast Stories aspires to be a sustainable, net zero carbon exemplar for the city and region, at the forefront of environmentally sensitive design, minimising energy consumption and maximising the potential for enhancing biodiversity, on-site energy generation and sustainable transport. The design process which underpins the development therefore requires early consideration of the elements relating to best practice that will support this ambition.</p>
<b>4.0</b>	<b><u>Net Zero ambitions</u></b>
4.1	<p>In August 2021 council officers arranged a site visit with key stakeholders to QUB's new Riddell Hall extension to educate and inform us on the potential use of geothermal energy for further consideration by the Belfast Stories team.</p>
4.2	<p>This visit and subsequent interactions with geothermal experts and other energy advisors led to the consideration of energy sources for Belfast Stories to see how it could meet the goals and ambitions outlined within the Future Proofed City Ambitions Document: <i>A Climate Plan for Belfast (Dec 2020)</i>. Within the plan, Belfast Stories is named as a standalone</p>

project (No. 26) with the potential to be '*a bold demonstration of intent on Belfast's ambition to be a net zero emissions, climate-resilient city*'.

4.3 Belfast Stories is currently in the process of procuring the Integrated Design Team. Various sustainability assessments and standards are being considered to ensure the design will support the intent and ambition. These include BREEAM, Passivhaus and One Planet Living.

4.4 BREEAM is the world's leading sustainability assessment method for master planning projects, infrastructure and buildings. It recognises and reflects the value in higher performing assets across the built environment lifecycle, from new construction to in-use and refurbishment.

4.5 Passivhaus is a performance-based set of design criteria for very low-use energy buildings, which can help create buildings which use around 90% less energy than standard UK buildings.

4.6 One Planet Living is a vision of a world where we can live happily within our one Earth's resources and is a simple framework that may be suitable for the project's operational phase.

4.7 In **October** 2021 the Climate and Resilience Board supported the commissioning and appointment of suitably qualified consultants to undertake a feasibility study for the further consideration of the use of geothermal energy solutions. The study was to:

- Establish local thermogeological, geological, hydrogeological setting.
- Determine opportunities / limitations for ground-based site energy.
- Explain the operational concept of ground sourced solutions.
- Compare options over a 30-year lifecycle.
- Undertake a data gap analysis and consider any regulatory issues to be addressed.

4.8 TetraTech Environmental Planning (NI) Limited (TetraTech) was commissioned by the Council in December 2021 to deliver the contract. The Executive Summary of the report findings is attached in **Appendix A**. The report concludes that Geothermal is a viable option for the site. A closed loop geothermal solution is preferred to an open loop system.

4.9 A number of assumptions have been made given the early stage of project design. It is possible to consider other developments of similar size and scale and make some assumptions at this stage. It should be noted this is a starting point on a journey towards

4.10	<p>consideration of the suitability of geothermal energy for Belfast Stories alongside other renewable energy options.</p> <p>In summary the report concludes that:</p> <ul style="list-style-type: none"> <li>- The site has suitable geological/hydrological/thermogeological properties for a shallow geothermal scheme.</li> <li>- A closed loop geothermal system is the preferred solution when compared with other heating and cooling solutions.</li> <li>- The CO2 emissions (TCO2) saving is est. 950 tonnes over a 30-year period.</li> <li>- The capital cost (CAPEX) is more expensive than air to water est. +£1m (as would be expected).</li> <li>- A closed loop geothermal system provides potential operational expenditure (OPEX) savings over a 30-year period compared to air to water est. 500k.</li> </ul>
5.0	<p><b><u>Proposed Next Steps</u></b></p> <p>5.1 In identifying the suitability, cost-benefit and environmental considerations of geothermal energy sourcing, it needs to be outlined at the outset that the Belfast Stories energy consumption requirements are not yet known due to the project being at an early stage of development (RIBA 0/1).</p> <p>5.2 The Integrated Design Team (IDT) scope of works and specification will outline the Council's ambition for the project to be a net zero exemplar for the city. The IDT will be required to include a sustainability expert within the team. The IDT is due to be appointed by the end 2022.</p> <p>5.3 It is proposed that BREEAM is the sustainability assessment to be included within the IDT specification with the aspiration of the project to be 'outstanding'. The Geothermal Feasibility Study will be made available to the successful IDT for their consideration.</p> <p>5.4 As highlighted the capital cost of a geothermal energy solution is more expensive than other options. Consideration of opportunities to secure additional capital funding including Peace Plus are ongoing. There is a potential Peace Plus opportunity for funding under Theme 5.5 Geothermal Energy Demonstration Programme. A meeting was held in February regarding a funding bid, Chaired by Codema (Dublin's Energy Agency). The potential bid being considered is for 2 deep geothermal and 2 shallow geothermal projects, with 1 of each on each side of the border. The shallow geothermal project being considered north of the border is Belfast Stories. The total potential amount of funding is €20 million</p>

5.5	<p>for all 4 projects. The Peace Plus Call is expected in Jul-22 with an award made in Oct-22. The funding is to be spent before 2030.</p> <p>Prior to BCC committing to be part of a Peace Plus bid, a full report would be brought to SP&amp;R Committee for their consideration.</p>
6.0	<p><b><u>Financial and Resources Implications</u></b></p> <p>None</p>
7.0	<p><b><u>Equality or Good Relations Implications /Rural Needs Implications</u></b></p> <p>None</p>
	<p><b>Appendices</b></p>
	<p><b>Appendix A:</b> Belfast Stories – Shallow Geothermal Feasibility Study Executive Summary</p>