



Comhairle Cathrach  
Bhaile Átha Cliath  
Dublin City Council

Dublin City Council's response to the public  
consultation on district heating published December  
2019

*Consultation to Inform a Policy Framework for the  
Development of District Heating in Ireland*

February 2020

## Dublin City Council

Dublin City Council is the largest Local Authority in Ireland, covering an area of 11,761 hectares with a resident population of 553,165 (Census 2016). Dublin City Council is the democratically elected body that governs Dublin City. It is one of four local authorities in the Dublin Region which has a wider population of 1.345 million which equates to 28% of the national population and is the administrative and political capital of Ireland housing the national government and President of the state.

The city administration is headed by [REDACTED] the Chief Executive who is responsible for a staff of approx. 5,800 (full time and part time staff). The main offices of the Chief Executive and other administrative staff are located in the Civic Offices on Wood Quay. Dublin City Council staff provides a wide and diverse range of services to the citizens of Dublin City, to businesses and to visitors to the city. The work of the Council is overseen by a governance structure which comprises the Lord Mayor of Dublin, the 63 Elected Members and the 7 Chairs of the Strategic Policy Committees (SPCs).

Activities are carried out in the physical infrastructure works area such as the provision and maintenance of housing and roads infrastructure and in the areas of arts, sports, recreation, events, leisure, tourism and social services including libraries, sports facilities, parks, community development and housing welfare services. The City Council also provides fire, emergency response and safety services for the region through Dublin Fire Brigade while playing a key control and enforcement role in planning, building control and environmental matters.

## District Heating in Dublin City

Building on the Dublin City Council Climate Change Action Plan 2019-2024, Dublin City Council is *"committed to safeguarding the environment and increasing the City's capacity to reduce greenhouse gas emissions and adapt to the impacts of Climate Change, in order to increase economic competitiveness and attract inward investment."*

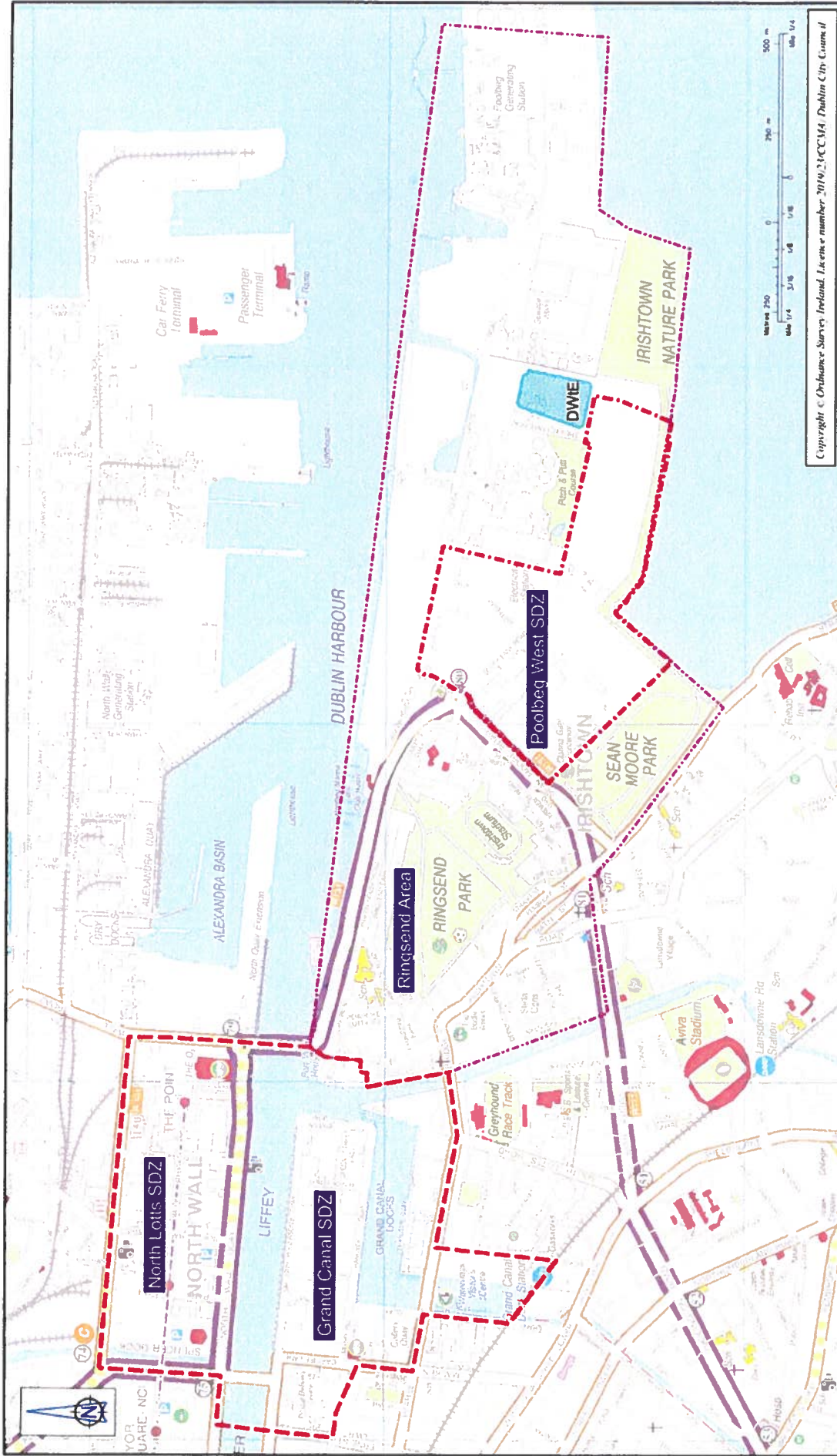
The Dublin District Heating Scheme (DDHS) aims to utilise waste heat from electrical generation station and industrial facilities on the Poolbeg peninsula to supply space heating and hot water to homes and businesses in the Poolbeg West, North Lotts and Grand Canal Dock Strategic Development Zone ("SDZ") areas of Dublin City. The Dublin Waste to Energy ("DWtE") Facility has been identified as the primary heat source for the network. The boilers, turbine and condensers installed at the Facility have been designed to export up to 90MW of thermal energy from the Facility. It is noted that the Project will require the development of a back-up/peak load heat plant to supply heat to the network during periods when the primary heat source is unavailable and during peak load hours. Additionally, it is envisaged that the network will be developed with a thermal energy storage capacity to serve as a back-up/peak load heat source. The back-up and thermal storage infrastructure are together referenced as the "Projects Energy Centre".

Dublin City Council has a long-term goal to expand district heating throughout the City and Dublin area. The objective of Dublin City Council in relation to the Project is to develop a highly efficient

district heating system which minimises carbon emissions, improves air quality, reduces dependence on imported fossil fuels and is accessible to as many customers in the Dublin City Area as possible.

The initial DDHS project catchment area is illustrated in the drawing TSD-DDHS2-001-REV2 on page 3 below.

In 2018, Dublin City Council applied for and successfully qualified for up to €20m grant funding from the Climate Action Fund (CAF) under the General Block Exemption Regulation. This funding is currently at the validation stage of the approval process.



<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="color: blue;">▬</span> Dublin Waste to Energy Plant</li> <li><span style="color: red;">▬</span> Docklands Strategic Development Zone (SDZ)</li> <li><span style="color: red;">▬</span> Poolbeg West Strategic Development Zone (SDZ)</li> <li><span style="color: red;">▬</span> Poolbeg Peninsula &amp; Ringend Area</li> </ul>		<p><b>DESCRIPTION</b></p> <p>PROJECT AREA EXTENDED &amp; PROJECT NAME CHANGED DWE OUTLINE ADDED AREAS HIGHLIGHTED</p>		<p><b>DATE</b>    <b>REFERENCE</b>    <b>DRAWINGS</b>    <b>PROJECT</b></p> <p>05/2017    OS MAP 3264 03 04 05    DUBLIN DISTRICT HEATING SYSTEM 07/2017    08 08 10    PHASE 2 08/2018    13 14 15</p>	
<p><b>REVISION</b></p> <p>1 2 3</p>		<p><b>TITLE</b></p> <p>LOCATION OF PROJECT WORK AREA</p>		<p><b>SCALE</b>    <b>DRAWING No.</b></p> <p>1:10,000 @ A3    TSD-00482-001-REV 3</p>	
<p><b>CONTRAILÉ CATHRACH</b> Bhráite Áine Cláirín Dublin City Council</p> <p>GOVERNMENT AND TRANSPORTATION DEPARTMENT TECHNICAL SERVICES DIVISION City Offices, Wood Quay, Dublin 8</p>		<p><b>DRAWN BY</b>    <b>VC</b></p> <p><b>CHECKED BY</b></p> <p><b>APPROVED BY</b></p>		<p><b>DATE</b>    <b>DATE</b></p> <p>MAY 2016</p>	
<p><b>DR. JOHN W. FLANAGAN</b> CITY ENGINEER</p>					

# Research

## **Q1: What additional research do you think needs to be carried out to support the development of district heating in Ireland?**

Dublin City Council are currently investigating how buildings within the initial catchment of the Docklands SDZ are being heated, and have been gathering information such as the building's current annual and peak heat demands, the heat demand profile, maintenance records and age of the buildings heating systems. The aim is to establish if the building is already District Energy ready (or enabled), and when heating systems upgrades are planned for the building. This information is very valuable when considering whether district heating can be successfully delivered to the area, and to that particular street/road.

Consideration and support by the Department should be given to setting up Strategic Energy Zones in urban areas, where building owners share their building's energy usage. This information can then be used inform the sustainable use of energy in the Strategic Energy Zones and reduce the carbon dioxide emissions from the area. In showing support for this would back up the following Regional Policy Objectives (RPO) as stated in the Eastern & Midland Regional Assembly (EMRA) Regional Spatial & Economic Strategy 2019-2031:

- RPO 7.35: EMRA shall, in conjunction with local authorities in the Region, identify Strategic Energy Zones as areas suitable for larger energy generating projects, the role of community and micro energy production in urban and rural settings and the potential for renewable energy within industrial areas. The Strategic Energy Zones for the Region will ensure all environmental constraints are addressed in the analysis. A regional landscape strategy could be developed to support delivery of projects within the Strategic Energy Zones.
- RPO 7.38: Local authorities shall consider the use of heat mapping to support developments which deliver energy efficiency and the recovery of energy that would otherwise be wasted. A feasibility assessment for district heating in local authority areas shall be carried out and statutory planning documents shall identify local waste heat sources.

Research is also needed for the challenge of replacing existing fossil fuel boilers with District Heating infrastructure. An important part of this research should also be to highlight any supports that can be made available to assist developers/building owners in making this change over.

Data on new buildings should be collected through the planning application process - requiring a standard energy assessment form to be filled in and submitted with applications. This way the local authorities can manage and utilise this data for District Energy planning. For existing buildings, it is obviously a much bigger challenge to collect data, but a system like the mandatory DEC's for public buildings above a certain size could also apply to private sector commercial buildings and include other data such as heat demand and operating temperature.

**Q2: How should research (including the upcoming comprehensive assessment) be used to inform/support the development of district heating in Ireland?**

Once the research has been completed, the information should be used to develop appropriate District Energy zones within the Strategic Energy Zone, and should be included as policies and objectives in City and County Development Plans to inform the planning consent process. The research should be evaluated based on the social, economic and environmental impacts within the Strategic Energy Zone. Actions can be taken to introduce energy efficiency measures to reduce Carbon Dioxide emissions, such as district heating systems and renewable energy technologies.

**Q3: Are there relevant existing research projects into district heating, in the Irish context, which are not referenced in this document?**

Dublin City Council is partner in the GEO-URBAN project which is a collaborative innovation project in geothermal energy that brings together an international consortium from Ireland, Spain and Denmark. The project consortium combines industry, universities, research institutes, local planning authorities and non-profit organisations that are actively involved in the development of geothermal energy markets and technologies, and in promoting the potential exploitation of this resource as an alternative energy source to fossil fuels. Deep geothermal is a low carbon energy source which is ideally suitable for large scale district heating networks.

The GEO-URBAN project supports the GEOTHERMICA objective to accelerate the demonstration and validation of novel concepts of geothermal energy supply, and to identify paths to commercially viable deployment. There are two test locations, one in Dublin City, and one in Vallès, Catalonia, in Spain.

This project has been subsidised through the GEOTHERMICA ERA-NET co-fund (Project no. 731117), and has received funds from the European Commission, the Irish Department of Communications, Climate Action and the Environment / Geological Survey Ireland, and the Spanish Ministry of Economy, Industry and Competitiveness / State Research Agency (MINEC-AEI).

**Q4: Can further research contribute to encouraging areas of compact urban growth to develop district heating projects?**

There are a number of areas within Dublin City Council's jurisdiction which are known to have clusters of buildings which are centrally heated, essentially being district heating enabled. Research could be carried out to identify other areas within the city which have similar clusters of buildings.

Research should also be carried out into whether these clusters of buildings could be interconnected with a district heating network, identifying the benefits and costs, investigate incentives and supports, ultimately to create sustainable low carbon district heating zones. Zones, which could themselves be interconnected creating a city wide district heating network.

## Regulation:

### **Q5: What elements of Article 24 of the recast Renewable Energy Directive should be implemented in the near term (i.e. by the mid-2021 transposition deadline)?**

The elements of Article 24 that should be introduced in the short term are;

*1. Member States shall ensure that district heating and cooling suppliers provide information to end-consumers on their energy performance and the share of renewable energy in their systems. Such information shall be in accordance with standards used under Directive 2010/31/EU.*

It will also be important that transparency on pricing and protection for customers against escalating costs is implemented to give assurances to new customers connecting to District Energy systems and to ensure the market does not suffer from negative perceptions. This could be a voluntary customer charter that suppliers can sign up to, much like the Heat Trust in the UK, until such a time that the DISTRICT ENERGY market has grown to a level where it requires national level customer protection regulation through an appropriate national body. In Denmark all District Energy schemes are required to submit the average heat price on their network to the energy regulator each year, so there is assurances for consumers that they are at a reasonable price level, a similar system should be implemented in Ireland.

### **Q6: What elements of the Article 24 of the recast Renewable Energy Directive should be implemented in the medium term (i.e., by 2025)?**

Your consultation document summarises Article 24 requirements 2 to 9 as follows;

- 2. Measures and conditions to allow customers to disconnect from DISTRICT HEATING systems which are not efficient District Heating systems in order to produce their own renewable heat.*
- 3. Restrictions on the conditions detailed in paragraph 2.*
- 4. Measures to ensure that DISTRICT HEATING contributes to the overall renewable energy target in the heat and cooling sector.*
- 5. Conditions under which the Operator of a DISTRICT HEATING System can refuse to connect or purchase heat from a third party supplier.*
- 6. Conditions for exempting operators of certain DISTRICT HEATING systems from having to apply point (b) of paragraph 4,*
- 7. Identifies who may exercise the right to disconnect.*
- 8. Requirement for electricity distribution system operators to assess potential for DISTRICT HEATING systems to provide balancing and other system services.*
- 9. Requirement to ensure that the competent authority defines and enforces consumer rights and rules for operating DISTRICT HEATING systems.*

The consultation document also notes that the above conditions are not required to be applied to Member States where district energy accounts for less than or equal to 2% (in energy terms) of their heating and cooling sectors. It also notes that district heating in Ireland is estimated to be significantly less than 1% of such sectors.

We agree that introducing overly complex regulation aimed at large district energy markets may not be appropriate at this early stage of Ireland's district heating sector. It is therefore difficult to determine or comment on the elements of the directive, which should be implemented in the medium term; it would hence seem prudent to monitor the development of the District Energy market within Ireland and to reassess at a future date, taking into account factors such as the size of the district energy as part of the heating and cooling sectors and the different markets which will have developed.

**Q7: Who should have the right to own the district heating networks?**

There are multiple parts of a District Energy system and it is good to ensure that each is highlighted when speaking about ownership so there is no confusion;

- **Heat supply** - there are typically multiple heat suppliers into a large District Energy network which may or may not be owned by the District Energy network operator. The back-up or peak load heat supply is often owned by the District Energy operator, but this can also be provided by third parties.
- **Customer Heat Substations** - There are mixed experiences in other markets with substation ownership - some operators prefer to own the substation to retain more control to ensure efficient operation and to incentivise connection by taking on the upfront capital costs for retrofit customers, while some schemes the customers prefer to own their own substation and the operators do not want the hassle of the maintenance and access to private property. We do not see a need to define this ownership as it should come down to what suits each operator/customer agreement.
- **Heat (and/or cooling) Network** - the main transmission and distribution network pipelines are often owned by the operator directly or can be contracted by owners to operators to operate on their behalf. Network owners are typically local authorities or local authority utility companies, and we would suggest that the network assets should follow this trend and be owned and kept in public ownership in Ireland. District Energy networks, like electricity networks, are a vital infrastructure to decarbonise the energy sector and need to be able to develop and connect to customers that are outside the very feasible 'high returns' areas. It is also likely that the development of new networks will require significant public investment given private capital comes at too high a cost for the returns on a system competing with low-cost fossil-fuel alternatives.

It is noted that Ireland's water, drainage, gas and electricity networks are all vested in entities controlled by the state as key public infrastructure. Dublin City Council would consider that District heating networks should also be vested in a similar entity, such as a local authority, state or semi-state entities.

As District Heating networks grow and develop, there will be greater opportunities for multiple heat suppliers to access the network and if the network is retained within public ownership, similar to the experience in gas and electricity, this can allow greater opportunities for an open and competitive market to develop. In addition if the network is vested within public ownership, network development and expansion can be priorities to achieve social and environmental policy goals ahead of purely commercial objectives.



Dublin City Council would note that District Energy networks are generally developed on a nodal basis, with local area networks developing in the first instance and these smaller networks being integrated over time. Given local authorities' statutory role in relation to planning and our key role in the implementation of government policy (and in particular our role in the National Adaptation Framework in planning for a Climate Resilient Ireland), the local authorities are best placed to effectively catalyse district energy deployment through appropriate energy planning and target setting.

**Q8: Should there be a district heating market regulator?**

The UK Department for Business, Energy and Industrial Strategy has recently produced a report entitled "International Review of Heat Network Market Frameworks" which is a review of district heating market frameworks internationally, specifically focusing on those in new District Energy markets which are more relevant for comparison to the UK (and Ireland).

This report shows that in countries where District Energy has been most successful, the ownership of the heat network companies is at a municipal (local authority) level. This report also discusses the benefits associated with regulation in areas such as consumer protection, safety and price transparency. In many countries where municipality-led District Energy networks are developed self-regulation is common as it is the duty of the municipality to serve its residents and to deliver solutions that are in line with their socio-economic, energy efficiency, carbon reduction targets.

As described previously in the report Dublin City Council is promoting a significant district heating network. The benefits associated with a local authority level project is that regulation and customer service is already embedded within it, as a local authority, and is reflected within its governance structures. It is the duty of local authorities to serve its residents, and to deliver solutions that are in line with community policies and objectives.

District heating is currently in its infancy in Ireland, so establishing a regulator within these early stages may be unnecessary, if the networks are being developed by local authorities.

When district heating is more developed and established in Ireland, then a regulator will be required who can ensure networks are providing adequate customer service, through a low carbon and sustainable energy network.

**Q9: Should there be guidelines/Code of Practice around district heating and if so, who should be responsible for their development and implementation?**

Dublin City Council has developed a 'Technical Information Pack for Developers' which is available for download at [www.ddhs.ie](http://www.ddhs.ie). This document gives information to developers on the technical specification of our proposed heat network, and therefore informs their internal Mechanical and Electrical (M&E) systems design. It also describes what 'District heating enabled' means, and what developers are required to do, to ensure that they are ready to connect to the district heating network when it is available in the area. This document also describes the information which is to be included for planning and planning compliance. Developers' designers and contractors can freely download this document to ensure greater compliance with Dublin City Council's policies and objectives.

Dealing with developers within our current catchment area, we have noted that there is a knowledge gap as regards district heating with many contractors and designers, at all stages of the district heating infrastructure lifecycle. Developing guidelines and guidance through a national body such as the Irish District Energy Association (<https://www.districtenergy.ie/>) with the support of the Department of Communications, Climate Action and Environment, and the Sustainable Energy Authority of Ireland will help with this knowledge gap, and facilitate that a minimum standard being reached in relation to projects at all stages of the process (such as, feasibility, design, business models, legal agreements, procurement, construction & installation, commissioning, and operation & maintenance). Having approved standardised guidelines and procedures will provide greater confidence to the wider market in making its investment decisions.

# Planning

**Q10: What changes, if any, are required to existing planning and building regulations in order to support the development of district heating? In particular what changes might be required in order to promote the type of high density development that is seen as providing the most suitable conditions for development of district heating?**

High density development is of course helpful to support the roll-out of District Energy systems, but the Heat Atlas research has already shown the necessary heat demand densities exist in Ireland to support the roll-out of District energy, so density at this time is not the most pressing planning or regulatory issue.

Sustainable built forms in urban areas is already a key principle of the National Planning Framework. Planning is based on a hierarchy of national, regional and local authority plans. For planning authorities to be in a position to impose planning conditions on development, there must be a clear policy pathway to support this. Some of this can be found in the National Planning Framework and the Regional Spatial and Economic Strategy. The challenge is including a clear and spatially based policy and supporting objectives into City and County Development Plans. It would be very useful if the forthcoming Development Plan Guidelines, currently under preparation by the Department of Housing, Planning and Local Government set out in connection with its focus on climate change, a requirement for such plans to address heat mapping areas specifying locations where District Heating is possible, and that developments within these areas are conditioned to be enabled. It would be very helpful if the Department prepared new guidelines that address planning and energy policy and included sustainable goals, with a policy tool such as energy mapping/heat source and demand mapping.

Planning authorities could then better support District Energy by applying planning conditions similar to those used in London in areas where heat density is suitable for District Energy - such as applying conditions that

- buildings must be 'District Heating enabled' in these zones,
- buildings must connect to the District Energy network if it is a lower carbon solution to an individual solution, and
- importantly ensures any new industrial development with a useful waste heat source is future proofed so that it may connect to a District Energy network.

We understand that these types of planning requirements have already been used and trialled in the South Dublin County Council district heating scheme, and are absolutely fundamental to de-risking and laying the foundations for future District Energy development. In our scheme Dublin City Council is focusing on the Dublin Waste to Energy (DWtE) plant in Poolbeg which recently came into operation, and is designed and built to readily supply heat to a district heating network. These practices need to become mainstream for planning departments in all local authorities, starting with those with large dense urban areas.

In the consultation document it is mentioned that Energy Efficiency Directive requires that a *“cost-benefit analysis to be carried out where, inter alia, new large (over 20 MW) electricity generation or industrial installations are planned or existing installations are being substantially refurbished, in order to assess the costs and benefits of employing High Efficiency-CHP and/or connecting to a district heating and cooling network.”* Modern designed and energy efficient industrial installations should have limited wasted heat, however many new and existing industrial installations and their processes create waste heat. Guidelines and policies should be developed to support Local Authorities who are dealing with developers of such industrial installations, to ensure that that such waste heat is utilised on installation of greater or less than 20 MW.

The recast Renewable Energy Directive 2018/2001 (48) states, in relation to meeting the energy requirements of new building and renovation regulations, that *“Member States should allow, inter alia, the use of efficient district heating and cooling or, where district heating and cooling systems are not available, other energy infrastructure to fulfil those requirements.”*

Currently the requirements for new dwellings, under Part L, require an energy performance (the EPC), carbon performance (the CPC) and renewable energy (the RER) target to be met. There is a problem with having a carbon coefficient and a separate renewable energy requirement when utilising waste heat. Waste heat is not classified as renewable, but is zero-carbon as it has no fuel associated with producing it as it is a waste product of a primary process. A dwelling which is supplied by a District Energy scheme utilising waste heat will far over-achieve in terms of energy efficiency and carbon, but will not meet the renewable energy element. This means that you could have a near zero-carbon home - supplied fully with zero-carbon heat, but it will still require an investment in an on-site renewable technology to meet the RER threshold.

The typical developer response to meeting the RER now is to install a number of Photo Voltaic (PV) panels on the roof (with no batteries) as it is the cheapest solution, regardless if this is the best operational solution, because, for example, if there is nobody home during the day to actually use the PV generated. If carbon emission reductions are the primary driver of the building regulation, the assessment should be based purely on efficiency and carbon emissions. This can easily be adjusted in the Dwelling Energy Assessment Procedure (DEAP) which produces the Building Energy Rating (BER).

Another issue which is pressing for the development of current schemes is meeting the connection timelines for new developments - in other jurisdictions in Europe, there is an allowance for buildings to connect to a temporary supply (provided by the District Heating provider) until the network pipes are laid to connect the building to the main low-carbon network. There is typically a window of 3 years given for the District Energy operator to switch the building from the temporary supply to the main District Energy supply. The temporary supply is typically the cheapest solution - i.e. gas boilers. At the moment there is no allowance for a temporary supply to be provided to new buildings using a temporary higher-carbon source such as gas boilers. This means that many District Energy schemes will miss out on connections to many new buildings as the network may not always be close enough to connect within the building delivery timeline. This is a big issue when heat demand connections are the biggest risk for District Energy financial viability and new developments are a key foothold in the market.

As already described in question 1, data on new buildings should be collected through the planning application process - requiring a standard energy assessment form to be filled in and submitted with applications. This way the local authorities can manage and utilise this data for District Energy planning. For existing buildings, it is obviously a much bigger challenge to collect data, but a system like the mandatory DEC's for public buildings above a certain size could also apply to private sector commercial buildings and include other data such as heat demand and operating temperature.

**Q11: Is there potential for the revised building Regulations to act as a driver for district heating?**

The latest update of Part L of the Building Regulations has gone a long way to incentivise developers to utilize District Energy over other options, where District Energy is available. The changes suggested above will improve the situation for District Energy schemes.

**Q12: Given the importance of the public sector taking a lead role in developing district heating in Ireland, as highlighted in the 2015 Comprehensive Assessment, what, if any, additional powers are required by local authorities in order to ensure they have the necessary vires to develop and operate district heating networks?**

All government and public buildings within or near a catchment of an existing or proposed district heating network, should have clear guidelines and policies for connections to low carbon district heating networks. The use of district heating technologies should be prioritised over other heat energy technologies.

Under the Local Government Act 2001 and Local Government Reform Act 2014 the local authorities have powers to take measures or engage in activity that is necessary in the interests of the local community; these interests are defined as promoting social, economic and environmental development, including providing utilities or equipment for specific purposes. On a broad interpretation developing local district heating and cooling systems could be said to fall under this legal authority (though it would be appropriate and advisable if the provision and supply of district heating and cooling was expressly provided for in applicable legislation given the likely wide ranging nature of the activities to be undertaken by any local authority in this area and the variety of possible market structures.

A further obstacle is, as there is no definition of what a District Energy utility owner/owners is, District Energy is not afforded the same rights in the Planning and Development Act as other utility developers. The local authorities need to be named as the legal District Energy utility owner in each local authority area and given the same rights as gas/elec. network utilities to lay pipes.

# Financing

## **Q13: What sources of financing are currently available to the Irish district heating market?**

District Energy networks that are currently under development in Ireland have gained grant funding through DCCAÉ's Climate Action Fund (CAF) and also from the EU's Interreg programme, the Support Scheme for Renewable Heat (SSRH). Local Authorities may also have the potential to fund project utilising loans, but this may affect their potential to deliver other priority projects.

There is also a potential role for alternative funders such as EIB and ISIF to play alongside traditional funders where a competitive District Energy funding market does not exist, such as in Ireland. Strategic financial measures such as first loss and co-investment could assist in lowering market barriers and help drive investment in targeted sectors.

## **Q14: What are the most appropriate financing mechanisms for developing district heating in Ireland?**

This is completely dependent on the particular circumstances of each scheme - unfortunately, there is no one answer to finance in the District Energy sector. The only obvious and common thing across all large District Energy development schemes at present is that these will require a level of government support, either in the form of policy, which supports or mandates district heating, or in the form of grant funding. Government support is common practice in the utility space, for example in the case of the supported roll-out of the gas network across Ireland. In a similar manner, District Energy will require government support to facilitate its growth at the outset. Looking to countries with high levels of District Energy uptake such as Denmark, the implementation of mandating policy requiring customers to connect has greatly assisted the development of District Energy. Another fundamental support for District Energy, along with all other low-carbon heating solutions, is to fairly price the cost of carbon and introduce taxes that reflect that cost. We strongly feel that carbon taxes collected from fossil-based heating fuel providers should be used to support the uptake and development of low-carbon heating solutions, in much the same way that the PSO supports the integration of renewable electricity.

## **Q15: What are the most appropriate business delivery models for the Irish context?**

Again, there is no one-size-fits-all solution, and a range of template contracts and business models should be piloted and supported to gain insight and establish guidance to developing a range of District Energy type schemes in the Irish market. The appropriate business delivery model will depend on factors such as:

- The level of supportive and mandated policy in place
- Available funding, including government, agency and private
- The size of the scheme, including quantum and density of heat demand
- The level of revenue risk associated the project and mechanisms for mitigating such risk (e.g. mandating policy) – how likely are customers to connect?

In essence, the greater the level of certainty that can be provided, the greater the ability to attract finance at reasonable rates.

**Q16: In addition to those listed above, what are the other main challenges to raising non exchequer financing for district heating projects in Ireland? What measures should Government consider putting in place in order to mitigate these challenges?**

One of the barriers to the non-exchequer financing for district heating is uncertainty regarding the timing and quantity of heat demand to be served by the network, often referred to as connection risk. This is important because of the need to make returns on the up front capital expenditure on these networks. This connection risk can be helped in a number of ways:

- One of the key factors in mitigating this risk is ensuring that the heat network can supply these buildings with heat on or before its completion date and therefore prevent alternative heating technologies being installed in these buildings.
- By providing greater certainty around District Energy utilities statutory powers to open roads, install infrastructure and supply energy in the same way that other utilities do. These rights may include, easement rights, rights to install pipes in roadways, street works rights, rights to supply energy to customers.
- Having a greater certainty in terms of heat demand by having defined district heating zones where buildings are required to be District Energy-enabled/connected can also help build a really solid business case.

Lack of knowledge and training in District Energy specific elements of hydraulic modelling, hydronic systems, welding, trenching requirements, commissioning. Additional modules to existing courses in similar areas could bridge this knowledge gap and provide people with the skills and qualifications needed to design, install and maintain this major new renewable energy infrastructure. This would enable District Energy contractors to recruit local, highly-skilled workers.

**Q17: Other than providing direct exchequer funding, what incentives might Government consider implementing in order to drive the development of district heating? For example, should major energy users be allowed to offset their carbon taxes on energy demand by supplying waste heat to local communities?**

There are a number of actions that Government could consider in order to drive the development of district heating.

In effect, allowing major energy users to offset their carbon taxes would result in an increased system efficiency (combined heat and power efficiency) and should be treated as such.

As previously noted, implementing supportive or mandated policy would act as a key support for the development of district heating. By incentivising or mandating customers to connect to the network, project revenues are de-risked both in terms of the number of customer sign-up and the reliability of these connections. Not only does this improve the economics of District Energy projects, but it also

makes District Energy a more viable option for investment by the private sector and lending agencies, such as EIB and ISIF.

Also, an alternative or additional option is to disincentivise or ban the use of fossil fuels as energy sources for heat, which is a measure seen in countries such as Denmark and would appear consistent with the Irish Government's Climate Action Plan.