

# Strood

## Heat Network Zoning

## Zone Opportunity Report



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#### Acknowledgements





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## Contents

| Executive Summary                                | 4  |
|--|----|
| 1) Introduction                                  | 6  |
| Heat Network Zoning Pilot Methodology            | 7  |
| Heat Network Zone Identification                 | 7  |
| Initial Zone Opportunities                       | 8  |
| Study Scope                                      | 9  |
| 2) Strood Heat Networks Context                  | 10 |
| 2.1) Strood Overview                             | 10 |
| 2.2) Strood Net Zero Targets and Commitments     | 10 |
| 2.3) Delivering Heat Networks in Strood          | 11 |
| 2.4) Strood Heat Network Zones                   | 12 |
| 3) Strategic Heat Network Zones                  | 14 |
| Strategic HNZs in Strood                         | 14 |
| 3.1) Strood Town Centre                          | 16 |
| 4) Other Heat Network Zones                      | 22 |
| Appendix 1 – Maps and Legends                    | 23 |
| A. Strood Typology Map                           | 25 |
| B. Key Heat Demands                              | 26 |
| C. Key Heat Sources and Potential Energy Centres | 28 |
| D. Existing and Planned Heat Networks            | 29 |
| E. Physical Constraints                          | 30 |
| F. Off-Gas Grid Areas in Strood                  | 31 |
| Appendix 2: Data Room Resources                  | 32 |

## **Executive Summary**



**About Strood:** Strood is a small town in Kent, South-East England, with a population of around 40,000. It has a mix of commercial, industrial, retail, and residential properties.



**Local Energy Policy:** Medway Council declared a Climate Change Emergency in April 2019 and aims to achieve net zero by 2050. The Council hopes to significantly reduce carbon emissions by 2030.



**Existing heat networks:** Strood has one communal heat network serving social housing. No district heat networks currently exist in Strood.



**Zones identified:** Two potential heat network zones have been identified in Strood. The overall heat demand of all buildings potentially required to connect within zones is 36GWh/yr.



**Strategic heat network zones:** One strategic heat network zone has been identified in Strood Town Centre with an overall heat demand of 34GWh/yr from buildings potentially required to connect.



**Key heat demands:** The initial zone opportunity has a heat demand of 29GWh/yr. Key anchor loads include Strood Sports Centre, the Strood Waterfront development and Nuffield Health Club.



**Key heat sources:** The most viable heat sources are water source heat pumps, recovering heat from the River Medway, and waste heat recovery from the Whitewall Creek Wastewater Treatment Works.



**Estimated CapEx:** The high-level estimate of capital expenditure to network all buildings required to connect in all zones is approximately £43m, of which the initial zone opportunities amount to approximately £34m.



**Other heat network zones:** One other potential zone was identified covering Strood Academy, Bligh Primary School, and the Bligh Children's Centre.



**Carbon savings:** The estimated carbon savings for the Strood Town Centre initial zone opportunity are approximately 5ktCO<sub>2e</sub>/yr.





## 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 Strood 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 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) Strood Heat Networks Context

## 2.1) Strood Overview

Strood is a small town within the unitary authority of Medway in Kent, South-East England. It falls within the parliamentary constituency of Rochester and Strood and is governed by Medway Council (MC). It is situated on the north bank of the River Medway which flows into the Thames Estuary and into the North Sea. It is a critical crossing point to Rochester and Chatham on the south side of the River Medway. The area of study covers a land area of 30 square kilometres. The town has a population expected to be in the region of 40,000<sup>3</sup>. The urban environment is a mix of commercial/industrial, retail, and residential property. The social housing within the town is largely owned by the private sector.

There are a large number of commercial and industrial sites in Strood. Notably, there is a large retail/leisure park in East Strood and a very large industrial estate, Medway City Estate, situated on a peninsula in South-West Strood. There are significant plans for regeneration, focused on the town centre.

There is one communal heat network registered under the Heat Network Metering and Billing Regulation within Strood. This is understood to serve predominantly social housing. Such schemes could potentially be required to connect to a district heat network if it falls within a HNZ under proposed zoning legislation. No district heat networks currently exist in Strood.

## 2.2) Strood Net Zero Targets and Commitments

In April 2019, MC declared a Climate Change Emergency and established a Climate Change Action Plan which was last revised in 2022. This emphasises MC's dedication to environmental initiatives and sets a net zero target for 2050. The Council hopes to achieve a significant reduction in carbon emissions by 2030<sup>4</sup>.

With respect to heat networks, actions proposed within the Action Plan include for MC to seek funding to enable the implementation of a Detailed Project Development stage of works for a "River Source Heat Network". Work on this has been subsequently commissioned which principally focuses on opportunities outside of the study area.

<sup>&</sup>lt;sup>3</sup> The study area does not map to ward boundaries, hence this estimate is inferred from 2022 population data for the three Strood Wards. Please see Kent County Council Kent Analytics (2024). Available at: https://www.kent.gov.uk/\_\_data/assets/pdf\_file/0018/8145/Mid-year-population-estimates-ward-level-

population.pdf

<sup>&</sup>lt;sup>4</sup> Medway Council Climate Change Action Plan Refresh (2022). Available at:

https://www.medway.gov.uk/downloads/file/7657/climate\_change\_action\_plan\_refresh\_2022

Figure 3 summarises key dates in the Council's plans for decarbonisation and demonstrates their progress towards decarbonisation targets announced. Delivery of a town-scale heat network could make a significant contribution to the borough's net zero ambitions.





### 2.3) Delivering Heat Networks in Strood

There are no operational district heat networks in Strood. However, in 2021 a heat mapping and master planning study was completed for MC which examined the whole local authority area. MC are now conducting feasibility assessments and other more detailed heat network studies in the Chatham and the Hoo regeneration area.

MC launched a consultation in July 2024 regarding bringing forward a revised Local Plan (Medway Local Plan 2041) to replace the current version (2003). Section 13.3 of the draft policy is supportive towards the implementation of heat network infrastructure and/or setting development standards that would encourage heat network connections. This includes policy T41 which sets out that development proposals of 10 dwellings or more or 1000sqm will follow a heat network provision hierarchy unless demonstrated that it is not viable. It also references key anchors loads such as the Civic Centre and Strood Waterfront sites in Strood and other sites in the Hoo Peninsula (the latter being outside the geographic scope of this study)<sup>5</sup>.

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

<sup>&</sup>lt;sup>5</sup> https://www.medway.gov.uk/downloads/file/8778/local\_plan\_regulation\_18\_consultation\_document

### 2.4) Strood Heat Network Zones

A total of two potential HNZs were identified in Strood, with one considered a Strategic HNZ. Figure 4, below, shows the study area boundary as well as the boundaries of the HNZs identified within Strood. The Strategic HNZ has been allocated a meaningful name agreed as relevant from a local perspective whilst the Other HNZ has a reference number allocated instead. In both cases, these names/references are shown on the map.

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

- A: 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 heat networks, planned extensions, and planned networks at an advanced development stage.
- E: Key Constraints Map shows key topographical constraints identified.
- F: Off-gas Grid Areas presents areas with differing levels of properties off the gas grid within the study area.

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



## 3) Strategic Heat Network Zones

### Strategic HNZs in Strood

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 Strood. Please refer to Appendix 4 for more detail.

| Scope   | Annual heat demand (GWh/yr) |
|---|-----------------------------|
| All buildings required to connect in all zones <sup>6</sup> | 36                          |
| All buildings required to connect in strategic zones        | 34                          |
| All buildings connected to the IZOs                         | 29                          |

#### 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, alongside the key potential heat sources and the proportion of buildings that may be potentially required to connect.

**Strood Town Centre** is a Strategic HNZ which covers an area along the northern bank of the River Medway, with Stood town centre at its centre, a large commercial/leisure retail area to the east and a significant industrial estate to the west. Within the zone, there are major plans for development and regeneration of both residential and non-residential properties. For more information see Section 3.1.

<sup>&</sup>lt;sup>6</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.

![](_page_14_Figure_1.jpeg)

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

### 3.1) Strood Town Centre

#### 3.1.1) Strood Town Centre – HNZ Summary

Strood Town Centre is the largest HNZ identified in Strood which includes the town centre and up to 50GWh/yr of heat demand, of which approximately two-thirds could be required to connect. The zone extends from the south-west corner of Strood (the Strood Retail Park) through to the north-east urban fringe of the town where a significant commercial/industrial area is located (Medway City Estate). The zone is bounded by the River Medway to the south and a largely rural area to the north. Potential consumers in the area are primarily industrial/commercial properties and mixed-use new development sites. The central area of the town centre presents the highest density of potential connections.

There are several potential low carbon heat sources identified in this zone. The largest opportunities include heat recovery from the River Medway and Whitewall Creek Wastewater Treatment Works (WWTW). Smaller opportunities include waste heat recovery from sewers, a power substation and property-level heat recovery, e.g. from supermarket cooling systems. The various new development sites offer opportunities for possible energy centre locations.

#### 3.1.2) Strood Town Centre - Existing Heat Networks

There are currently no operational, planned or proposed heat networks in this HNZ.

#### 3.1.3) Strood Town Centre - Initial Zone Opportunities

A single IZO was identified in the Strood Town Centre zone. Potential routing<sup>7</sup> is shown in Figure 6 and summary statistics provided in Table 2.

| CapEx  | Heat      | Network | CO <sub>2</sub> e<br>savings | Linear Heat<br>Density | Heat Sources      |
|--------|-----------|---------|------------------------------|------------------------|-------------------|
| ~ £50m | ~25GWh/yr | 10km    | 5ktCO <sub>2e</sub> /yr      | 3.9MWh/m               | River WSHP & ASHP |

|                 |                 |           |            |             |        | -                         |
|-----------------|-----------------|-----------|------------|-------------|--------|---------------------------|
| Table 9. Chrose | d Taura Cantra  |           | Ctatiation | for Initial | Zama O | o no o refu un lifico o 8 |
| Table Z: Stroot | a Town Centre - | - Summarv | Statistics | for initial | Zone U | obortunities*             |
|                 |                 |           |            |             |        | pp                        |

The IZO offers an opportunity to connect to ~25GWh/yr of heat demand and expand as new developments are built out. Key consumers include Strood Sports Centre, major developments in the Frindsbury area, the Town Centre and area around Medway Valley Leisure Park. The relative proximity (and therefore heat density) of larger consumers is a key driver for the IZO.

The preferred heat source is a water source heat pump (WSHP), recovering heat from the River Medway. It is considered that this could operate alongside a centralised air source heat pump (ASHP) to increase supply resilience.

<sup>&</sup>lt;sup>7</sup> Routes can be expected to change as a better understanding of local constraints is developed through design.

<sup>&</sup>lt;sup>8</sup> Please see Appendix 3 – Glossary, "Specific definitions" of the main report for definitions related to this table.

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

![](_page_16_Figure_2.jpeg)

| Strood  |  |  |  |
|---|--|--|--|
| zone: Town Centre   |  |  |  |
| Boundaries<br>Study Boundary<br>Local Authority Boundary<br>Other Local Authority Boundary<br>Heat Network Zone<br>Other Heat Network Zones   |  |  |  |
| Network<br>— Initial Zone Opportunity Network<br>— Existing and Planned Heat Network  |  |  |  |
| Heat Source<br>△ Area Source<br>▲ EfW   |  |  |  |
| <ul> <li>Industrial Waste Heat</li> <li>Minewater</li> <li>Other Waste Heat</li> <li>Water Source</li> <li>WWT Plant</li> </ul>   |  |  |  |
| <ul> <li>Energy Centres</li> <li>Existing and Planned - Communal</li> <li>Existing and Planned - District</li> <li>Potential IZO site</li> </ul>  |  |  |  |
| Key Area Heat Sources<br>Deep Geothermal<br>Ground Source<br>Water Source   |  |  |  |
| Buildings<br>Buildings Required to Connect<br>Campus<br>New Development   |  |  |  |
|   |  |  |  |
| o 0,3 0,6<br>Kilometres   |  |  |  |
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### 3.1.4) Strood 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 identified connects to a mix of large building typologies, with a total heat demand of 25GWh/yr. It includes buildings within Strood town centre with a range of retail and commercial properties, an industrial and commercial area which includes a retail/leisure park, new developments and existing public sector properties. The categorisation of heat demand is shown in Figure 7.

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

![](_page_17_Figure_6.jpeg)

Further details of the key heat demands for buildings potentially required to connect are provided in Table 3. It illustrates the significance of the multiple development areas which account for 35% of the heat demand. The remaining demand is characterised by typical town centre building typologies; commercial, retail and leisure accommodation.

| Building name                             | Building<br>category                | Number of<br>connections | Annual heat<br>demand (MWh) | Data source        |
|---|-------------------------------------|--------------------------|-----------------------------|--------------------|
| Strood Sports<br>Centre                   | Public Building                     | 1                        | 2,300                       | Stakeholder        |
| Diggerland<br>development                 | Non-domestic                        | 1                        | 2,200                       | Pilot Methodology  |
| Strood<br>Waterfront<br>development       | New<br>development<br>(Residential) | 590 <sup>10</sup>        | 2,065                       | Pilot Methodology  |
| Nuffield Health<br>Club                   | Non-domestic                        | 1                        | 2,040                       | Benchmark<br>(NZM) |
| Hobourn House                             | Non-domestic                        | 1                        | 1,900                       | Benchmark<br>(NZM) |
| Premier Inn                               | Non-domestic                        | 1                        | 1,800                       | Benchmark<br>(NZM) |
| Manor Farm<br>development                 | New<br>development<br>(Residential) | 182 <sup>10</sup>        | 1,700                       | Pilot Methodology  |
| Buzz Bingo                                | Non-domestic                        | 1                        | 1,200                       | Benchmark<br>(NZM) |
| Priory Road<br>development                | New<br>development                  | 1                        | 1,200                       | Pilot Methodology  |
| Pit 2 (aka<br>Cuxton Road)<br>development | New<br>development                  | 1                        | 1,100                       | Pilot Methodology  |

#### 3.1.5) Strood Town Centre – IZO Heat Sources

Low carbon heat sources have been identified within or close to the HNZ. Table 4 and Table 5 summarise the key heat sources and potential energy centre locations identified. These are also shown in Figure 6 in Section 3.1.3 and on Map C in Appendix 1.

The most viable heat source is considered to be heat recovery from the River Medway. This offers significant capacity for a WSHP solution and there are potential abstraction points along the southern boundary of the zone. Other options include waste heat from the Southern Water Whitewall Creek WWTW and from a UKPN power substation, open-loop ground source heat

<sup>&</sup>lt;sup>9</sup> Please refer to Appendix 3 for definitions related to building categories in this table.

<sup>&</sup>lt;sup>10</sup> Relates to number of 'units' identified in site allocation data. The number of connections may be lower.

pumps (GSHP) using aquifer water, and waste heat from sewers and from supermarket chiller systems. Each of the above options would need to be further investigated. A centralised ASHP is considered as a fall-back option.

| Heat source type        | Capacity (kWp) <sup>11</sup> | Temperature<br>(°C) | Potential energy centre location |
|-------------------------|------------------------------|---------------------|----------------------------------|
| WSHP                    | 13,000                       | 13 ºC               | E1                               |
| ASHP                    | 6,800                        | 5-20 °C             | E2, E3, E4                       |
| Waste heat: supermarket | Unknown                      | 10-20 °C            | E2                               |
| GSHP                    | 170 <sup>12</sup>            | 13 °C               | E1, E4                           |
| Waste heat: WWTW        | 2,000                        | 5-10 °C             | E5                               |
| Waste heat: substation  | 120                          | 30-35 °C            | E1                               |

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

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

| EC ref<br>number | Site type   | Size (m²) | Ownership                    | Heat source  |
|------------------|---|-----------|------------------------------|--------------|
| E1               | Private<br>development<br>land                                | 3,000     | Strood Waterfront developer  | WSHP or GSHP |
| E2               | Private<br>development<br>land                                | 3,000     | Strood Waterfront developer  | ASHP         |
| E3               | Council land<br>around existing<br>leisure centre<br>facility | 800       | Council                      | ASHP         |
| E4               | Private<br>development<br>land                                | 3,000     | Diggerland site<br>developer | ASHP or GSHP |

<sup>&</sup>lt;sup>11</sup> Capacity is shown in terms of the full opportunity estimated to be available, rather than supplied, except for the ASHP which is linked with the scale to the IZO identified.

<sup>&</sup>lt;sup>12</sup> Limited by available area and borehole depth

### 3.1.6) Strood 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 routing was developed solely around buildings which could be potentially 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 potentially 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 below, shows the network statistics including the network length and associated cost. Please see Appendix 5 for related methodology statements and assumptions.

The heat network routing seeks to avoid the most dense and busiest shopping streets. For the proposed connections to the new developments, the specific heat network routing would require engagement with the property developers.

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

| IZO description    | Network<br>length (km) | Network<br>cost (£m) |
|--------------------|------------------------|----------------------|
| Strood Town Centre | 10                     | 20                   |

#### 3.1.7) Strood Town Centre - IZO Key Constraints and Mitigations

**[C1] Rail line**: A regional rail line crosses the zone from the east to its centre, where it then diverts south to cross the River Medway on a bridge parallel to the historic Rochester (road) Bridge. The IZO requires crossing the rail line in at least three locations with tunnels and bridges selected at preferred points. This will require further assessment with engagement with Network Rail and other relevant stakeholders.

## 4) Other Heat Network Zones

This section describes the 'Other' potential heat network zone that was identified in Strood. 'Other' HNZs 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 potentially required to connect within the zone. A map of all zones can be found in Figure 4.

![](_page_21_Figure_4.jpeg)

![](_page_21_Figure_5.jpeg)

This small, discrete HNZ lies north-west of the Strood Town Centre Strategic HNZ. The HNZ includes various education campuses including Strood Academy and Bligh Primary School, and the Bligh Children's Centre. Buildings potentially required to connect have a total heat demand of 1.7GWh/yr in this zone and this equates to around 90% of the total heat demand identified within the 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                       |   |
| 513                          | 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    |
| 525                          | 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: Strood

|                                 | Appendix 1: Map A        | Commercial / business office               | Public & private office space   |  |
|---------------------------------|--------------------------|--|---|--|
|                                 | Appendix 1: Map A        | Industrial areas                           | Primarily used for manufacturing, engineering, and ware   |  |
| Appendix 1: B – Key heat dema   | nds                      |  | 1   |  |
| ۲                               | Appendix 1: Map B        | Top 10 Heat Demands                        | The largest (anchor) heat loads within the Pilot program  |  |
|                                 | 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 (  |  |
|                                 | Appendix 1: Map B        | Residential with existing communal heating | Residential buildings with existing communal heating sys  |  |
|                                 | 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, manuf   |  |
| 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 Sour   | ces and Potential Energy | y Centres                                  |   |  |
|                                 | Appendix 1: Map C        | EfW plant                                  | Point heat sources have known or likely points of heat of   |  |
|                                 | Appendix 1: Map C        | Industrial Waste Heat                      | Mine water and water source 'points' indicate potential a   |  |
|                                 | Appendix 1: Map C        | Mine water                                 |   |  |
| $\triangle$                     | Appendix 1: Map C        | Other Waste Heat                           | Other waste heat sources include sewers, electrical subs<br>for more detail on heat source capacities, where known. |  |
|                                 | Appendix 1: Map C        | Water Source                               |   |  |
|                                 | Appendix 1: Map C        | Waste Water Treatment                      | On Map C only, the heat waste symbol is sized according   |  |
|                                 | Appendix 1: Map C        | Deep geothermal or mine water heat         | Area heat sources differ from point-heat sources in that  |  |
| C13                             | Appendix 1: Map C        | Ground source                              | - resource is not yet determined  |  |
| 013                             | Appendix 1: Map C        | Water source                               |   |  |
| Appendix 1: D – Existing and pl | anned heat networks      |  | 1   |  |
| $\bigcirc$                      | Appendix 1: Map D        | Existing and planned heat networks         | At this scale the route of an existing heat network cannot  |  |
| Appendix 1: E – Physical const  | raints                   |  |   |  |
|                                 | Appendix 1: Map E        | Key constraints                            | Key heat network routing constraints as described in sec  |  |

#### housing

me study area (see Section 3)

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

stems installed

)

facturing, warehouses and distribution)

offtake/abstraction

abstraction points.

stations and other sources of heat. See section 3

ng to its scale in GWh/yr

t the exact location for extracting heat from the

t be displayed, so an area outline is used instead

ction 3

## A.Strood Typology Map

![](_page_24_Figure_2.jpeg)

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![](_page_24_Figure_4.jpeg)

## B. Key Heat Demands

![](_page_25_Figure_2.jpeg)

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| Table 7: Heat Demand split further | by Building Categories acros | s all Initial Zone Opportunities identifi | ed in Strategic HNZs in the Study Area |
|------------------------------------|------------------------------|---|--|
|------------------------------------|------------------------------|---|--|

| Building category                       | Number of Buildings<br>Required to Connect in<br>this category | Annual Heat Demand of<br>Buildings Required to<br>Connect across IZOs (MWh) |
|---|--|---|
| Industrial buildings                    | 16   | 4,123   |
| Hospitals and residential/nursing homes | -  | 0   |
| Domestic                                | -  | 0   |
| Retail                                  | 8  | 2,450   |
| Education (schools & higher education)  | -  | 0   |
| Sports and recreation                   | 6  | 6,277   |
| Public buildings                        | 1  | 1,900   |
| Entertainment                           | 1  | 622   |
| Offices                                 | 3  | 1,400   |
| Hotels                                  | 1  | 1,788   |
| New Developments                        |  | 9,951   |
| Totals                                  | 36   | 28,511  |

![](_page_26_Figure_3.jpeg)

**Note:** In Strood there are two HNZs with a single IZO identified across them. The table and graph above summarise the heat demand for buildings potentially required to connect to this IZO.

## C. Key Heat Sources and Potential Energy Centres

![](_page_27_Figure_2.jpeg)

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## D. Existing and Planned Heat Networks

No relevant information available.

29

## E. Physical Constraints

![](_page_29_Figure_2.jpeg)

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### F. Off-Gas Grid Areas in Strood

![](_page_30_Figure_2.jpeg)

## 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<br>during the Pilot programme, including organisation name, address,<br>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<br>who provided the item from the stakeholder directory and a<br>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  |
|---|--|
| Medway Climate Change<br>Action Plan, 2021                                  | Drivers, targets and action for climate change.  |
| Medway Council – District<br>Energy Mapping &<br>Masterplanning Study, 2021 | Heat mapping and initial heat network investigation of parts of borough, including Strood. |
| Medway Local Plan 2041  | Local Plan version available at time of investigation                                      |

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

If you need a version of this document in a more accessible format, please email <u>alt.formats@energysecurity.gov.uk</u>. Please tell us what format you need. It will help us if you say what assistive technology you use.