THERMOS

Baseline Replication Assessment Report – Pilot Cities

20.03.2018

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723636. The sole responsibility for any errors or omissions made lies with the editor. The content does not necessarily reflect the opinion of the European Commission. The European Commission is also not responsible for any use that may be made of the information contained therein.

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1 Introduction

The Baseline Replication Assessment Report aims to map-out and assess the national and local framework conditions for a successful adoption of the THERMOS model.

This document constitutes the final issue of the Baseline Replication Assessment Report and focuses on the four Pilot Cities of the THERMOS project: Granollers, Islington, Jelgava and Warsaw, and the 4 Replication Cities: Alba Iulia, Berlin, Cascais and the Greater London Authority.

Throughout this document, the most relevant characteristics and features that should be considered for the adoption of the THERMOS tool are analysed. The analysis covers the following elements in each of the four Pilot Cities studied:

- **Heating and Cooling in the local context**: this section contains an analysis of the local energy system (energy mix, key performance indicators on power and thermal supply and demand), the key energy policy and legislation, the adoption of Renewable Energy Sources (RES) in the city and the existing energy objectives and plans, among others;
- **Stakeholder Identification and Engagement**: the main local and national stakeholders that should be engaged for a successful adoption of the tools developed throughout THERMOS are listed in this section, together with the roles that they can hold towards the THERMOS model replication and the strategies to be followed for their engagement;
- **Towards THERMOS Uptake**: in this section the principal barriers that could prevent the adoption of the THERMOS tool and the solutions to overcome them are examined;
- **THERMOS Case Study**: finally, the document focuses the analysis on a single opportunity in a city district or quarter where the THERMOS tool will initially be applied.

This report is therefore meant to establish a baseline and serve both as a guide and a set of practical examples on the information that should be gathered and the stakeholders that should be engaged for a successful replication and adoption of the THERMOS tool.

2 Islington

2.1 Introduction

Islington is one of the 33 boroughs of Greater London, located in the northern part of inner London. The borough is run by a London Borough Council, the third layer of government below the national UK government and the Greater London Authority. The borough is largely residential, although it has some commercial areas in the south near the border with the City of London. The high density of buildings means that Islington has the least green space in London (see right).

History

Modern Islington was formed by a gradual merger of six separate parishes that were originally in the English county of Middlesex; Charterhouse, Clerkenwell, Glasshouse Yard, Islington, St Luke's and St Sepulchre. The largest of them, Islington, was established around 1005 by the Saxons along the Great North Road, the main road from London to Edinburgh. Clerkenwell became a popular residential area for wealthy Londoners in the 18th century and St Luke's was established in 1733 when the church of St Luke's was built. Charterhouse, Glasshouse Yard and St Sepulchre were very small parishes bordering the city of London.

In 1855 all six parishes came under the jurisdiction of the Metropolitan Board of Works and in 1889 they became part of the newly-established county of London. In 1900 Islington was transformed into a metropolitan borough, whilst the other five parishes were merged to form the metropolitan borough of Finsbury. The two metropolitan boroughs were merged in 1965, creating the modern Islington.

Demographics

At only 15km^2 in size – around six kilometres from north to south and a maximum of 3 km wide, Islington is the second-smallest borough in London and the third-smallest district in the UK. The 1800s saw a population boom as a large amount of housing was built, covering almost the entire parish of Islington – between 1801 and 1901 the population of modern Islington increased from 66,000 to 440,000. It began to decline after 1900, reaching a low of around 160,000 in the 1981 census. Since then the population has begun growing again and is now around 230,000, making it the most densely populated district in the UK and the population density of 15,322 people/km^2 is around double that of Singapore, although lower than that of Paris, Athens or Barcelona.

Climate

Like most of the UK, Islington has a temperate climate with mild summers and cool winters. Average summer highs are around 24°C with average winter lows around 2°C, although temperatures can reach as high as 38°C and as low as –13°C. As an inner London borough,

Islington benefits from the London urban heat island effect, making it up to 5ºC warmer than the city's outskirts.

2.2 Heating and Cooling in the Local Context

2.2.1 Local energy system

2.2.1.1 Introduction

As common to most London boroughs, there is only a small amount of power generated in Islington from CHP units, solar PV and minimal urban wind turbines (largely constrained to providing energy for the buildings they are located on or in) due to its location in inner London. The borough is instead largely reliant on energy from outside the area, with electricity and gas transmitted to Islington via the national electricity and gas grids and distributed via the local transmission networks.

In 2014 the total energy consumption in Islington was 3,162GWh (see table 1 below). The largest sources of energy were gas (48%), electricity (37%) and petroleum products (15%). However, gas accounted for 73% of domestic consumption (due to heating being largely provided from gas boilers), with electricity almost all of the remaining 23% (table 2). In the commercial and industrial sector (which in Islington is largely commercial as there is very little industry), electricity is the major source of energy at 56%. Road and rail transport are deemed to be 100% from petroleum products, although most of the railway lines in Islington are electrified.

Table 1: *Energy source and usage in Islington (GWh in 2014)*[1]

	Domestic	Commercial & industrial	Road transport	Rail	TOTAL
Gas	895.78	614.09	-	-	**1,509.87**
Electricity	325.58	837.08	-	-	**1,162.66**
Petroleum products	3.22	35.67	446.69	2.16	**487.74**
Manufactured fuels	0.88	0.00	-	-	**0.88**
Coal	0.66	0.05	-	-	**0.70**
TOTAL	**1,226.11**	**1,486.89**	**446.69**	**2.16**	**3,161.85**

Table 2: Energy source and usage in Islington (% in 2014)

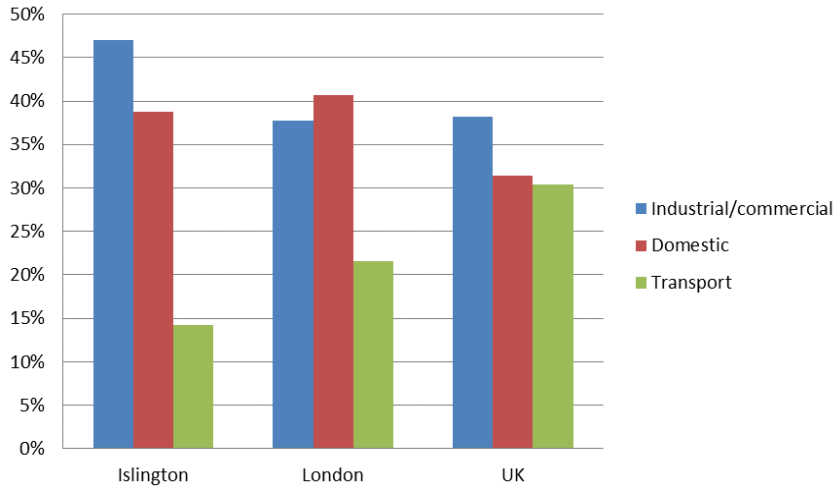
	Domestic	Commercial & industrial	Road transport	Rail	TOTAL
Gas	73%	41%	0%	0%	**48%**
Electricity	27%	56%	0%	0%	**37%**
Petroleum products	0%	2%	100%	100%	**15%**
Manufactured fuels	0%	0%	0%	0%	**0%**

[1] Total final energy consumption at regional and local authority level

Coal	0%	0%	0%	0%	**0%**
TOTAL	**39%**	**47%**	**14%**	**0%**	**-**

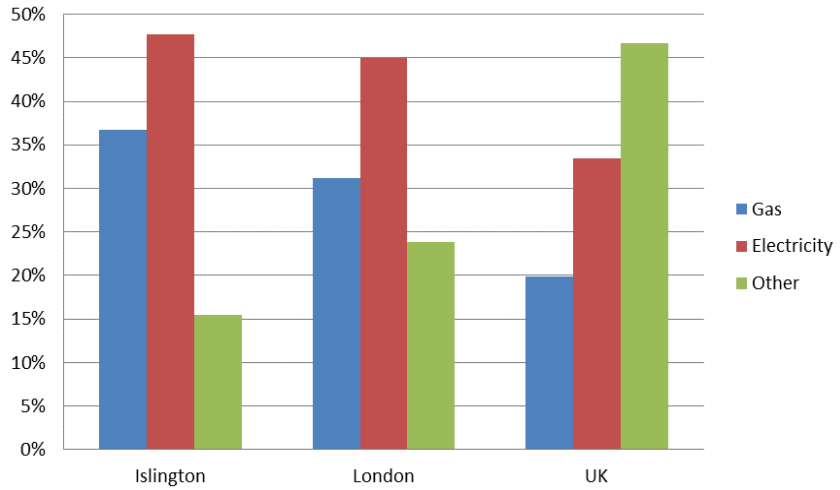
Energy consumption is somewhat different to the rest of London and the UK as a whole (Figure 1), with relatively high levels of industrial and commercial consumption (due to its location bordering the City of London) and low levels of transport-related consumption due to its small size and significant public transport system.

Figure 1: Energy consumption by sector in Islington (2014)



In terms of the source of energy, Islington is also significantly different to the UK average in getting the vast majority of its energy from electricity and gas, whereas the UK as a whole gets over 45% of its energy from other fuels – coal, petroleum products, biomass and manufactured fuels.

Figure 2: Energy consumption by source in Islington (2014)



The significant amount of gas consumption in Islington's domestic sector is due to heating in Islington largely being provided via gas (boilers or CHP), although there is a small amount of

electric and an insignificant amount of biomass heating. Heating via gas is split into three different types; individual boilers, communal systems that serve an entire building and district heat networks, which serve numerous buildings or estates. Individual boilers account for the vast majority of gas heating systems; the council has around 4,000 of its dwellings connected to communal systems and around 800 dwellings connected to its district heating network.

The level of heat demand in Islington is affected by the age of the buildings – over 60% of them were built before 1919[2] – these are largely solid walled houses, many of which have been converted to flats. There is also a very high level of social housing in Islington – at 41% (41,070 of the 101,780 dwellings)[3] it is ranked third out of the 350+ local authorities in England. Home ownership is one of the major dividers in Islington; in 2012 social housing tenants had an average income of around £15,000 and owner-occupiers around £100,000[4]. As a result of the combination of old, inefficient building stock and significant levels of poverty, fuel poverty is a major issue and has become a focus for the council.

Islington Council is the major social landlord in the borough and most of its properties are flats either in the converted townhouses, or more modern estates built from the 1930s onwards. The council operates 48 communal heating systems on its estates, serving over 4,000 dwellings[5]. The council also operates one of the borough's two heat networks, the council-owned Bunhill network, which supplies residential buildings, two leisure centres and a small number of offices, and the Citigen network operated by E.On, which is largely based in the City of London, but serves some buildings in Islington – this network is largely for commercial buildings with a small number of residential properties connected.

Cooling is largely restricted to a minority of commercial and public sector buildings, although demand is expected to be increasing as the amount of commercial floorspace and summer temperatures increase. The Citigen network also provides cooling to the connected buildings.

2.2.1.2 Thermal energy supply and demand

Key performance indicator	
Number and type of energy generation units	No local data available
Solar thermal energy generation (MWh/ year)	No local data available
Heat pump energy generation (MWh/ year)	No local data available
Biomass energy generation (MWh/ year)	No local data available

[2] Housing Strategy 2014–2019
[3] Number of dwellings by tenure and district, England
[4] Two Islingtons: Understanding the Problem
[5] Communal Heating Scrutiny Review

Waste heat potential (MWh/ year)	71,000,000 MWh (whole of London)[6]
Buildings' energy consumption in the residential sector (MWh/ year)	1,226,119 MWh (Islington) 53,206,558 MWh (whole of London)
Buildings' energy consumption in the commercial sector (MWh/ year)	1,486,895 MWh
Buildings' energy consumption in the industrial sector (MWh/ year)	49,394,526 MWh (whole of London)

2.2.2 Key Heating and Cooling policy and legislation

Heating and cooling legislation is largely delivered through the planning system with national legislation and regional and local planning policy. It should be noted that the UK does not have any legislation or national government policy that requires connection to district heating or cooling networks.

Islington falls under the remit of the London Plan, written and enforced by the Mayor of London and the Greater London Authority. This has several policies that impact on heating and cooling in Islington, including:

- 2.10 Central Activities Zone – Strategic Priorities – aims to 'realise the potential for district energy networks'
- 5.2 Minimising carbon dioxide emissions – requires energy assessments to include proposals to use decentralised energy
- 5.3 Sustainable design and construction – requires major developments to minimise their carbon emissions, including strongly recommending heating and cooling systems

The key policy is 5.5 Decentralised Energy Networks, which sets out a target of 25% of all heat and power to be sourced from heat networks by 2025. It requires the borough councils to develop policies and proposals to develop energy masterplans, establish heating and cooling networks and protecting existing networks.

Policy 5.6 (Decentralised Energy in Development Proposals) requires developments to evaluate the feasibility of CHP systems and consider expanding any potential network beyond site boundaries. It also sets out a hierarchy for energy systems in major development:

1. Connection to existing heating or cooling networks
2. Site-wide CHP network

[6] London's Zero Carbon Energy Resource: Secondary Heat

3. Communal heating and cooling

In Islington these policies have been captured in its Core Strategy, the council's overarching planning document. The Strategy includes policy CS10 on sustainable design, which requires:

- All developments to use low carbon heating and cooling systems and major developments to achieve a 40% reduction in carbon emissions compared to the national building regulations, or 50% where connection to a district heating network is feasible.
- The protection of existing heat networks and support for their expansion
- All developments to contribute to the development of heat networks, including by connection

As part of their planning applications, developers must submit an energy statement. This is reviewed by energy officers who assess whether it complies with the council's energy policies and targets. As part of the planning permission granted, a section 106 agreement is drawn up which includes requirements around connection to or compatibility with heat networks. In cases where developers fail to meet the carbon emission reduction targets, they are required to pay into the council's Carbon Offset Fund, currently at a value of £920 per tonne. The level of payment is included in the section 106 agreement.

Heating and cooling policy is also driven by the Department for Business, Energy and Industrial Strategy (BEIS). Its Heat Network Development Unit (HNDU) was set up to promote the development of district heating in England and supports local authorities through a system of grants for feasibility studies. It has also recently launched the Heat Network Investment Project (HNIP) with £320m of finance available to support the development of networks. The UK's first major policy document on district heating – The Future of Heating – Meeting the Challenge – was only published in 2013.

In terms of energy efficiency of buildings, there are several pieces of legislation or planning policy that set out targets, including:

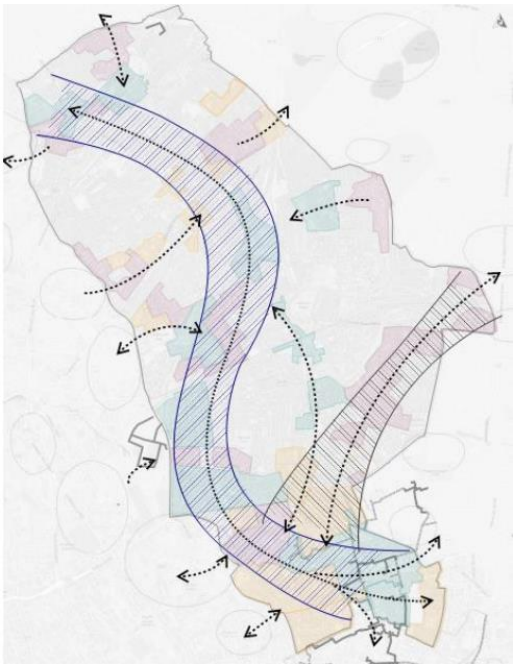
- Building regulations
- The *Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015*, which requires private landlords to ensure their property has at least an E rating on their Energy Performance Certificate by 2018 if starting a new letting, and from 2023 for any privately-rented property.
- Zero Carbon Homes – initially a central government policy that was due to come into force in 2016 but was later scrapped, this has been adopted by the GLA and requires all developments in London to meet the zero carbon homes standard or pay a carbon offset contribution.

2.2.3 Heating and Cooling within urban development and renovation programmes

2.2.3.1 Heating and Cooling Objectives

In 2014 Islington Council produced a Decentralised Energy Masterplan that set out the vision of how thermal energy systems would develop in the borough. The masterplan identified 11 priority areas for heat network clusters in addition to the existing Bunhill network and its first expansion. Key figures from the masterplan included:

- Total development costs of £77m
- 17km of pipework
- 17MWth of CHP to supply 168GWh/year
- 3% reduction of borough emissions, equivalent to 32,300 tonnes of CO_2 annually



A 'heat corridor' that would link the prospective networks and those from other boroughs was also identified (see right).

2.2.3.2 Energy Efficiency Opportunities

The main method of improving energy efficiency in Islington's housing stock is through insulation and connection to low carbon heating systems; the council has completed cavity wall insulation in almost all of its own stock (only cavities that cannot be filled for technical reasons are left) and is continuing to insulate lofts where possible. However, solid-walled buildings are now the major challenge, with the council owning around 13,700 solid-walled buildings that will require external wall insulation (EWI). The main obstacles to installing this insulation are cost (EWI is at least 20 times more expensive than cavity wall insulation), the lack of funding (changes to the government's energy company obligation ECO fund (which was designed to be used for EWI) have meant it provides almost no funding) and issues with planning (many of the council's solid-walled buildings are converted houses from the 19th and early 20th century and local planners object to any change in their appearance, especially when they are located in conservation areas).

In terms of opportunities, there are several openings to use waste heat in Islington for heat pump-based heat networks. These include:

- Canal basins – the council is currently undertaking a second study into installing a water source heat pump in the Regents Canal basin. This has been shown to be technically viable but the commercial viability is the main challenge.

- Data centres – either as a direct source of heat, or an indirect one (the study on the canal water source heat pump includes the possibility of a cooling loop to the data centre).
- London Underground ventilation – as part of the CELSIUS project, the council is in the process of building an energy centre that will see an air source heat pump installed in a London Underground ventilation shaft to extract the heat from the warm air that is blown out of the tunnels.
- Electricity substations – currently heat from underground electrical substations is being ejected into the atmosphere via radiators on the surface. The council has developed plans to use the heat from one substation to supply its Bunhill network as part of the CELSIUS project, but the substation owner, UKPN, withdrew from the project.

2.2.3.3 Renewable Energy Adoption and Potential

Options for renewable energy in Islington are limited by its geography. As an inner London borough, there is little space available for solar farms, no suitable sites for large wind turbines and no rivers for hydroelectricity. Stringent air quality rules also restrict the use of biomass. The main area of potential is for the installation of rooftop solar PV and solar thermal, and to a lesser extent, roof-mounted urban wind turbines. In March 2017 Islington had at least 1.7MW of solar PV installed (the available figures do not allocate all the installed capacity correctly).[7]

Islington Council has recently installed around 500kW of PV on three roofs – one on a large leisure centre, one on the council's main depot, and one on its largest offices.

2.2.3.4 Transport and infrastructure

Transport in London is largely under the control of Transport for London (TfL), which is overseen by the Greater London Authority. TfL are responsible for all public transport and the city's major roads. Islington therefore has a limited impact on transport planning, largely restricted to the maintenance of minor roads in the borough. However, the council has a role in promoting modal shift, and has installed six electric car charging points around the borough, as well as creating "quiet ways" for cycling, which either involves creating segregated cycle lanes or restricting vehicular traffic to these roads.

2.2.4 Financing Opportunities and Instruments

Heating and cooling systems

Financing heating and cooling systems is the main challenge for Islington Council. The original Bunhill heat network was funded entirely by one-off grants from the Homes & Communities Agency and the GLA. The second phase was part-funded by the EU CELSIUS project, with the council contributing the remaining finance.

[7] Sub-regional Feed-in Tariffs confirmed on the CFR statistics

The council has a small number of internal financing options:

- Council capital – this is council budget set aside for major capital works. As local authorities have been subject to austerity since the financial crash (the funding received from central government (which is the bulk of the council's income) has been halved since 2010), this is no longer a realistic source of significant funding.
- Planning-related funding – this is money raised through the planning system from developers building in the borough:
    - Community Infrastructure Levy (CIL) – this levy is money to contribute towards public infrastructure in the borough, which could include a district heat network.
    - Section 106 (s106) – similar to CIL, but cannot be spent on public infrastructure. However, it can fund, for example, works within a housing estate such as conversion to a communal heating system (which can be connected to a heat network).
    - Carbon Offset Funding – a form of s106 money, this is specifically raised from developers who fail to meet the carbon reduction targets set out in Islington's planning system (a 27% reduction compared to the 2013 building regulations, or a 39% reduction if connection to a heat network is possible). This contribution is valued at £920/tonne. This funding cannot be spent on infrastructure.

There are also some regional and national financing options specific to heat networks:

- Heat Network Investment Project (HNIP): A central government fund set up in 2016 that will provide £320m towards heat networks.
- Heat Network Development Unit (HNDU) funding: A central government fund that provides match funding for heat network development studies.
- Decentralised Energy Enabling Project (DEEP): A GLA fund that provides strategic, technical, commercial/financial and legal support to local authorities developing heat networks. This does not provide capital funding.

Beyond these funding sources, there is also European grant funding, but this is usually limited to demonstrator projects of new technologies rather than being available for a standard new heat network. Private finance is an option, but has not been taken up by the council.

Energy efficiency in buildings

In terms of funding for increased energy efficiency in buildings, there have been several schemes in recent years which have either ended (such as SHESP, which Islington Council used to complete its cavity wall insulation programme) or abandoned (such as the Green Deal, a programme of loans to homeowners to carry out energy efficiency measures – this was abandoned due to low uptake caused by a relatively high interest rate).

The main source for local authorities at present is ECO (Energy Company Obligation). ECO consists of funding that large energy companies are required to set aside to contribute to domestic energy efficiency improvements. The money is obtained from the energy companies, usually through brokers, and is valued on a £ per tonne (of carbon saved) basis. The scheme was originally designed to focus on solid wall insulation (SWI), which meant that the value of a tonne of carbon was relatively high (due to the high cost of SWI), and Islington Council used this to part-fund two SWI projects that insulated around 300 flats. However, reforms to the fund allowed easier works (such as cavity wall insulation) to be funded through it, which in turn significantly devalued the amount available per tonne of carbon saved, making it difficult to fund SWI projects – a third SWI project was postponed when it was discovered that the amount of ECO funding obtainable was less than it would cost to obtain (through certification etc.).

2.3 Stakeholder Identification and Engagement

2.3.1 Local stakeholders

2.3.1.1 Islington Council

Potentially the biggest stakeholder is Islington Council itself. The council owns several large buildings with significant heat loads (such as leisure centres with swimming pools) and 48 housing estates that are already communally heated and would require little retrofit to be connected to a district heating network. This means it has significant levels of baseload that are critical to a new heating network. The council has carried out several feasibility studies for new heat networks, most of which are based around leisure centres and housing estates.

Beyond the 48 communally-heated estates, the council owns over 20,000 other dwellings, many of which are individually heated flats that could be converted to communal heating and connected to district heating networks.

2.3.1.2 Residents

Residents – both in council housing and private housing – are another major stakeholder. Heat networks will need to be attractive to residents, which will primarily come down to cost – will heat from a network be cheaper that their existing heating source? To date the council has achieved a guaranteed 10% saving to all residents connected to the Bunhill network compared with their previous heating bill.

As the Bunhill network is owned by the council, residents effectively have democratic control of the network through the councillors they elect. This helps ensure that the council acts in the best interests of residents when operating the heat network.

2.3.1.3 Businesses

Like residents, businesses are a stakeholder in the network as they are potential connectees and provide the benefit of diversifying the heat load compared with residential properties. Again, the heat network will only be attractive to local businesses if it can provide heat at a price lower than their existing systems, or potentially with more security. The council has several ways of engaging with local businesses, including Town Centre forums and the Islington

Sustainable Energy Partnership, a networking group which helps local businesses improve their energy efficiency.

Businesses are also potential stakeholders as suppliers of waste heat to the network – for example local data centres or electrical substations.

2.3.1.4 Other public sector organisations

Islington Council is not the only operator of large public sector buildings in Islington – there are also hospitals and universities. These provide excellent baseloads for heat networks, as well as diversifying the demand profile, and have been included in the council's feasibility studies for new networks in the borough.

The GLA is another relevant public sector organisation in several ways; it sets regional policy, including the target of 25% of heat and power coming from heat networks by 2025; it provides support to London boroughs on the development of heat networks; and, as the ultimate owner of TfL, it is a partner for the development of projects such as the heat-from-the-tube project that the council is currently undertaking.

2.3.1.5 Developers and building managers

In some cases, Islington's planning system requires new developments to connect to local heat networks, making their developers stakeholders during the construction process. After the development is complete, the organisation that takes over managing the building will become the stakeholder, which in case of residential developments, will not be the same as residents.

2.3.2 National stakeholders

The main national stakeholder is the Department for Business, Energy and Industrial Strategy (BEIS), and in particular its Heat Network Development Unit (HNDU). The HNDU guides national policy on heat networks and is responsible for promoting and supporting their development through funding.

The Association for Decentralised Energy (ADE) is the trade body for district heating providers. It lobbies the government on behalf of its members for policies that support the rollout of district heating in the UK. Islington Council are a Board Member of the ADE.

2.3.3 Existing stakeholder participation processes

Currently there is no formal stakeholder participation process in Islington except for the planning system. Developers must submit an energy strategy, which is reviewed by council officers. There is then a period of negotiation between the developer and the council on the terms of connection, before the connection is made. In order to smooth this process, the council has created two guidance documents for developers and building service designers connecting to the Bunhill network that ensures their systems are compatible with the local heat network:

- Connections Guidance - Part 1 - A guide for developers and building owners

- Connections Guidance - Part 2 - A guide for building services designers connected to Bunhill Heat and Power

Beyond this, stakeholder engagement has been carried out through direct contact with potential connectees such as universities, hospitals etc.

2.3.4 THERMOS Local Liaison Group

The initial members of the London Local Liaison Group (LLG) members have been identified in addition to Islington Council and the GLA and are detailed in the table below. The local authorities are those covering the heat network priority zones for London.

ADE	Trade body for decentralised energy in the UK
BEIS	Government department responsible for heat networks
Brent Council	Local authority in London
Camden Council	Local authority in London
G15	Group of the largest non-council social housing providers in London
Greenwich Council	Local authority in London
Hackney Council	Local authority in London
Haringey Council	Local authority in London
Sutton Council	Local authority in London
Waltham Forest Council	Local authority in London
Westminster Council	Local authority in London

2.3.4.1 Stakeholder roles towards THERMOS model replication

ADE: As the trade body for district heating in the UK, the ADE would be able to advertise its development to members, including other local authorities. It may also be able to help publicise requests for input

BEIS: The government department that has responsibility for heat network development, BEIS would be a potential partner in helping promote and roll out the use of THERMOS

Councils: Other local authorities in London would potentially be users of THERMOS

E.On and SSE: Energy companies like E.On and SSE may seek to become district heating providers (E.On already operates the Citgigen network)

G15: The G15 is a group consisting of the largest non-council social housing providers. Their estates are potential heat network connection opportunities.

2.3.5 Stakeholder Engagement Strategies

Initially the LLG will collate user requirements for the model-building process. Following the model's development, the LLG will be used to help publicise it to local authorities in London and inform national bodies such as the ADE and BEIS so that they are able to raise awareness across the UK. We also plan to present the THERMOS project at a meeting of the London

Environment Coordinators Forum, as well as raising it when hosting events for the CELSIUS project in London.

2.4 Towards THERMOS Uptake

2.4.1 Barriers

In Islington's experience, by far the most significant barrier for local authorities developing heat networks or implementing energy saving measures is finance – i.e. how a new or expanded heat network is funded. If no funding is seen to be available in the foreseeable future, it is unlikely that councils will invest time and effort into developing plans for heat networks, in which case THERMOS would not be used.

If funding is available, the next barrier is lack of expertise within local authorities. However, this is something that THERMOS will help to address. This is why a training programme for local authorities is key to the rollout of the tool.

A UK-wide barrier is the lack of a mechanism by law or in the planning system that requires local authorities to set up heat networks or requires connection to them.

2.4.2 Proposed solutions

The funding availability issue cannot be addressed by the project. However, as noted in section 2.1.1.4, central government has made a significant amount of funding available for heat networks.

The purpose of the THERMOS tool is to address the second gap – i.e. lack of in-house expertise, as it will ensure that local authorities are able to at least partially beginning to develop systems in-house. This will require staff to be trained to use the tool, which is part of the THERMOS project objectives.

If Islington and London can demonstrate the tangible benefits of district heating, it may lead national government to strengthen policies to push the UK towards more district heating; Currently the HNDU and HNIP fund are designed to do this, but they need local authorities to build best practice examples to take it to the next step. THERMOS can play a key role in making that happen, and more quickly.

2.4.3 THERMOS exploitation opportunities

Currently councils across the UK are looking to start developing heat networks in their boroughs or districts and THERMOS is a tool that these councils will be able to use in their development process, reducing their costs and freeing up money for other areas of spending. In the future it may even be possible for community groups to attempt to develop networks if they have sufficient expertise and funding opportunities.

2.5 THERMOS Case Study: Highbury West

2.5.1 Objectives

The main objective is to create a district heat network that would serve the Highbury West ward of Islington. The core scheme would serve a council leisure centre and an estate consisting of four electrically-heated high-rise tower blocks, which would have to be converted to a traditional communal heating system (the existing storage heaters are at the end of their life). The wider objectives include connection to the nearby London Metropolitan University campus.

2.5.2 Key stakeholders

Initially, the key stakeholders would be:

- Islington Council as the owner of the social housing and the nearby Sobell Leisure Centre, which would likely house the energy centre
- Local residents
- GLL, the organisation that operates the leisure centre for the council
- London Metropolitan University

2.5.3 KPI indicators table

Key performance indicator (core scheme)	
Number and type of energy generation units	1
Solar thermal energy generation (MWh/ year)	0
Heat pump energy generation (MWh/ year)	0
Biomass energy generation (MWh/ year)	0
Waste heat potential (MWh/ year)	Unknown
Buildings' energy consumption in the residential sector (MWh/ year)	1,840 (heat)
Buildings' energy consumption in the commercial sector (MWh/ year)	2,390 (heat) 1,385 (electricity)
Buildings' energy consumption in the industrial sector (MWh/ year)	N/A

2.5.4 Financing status/ opportunities

The current financing situation is that the project is unfunded. A bid was made for HNIP funding, with the council using its Carbon Offset Fund to pay for the retrofit of the four high-rise tower blocks. However, the bid was rejected. We are considering amendments to our financial model in order to reapply for HNIP funding as this is realistically the main funding option at present for the council.

2.5.5 Exploitation of the opportunity

2.5.5.1 Barriers

There are no particular barriers in the local energy system; the major barrier at present is insufficient finance for the council to go ahead with the project.

2.5.5.2 Proposed solutions

The lack of finance is a problem specific to the council. Currently we are examining opportunities to apply for funding and considering whether a slightly different business model may be required if we were to reapply to HNIP.