

# Northallerton

# Heat Network Zoning

# Zone Opportunity Report



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### Acknowledgements



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# **Executive Summary**



**About Northallerton:** Northallerton is a historic market town in North Yorkshire with a population of ~11,400. It serves as the administrative centre for North Yorkshire Council.



**Local Energy Policy:** Northallerton Town Council supports North Yorkshire Council's net zero pathway, aiming for operations to be net zero by 2030, the region by 2034, and carbon negative by 2040.



**Existing heat networks:** Currently, there are no district heat networks within Northallerton's study boundary, but Friarage Hospital has a campus heat network.



**Zones identified:** Three potential heat network zones were identified in Northallerton with one considered a strategic heat network zone. The overall heat demand for all buildings potentially required to connect in all zones is 34GWh/yr.



**Strategic heat network zones:** The strategic zone in Northallerton has an overall heat demand of 23GWh/yr for all buildings potentially required to connect.



**Key heat demands:** The initial zone opportunity connects 39 buildings with an overall heat demand of approximately 21GWh/yr. The largest buildings include Friarage Hospital and Northallerton School & Sixth Form College.



**Key heat sources:** The main low carbon heat sources identified are air source and ground source heat pumps.



**Estimated CapEx:** The high-level estimate of capital expenditure to network all buildings required to connect in all zones is approximately £40m, of which the initial zone opportunities amount to approximately £20m.



**Other heat network zones:** Other heat network zones include the Standard Way Industrial Estate and a zone comprising of Northallerton School & Sixth Form College, a Leisure Centre and North Yorkshire Council offices.



**Carbon savings:** The Northallerton Town Centre IZO is expected to achieve carbon savings of ~5ktCO<sub>2e</sub>/yr.

### Figure 1: Overview of Heat Network Zones in Northallerton



# 1) Introduction

Heat networks will play a crucial role in decarbonising heat in buildings. Heat networks take heating, cooling or hot water from a central source(s) and deliver it to a variety of premises such as public buildings, shops, offices, hospitals, universities, and homes. They are also an important part of securing the UK's energy independence through local, low carbon heat sources and reducing the cost of living through efficient, affordable heating in densely populated areas. Our analysis shows that heat networks could provide about 20% of total heat by 2050. They currently provide about 3%.

The Department for Energy Security and Net Zero (DESNZ) is enabling the development of heat network infrastructure through a range of targeted funding, policy and legislative support to de-risk projects and attract investment. The Energy Act 2023 establishes the regulatory framework for heat networks in Great Britain and provides powers to introduce heat network zoning in England through secondary legislation. A heat network zone (HNZ) is a formally designated geographical area in England where heat networks are expected to provide the lowest-cost solution for decarbonising heating.

Under heat network zoning, central and local government will work with industry and local stakeholders to identify and designate areas of England where heat networks are expected to be the lowest-cost solution to decarbonising heat. Heat network zoning will be essential to speeding up the development of new heat networks and we hope to catalyse growth where it's most needed.

Heat network zoning will significantly increase private sector investment in the sector by removing the barriers which currently limit the pace of developing large scale heat networks. It will also give local communities the tools to accelerate the development of heat networks in their own areas and ensure that more homes and businesses can have access to greener, cheaper heat. It also has the potential to create tens of thousands of jobs across the country.

This report shows the Pilot programme outputs for Northallerton and is intended to showcase potential heat network zones in the town. The report indicates the heat network investment opportunity at a town scale, the potential location of heat network zones, and key opportunities for initial heat network development within those potential zones

Please note that all information presented in this report, including the location of identified heat network zones, is subject to change. These are the findings of Pilot programme that were developed alongside the emerging Heat Network Zoning policy and therefore reflect our understanding at a moment in time. As the methodology improves, we will update these reports to improve our understanding of how heat network zoning may be rolled out in each area. Any potential zones that are identified fully, or partly, in an adjacent local authority area will need to be discussed further once local zone co-ordinators are established.

# Heat Network Zoning Pilot Methodology

Heat network zones will be identified using a standardised national zoning methodology<sup>1</sup>. The Heat Network Zoning Pilot Programme (hereafter Pilot programme) set out to develop a process to identify potential zones in a consistent and standardised manner across a range of towns and cities in England. The programme was fully funded and led by DESNZ, working alongside 28 Local Authorities, and multiple consultancy firms, to develop and test this approach at a local level. As such the final outputs are supported by each Local Authority but do not reflect an approved, endorsed, or adopted position on how zones may be delivered.

Lessons from the Pilot have been used to inform the development of the Heat Network Zoning policy. This includes improvements to the identification approach itself, but also wider policy design relating to the number and size of potential zones; existing heat networks; and the impacts of the policy on a range of stakeholders. Once the response to the heat network zoning consultation is published, we will update the methodology to reflect the final policy position.

The key concepts, definitions and complementary workstreams relevant to this report are introduced below. For a fuller description of the Heat Network Zoning policy, and up to date information regarding its implementation, please visit <a href="https://www.gov.uk/government/collections/heat-network-zoning">https://www.gov.uk/government/collections/heat-network-zoning</a>.

# Heat Network Zone Identification

Heat network zones will be identified using a standardised national zoning methodology. The <u>December 2023 consultation on Heat Network Zoning</u> proposes that the methodology will consist of two stages:

- 1. a national mapping exercise (using a data-led spatial energy model the National Zoning Model, (or NZM), to identify indicative heat network zones across England;
- 2. a refinement stage where relevant local stakeholders will input to the review and refinement of potential heat network zones prior to formal designation.

For the purposes of this study, indicative heat network zones have been identified using a prototype version of the NZM. These indicative zones were then refined by technical consultants with input from local stakeholders. The NZM outputs are already of considerably higher quality than those shared for this work and therefore these reports will improve over time.

This study split heat network zones into two different categories. These are **'strategic'** zones – the largest zones which are generally seen as strategically significant to developing heat networks in an area; and **'other'** zones – which are generally smaller and discrete. These are terms specific to the Pilot programme and the report focuses primarily on the strategic zones.

<sup>&</sup>lt;sup>1</sup> More information can be found in the Heat Network Zoning Methodology Statements (Appendix 3, 4 & 5)

## **Initial Zone Opportunities**

Alongside the identification of potential heat network zones, the Pilot programme has attempted to define areas within zones where the most attractive heat network development opportunities might exist. For the purposes of this programme *only* these are called an "initial zone opportunity" (or IZO). The approach considered economic viability, investment scale and returns, decarbonisation impact and deliverability. They were developed solely around buildings which could be potentially required to connect<sup>2</sup> under the proposed Heat Network Zoning policy and did not consider potential voluntary connections.

Initial zone opportunity design targeted a linear heat density (LHD) of 4MWh/m/yr, for the existing built environment. This is considered a relatively low proxy for economic viability with the heat network sector in England. A more flexible approach was used for new development sites, where different economic success criteria are likely to be applied. To standardise the way opportunities were assessed, the IZOs presented in this report may differ from, or overlap with, existing or planned heat network infrastructure. Campus style heat networks (e.g. in hospitals or university campuses) were considered as potential heat loads with a single point connection. Figure 2 below shows an example of a heat network zone and an IZO.



### Figure 2: Illustration of a Heat Network Zone (HNZ) and an Initial Zone Opportunity (IZO)

<sup>&</sup>lt;sup>2</sup> The building categories being considered as potentially required to connect include new developments, large non-domestic buildings, and communally heated residential blocks as described in Heat Network Zoning Consultation (2023)

# Study Scope

This document is presented as a zone opportunity report as it was developed in advance of the final policy design. As such, the report does not include:

- references to the central authority or zoning co-ordinator roles;
- assumptions about rights of existing heat networks, or zone delivery areas;
- an options appraisal on which routes to market may be taken;
- calculations on the cost of heat (connection/tariffs) to specific buildings;
- any inferences as the suitability for public/private sector delivery unless it's matter of fact (existing network or Heat Network Investment Project/Green Heat Network Fund project);
- references to **local community benefit** or **consumer protection** (subject to a live consultation).

In the future, it is intended that a document, similar in style, will be produced to incorporate these policy design aspects and be used as a Zone Market Prospectus (ZMP) to market heat network zoning opportunities in an area. Further detail on the methodology and initial zone opportunity criteria is provided in Appendix 4 and Appendix 5.

# 2) Northallerton Heat Networks Context

# 2.1) Northallerton Town Overview

Northallerton is a historic market town and civil parish in North Yorkshire situated between the North York Moors and the Yorkshire Dales National Park. Northallerton is made up of three wards and has a total population of ~11,400<sup>1</sup>. Northallerton Town Centre is a compact urban area with a mix of residential and commercial buildings and a large hospital, the Friarage Hospital. The area surrounding the town centre is made up of medium-density social and private housing and schools. The majority of housing in Northallerton is privately owned with 24% of the households in Northallerton socially rented (1,133).

North Yorkshire Council (NYC) is the largest local council by area in England, comprised of several urban areas and former districts. In 2022, York and North Yorkshire announced a 30-year devolution with an investment fund of over £500 million. In April 2023, North Yorkshire underwent a local government reorganisation, replacing the two-tier system of a county council and seven district councils with a single unitary authority, North Yorkshire Council, based in Northallerton. Since early 2024, York and North Yorkshire formed a Mayoral Combined Authority. For Northallerton this means greater influence over decisions affecting the local area and its residents alongside access to funding and investment.

In 2022, the York and North Yorkshire Local Enterprise Partnership and the City of York Council commissioned a Local Area Energy Plan (LAEP) to provide stakeholder engagement and identify areas of focus needed for regional decarbonisation efforts<sup>3</sup>. Whilst there are currently no district heating networks in the town, the LAEP highlights the importance of further exploration in Northallerton.

# 2.2) Northallerton Net Zero Targets and Commitments

Northallerton are committed to supporting NYC deliver their net zero pathway. Having declared a climate emergency on 5<sup>th</sup> July 2022, NYC has set an ambition for operations to be net zero by 2030, the region to be net zero by 2034 and carbon negative by 2040. NYC published their first draft climate change strategy in 2023, with local community engagement 'Let's Talk Climate' supporting the final publication<sup>3</sup> in February 2024.

NYC's strategy is built on several previous local strategies including Hambleton District Council Climate Strategy<sup>4</sup>, Yorkshire and Humber Climate Action Plan<sup>5</sup> and the York and North

<sup>4</sup> Hambleton District Council (2021) Climate Change Strategy and Action Plan 2021 – 2034. Available at: <u>https://democracy.hambleton.gov.uk/documents/s24106/Annex%20B%20Climate%20Change%20Strategy%20an</u> <u>d%20Action%20Plan%20202.pdf</u>

<sup>&</sup>lt;sup>3</sup> North Yorkshire Council (2023) Let's talk Climate Change: Survey Findings. Available at: <u>https://www.northyorks.gov.uk/your-council/consultations-and-engagement/lets-talk-north-yorkshire</u>

<sup>&</sup>lt;sup>5</sup> Gouldson, A. et al. (2021) Yorkshire and Humber Climate Action Plan. Available at: https://yorksandhumberclimate.org.uk/sites/default/files/Climate%20Action%20Plan.pdf

Yorkshire Local Enterprise Partnership Route Map to Carbon Negative<sup>6</sup>. NYC's 2024 strategy is based on three key themes; mitigation, adaptation, and resilience, and supporting nature. In mitigating emissions, the council targets a low-carbon built environment powered by local renewable energy, low-carbon transport, a circular economy, and nature-based solutions.

Buildings and transport comprise the greatest share of the county's emissions, a similar conclusion reflected by the LAEP. Whilst quantitative targets to address building emissions are not yet formed, the LAEP highlights the importance of investing in district heating as a key opportunity to decarbonise greater density areas. Determining the scale of any proposed district heating networks has been identified as a short-term action in the LAEP, something which this report could aid with. Northallerton has been identified as a dense area in which a district heat network could be considered.

Figure 3 below, summarises key dates in the NYC's plans for decarbonisation and demonstrates their progress towards decarbonisation targets.





# 2.3) Delivering Heat Networks in Northallerton

Currently there are no existing district heat networks within Northallerton' study boundary, however, Northallerton Friarage Hospital has a campus heat network. The hospital is served by dual fuel and steam boilers, whilst recent updates to the hospital site occurred in 2006<sup>7</sup>, further investigation is required to determine whether it could connect to a wider heat network.

Recent studies indicate the opportunity for a larger scale Northallerton heat network. In 2019, a heat mapping and master plan was completed for NYC and Hambleton District Council to establish the potential for district heat networks in Northallerton. Since then, the York and

<sup>&</sup>lt;sup>6</sup> York and North Yorkshire LEP (2023) York and North Yorkshire's Routemap to Carbon Negative. Available at: <u>https://yorknorthyorks-ca.gov.uk/wp-content/uploads/2023/12/York-and-North-Yorkshires-Routemap-to-Carbon-Negative-040123.pdf</u>

<sup>&</sup>lt;sup>7</sup> Robinson, G. (2020) Friarage Hospital, Northallerton, Case Study. Available at: <u>https://www.iheem.org.uk/wp-</u> content/uploads/2020/10/Energy-Centre-Case-Study-Friarage-Hospital.pdf

North Yorkshire LEP have undertaken a LAEP to assess, among other aims, heat network deployment potential. Both studies highlight that Northallerton has several users with high heat demand close to each other, indicating positive potential for a heat network in the area.

Please refer to Appendix 2 for further information about the evidence compiled during the Pilot programme and held by DESNZ for Northallerton. This includes a fully populated stakeholder directory and records of interactions with those stakeholders as well key studies and reports shared with DESNZ.

# 2.4) Northallerton Heat Network Zones

A total of three potential HNZs were identified in Northallerton, with one considered a Strategic HNZ. Figure 4 shows the study area boundary as well as the boundaries of all HNZs identified within Northallerton. HNZs have been allocated a meaningful name where appropriate from a local perspective whilst others have a reference number allocated instead. In both cases, these names are shown on the map.

Please see Appendix 1 for the following maps giving more detail:

- A: Northallerton Typology Map Shows building typologies which dominate by area.
- B: Key Heat Loads Map Highlights key buildings potentially required to connect by heat demand.
- C: Key Heat Sources Map Highlights key heat sources by type and potential energy centre locations as well as any existing district heat network energy centres.
- D: Existing / Planned Heat Networks Map Shows existing HNs and planned extensions to them as well as any planned HNs in advanced stages of development.
- E: Key Constraints Map Shows key topographical constraints identified.
- F: Off Gas Grid presents areas with differing levels of properties off the gas grid within the study area.



### Figure 4: Heat Network Zones Identified within the Northallerton Study Area

# 3) Strategic Heat Network Zones

# Strategic HNZs in Northallerton

This section examines the strategic HNZ and the IZO identified within it. This covers the key heat demands, heat sources, energy centre locations and potential constraints. Heat network distribution routes are conceptual and designed to illustrate the potential size and scale of the heat network opportunity that may be realised as part of the upcoming Heat Network Zoning policy. Other heat network zones are listed in Section 4.

Table 1 below presents a high-level estimate of the scale of opportunities across Northallerton. Please refer to Appendix 4 for more detail.

Scope	Annual heat demand (GWh/yr)
All buildings required to connect in all zones <sup>8</sup>	34
All buildings required to connect in strategic zones	23
All buildings connected to the IZOs	21

### Table 1: Annual Heat Demand for Buildings in All Zones, Strategic Zones and IZOs

Existing/planned heat networks that overlap with IZOs are described, though their locations may vary due to different approaches. The Pilot programme applied a standard set of technical and economic assumptions across each of the 28 areas that participated in the programme and uses a proxy for economic viability, see Section 1 and Appendix 4 for more detail. Existing and planned networks will often be based on more detailed design work and have taken account of strategic and commercial considerations that were relevant at the time of their development. Future iterations of this report will consider how to better align local studies whilst retaining a nationally consistent approach.

The strategic zone is summarised below. Figure 5 illustrates its size and the proportion of buildings that may be potentially required to connect.

**Northallerton Town Centre** comprises the commercial and historic Northallerton Town Centre. The proposed zone includes the Friarage Hospital which has the largest heat demand in the town, as well as other commercial and educational buildings. For more information, please see Section 3.1.

<sup>&</sup>lt;sup>8</sup> Row 1 is an estimate of heat demand across buildings potentially required to connect in all zones identified. Row 2 is as per row 1, but only within strategic zones. Row 3 includes buildings connected to the IZOs described and largely comprise of buildings potentially required to connect.

Due to the proximity of the 'Other' proposed zones, it may be possible to combine a network that spans across particularly the NRTH\_002 zone that comprises North Yorkshire Council offices, the leisure centre and the Northallerton School & Sixth Form College.



### Figure 5: Summary of Heat Demands in the Strategic HNZ Identified

## 3.1) Northallerton Town Centre

## 3.1.1) Northallerton Town Centre – HNZ Summary

Northallerton is a Strategic HNZ, situated at the centre of the study boundary. The zone includes the greatest heat demands in the heart of the town, including the Friarage Hospital, as well as other large commercial and educational buildings as presented in Figure 6. Northallerton HNZ highlights a key opportunity for this area to provide economic low-carbon heat to the town and the surrounding area.

## 3.1.2) Northallerton Town Centre - Existing Heat Networks

There is one operational campus heat network in the HNZ as described below.

## **Operational Heat Networks and Planned Expansions**

### Friarage Hospital Campus Heat Network

The campus heat network serves the Friarage Hospital including: 8 wards, surgeries, theatres, clinics, an eye and dialysis unit, an education centre, and information centre. The energy centre was designed and is now maintained by Geoffrey Robinson Ltd.

## 3.1.3) Northallerton Town Centre - Initial Zone Opportunities

A single IZO was identified in the Northallerton Town Centre HNZ. Potential routing<sup>9</sup> is shown in Figure 6 and summary statistics provided in Table 2.

### Table 2: Northallerton Town Centre - Summary Statistics for Initial Zone Opportunities<sup>10</sup>

CapEx	Heat	Network	CO <sub>2</sub> e savings	Linear Heat Density	Heat Sources
~£20m	~21GWh/yr	~5km	~5ktCO <sub>2</sub> /yr	4.3MWh/m	GSHPs & ASHPs

The route covers most of the town centre and contains a mix of public sector and commercial buildings, comprising around 39 buildings potentially required to connect. The main low carbon heat sources are air source and ground source heat pumps (ASHP and GSHP). The nature of the town means that the heat network development has few physical constraints which prohibit its development. As mentioned previously, one campus heat network exists serving the Friarage Hospital with opportunity for expansion or connection to a wider heat network.

<sup>&</sup>lt;sup>9</sup> Routes can be expected to change as a better understanding of local constraints is developed through design.

<sup>&</sup>lt;sup>10</sup> Please see Appendix 3 – Glossary, "Specific definitions" of the main report for definitions related to this table.

### Figure 6: Initial Zone Opportunities in Northallerton Town Centre HNZ



## 3.1.4) Northallerton Town Centre - IZO Heat Demands

The heat demands identified are described below. The Pilot programme used several sources including local data collected from building owners; national energy demand datasets; benchmarks applied via the National Zoning Model (NZM); and a standardised approach to estimate the potential heat demands of new development sites. More information is provided in Appendix 4.

Where there are different values between datasets, the methodology prioritised the use of the early prototype version of the National Zoning Model, for consistency. This has led to an overestimation of some commercial and light industrial heat demands presented in this report. Large anchor loads that are already connected to existing district-scale heat networks are not listed.

The IZO in Northallerton Town Centre proposes connection to 39 existing buildings with an overall heat demand of ~21GWh/yr. It includes a broad mix of health sector, educational, and non-domestic commercial properties, anchored by the Friarage Hospital campus buildings. For the purposes of this study no new developments were included. Figure 7 shows the breakdown of heat demand for buildings potentially required to connect by building type.



# Figure 7: Northallerton Town Centre - Categorisation of Heat Demand for Buildings Potentially Required to Connect in the IZO

Over 60% of the heat demand is represented by public sector buildings. This is mainly due to the large heat demand from the Friarage Hospital followed by the police station. Non-domestic buildings make up the second largest segment at  $\sim$ 30% of heat demand driven by the retail dominated high street. Council-owned buildings make up  $\sim$ 10% of total heat demand and includes County Hall. Further details of the key heat demands for buildings potentially required to connect are provided in Table 3, below.

Due to the proximity of the 'Other' proposed zones, it may be possible to combine a network that spans across particularly the NRTH\_002 zone that comprises North Yorkshire Council offices, the leisure centre and the Northallerton School & Sixth Form College.

Building name	Building category	Number of connections	Annual heat demand (MWh)	Data source
Friarage Hospital	Public Sector	1	10,300	ERIC National Dataset
Northallerton School & Sixth Form College (Grammar School Lane)	Public Sector	1	1,300	DEC
County Hall	Council Owned	1	1,300	DEC
North Yorkshire Police	Council Owned	1	800	Benchmark (NZM)
Tesco	Non-domestic	1	700	Benchmark (NZM)
Barkers	Non-domestic	1	600	Benchmark (NZM)
Mountain Warehouse and Wilkson	Non-domestic	1	475	Benchmark (NZM)
Yorkshire trader and Hanby & co	Non-domestic	1	450	Benchmark (NZM)
British Telecom Exchange	Non-domestic	1	400	Benchmark (NZM)
Royal Mail Northallerton Delivery Office	Non-domestic	1	375	Benchmark (NZM)

<sup>&</sup>lt;sup>11</sup> Please refer to Appendix 3 for definitions related to building categories in this table.

## 3.1.5) Northallerton Town Centre - IZO Heat Sources

The IZO is a relatively dense urban area with limited waste heat opportunities and limited access to rivers or significant larger bodies of water. However, where the density decreases, there is opportunity to explore surrounding green spaces for GSHPs and energy centre locations. Finding space to locate energy centres in this densely populated area will be critical to successful delivery of a heat network. A potential option is to extend the existing energy centre at Friarage Hospital or to build a new one in Bullamoor Park close to the hospital (E1). The advantage of being next to Bullamoor Memorial Park could provide the potential of using a GSHP. Due to the scale of the heat demand, location-agnostic ASHPs are likely to also be required. Another site identified is a car park site on Ashlea Road which could potentially house a new energy centre, though for this report it has not been considered.

Table 4 and Table 5 summarise the key heat sources and potential energy centre locations identified for this IZO. These are shown in Figure 6 in Section 3.1.3 above and on Map C in Appendix 1.

Heat source	Capacity (kWp)	Temperature (°C)	Potential energy centre location	
GSHP	3,500 (supplied capacity)	50-60°C	E1	
ASHP	700 (full opportunity capacity)	10-20°C	E1	

### Table 4: Northallerton Town Centre - Key Heat Source Opportunities for the IZO

### Table 5: Northallerton Town Centre - Potential IZO Energy Centre Locations

EC ref number	Site type	Size (m²)	Ownership	Heat source
E1	Existing	Unknown	NHS	ASHP & GSHP

## 3.1.6) Northallerton Town Centre - IZO Heat Distribution

The approach to developing the heat network route considered economic viability, investment scale and returns, decarbonisation impact and deliverability. These criteria were applied in a standardised manner across all opportunities identified in the Pilot programme and therefore may not reflect detailed designs or proposed routes identified in more detailed feasibility work. Routing within the site boundary of a building or campus may not have been included if insufficient information was available. The IZO routing was developed solely around buildings which could be required to connect and did not consider potential voluntary connections.

The purpose of the concept heat network route is to define the scale, potential routing and identified associated constraints within the zone. Further work will be required to undertake a more detailed route assessment to take account of the buried utilities, building connections and other local strategic and local planning considerations. Table 6 shows the network statistics for

the IZO including the network length and associated cost. Please see Appendix 5 for related methodology statements and assumptions.

The proposed energy centre is located near to the Friarage Hospital. As can be seen in Figure 6, from the energy centre the heat distribution pipework runs south connecting additional buildings, mainly non-domestic buildings on the high street, which are identified as potentially required to connect. The proposed route does not cross the nearby railway lines, however development will need to account for potential disruption to main thoroughfares through the commercial centre of Northallerton. The total length of the network route is 4km, which is estimated to have a capital cost of about £10m.

## Table 6: Northallerton Town Centre - Indicative Heat Network Statistics for the IZO

IZO description	Network length (km)	Network cost (£m)	
Northallerton Town Centre	5	10	

## 3.1.7) Northallerton Town Centre – IZO Key Constraints and Mitigations

**[C1] Road crossing**: The A167 is a key road starting in North Yorkshire, running through Northallerton Town Centre and down to Tyne and Wear. The proposed pipework route overlaps the road at two points (a 200m and a 350m stretch). A feasibility study would be required to ascertain the potential impacts to minimise disruption and provide confirmation of the proposed route and would likely require engagement with the relevant highway authority.

# 4) Other Heat Network Zones

This section describes the 'Other' potential heat network zones that were identified in Northallerton. These are areas where heat networks were deemed to offer the lowest carbon route to decarbonising heat but are often much smaller or discrete in nature than the 'Strategic' heat network zones identified. The approach taken in the Pilot programme did not apply a minimum threshold for zone identification and therefore future work will need to consider factors such as size and aggregation to ensure efficient and effective delivery of heat networks in the area.

Figure 8 illustrates the total annual heat demand, and the proportion of which is associated with buildings that may be required to connect within each zone. A map of all zones can be found in Figure 4.



Figure 8: Total Heat Demand and Proportion Potentially Required to Connect in Other HNZs

**NRTH\_003:** This HNZ is situated to the northwest of the town centre, and comprises the Standard Way Industrial Estate, a combination of light industrial and commercial buildings. The area includes both warehouse style commercial buildings and light industrial buildings. Heat supply options are limited but there is open space for location agnostic technologies such as heat pumps.

**NRTH\_002:** This HNZ comprises Northallerton School & Sixth Form College (Brompton Road) buildings, Northallerton leisure centre, and NYC buildings. It is a zone that also has soft-dig trenching options and few constraints, other than a single road crossing. As in NRTH\_003, heat supply options are limited but there is open space for more location agnostic technologies such as heat pumps. It may be possible to combine this with the Northallerton Town Centre zone.

# Appendix 1 – Maps and Legends

This section provides guidance on interpreting the icons and legends used throughout this report and Maps A-G that follow:

Legend / icon	Relevant map(s)	What this represents on the map	Comments on interpretation
0.00	Report maps	Study boundary	Extends 1km beyond Local Authority boundary to includ
	Report maps	Local Authority boundary	
C 13	Report maps	Other Local Authority boundary	
	Report maps	Heat network zones	This includes both Strategic HNZs and Other HNZs.
	Report maps	Other heat network zones	Smaller or discrete heat network zone opportunities
	Report maps	New developments	New development within heat network zones and IZOs t
Gates Hill	Report maps	Heat network zone name / reference number	'Strategic' zones are named; 'Other' zones are represen
	Report maps	Buildings potentially required to connect	Buildings that could be required to connect (as describe
E13	Report maps	Campuses	Multiple buildings owned and operated by the same orga
	Report maps	Initial Zone Opportunity concept network route	Conceptual heat network pipe routes between buildings
	Report maps	Existing and Planned Heat Networks	Known existing or planned heat network pipe routes as
	Report maps	Potential energy centre - IZO	Potential energy centre location for an IZO (see section
	Report maps	Existing/planned energy centre - Communal HNs	'Communal' energy centres are those operated within a
	Report maps	Existing/planned energy centre - District HNs	'District' energy centres supply multiple buildings across
Appendix 1: A – Typology map			
	Appendix 1: Map A	Dense City Centre	Locally recognised as the City or Town centre, where bu
	Appendix 1: Map A	City Centre Fringe	Around the City or Town Centre or at its outskirts, where
	Appendix 1: Map A	Mixed Use District	A variety of building typologies, with no single typology p
	Appendix 1: Map A	Social Housing	Public, private and third sector social housing
	Appendix 1: Map A	Campus (health / education)	Buildings that are owned and operated together (e.g. Ur

le	cross	boundary	opportunities

that will still be in construction post-2025

nted by a reference number

ed in the HNZ Consultation 2023)

anisation (e.g. Universities, Hospitals)

that could be required to connect

provided by local stakeholders

3)

single building or across a campus

s multiple sites

uildings development is most dense

both building density reduces

prevailing in the area

niversities, Hospitals)

### Heat Network Zoning Opportunity Report: Northallerton

	Appendix 1: Map A	Commercial / business office	Public & private office space
	Appendix 1: Map A	Industrial areas	Primarily used for manufacturing, engineering, and wareh
Appendix 1: B – Key heat deman	ds		
۲	Appendix 1: Map B	Top 10 Heat Demands	The largest (anchor) heat loads within the Pilot programm
	Appendix 1: Map B	Local Authority	Buildings owned or operated by the Local Authority
	Appendix 1: Map B	Other public sector	Other buildings owned or operated by the public sector (e
	Appendix 1: Map B	Residential with existing communal heating	Residential buildings with existing communal heating syst
	Appendix 1: Map B	Non-domestic private	Non-domestic private buildings (e.g. commercial, offices)
	Appendix 1: Map B	Industrial	Mixed industrial sites (e.g. light or heavy industry, manufa
O 400 - 600	Appendix 1: Map B	Building heat demand (MWh/yr)	Circle size increases with size of heat demand
Appendix 1: C – Key Heat Source	es and Potential Energy	/ Centres	
	Appendix 1: Map C	EfW plant	Point heat sources have known or likely points of heat o
	Appendix 1: Map C	Industrial Waste Heat	Mine water and water source 'points' indicate potential ab
	Appendix 1: Map C	Mine water	
$\bigtriangleup$	Appendix 1: Map C	Other Waste Heat	Other waste heat sources include sewers, electrical subst for more detail on heat source capacities, where known.
	Appendix 1: Map C	Water Source	
	Appendix 1: Map C	Waste Water Treatment	On the City-level Map C only, the heat waste symbol is siz
	Appendix 1: Map C	Deep geothermal or mine water heat	Area heat sources differ from point-heat sources in that t
C13	Appendix 1: Map C	Ground source	resource is not yet determined
013	Appendix 1: Map C	Water source	
Appendix 1: D – Existing and pla	nned heat networks		
$\bigcirc$	Appendix 1: Map D	Existing and planned heat networks	At this scale the route of an existing HN cannot be display
Appendix 1: E – Physical constra	aints		
	Appendix 1: Map E	Key constraints	Key heat network routing constraints as described in sect

### ehousing

me study area (see Section 3)

(e.g. hospital, universities, Govt. estates)

stems installed

facturing, warehouses and distribution)

offtake/abstraction

abstraction points.

ostations and other sources of heat. See section 3

sized according to its scale in GWh/yr

t the exact location for extracting heat from the

ayed, so an area outline is used instead

ction 3

# A.Northallerton Typology Map



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# B. Key Heat Demands



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## Table 7: Heat Demand split further by Building Categories across all Initial Zone Opportunities identified in Strategic HNZs in the Study Area

Building category	Number of Buildings Required to Connect in this category	Annual Required of buildings required to connect across IZOs (MWh)		Northaller building cate	ton heat demand egory summed fo	split by r all HNZs	
Domestic	0	-	100%	)	674	112	
Education (schools & higher education)	6	1,502	90%		1,502	190	■ In
Entertainment	0	-	80%	)	3,055		- 14
Hospitals and residential / nursing homes	2	10,299	70%		4.822		■ Pi
Hotels	1	190	demar demar				
Industrial buildings	1	112	total	)			
Offices	15	4,822	5 % 40%				■R
Public buildings	2	674	30%	)			<b>0</b>
Retail	12	3,055	20%	)	10,299		■ H
Sports and recreation	0	-	10%				
New Developments	0	-	1070				
Totals	39	20,655	0%		Heat demand (MWhs)		

Note In Northallerton there are three HNZs with a total of one IZO identified across them. The table and graph above summarise and categorise the heat demand for this IZO.

- dustrial buildings
- otels
- ublic buildings
- ducation (schools & higher education)
- etail
- ffices
- ospitals and residential / nursing home

# C. Key Heat Sources and Potential Energy Centres



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# D. Existing and Planned Heat Networks

No relevant information available

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# E. Physical Constraints



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# F. Off-Gas Grid Areas in Northallerton



# Appendix 2: Data Room Resources

Throughout the delivery of the Pilot programme, information resources have been compiled for future use in relation to the development of heat network zones.

These resources will remain restricted to DESNZ and the local authority. This is to ensure that the department remains within its Data Privacy Notice as shared with stakeholders providing the information. GIS outputs are not being published alongside the report as they are subject to change.

Information resource	Description of resource
Stakeholder Directory	A directory listing key stakeholders identified and approached during the Pilot programme, including organisation name, address, or website, contact names, work title and contact details.
Stakeholder meetings log and records	A log of key meetings held and related meeting records.
Datasets Directory	A list of datasets / reports shared by stakeholders cross-referencing who provided the item from the stakeholder directory and a description of the dataset.
Geospatial packages and related geo-coded datasets	Geo-coded datasets and descriptions related to maps produced in this report.

### **Table 8: Pilot Programme Standardised Information Resources**

### **Table 9: Pilot Programme Study-Area-Specific Information Resources**

Information resource	Description of resource
No relevant information available.	N/A

This publication is available from: <u>https://www.gov.uk/government/collections/heat-networks</u>

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