

Cambridge Local Area Report



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Document title	Authors	Checker	Approver	Date	Version	Purpose
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Cambridge Local Area Report	Fergus Ross, Lesley Sibanda	Nick Jimenez	Luke Strickland	13.02.26	B	Final Draft
Cambridge Local Area Report	Fergus Ross, Lesley Sibanda	Nick Jimenez	Luke Strickland	03.03.26	C	Final Draft

Readers should note that the development of the Cambridgeshire Local Area Energy Plan (LAEP) began before work commenced on the Cambridgeshire and Peterborough Local Growth Plan (LGP). Both this report and the Local Growth Plan both refer to doubling GVA by 2050 as the Core Growth scenario. However, the Technical Report and in each of the District Reports this is referred to as Higher Growth scenario. This discrepancy is because the terminology used to describe the growth ambitions in the LGP had not been finalised at the time of writing the Technical Report and District Reports.

Introduction

Drawing on the Cambridgeshire Local Area Energy Plan, this report provides a district-level “readout” for the Cambridge City area, identifying priorities and actions to deliver a sustainable, low-carbon and resilient energy system. It supports both current and future growth by setting out the scale of change and investment needed.

The summary provides an outline of:

- **Local context.**
- Summary analysis of the **scale of change** required across key interventions across buildings, transport and energy generation.
- **Estimated costs** of interventions required to deliver the transition.

Important Note:

This report does not replace the Cambridgeshire LAEP Technical Report. The two documents are designed to work together: the technical report provides detailed analysis and evidence, while this local area report highlights the scale of change and investment required across the district area. Together, these documents form the strategic and technical foundation for planning and delivering the energy infrastructure needed to enable sustainable growth and the wider energy system transition across Cambridgeshire. They ensure the transition is **technically robust, socially inclusive, economically viable and underpinned by energy security**, delivering social benefits and reducing inequalities across communities.

This report sets out actionable priorities and investment needs for the district. It should be read alongside the main technical report, which includes:

- Detailed modelling and analysis underpinning the LAEP.
- Key assumptions on growth, modelling and calculation methodology.
- Comprehensive assessment of intervention areas, including energy hotspots, building fabric upgrades, heat network opportunities, transport requirements and industrial fuel switching.
- Cost considerations and barriers to growth, with guidance on proactive infrastructure investment.
- Policy and financing challenges, including potential funding responsibilities to support decarbonisation

What is the Cambridgeshire Local Area Energy Plan (LAEP)?

The **LAEP is a strategic framework designed to guide Cambridgeshire’s transition towards a more sustainable, low carbon and resilient energy system**. It requires collaboration among local authorities, energy providers, businesses, and communities to ensure the right infrastructure is in the right places to deliver local ambitions.

It sets out **locally tailored interventions** across buildings, transport, industry, and energy generation, integrating projected growth in housing, employment, and infrastructure to align decarbonisation with development. The plan **supports both existing communities and future growth** while reinforcing long-term sustainability and energy security. By aligning national targets with local priorities, it ensures the transition is technically robust, socially inclusive, economically viable, and underpinned by a secure energy supply.

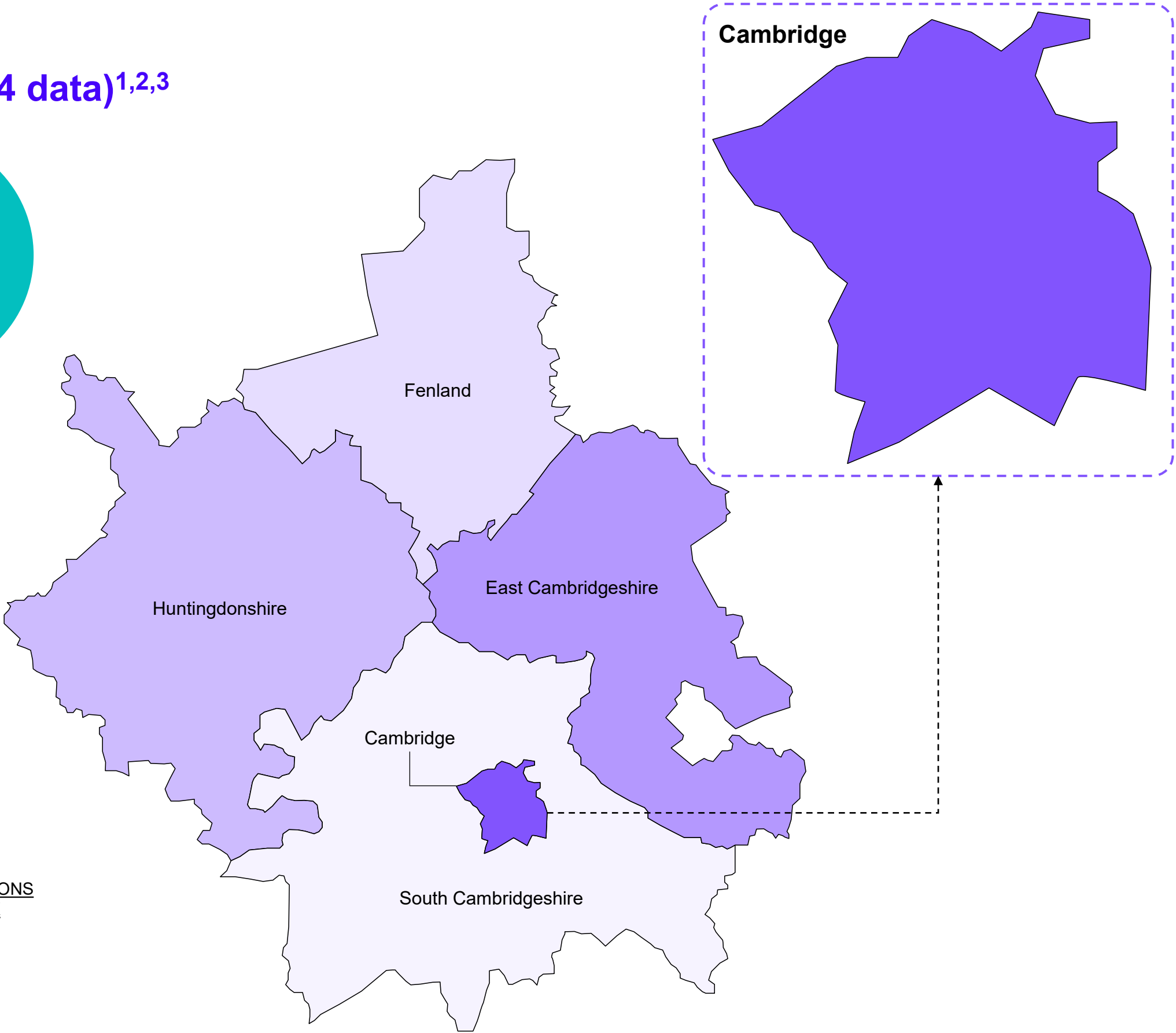
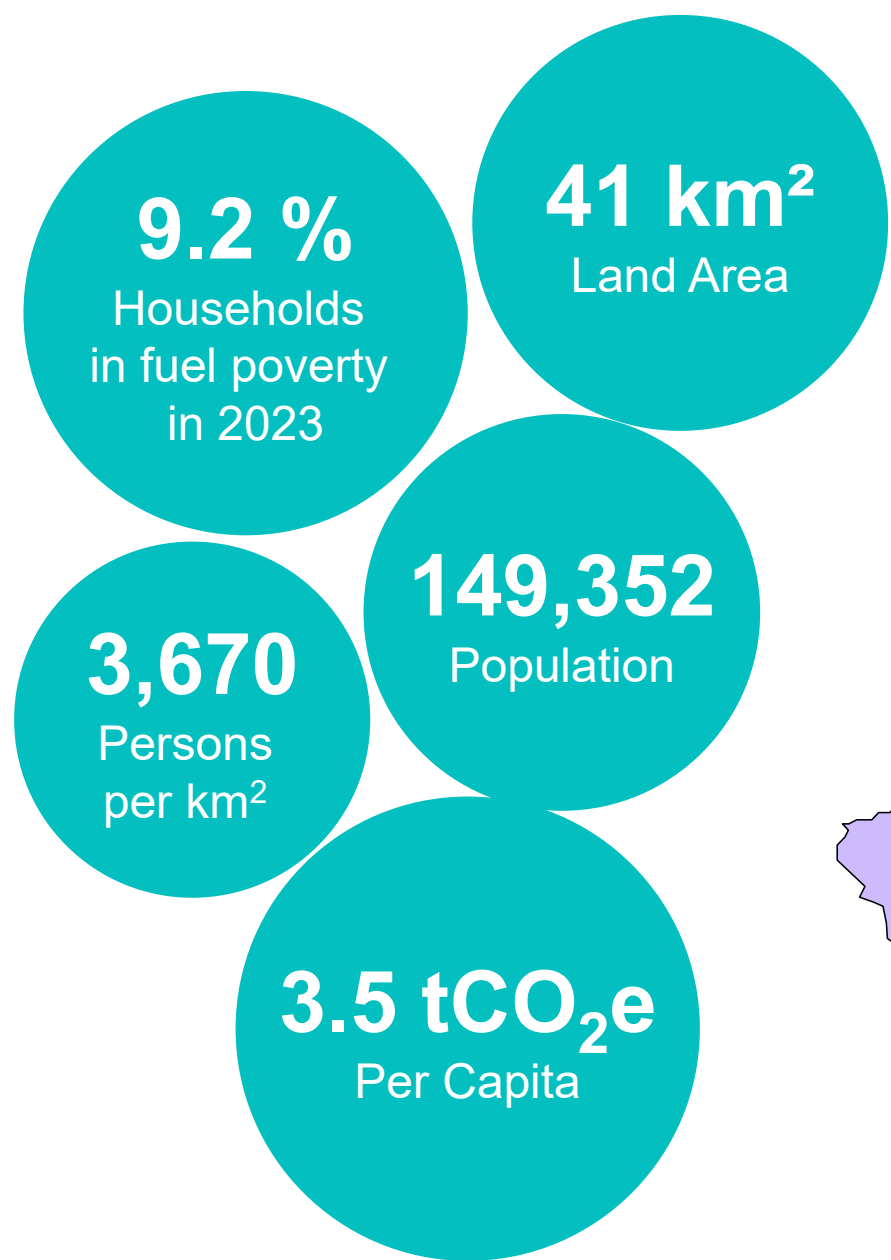


Purpose and Strategic Objectives of the LAEP

1. Develop a strategic understanding of the energy infrastructure required to support planned and future growth, and provide the evidence needed to make a compelling case for proactive investment.
2. Support achievement of a clean energy transition by 2045 while ensuring a secure, reliable, and resilient energy supply.
3. Provide robust, locally relevant data on future energy needs to inform electricity network operators and planners (including UK Power Networks and National Energy System Operator), Local Plans, and wider spatial planning frameworks.
4. Ensure the benefits of the clean energy transition are realised locally, reducing inequalities and delivering social and economic benefits for communities.
5. Identify policy and financing barriers and propose practical, actionable solutions to overcome them.

Cambridge Local Context and Baseline

Area Demographics (2024 data)^{1,2,3}



Baseline statistics (2023)



570 heat pumps installed in domestic buildings



4,700 electric resistive installations in domestic buildings



1,100 heat network domestic connections



10 heat pumps installed in non-domestic buildings



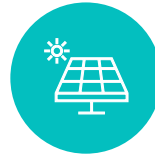
100 heat network non-domestic building connections



340 publicly accessible chargers



3,600 electric vehicles



11 MW renewable generation capacity



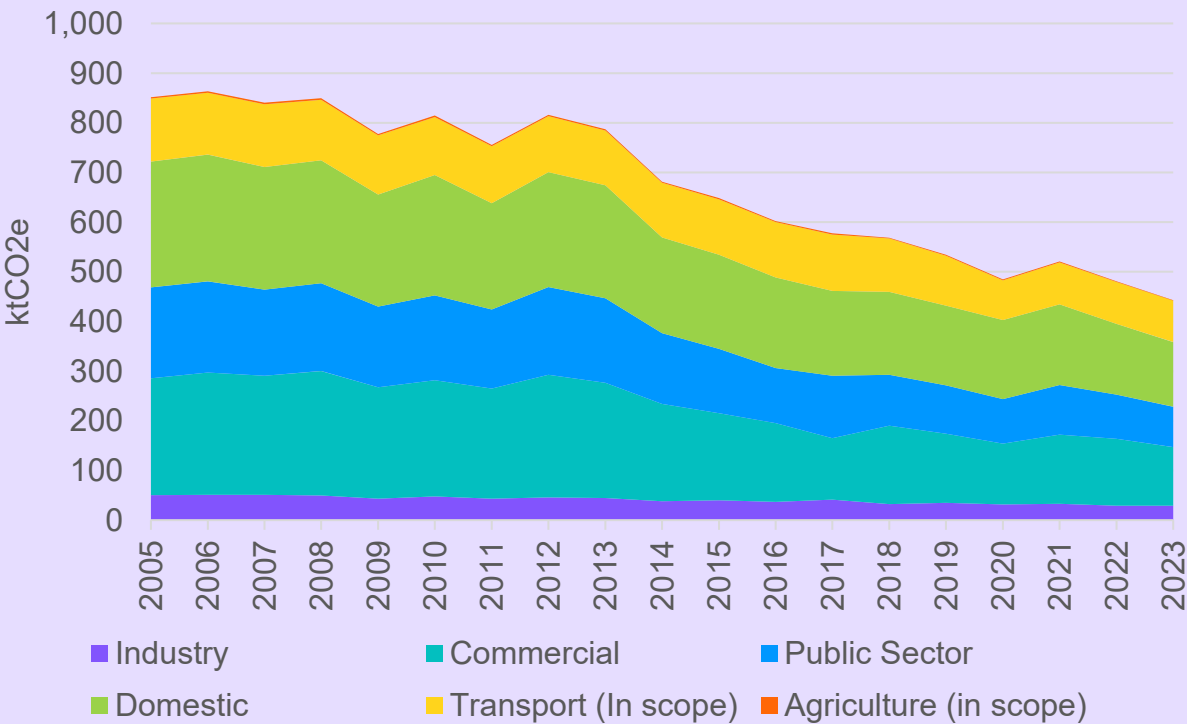
155 MW 2023 peak winter demand

¹ Local indicators for South Cambridgeshire (E07000012) – ONS
² Sub-regional fuel poverty data 2024 (2022 data) - GOV.UK
³ State of The Region Data Portal

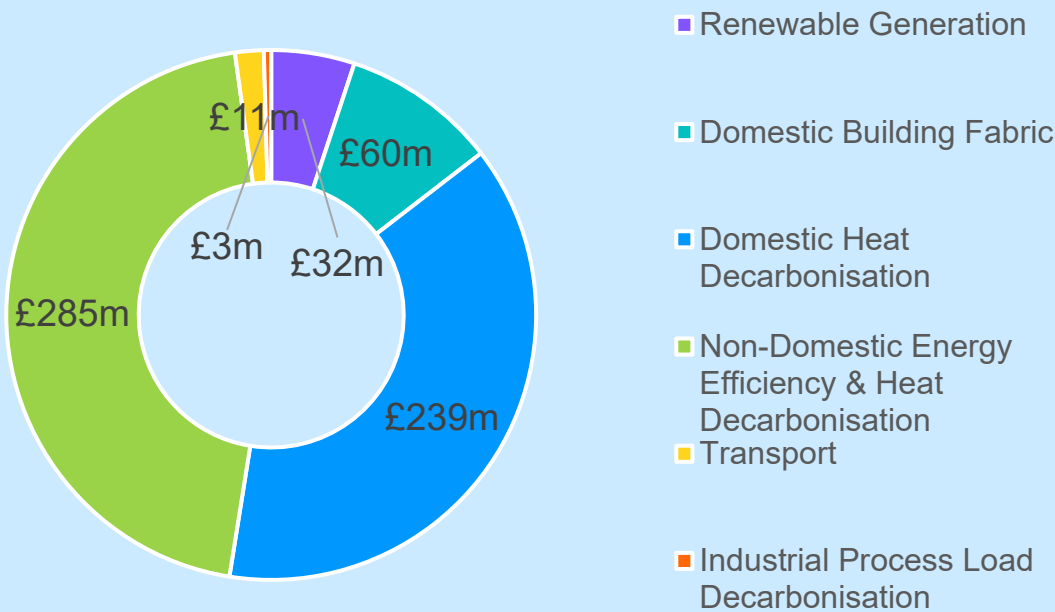
Cambridge Summary

Historical Carbon Emissions

Cambridge's in-scope¹ emissions have fallen by around 48% between 2005 and 2022, largely driven by the decarbonisation of the electricity grid, with additional contributions from energy efficiency improvements across domestic and non-domestic sectors. Despite this, the domestic sector remains the largest contributor, accounting for 29% of total emissions. The commercial sector follows closely at 27%, while transport and the public sector contribute 18.8% and 18.4%, respectively.



1: Excluding emissions from land use, land use change and forestry (LULUCF), non-energy use agriculture and waste.
From <https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics>



Sector Cost Breakdown

Reaching net zero will require significant investment across all sectors. In Cambridge, decarbonisation of non-domestic heat represents the biggest spend required, followed by domestic heat. All costs and benefits throughout show the additional spend against business as usual and are presented in present value terms.

Key Priorities :

- Cambridge experiences early electricity network constraints in some isolated areas. Substations such as St Anthony Street face early headroom limitations, requiring proactive reinforcement and potentially the use of demand side response to support the electrification of heat and transport.
- Spatial analysis identifies neighbourhoods in North and East Cambridge, including Arbury, East Chesterton and King's Hedges, as priority MSOAs for fuel poverty and low EPC ratings. These areas require targeted fabric upgrades and low carbon heating interventions, particularly for vulnerable residents and the poorest performing housing stock.
- Improving the energy efficiency of non-domestic buildings is also a priority, particularly in Central and West Cambridge, which has the highest number of non-domestic buildings currently below EPC C in the city and should be targeted for focused intervention. As many of the non-domestic buildings are older buildings, innovation trials (recommended in the main LAEP report) should be prioritised for this harder to abate building stock.
- The city contains significant proportion of historic building stock alongside high heat density and clusters of public buildings, making it a priority location for district heating development. These opportunities are strengthened by the presence of public sector anchor loads, major employers and a concentration of energy intensive uses in the city centre and surrounding areas. Further district heat feasibility studies are recommended.
- Given the large neighbourhoods of terraced housing, and high proportion of rented tenures in the City, public EV charging infrastructure is needed. Pilots for cross-pavement solutions could be trialled, public charging installed on social tenures and other housing estates without off-street parking, and potential loans for blocks of flats needing charging infrastructure can help ensure all residents can equally switch to EVs.

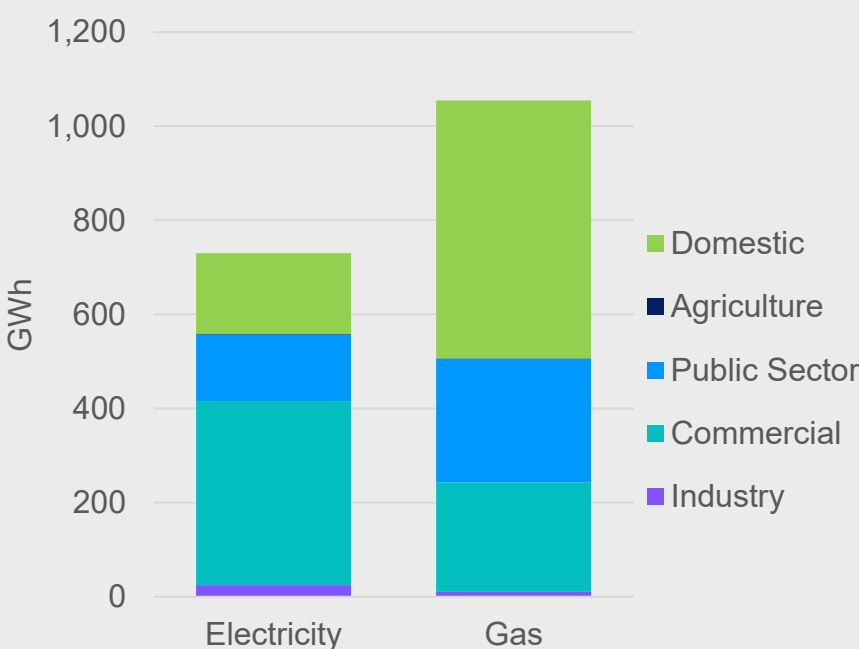
Energy, Decarbonisation And Grid

Baseline (2023)

1

Electricity/gas breakdown per sector

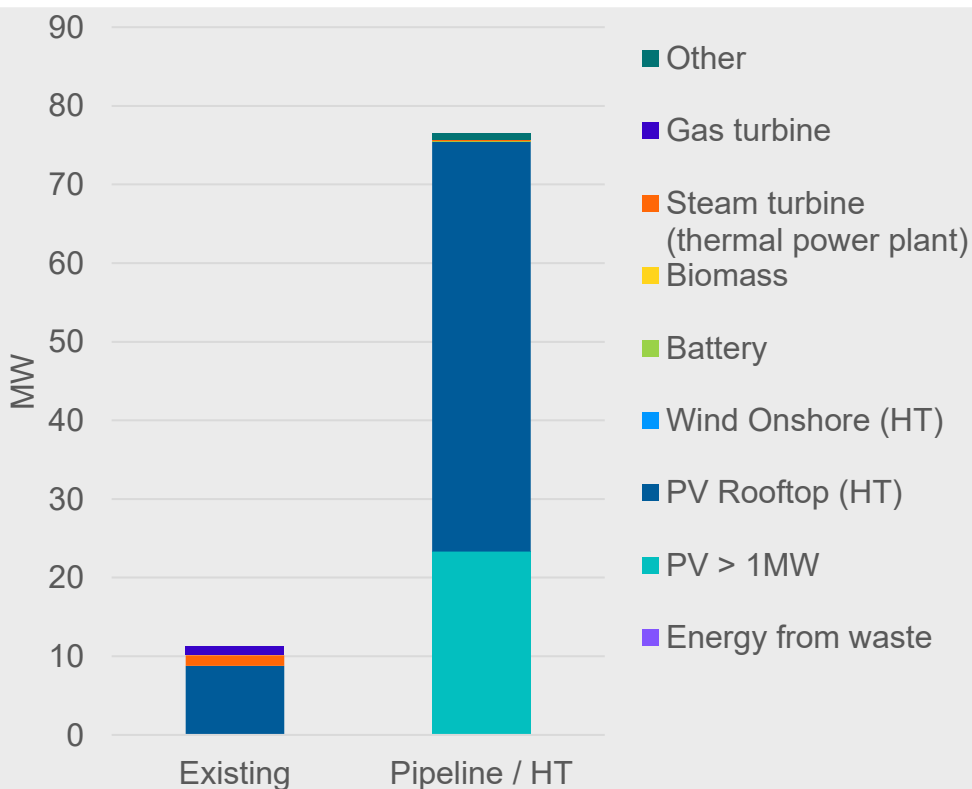
Cambridge’s gas consumption is a major contributor to overall emissions. Around 52% of gas use occurs in the domestic sector, while approximately 25% is attributed to Public sector and 22% to commercial activities. Electricity consumption is dominated by the commercial sector, which accounts for 54% of total use. The domestic sector follows at 23%, with public sector contributing 19%.



2

Local Generation

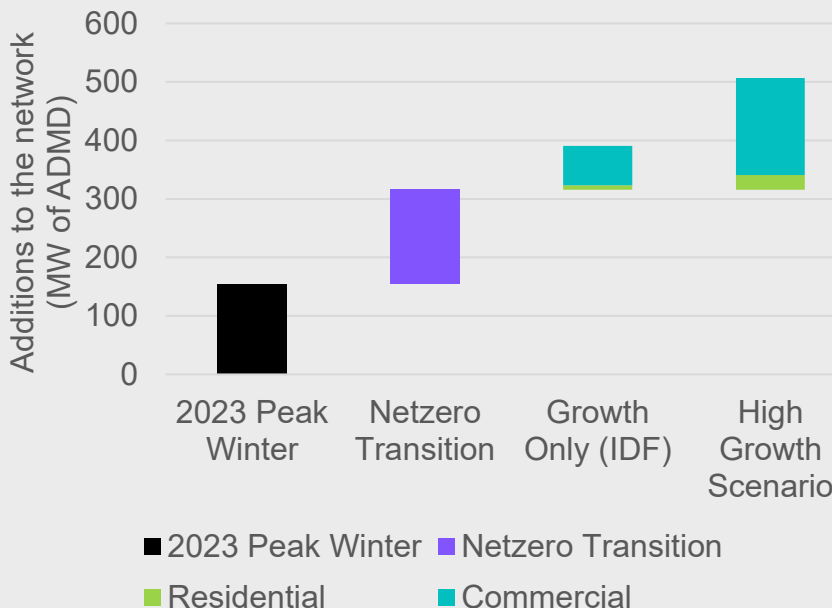
Cambridge currently has no major (>1MW) renewable energy generation, just two generators at existing sewage treatment works. However, there are a number of planned projects in the pipeline that will add 23 MW of solar capacity in the future. Coupled with this, rooftop solar is likely to play a material role for Cambridge City, with the LAEP forecasting an additional 43MW from rooftop solar.



3

Growth and Power Demand

Based on the Infrastructure Delivery Framework (IDF) (Stantec, 2024) and updated population forecasts provided for this LAEP, we anticipate that by 2045, 11,395 new dwellings will be added, and 776,599m² of non-domestic floor space. In a high growth scenario this could be as much as 17,243 dwellings, if the area grows by as much as the Draft Local Growth Plan. This results in a doubling of current power demand if both net zero is achieved with conservative growth. In a high growth scenario, this results in more than tripling of demand. Important to note however, is that in the high growth scenario the majority of additional growth occurs after 2035.



What needs to happen

4

Grid Constraints and Headroom

Cambridge is served by ten primary substations, with most of them looking to have sufficient capacity well into the mid 2030s. While this is comforting, growth may accelerate more than assumed in this study and industrial and heating decarbonisation at Addenbrookes could change. As such, regular communication with UKPN and large energy users should help maintain an accurate forecasts, so that network investment keeps pace with development.

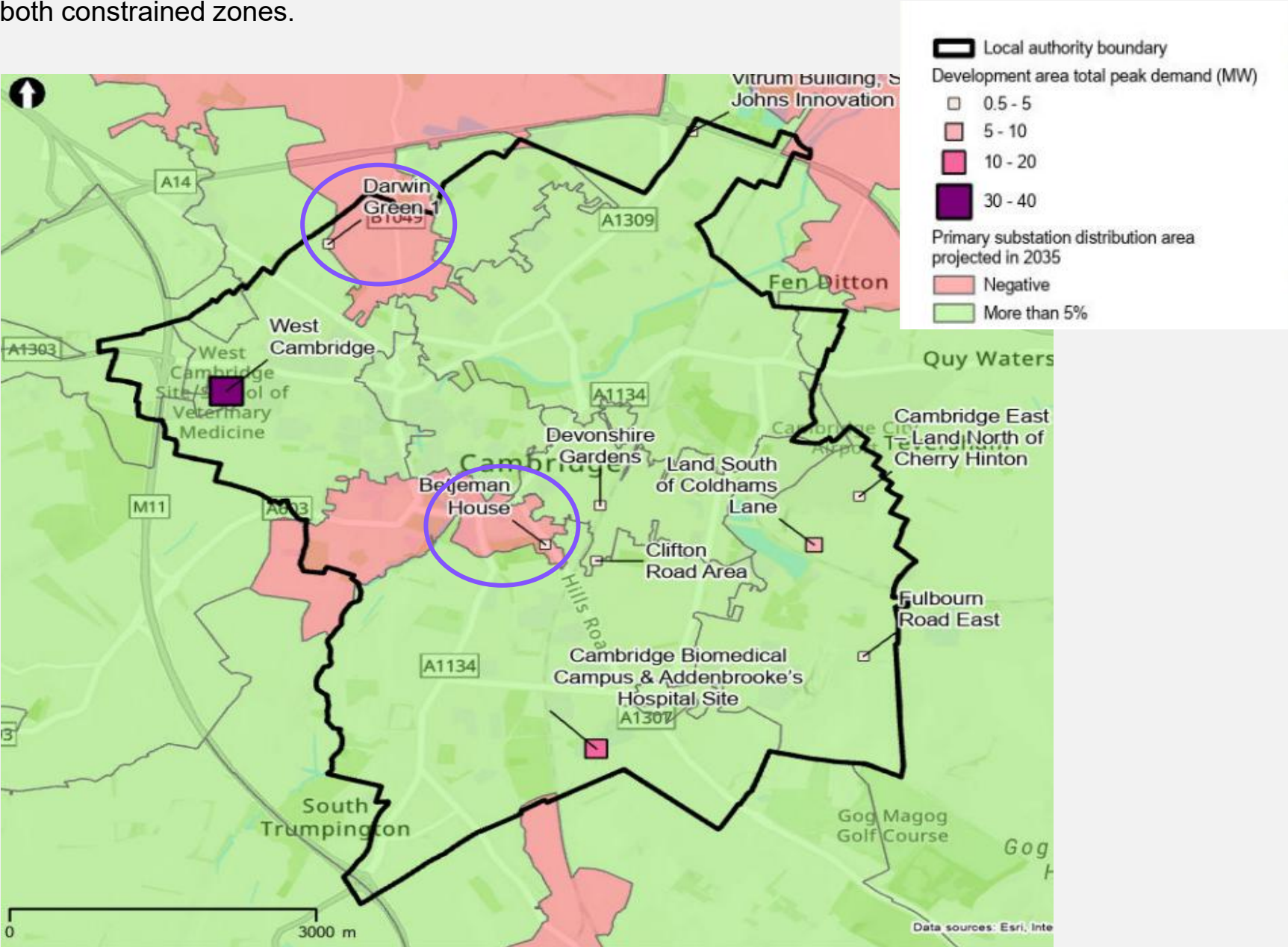
Primary Substation	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Barnwell Primary 11kV	6.8	6.90	6.69	6.53	6.34	6.15	5.86	5.66	5.40	5.13	4.97	4.74	3.38
Fulbourn 11kV	13.5	13.31	12.70	12.21	11.58	10.85	10.09	9.26	8.63	7.87	7.04	6.44	3.68
Milton Rd Primary 11kV	1.7	1.71	1.59	1.50	1.21	1.05	0.76	0.58	0.40	0.21	-0.09	-0.11	-1.33
Storeys Way Primary 11kV	6.1	6.06	5.91	5.70	5.43	5.20	4.87	4.54	4.32	4.03	3.82	3.49	2.34
Histon Primary 11kV	7.4	7.16	6.77	6.34	5.77	5.21	4.63	3.94	3.32	2.69	2.06	1.42	-0.53
Arbury Grid 11kV	15.9	15.90	15.71	15.55	15.38	15.12	15.01	14.67	14.49	14.44	14.24	13.96	13.14
Radnor Primary 11kV	9.5	9.51	9.09	8.72	8.15	7.71	7.15	6.52	6.06	5.75	5.12	4.74	3.10
Sleaford St Primary 11kV	13.9	14.09	14.03	14.00	13.83	13.75	13.42	13.32	13.16	13.11	13.03	12.86	11.60
St Anthony St Primary 11kV	0.1	0.19	0.12	0.02	0.10	-0.09	-0.16	-0.20	-0.27	-0.28	-0.41	-0.42	-0.93

Energy Hotspots And Transition Priorities

1

Grid Constraints and Headroom (continued)

The map shows some of the new developments planned, underlaid by the headroom under the holistic transition scenario in 2035. This indicates where some proposed growth will rely on increased capacity at the existing primaries. Darwin Green and Betjeman House are two such examples showing an exceeded headroom in 2035. It should be noted that the headroom shown is for 2035, so there is still sufficient time for proactive network planning and investment, ensuring that the projected development pipeline can be accommodated across both constrained zones.

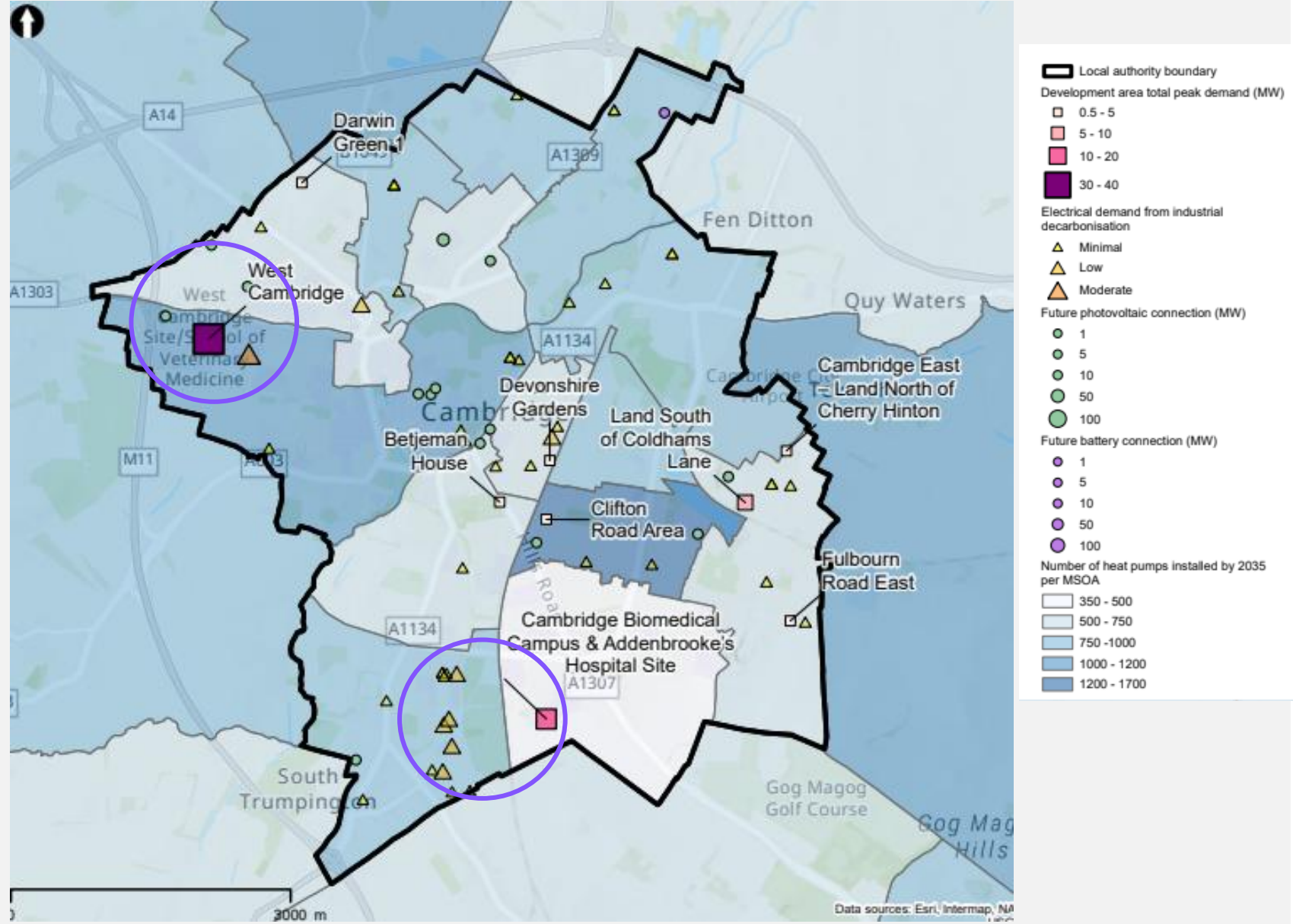


What needs to happen

2

Energy Hotspots and Transition Opportunities

Cambridge energy hotspots – from domestic heat transition, industrial process load switching, and new development- are shown overlaid with generation projects already in the pipeline. There are some overlaps where Power Purchase Agreements (PPA) or virtual PPAs could be facilitated – such as near West Cambridge site. The clustering of industrial decarbonisation (triangles) and some new developments (squares) also offers opportunities for community level infrastructure / partnerships.



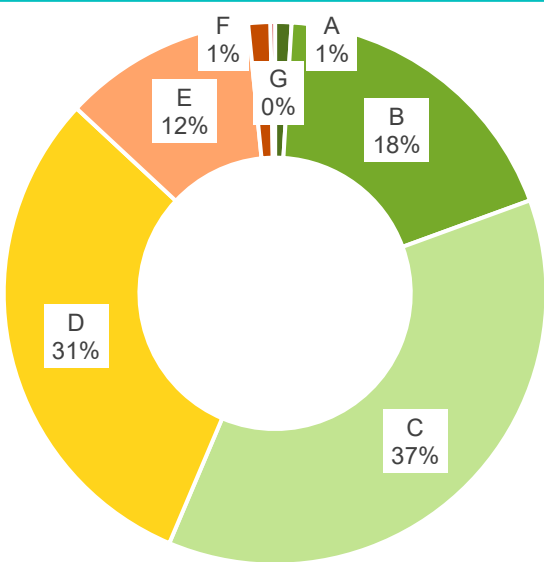
What needs to happen

Domestic Building Fabric

Baseline

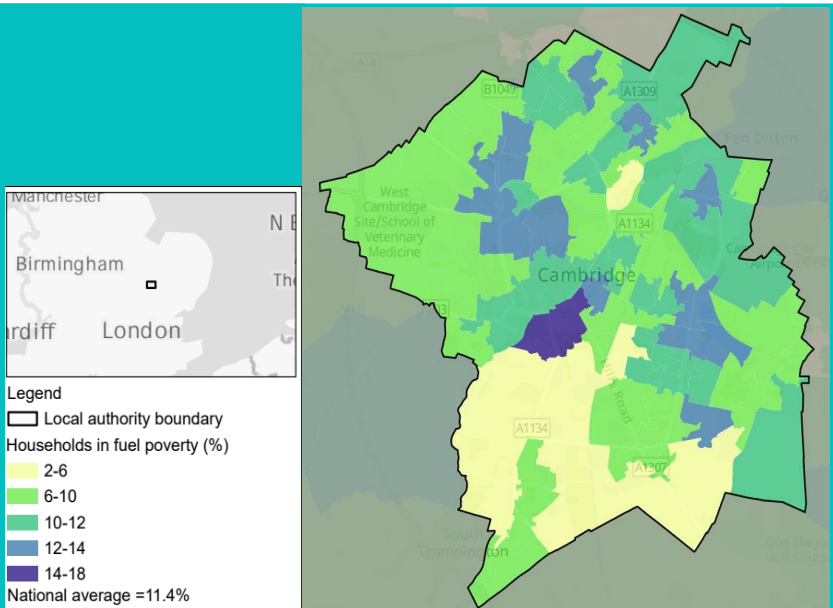
1 EPC rating (2025)

Around 43% of all homes in Cambridge currently have an EPC rating of D or lower and will require fabric and energy efficiency improvements to align with UK Government's targets of all homes reaching EPC C (for rented properties by 2030, and being considered for owner occupied by 2035). This proportion is broadly aligned with county wide averages.



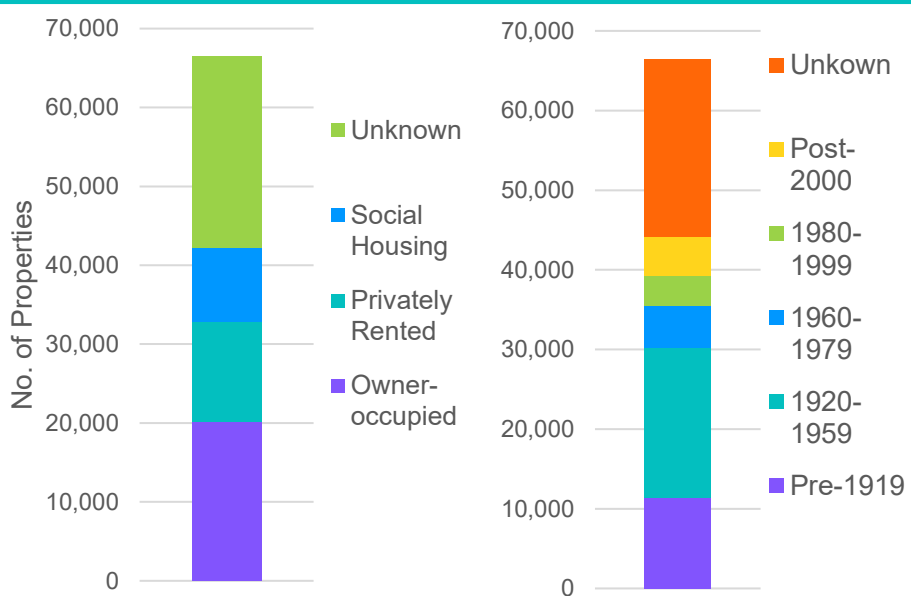
2 Fuel Poverty (2023)

Improving the fabric efficiency of domestic homes can help to reduce fuel poverty across Cambridge, through a reduction in energy bills. The highest fuel poverty area is just to the South-West of the city centre. The areas shown in blue on the map are at higher levels of fuel poverty compared to the national average of 11.4%. Cambridge overall has an average fuel poverty rate of 9.2%, down from a peak of 14.6% in 2020.



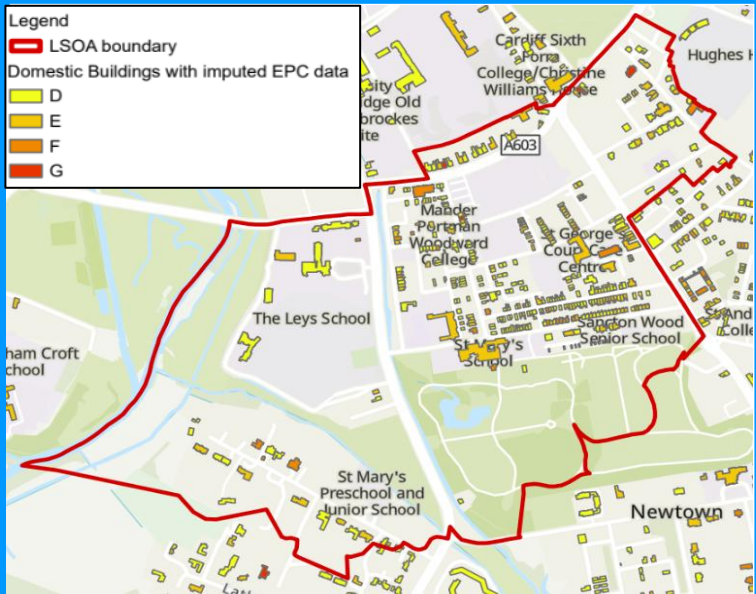
3 Tenure & Age band (2025)

Cambridge has a higher proportion of rented properties compared to the County as a whole, with just over a half of all domestic properties being privately or socially rented. The domestic building stock is older than the County average, with 68% of homes being constructed before 1960, and only 10% of homes constructed post 2000.



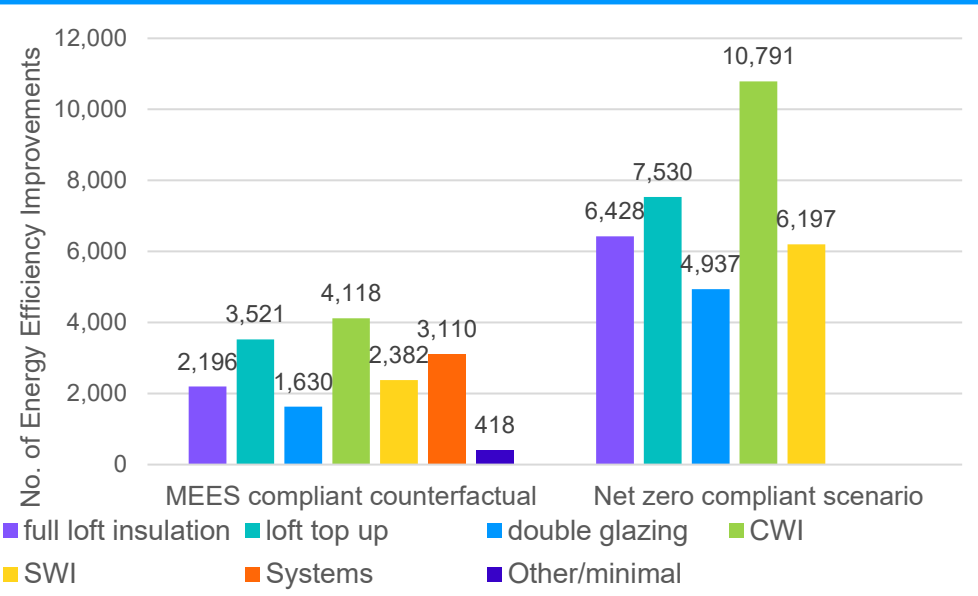
4 EPC Hotspots (2025)

The EPC ratings for domestic properties rated D or lower are shown for Cambridge's highest fuel poverty LSOA. These homes are currently missing the UK Government's minimum target of EPC Rating C, (for rented properties by 2030 and being considered for owner occupied by 2035) and will likely need some form of fabric or energy efficiency improvements to effectively deploy heat pump systems and reduce fuel poverty.



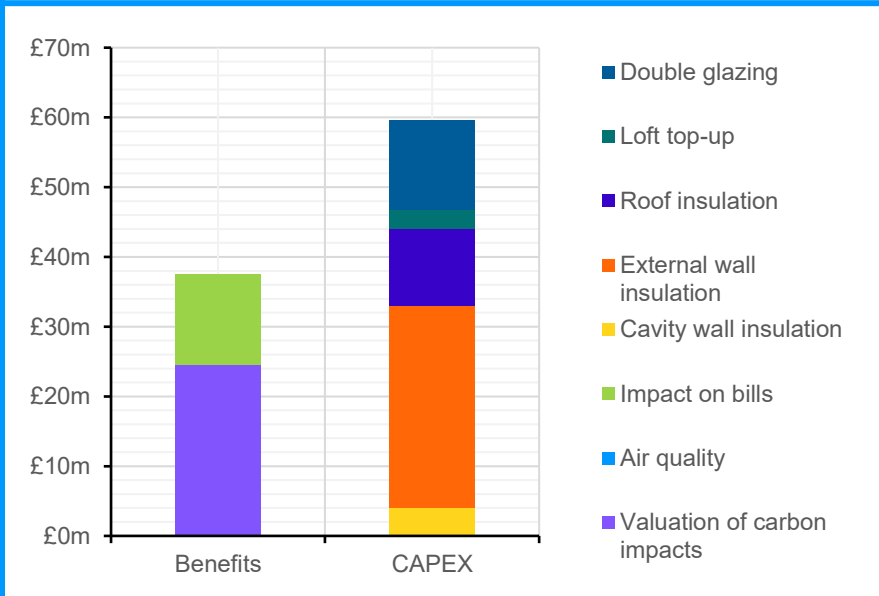
5 Fabric Upgrades Needed

To reach compliance with MEES regulations several hundred installations of each fabric improvement type will be required. The net zero compliant scenario will require significantly more fabric improvements to cut fuel poverty and ensure homes are heat pump ready. Cavity wall insulation is the most common fabric improvement intervention required in the net zero compliant scenario.



6 Investment needed

£60 million of investment will be required to improve the energy efficiency of Cambridge's homes. Light retrofit measures such as cavity wall and loft insulation typically has a relatively short payback period (<10yrs). However more expensive and disruptive works such as solid wall insulation or new glazing will likely require additional funding (e.g. grants or loans) to be cost effective for homeowners. Fabric retrofit can create wider societal benefits through reducing carbon emissions and energy bills.



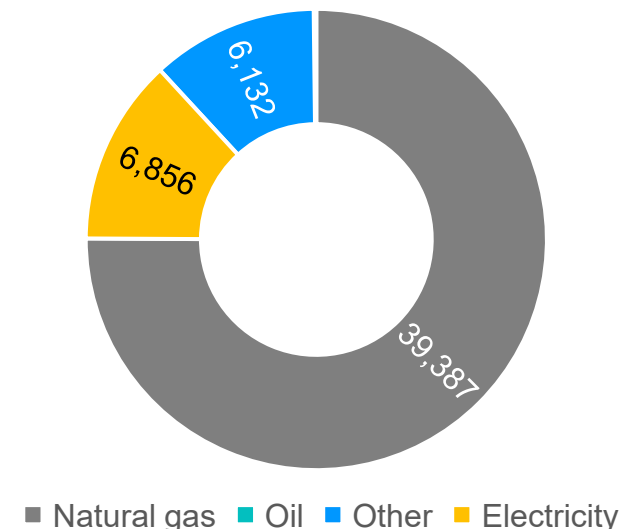
*All maps are shown in full size in the appendix

Domestic Building Heat Decarbonisation

1 Fuel Type Breakdown (2025)

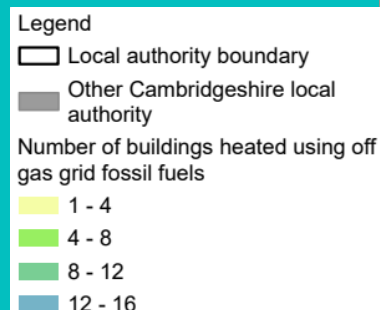
Around 87% of all homes in Cambridge currently use fossil fuels for space heating and hot water. These will need to change to a low carbon alternative to reach net zero and create wider benefits such as improve health outcomes through improved air quality. Natural gas is the most widely used fuel. The “other” category includes LPG, communal heating systems and biomass.

Number of Homes by Fuel Type



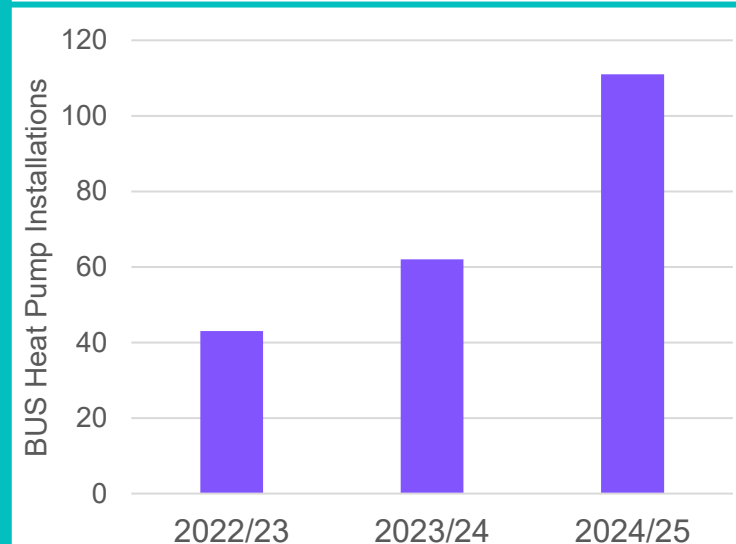
2 Off gas grid MSOAs (2025)

Homes using non natural gas fossil fuels such as oil or LPG should be highest priority for transitioning to heat pumps, as they will have a greater carbon impact and be more likely to have a reduction in fuel bills. Cambridge has significantly less oil or LPG boilers compared to the rest of the County, as would be expected due to its urban nature. The areas around the west of Cambridge, have the highest numbers of homes currently using oil or LPG boilers.



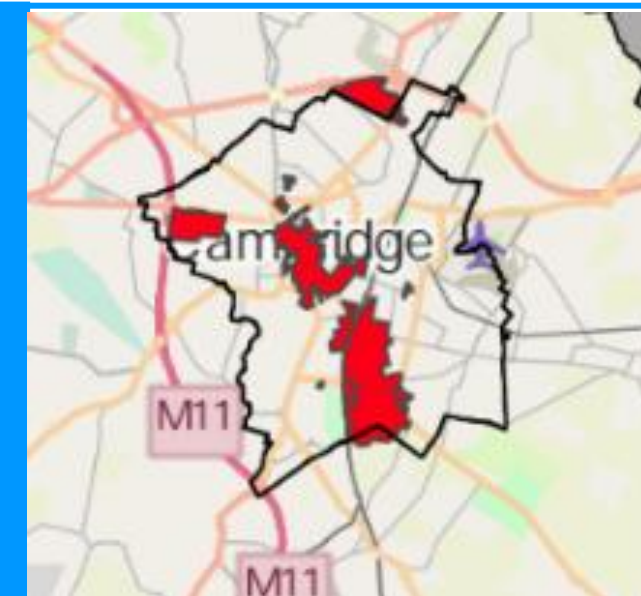
3 Heat Pump Uptake

Heat pump uptake in Cambridge has been gradual and remains below the pace needed to meet decarbonisation goals, though uptake is steadily increasing. Over 100 heat pumps were installed via the Boiler Upgrade Scheme in the last financial year. However, with an estimated 3,000 gas boiler replacements occurring annually in the district, proactive measures are essential to encourage homeowners and landlords to choose heat pumps where cost-effective and technically viable.



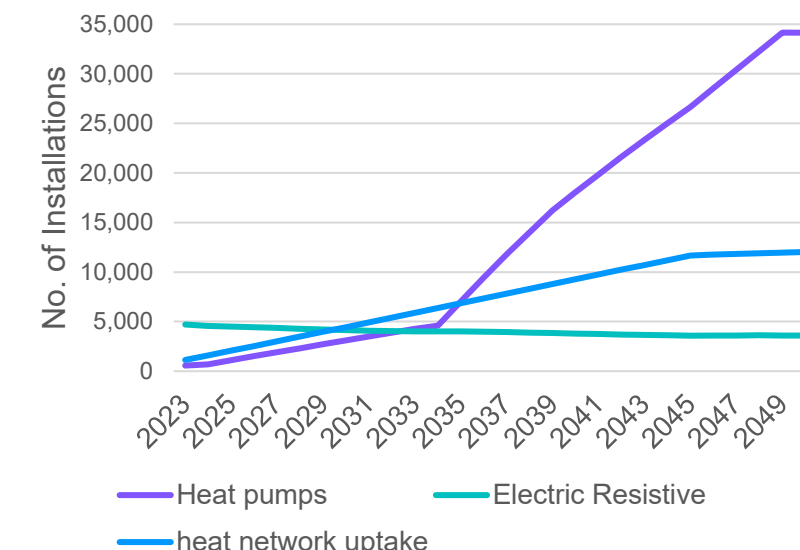
4 Heat Network Zoning

DESNZ provided data from their third National Model Run, which determines zones where a heat network would likely be a cheaper option for heat decarbonisation compared to an individual building level system. These are shown in red on the map. Cambridge has several zones throughout the centre, South (Addenbrookes), and West (West Cambridge) of the city. There is also a zone to the North of the city (Cambridge Science Park), that overlaps both Cambridge City and South Cambridgeshire. Some areas outside of these zones may still be suitable for communal systems.



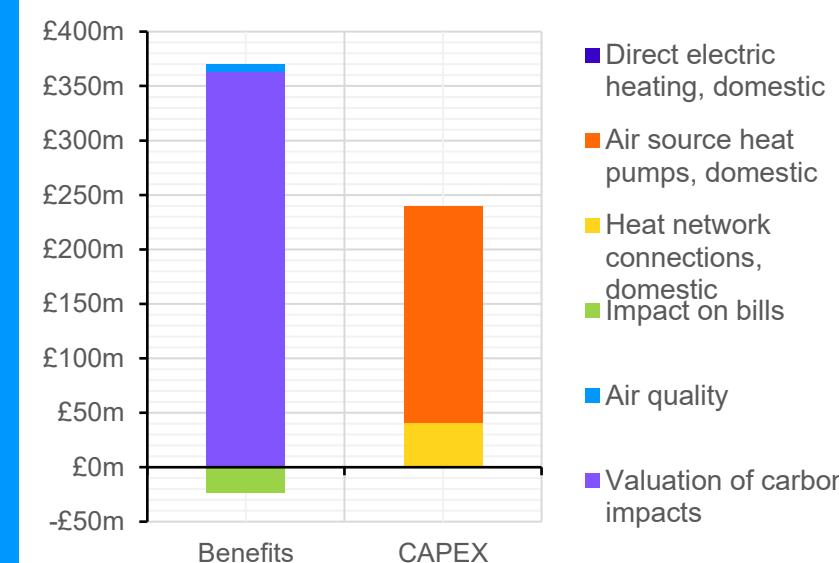
5 Heat decarbonisation projections

The modelled holistic transition net zero scenario has Cambridge decarbonising space heating predominantly through air source heat pumps. Cambridge also has a significant number of homes connecting to district heat networks by the 2040s. The number of electric resistive heating systems is expected to decrease slightly. The values shown in the graph are cumulative.



6 Investment needed

The majority of the investment required to decarbonise domestic heat consumption is for air source heat pump installations, with £239 million spend required. These installations will create a similar amount of monetised benefits, through reduced carbon emissions and improved air quality, despite a likely small increase in energy bills for the average household in Cambridge.



What needs to happen

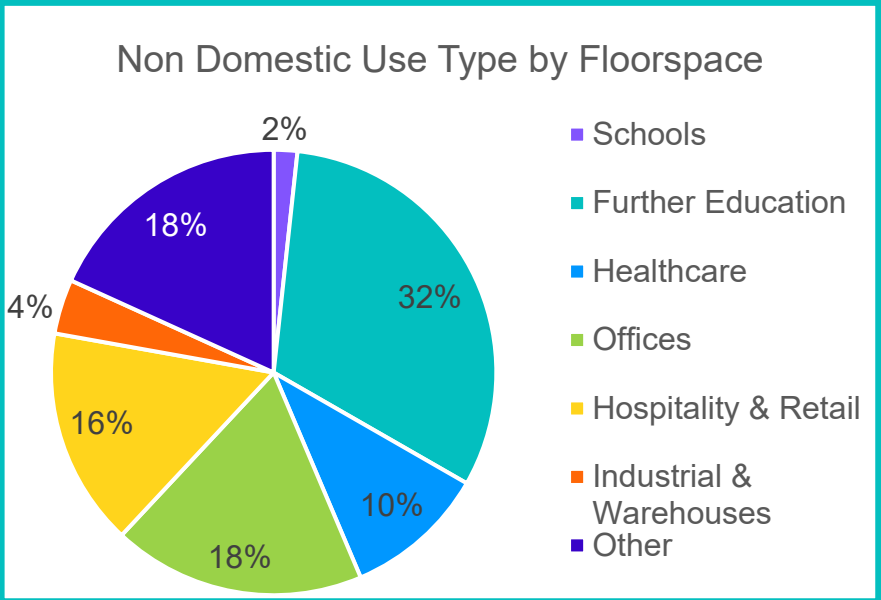
*All maps are shown in full size in the appendix

Non-domestic Energy Efficiency & Heat Decarbonisation

Baseline

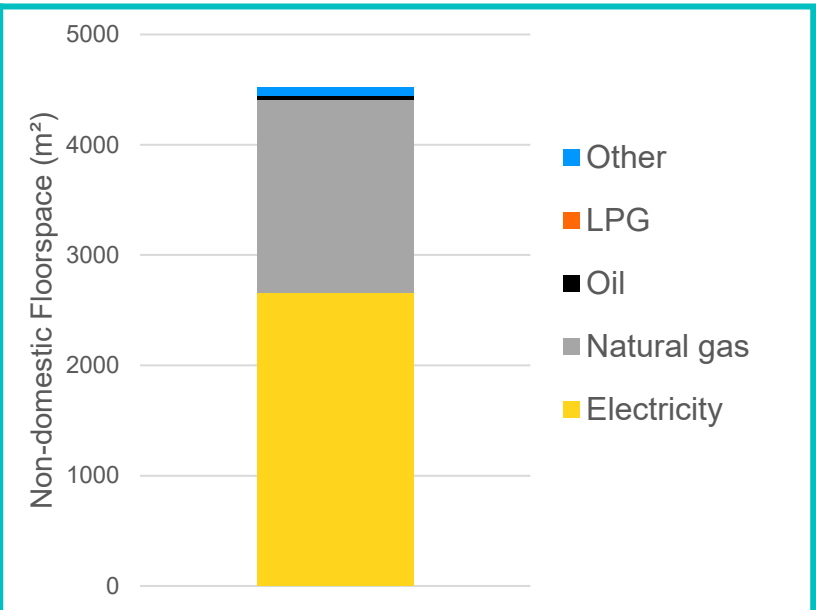
1 Primary Use by floor area

Further Education facilities dominate the non-domestic floorspace, accounting for approximately 32% of the total. Offices and other uses each represent around 18%, while hospitality and retail contribute 16%. Healthcare buildings make up 10%. Cambridge has a relatively low proportion of floorspace used for industrial and warehouses, compared to the other districts, with only 4%. Note that this data is from lodged EPC reports, which account for 81% of non-domestic buildings in Cambridge.



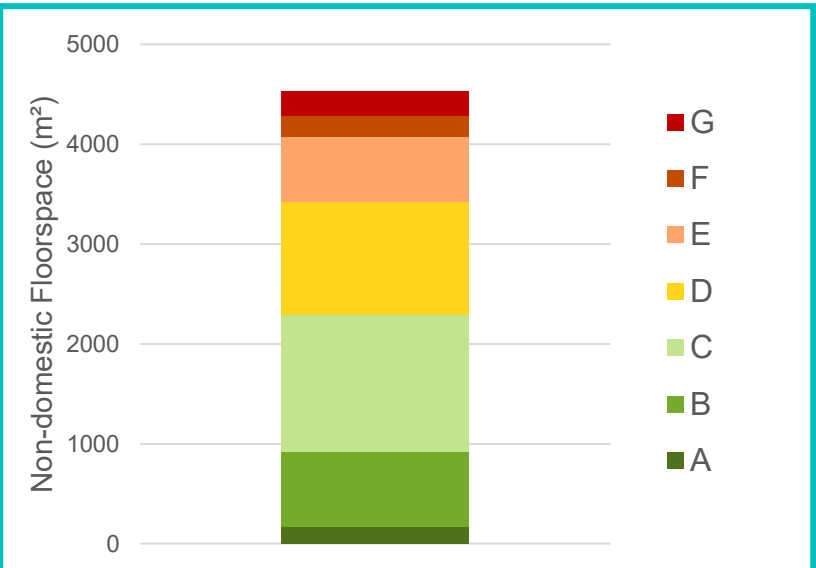
2 Fuel type breakdown

A higher proportion of non-domestic buildings already use a low carbon heat source, compared to domestic, as can be seen by the portion using electricity. Around one third are still using fossil fuels and will need to decarbonise their heat supply. These figures were also taken from the lodged EPC reports.



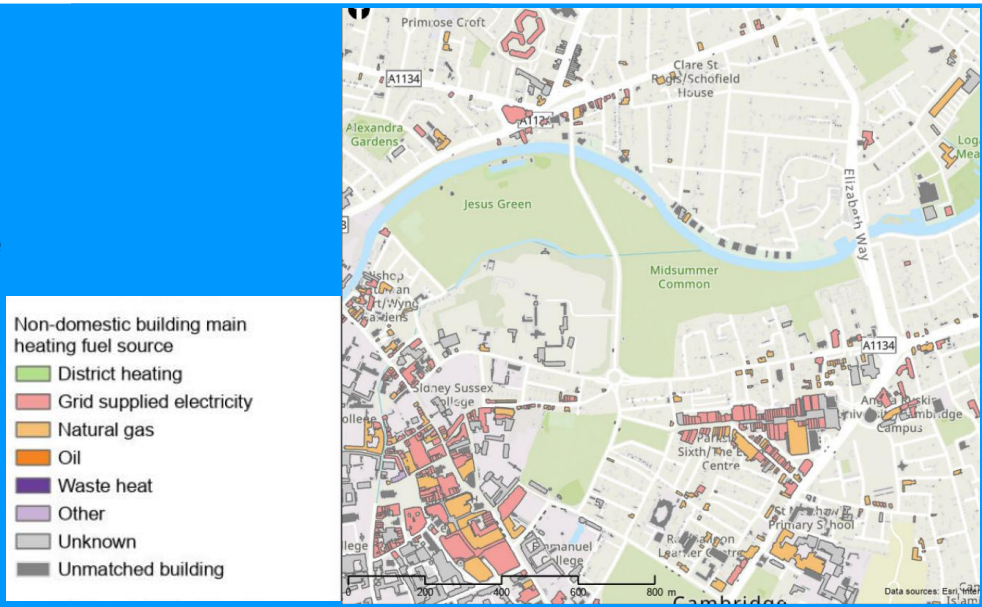
3 EPC Breakdown

49% of non-domestic EPC ratings in Cambridge are D or lower and will need some type of energy efficiency upgrades to fabrics, lighting, systems or processes to align with UK Government targets of all buildings being EPC C. A higher proportion of buildings in the private sector (office, retail, hospitality etc.) are below EPC C, compared to the public sector.



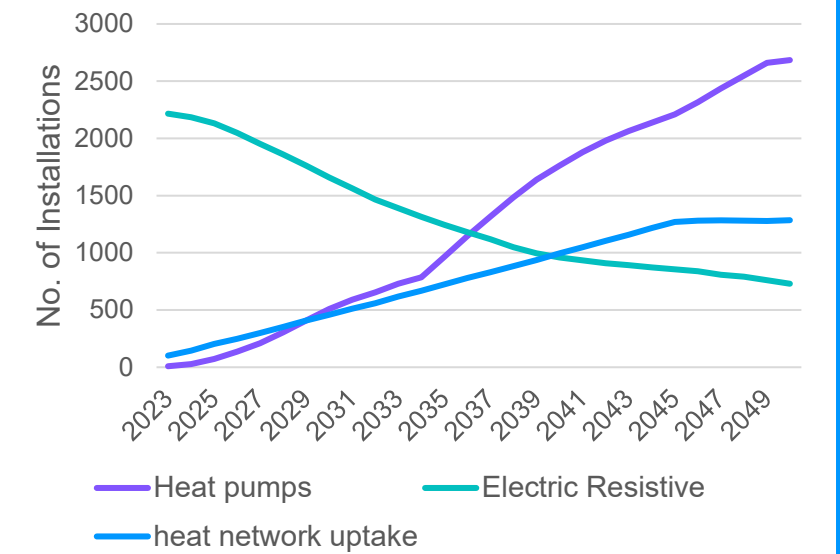
4 Building Clusters

Throughout Cambridge, there are clusters of non-domestic buildings predominantly using fossil fuels, as can be seen on the map. These could represent an opportunity to decarbonise via a heat network, or to reduce costs through shared procurements schemes or small-scale communal systems, depending on sufficient engagement occurring.



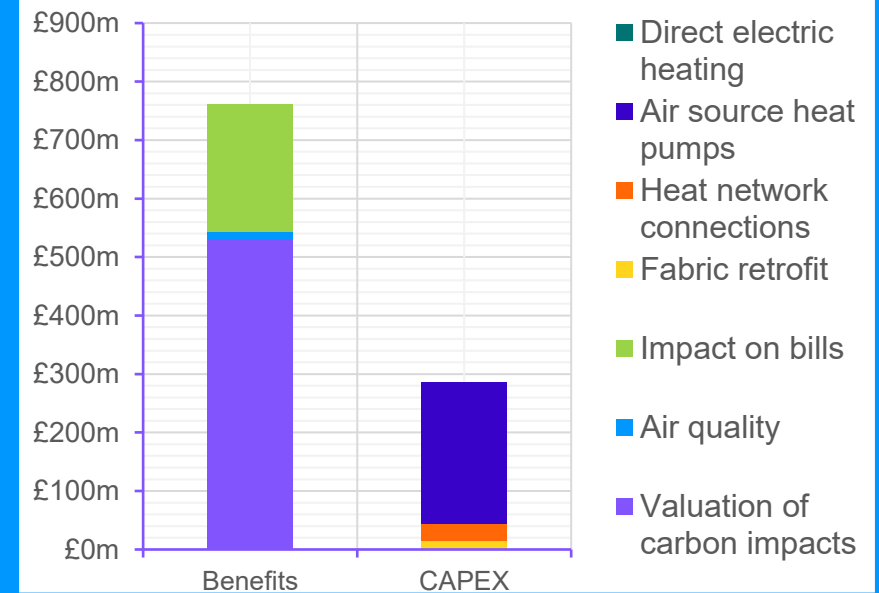
5 Heat decarbonisation projections

In the Holistic Transition scenario, air source heat pumps make up most of the projected heat decarbonisation in non-domestic buildings, with 95 heat pump installations per year on average. This scenario also assumed that several non-domestic buildings switch from their existing electric resistive heating technology, to a more efficient air source heat pump. Significant heat network uptake in Cambridge is also assumed. The data shown in the graph is cumulative



6 Investment needed

Most of the investment required to decarbonise non-domestic heat consumption is for air source heat pump installations. These installations will create significant monetised benefits through reduced carbon emissions and improved air quality. Savings on bills occur when heat pumps are replacing existing direct electric heating systems which are less efficient, and carbon savings are predominantly driven by replacement of fossil fuel systems, which do not typically generate a bill saving.



*All maps are shown in full size in the appendix

Transport

Current State (2023)

Cambridge is making progress on transport decarbonisation, with a growing uptake of electric vehicles across different categories. Transport emissions remain moderate, reflecting continued reliance on private cars alongside strong cycling culture and public transport provision. The key challenge is reducing car use in an urban context while supporting active travel and low-emission mobility.

Licensed vehicles in Cambridge grew 13.8% (2011–2024), with petrol and diesel dominating. EVs remain under 5.6% of total vehicles. Around 49% of those commuting travel to work by cycle or on foot, compared to 10-16% in the other districts.



3,592 total number of registered electric vehicles.



342 existing publicly accessible chargers.



42 existing rapid or high-powered chargers (>50kW).

Source: 2023 Data from the UK Government Vehicle Statistics

Intervention Focus Areas

Spatial analysis highlights a number of urban areas where public EV charging infrastructure may be required to support uptake among residents without access to off-street parking. This will need to be balanced with local heritage considerations, as many terraced properties in these locations are likely to fall within conservation areas or may have listed status. Areas such as Mill Road Bridge to Brookfields Hospital and Midsummer Common to Grafton Centre are estimated to have the highest levels of need for public charging (as illustrated below). Other areas include St Mathew's Piece, Parkside to Tenison Road, Sedgewick Street, Lammas Land and Alexandra Gardens. These locations could therefore be prioritised for more detailed assessment to identify appropriate public charging solutions and ensure equitable access across communities.



*All maps are shown in full size in the appendix

Scale of Change required

Detailed projections highlight the scale of infrastructure needed to support EV uptake across Cambridge under the most likely scenario, the Holistic Transition scenario.



5,839 publicly accessible chargers required by **2045**



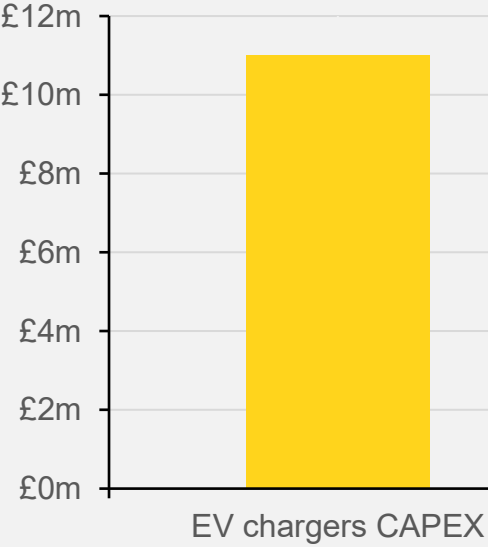
710 are rapid or high-powered chargers out of the above 5,839 required by **2045**



465 are chargers specifically needed for homes without off-street parking out of the above 5,839 by **2045**

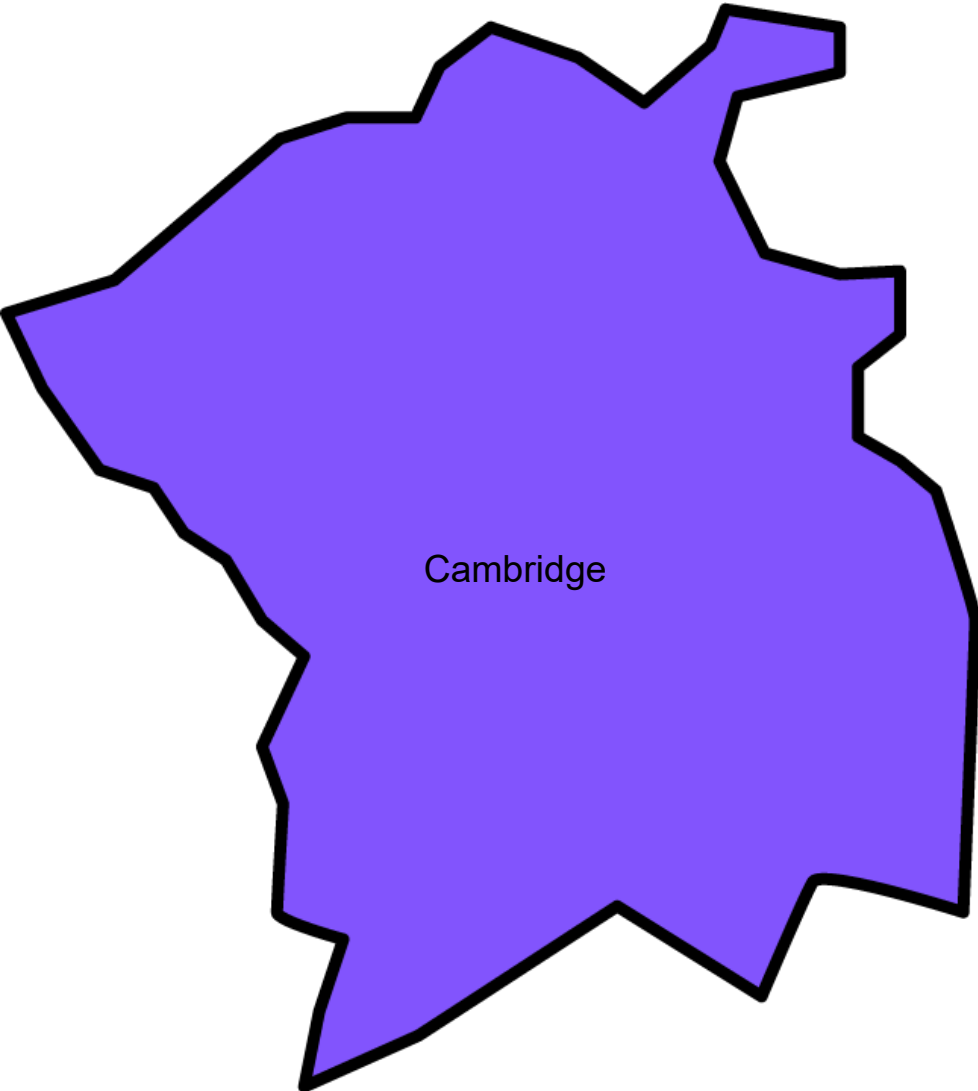
Investment needed

The estimated capital expenditure required for transport decarbonisation in Cambridge is significant, with public EV charging infrastructure alone projected to cost £11 million. This figure is noticeably lower compared to the other districts, due to Cambridge requiring less >50kW fast chargers, which are expensive. Private EV charging (chargers on homes) are not included, as they will be funded by residents in a do-nothing scenario as wider EV uptake occurs. The benefits have not been presented, as these are associated with EV uptake rather than the charging infrastructure itself.



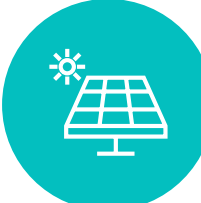
What needs to happen

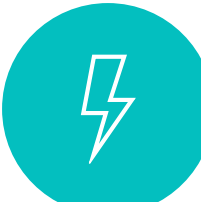
Holistic Transition Pathway Ambition Summary



93.7%

Total county-wide emission reduction from 2023 to 2045

60 GWh
local renewable generation

2045 electricity demand is 920 GWh

5,870
publicly accessible chargers

60,960
electric vehicles

34,150 heat pumps installed in domestic buildings

5,130 electric resistive installations in domestic buildings

12,025 heat network domestic connections

3,400 heat pumps installed in non-domestic buildings

1,290 heat network non-domestic building connections

Glossary

Acronym	Definition
ADMD	After Diversity Maximum Demand
BUS	Boiler Upgrade Scheme
DESNZ	Department for Energy Security and Net Zero
DNO	Distribution Network Operator
BUS	Boiler Upgrade Scheme
EPC	Energy Performance Certificate
EV	Electric Vehicle
GWh	Gigawatt-hour
IDF	Infrastructure Delivery Framework
ktCO ₂ e	kilotonnes of CO ₂ equivalent
LAEP	Local Area Energy Plan
LSOA	Lower-layer Super Output Area
LPG	Liquefied Petroleum Gas
LULUCF	Land Use, Land Use Change and Forestry
LSOA	Lower-layer Super Output Area
LPG	Liquefied Petroleum Gas
MEES	Minimum Energy Efficiency Standards
MSOA	Middle-layer Super Output Area
MW	Megawatt
EV	Electric Vehicle
ONS	Office for National Statistics

[illegible]



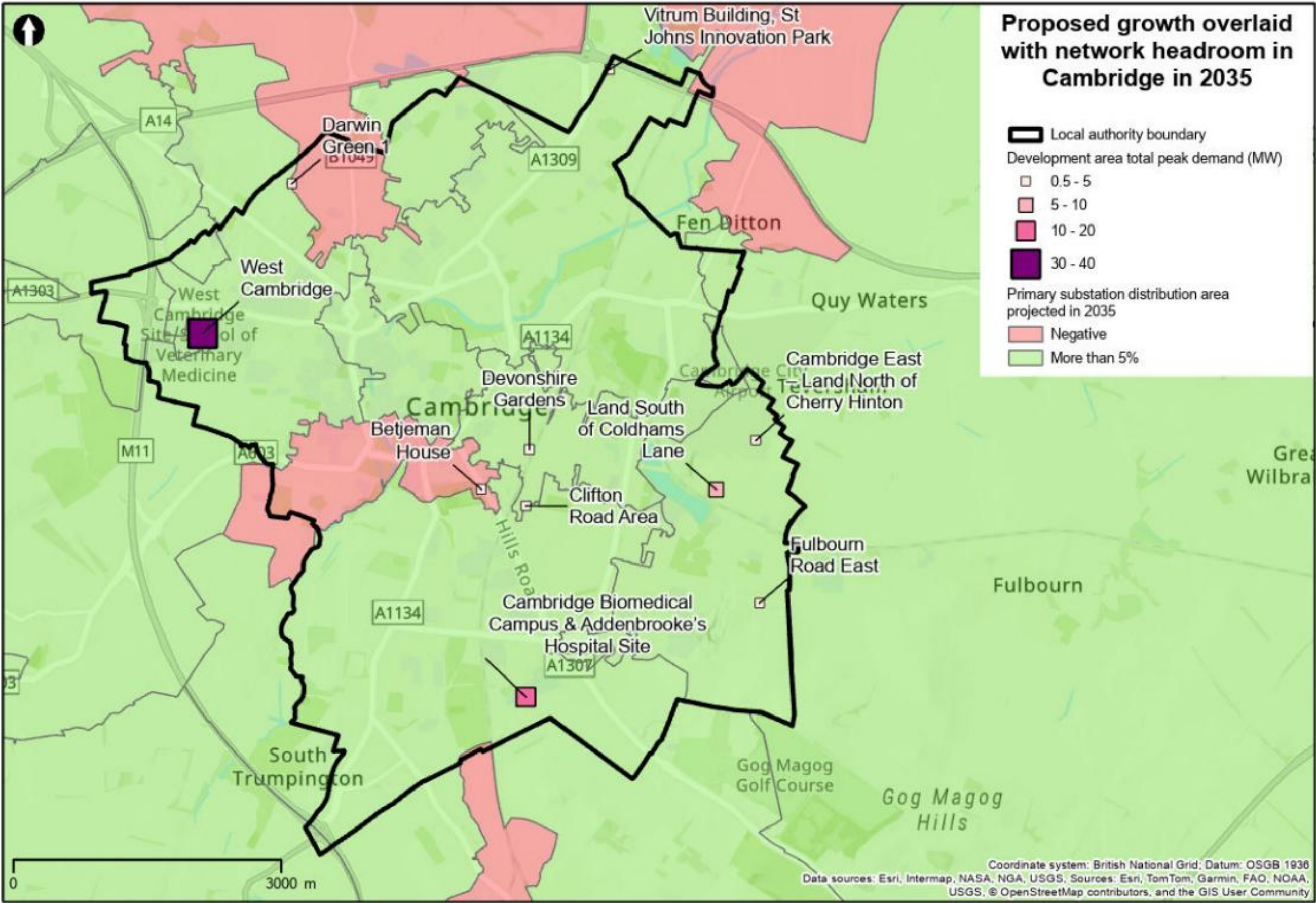
Appendices

Energy Hotspots And Transition Priorities

Proposed Development Overlaid with Projected Grid Headroom in Cambridge (2035)

This map shows projected grid headroom constraints in 2035, with future known development scaled by size.

Note developments are shown as a point (squares), and the actual area of the development is much larger.

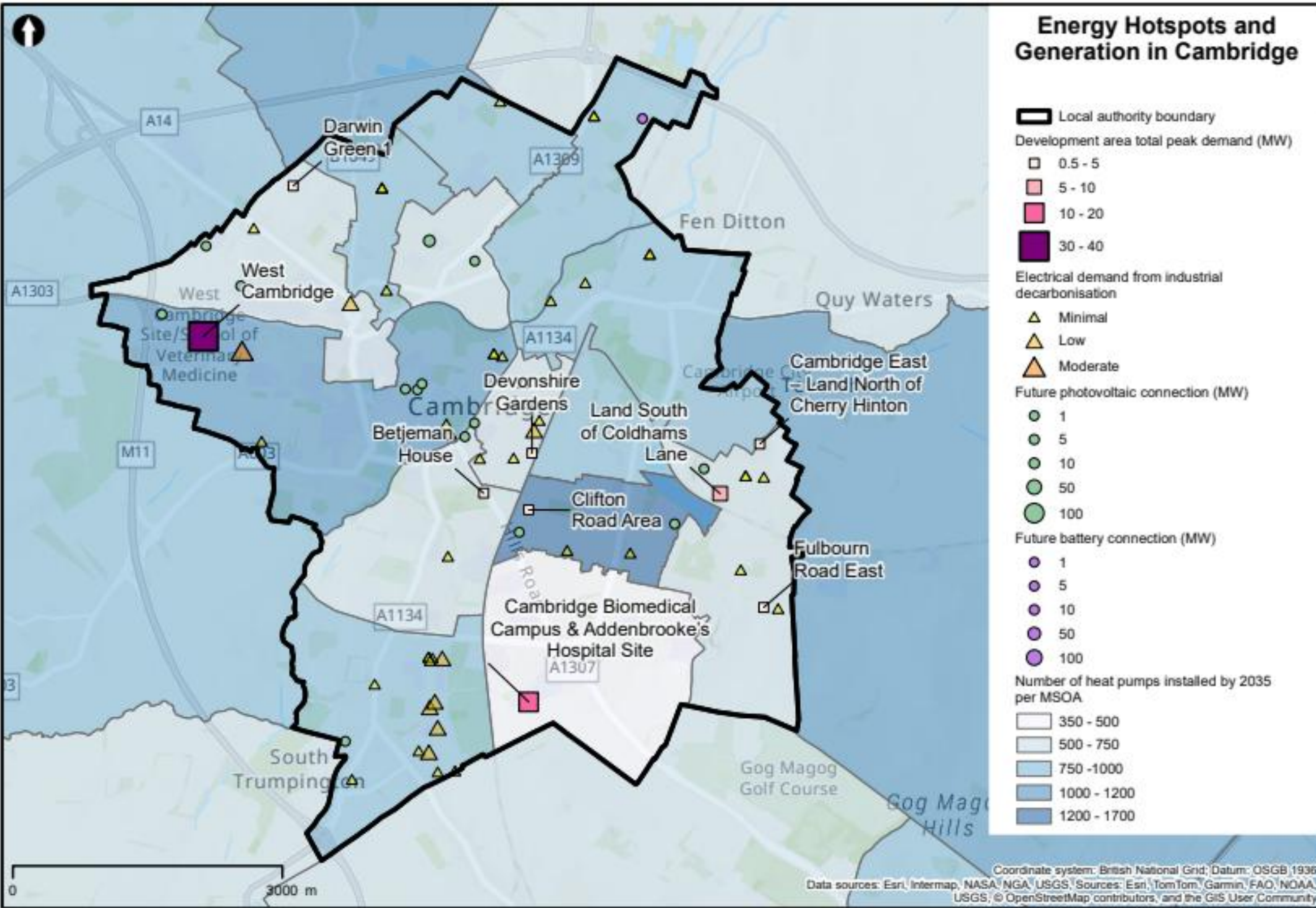


Energy Hotspots And Transition Priorities

Energy Heatmap and Opportunities

This map visualises where energy demand is growing from heat pumps, where industrial loads may electrify and therefore present large point loads, and future developments (growth).

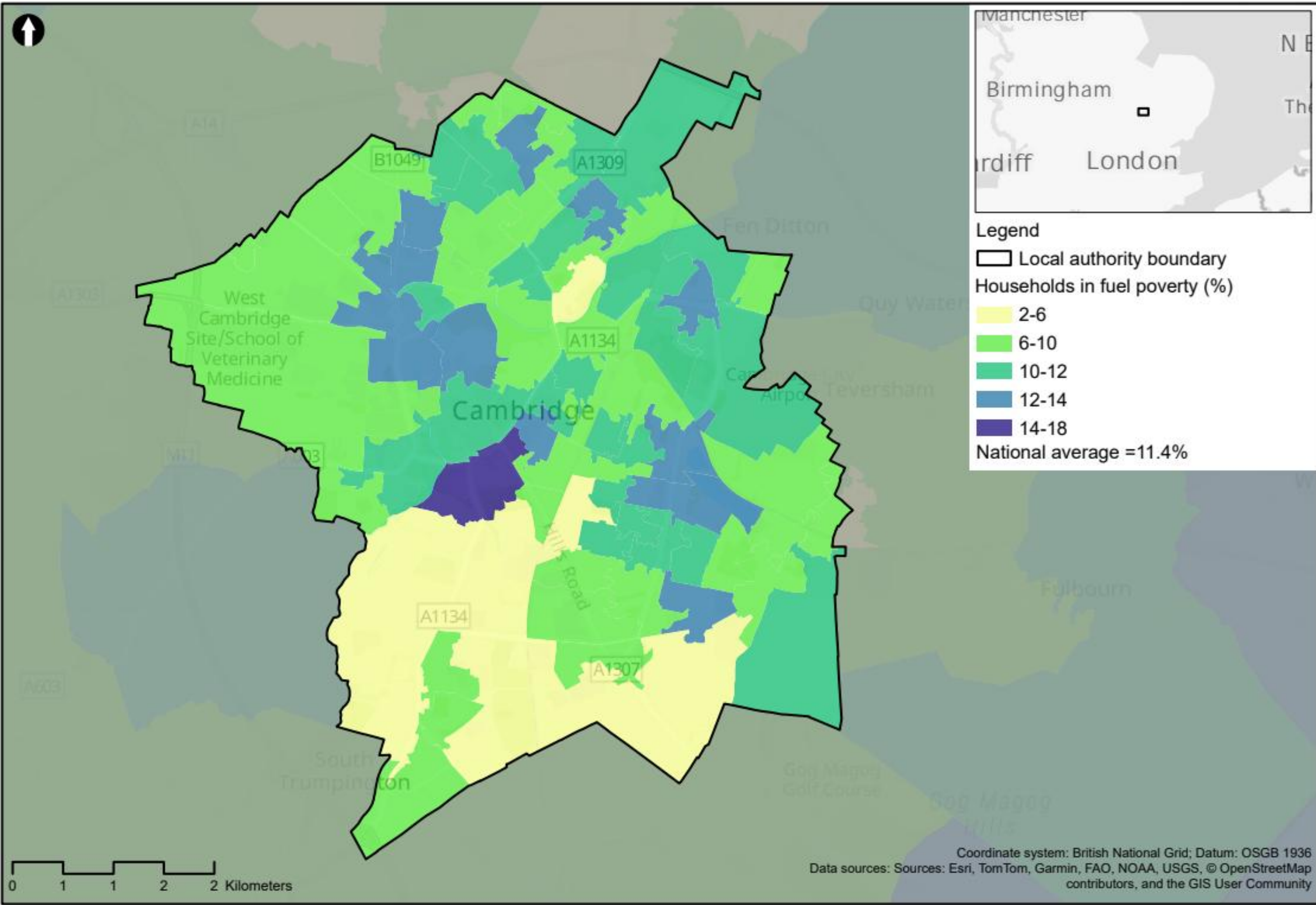
Alongside future local energy generation and flexibility, solar and batteries, that are within the pipeline already are shown.



Domestic Building Fabric

Fuel Poverty

This map shows the percentage of household in fuel poverty in Cambridge mapped at LSOA level.

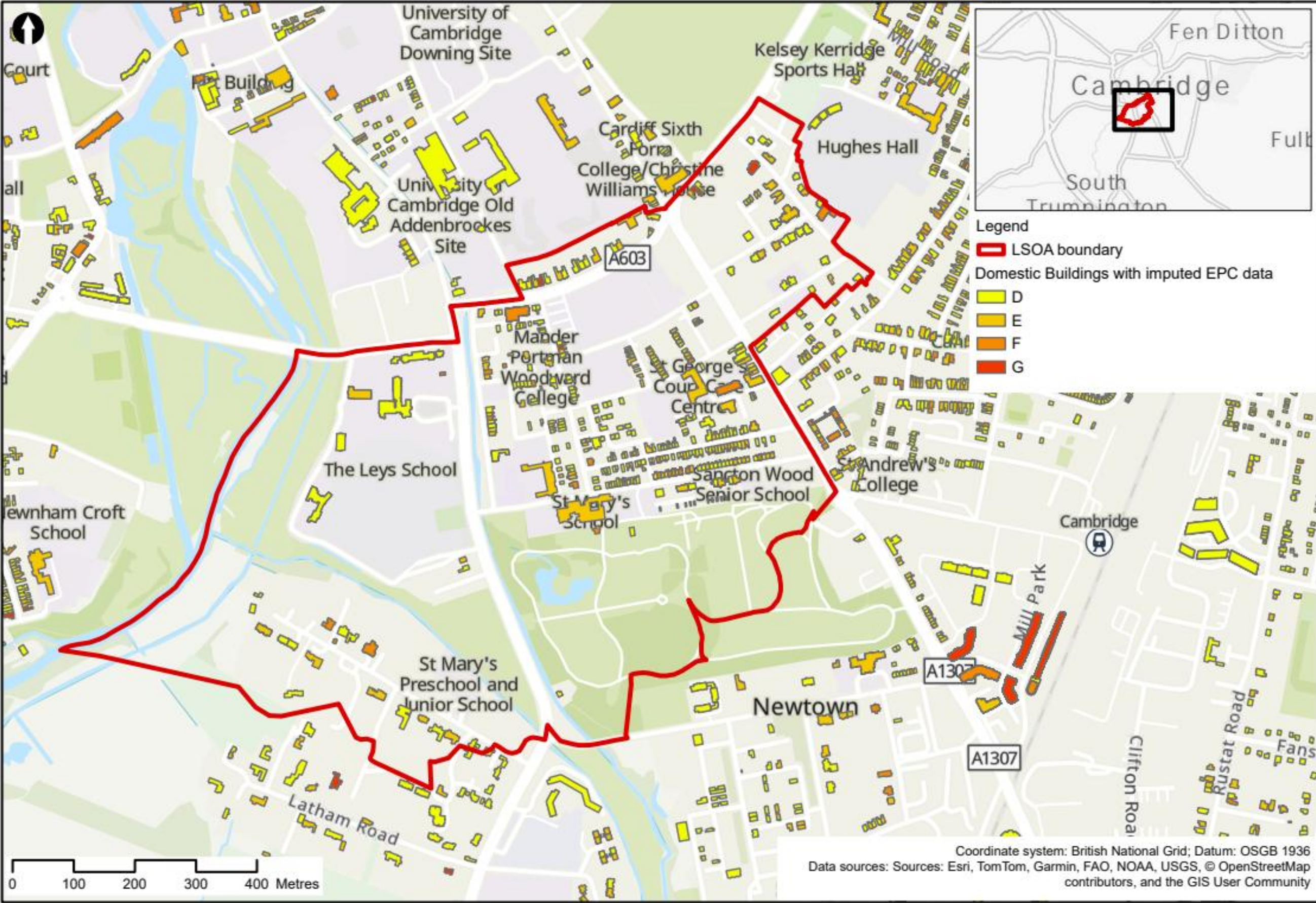


Domestic Building Fabric

Homes below EPC C per MSOA

This map shows the EPC ratings for domestic properties rated D or lower in Cambridge per LSOA.

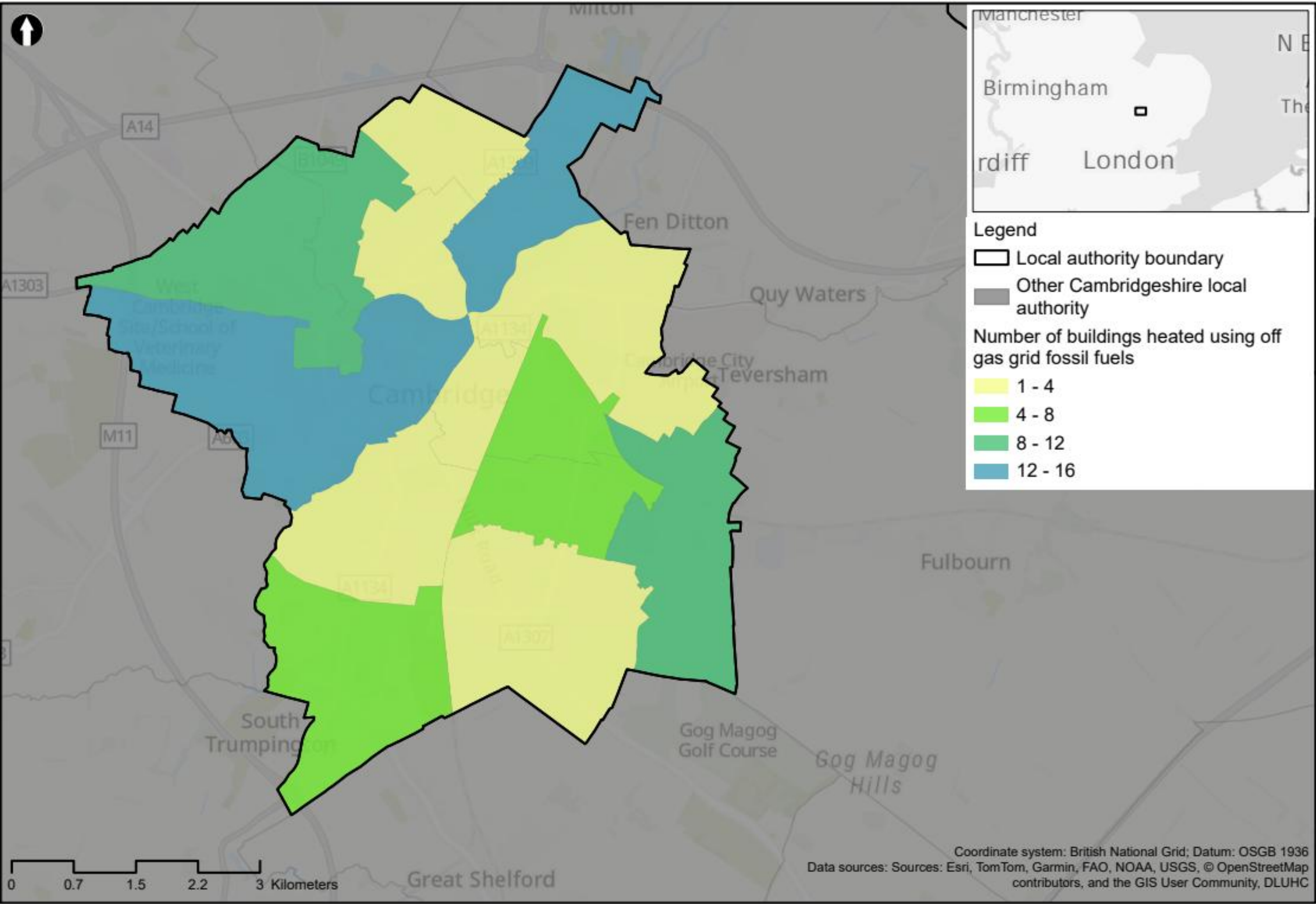
Note: this is imputed EPC Data and therefore is only accurate at an aggregate level by LSOA. The EPC rating provided for a given building (that does not already have a lodged EPC record) is a prediction, rather than a known quantity.



Domestic Building Heat Decarbonisation

Off Gas Map

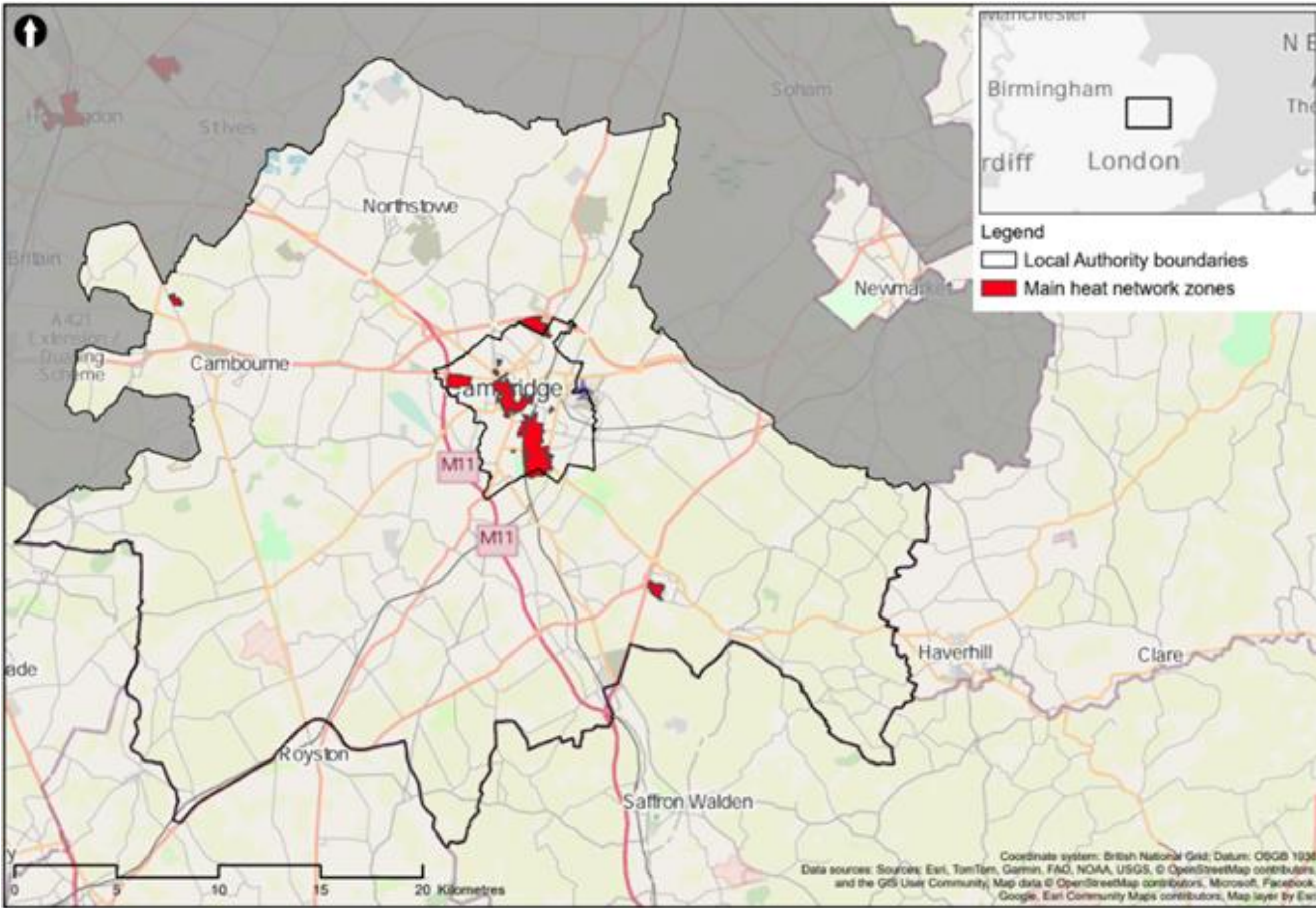
This map shows buildings heated by off grid fossil fuels per MSOA level.



Domestic Building Heat Decarbonisation

Heat Network Zones

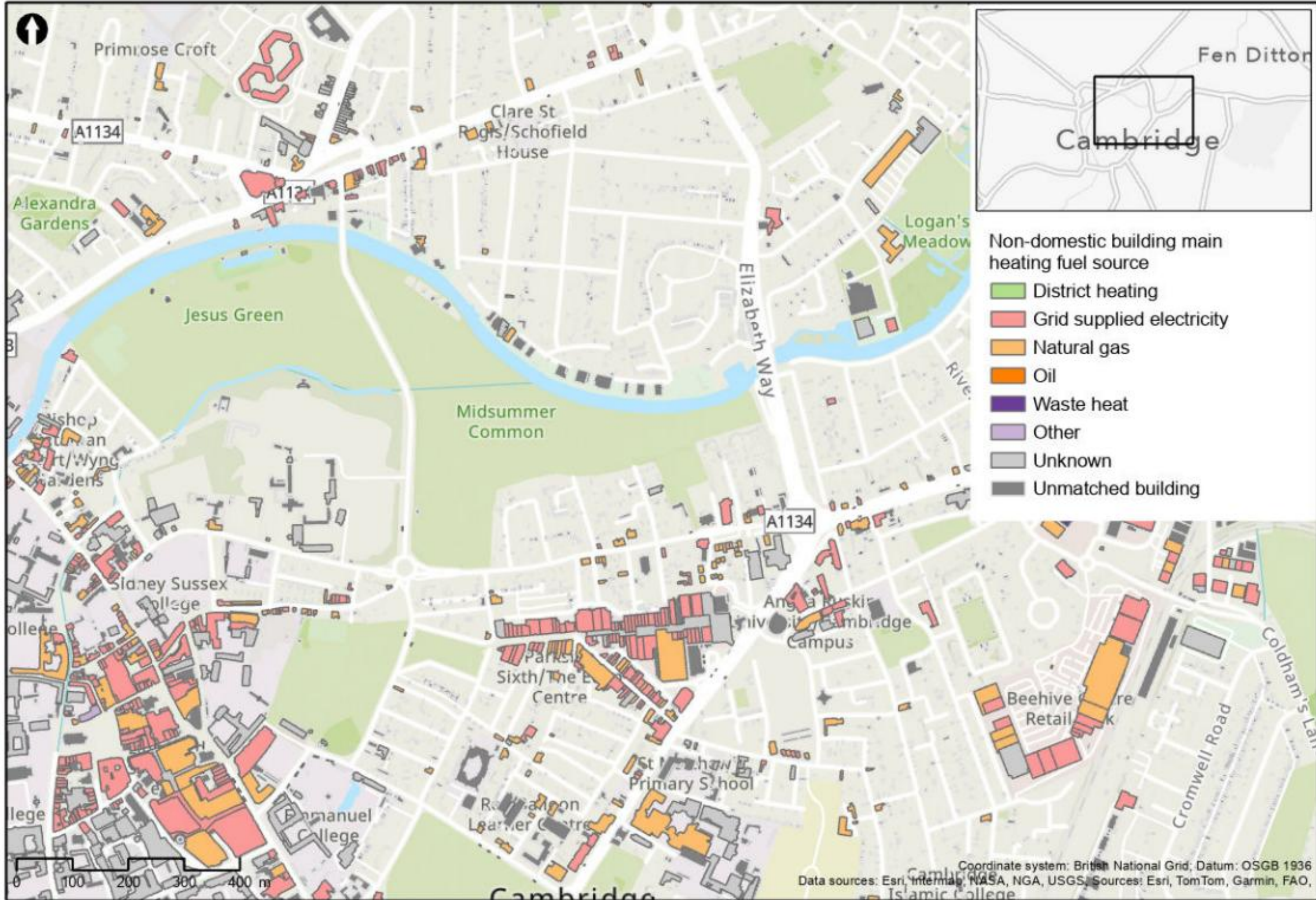
This map shows heat network zones in Cambridge and South Cambridgeshire.



Non-domestic Energy Efficiency & Heat Decarbonisation

Non-domestic fuel types

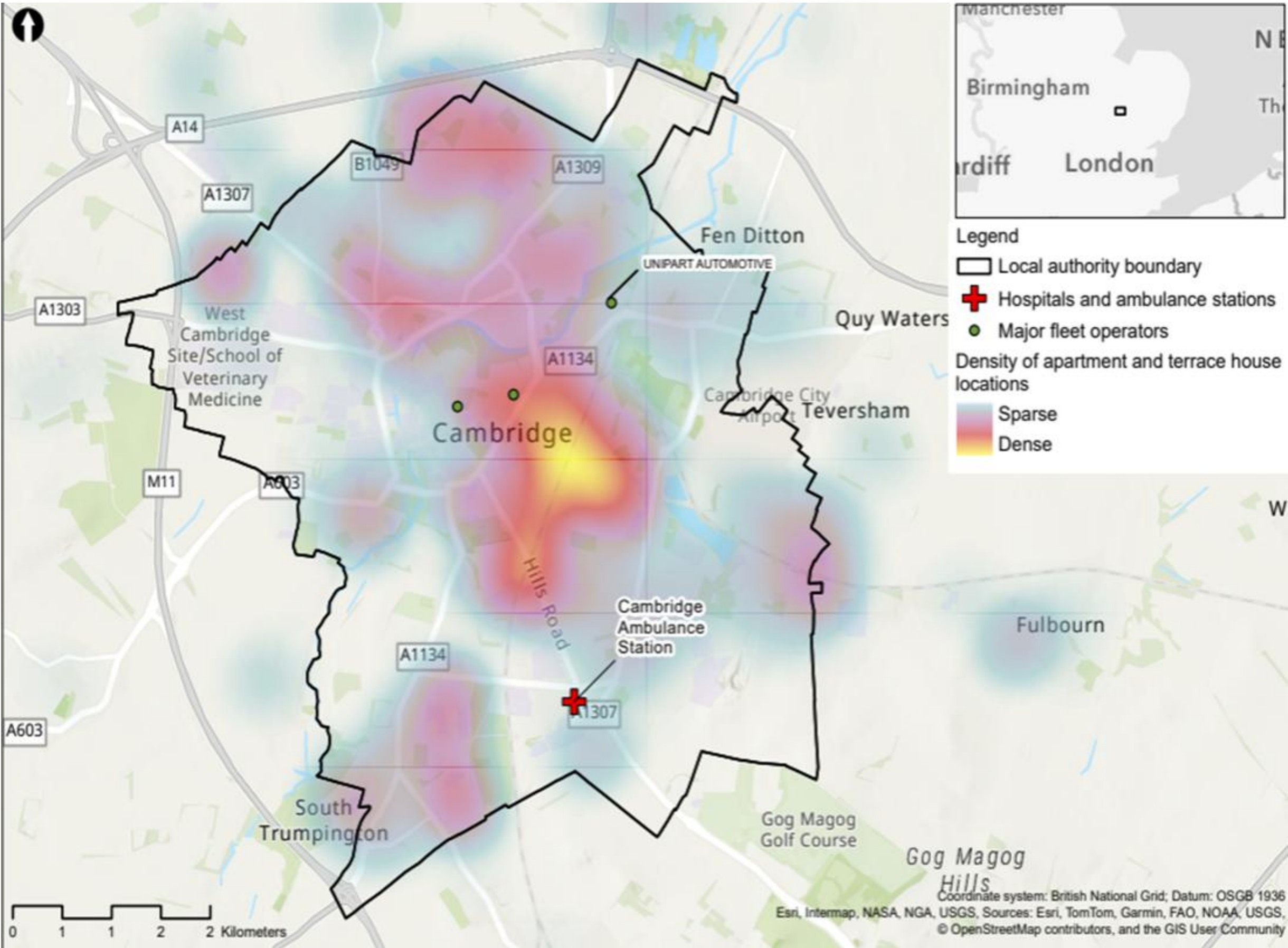
This map shows the fuel types of non-domestic buildings in Cambridge.



Transport

Transport Overview

This map provides an overview of transport-related factors, illustrating the distribution of apartment and terraced housing densities alongside the locations of major fleet operators, hospitals, and ambulance stations.

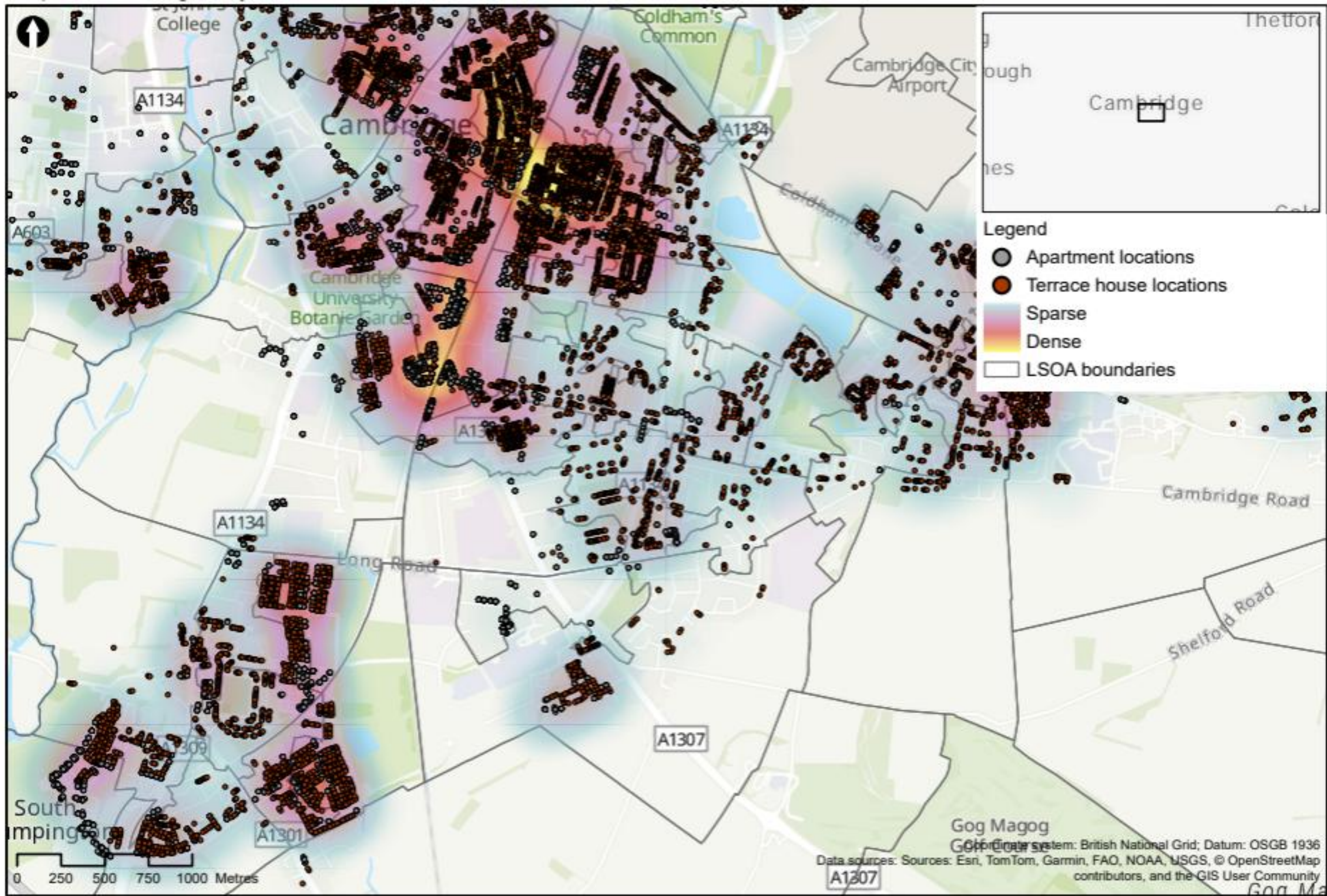


Transport

Transport Overview

This map shows the concentration of apartments and terraced housing in Cambridge City South helping identify neighbourhoods which may benefit from public charging provision.

This location is considered to have a higher concentration of residents who lack off-street parking.



Cambridge Local Area Report

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