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**COMHAIRLE CONTAE ÁTHA CLIATH THEAS  
SOUTH DUBLIN COUNTY COUNCIL**



**MEETING OF SOUTH DUBLIN COUNTY COUNCIL**

**Monday, May 14, 2018**

**HEADED ITEM NO.13**

**HEADED ITEM: C. Performance and Change Management Directorate**

**TO RECEIVE PRELIMINARY REPORT  ON THE PROPOSED  CENTRAL  TALLAGHT  HEATING DISTRICT SYSTEM.**

**REPLY:**

Ireland has legal obligations and binding targets in terms of limiting Greenhouse Gas emissions and expanding the development of renewable energy as part of the EU’s energy and climate package to 2020 and then 2030. South Dublin County Council is fully committed to meeting its target of 30% reduction by 2020 and at end 2017 stands at achieved reduction of 25%.   SDCC is signatory to Covenant of Mayors, and Tallaght is one of first 5 SEAI-designated Sustainable Energy Communities. The Council has a Sustainable Energy Action Plan, and Energy masterplans in position for Clonburris and Grange Castle Business Park. The County Development Plan has clear policies on renewable energy and use of waste heat. The Tallaght Smart-energy Test-bed is a research and development project centring on community energy, energy-trading and participative grid-stabilisation technologies.

Growing penetration of Wind-powered energy has meant that the majority of problematic emissions now arise from agriculture, transport and buildings. For urban councils like South Dublin, decarbonising transport and buildings has become the focus. For buildings, the vast majority of energy consumption and associated emissions comes from the provision of space heating and hot water. Near-Zero targets in upcoming Building Regulations will reduce energy-demand in new homes from early 2019. A recent report from Sustainable Energy Authority of Ireland has shown that Irish homes emit almost 60% more CO2 than the average EU home, which is the highest emissions per household in Europe. National level policies introduced to date have been partly successful, with 6.8% of Ireland’s heating demands now coming from renewable sources, but more than 93% still comes from fossil fuel sources, the majority of which are imported. (in 2016 imported fuels cost 5.7bn. euros). District-heating is an important potential response to integrating renewable sources, lowering carbon and reducing heat costs. New-generation district-heating systems allow the integration of different sources of heat- co-generation, renewable and waste-heat into flexible smart-energy systems which link energy production and consumption creating resilience and value while reducing emissions. This enables urban areas to make better use of low-cost, low-carbon resources, increases security of supply, lowers heating costs transitions to a sustainable energy system. The SDCC Development Plan 2016-2022 in its Energy chapter promotes the use of waste industrial heat, local energy partnerships and prioritises the development of low-carbon District-heating.

In pursuing these objectives SDCC is a partner in the Inter-Reg NWE “Heatnet ”project as one of 5 municipalities funded to develop a pilot 4G ( fourth generation) district-heating network. Through a combination of grant-aid and matching funding just under 1.0m euros will be available to lay the first pipework and heat exchangers to be completed before the end of 2019 as the Tallaght pilot. A large scale source of waste-heat may be available from a new data-centre to be developed on Belgard Road (subject to Planning and all other statutory approvals).

This source can generate 4 Mws of waste heat sufficient to heat the County Hall complex – including theatre, arts centre, library- 1400 new dwellings to be delivered in the Cookstown estate regeneration area as well as projects at ITT campus and the Square shopping centre.

An economic-technical feasibility study has been prepared by CODEMA confirming the financial viability of the overall project. This viability is dependent on the waste-heat component being made available at no charge by the Data-company developing the data-centre as a gesture of corporate social-responsibility and an action in their own programmes towards Zero-carbon operations. The data-company will be responsible for installing heat-recovery systems in the proposed building to provide heat source for heat-network.

Subject to approval by Elected Members the project delivery has a number of significant steps As part of an independent Cost-benefit analysis, the CODEMA feasibility study will be peer-reviewed by specialist consultants with a proven track-record in developing and managing existing district-heating including the re-use of waste-heat.

The project is dependent on the data-centre receiving planning permission and all other statutory approvals The successful negotiation of a Final agreement on the collection, consolidation and distribution of the heat with the data-company involved is then required: general heads of agreement are already set out through negotiations to date but will need to be finalised before the project can advance.

The Council must then establish a not-for-profit district-heating company whose central purpose is to deliver a low-cost, low-carbon heat-networks in South Dublin as part of its committed output on the Heatnet project. The company will be based on similar Local Authority models in Denmark and Scotland with local stakeholders on its board. This company can act as a vehicle to facilitate the delivery of heat-networks in other locations in the county where waste-heat is available.

The design of the DH Energy-centre building and the first section of pipe network will require Part 8 planning-approval following preliminary process of environmental screening. The raising of the temperature of the waste-heat to level suitable for distribution will be carried out using electric heat-pumps so no emissions will be involved. The use of the heat-pumps to raise the water-temperature defines the waste-heat as a renewable source for EU categorisation definitions and will attract Renewable-heat Incentive when the upcoming government RHI proposal is in place. Industrial Waste-heat treated in this way is categorised as a renewable energy source.

The District-heating company will then tender for an energy-supply company (ESCO) to design, build, operate and maintain the technology of the Energy-centre, first pipework connection and heat exchangers linking the County Hall to the data-centre. The ESCO will be subcontracted to the South Dublin District Heating Company for an initial contract period. This can be retendered over time to ensure continuing value for money. The roll-out of the heat network will commence with the County Hall complex as a guaranteed customer both to test the network and reduce commercial risk at the company’s commencement. As the new housing is constructed it will connect to the system in phases as the data-centre is built out and the full amount of waste-heat becomes available.

The estimated cost of Energy-centre building, heat-pump technology and pipework network is estimated at 2.50m euros. Just under 1.0m euros is already available through Heatnet commitments. SEAI have a current grant-scheme for heatpumps and the Department of Communications, Climate-change action and Energy are committed to grant aiding district-heating under National Strategic Objective 8 of the National Development Plan (“support new initiatives in district heating in cities and large towns with a leading role for state bodies, for example, Gas Networks Ireland and *Local Authorities*”). SDCC are part of a Departmental policy team tasked with developing district-heat in Ireland as part of Project Ireland 2040. Heat-mapping already carried out by SDCC under the South Dublin Spatial Energy Demand Analysis has identified Tallaght as having heat-demand densities that will support the viable development of District-heating.

The benefits of the proposed investment in the SDDH system can be broken down into; energy policy, environmental policy, innovation and socio-economic, as shown in Table 1. Although the proposed project is an energy supply project, the benefits go far beyond the energy sector. Most of the benefits are direct and quantitative, like energy and GHG reductions, reduced energy costs and increased local employment, but many are in-direct and qualitative like increased comfort and knowledge. The socio-economic benefits far outweigh the benefits in any other area and shows the wide reach this project has outside of the strategic context already outlined.

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| Category | Benefit |
| Energy Policy | Reduced energy consumption  Reduced fossil fuel imports  Increased renewable energy  Increased security of supply  Increase data centre efficiency  Reduced national level fines for binding EU targets in renewable energy |
| Environmental Policy | Reduced GHG emissions  Mitigates against climate change  Reduced local air pollution  Indigenous energy sources used |
| Innovation | Increased knowledge of DH systems  Creation of new local market for waste heat  Based on leading best-practice in Europe  First of its kind in Ireland  Shared research and development  Proof of concept for other areas (i.e. Grangecastle) |
| Socio-economic | Increased local employment  Decreased energy costs – fuel poverty  Increased building safety – no carbon monoxide or gas leak risks  On-demand hot water  No on-site heating fuel storage  Reduced customer exposure to fuel price volatility  Increased local spending power  Increased competitiveness of Tallaght area  Landmark area for de-centralised sustainable energy  Reduced developer costs  Increased building energy ratings – increased property value  New revenue stream for increased Local Authority energy services |

In brief the keynote benefits will be-

It will be the first 4G district heating network in Ireland contracting low-cost, low-carbon heat based on a renewable energy source.

It will enable the first data-centre in Ireland to collect its waste-heat, improve its environmental efficiency and footprint and deliver heat to public buildings and Tallaght residents making it the “greenest” data centre in the country.

It will be an important tool in helping SDCC achieve its 2020 and 2030 international targets. (55% reduction in carbon created in County Hall complex)

It will create a publicly-owned energy company dedicated to increasing renewable energy sources, lowering carbon and delivering low-cost and sustainable heat to homes and institutions across the county

It will consolidate the growing brand of South Dublin and Tallaght as centres of innovation in Smart-energy and sustainable community development attracting more business investment and job-creation.

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