Programme Area: Smart Systems and Heat

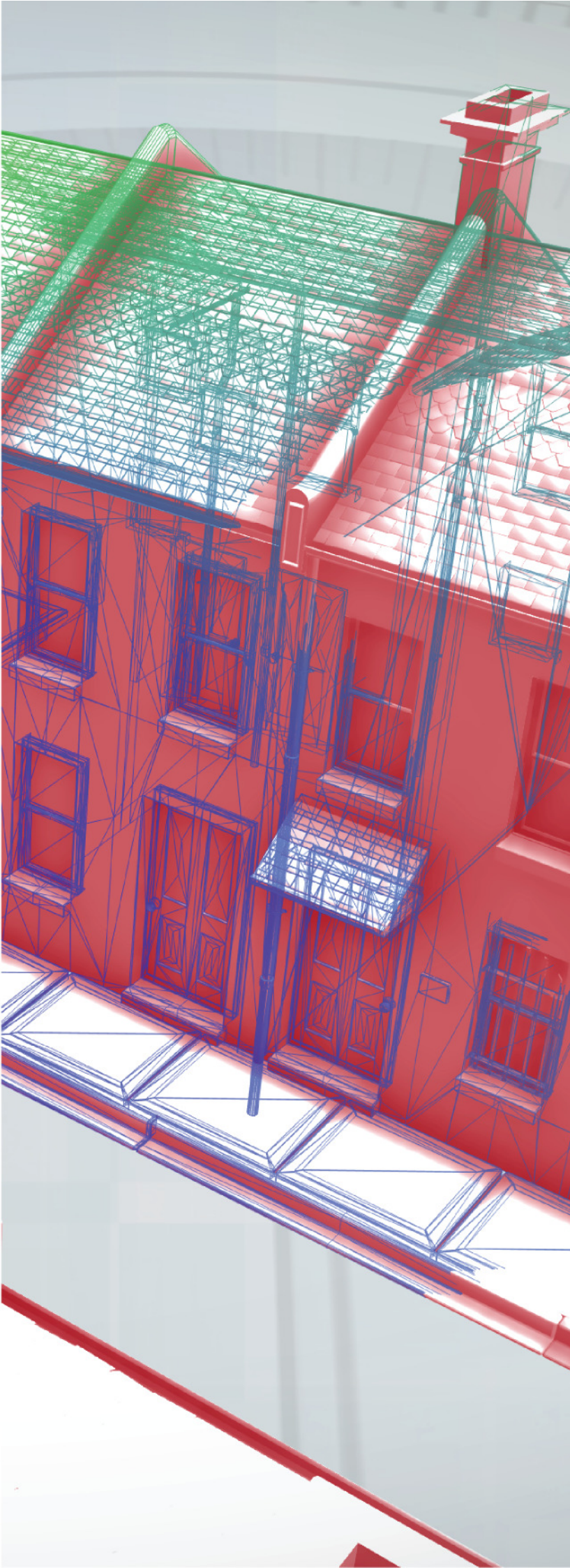**Project:** WP2 Manchester Local Area Energy Strategy

Title: Selection of a Local Authority Area for EnergyPath Networks Study Briefing Report

Abstract:

As part of the Smart Systems and Heat Programme the Energy Systems Catapult has undertaken a strategic high level study of the energy system in Greater Manchester, with the intention of delivering an EnergyPath Networks study for one of the local authorities in Greater Manchester. The purpose of this document is to set out the different factors which could be included in selecting that local authority and the results of initial analysis of those factors completed by the Energy Systems Catapult.

Context:

The Spatial Energy Plan for Greater Manchester Combined Authority project was commissioned as part of the Energy Technologies Institute (ETI) Smart Systems and Heat Programme and undertaken through collaboration between the Greater Manchester Combined Authority and the Energy Systems Catapult. The study has consolidated the significant data and existing evidence relating to the local energy system to provide a platform for future energy planning in the region and the development of suitable policies within the emerging spatial planning framework for Greater Manchester.

Greater Manchester Combined Authority

Selection of a Local Authority Area for EnergyPath Networks Study

Briefing Report

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An Energy Technologies Institute Project

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1 Selection of a Local Authority Area for EnergyPath Networks

1.1 Introduction

The EnergyPath Networks capability has been developed as part of the Energy Technologies Institute's Smart Systems and Heat programme. The capability is used to develop long term energy strategies at a local authority scale. These strategies, developed in collaboration with key stakeholders including the Local Authority and Network Operators, investigate the potential suitability of different technologies and network impacts across all energy vectors (heat, gas and power) to define an agreed long term pathway to a low carbon future for the buildings in the study area. Consideration is given to:

1) the different options for meeting the heat needs of the buildings in the local area,
2) the options for domestic building retrofit
3) how these options influence different energy sources (heat, gas and electricity) and the networks that deliver them.

As part of the Smart Systems and Heat Programme the Energy Systems Catapult has undertaken a strategic high level study of the energy system in Greater Manchester and is committed to delivering an EnergyPath Networks study for one of the local authorities in Greater Manchester.

The purpose of this document is to set out the different factors which could be included in selecting that local authority and the results of initial analysis of those factors completed by the Energy Systems Catapult.

1.2 Areas of Interest

1.2.1 Factors for Consideration

Several factors can be considered in deciding where an EnergyPath Networks study could have the most beneficial impact for the local authority area. Table 1 shows the factors which have been identified as of potential interest by the Catapult and their values for the different local authorities within GM.

EPC Rating

Areas with a large number of buildings with poor thermal performance may be of particular interest as the opportunities for improvement are likely to be larger and the benefits to individual residents and the local economy through reduced energy bills should be greater.

Off Gas Grid

Areas off the gas grid have fewer heating system options and tend to have higher energy bills. There might be particular interest in understanding the options for these communities.

Fuel Poverty

Any decarbonisation strategy is likely to be more costly than adopting business as usual. Understanding the influence of a decarbonisation on fuel poor households could be highly relevant in defining a future energy strategy that safeguards the most vulnerable.

Heat Networks

Several areas have been identified within GM as suitable for heat network development. These could provide the basis of a new, low carbon energy infrastructure. An EnergyPath Networks study including some of these areas could help to understand the options for cost-effective future development and growth of heat networks at a local authority level, in general and within the selected local authority in particular.

Table 1: Factors of interest in selecting a study area

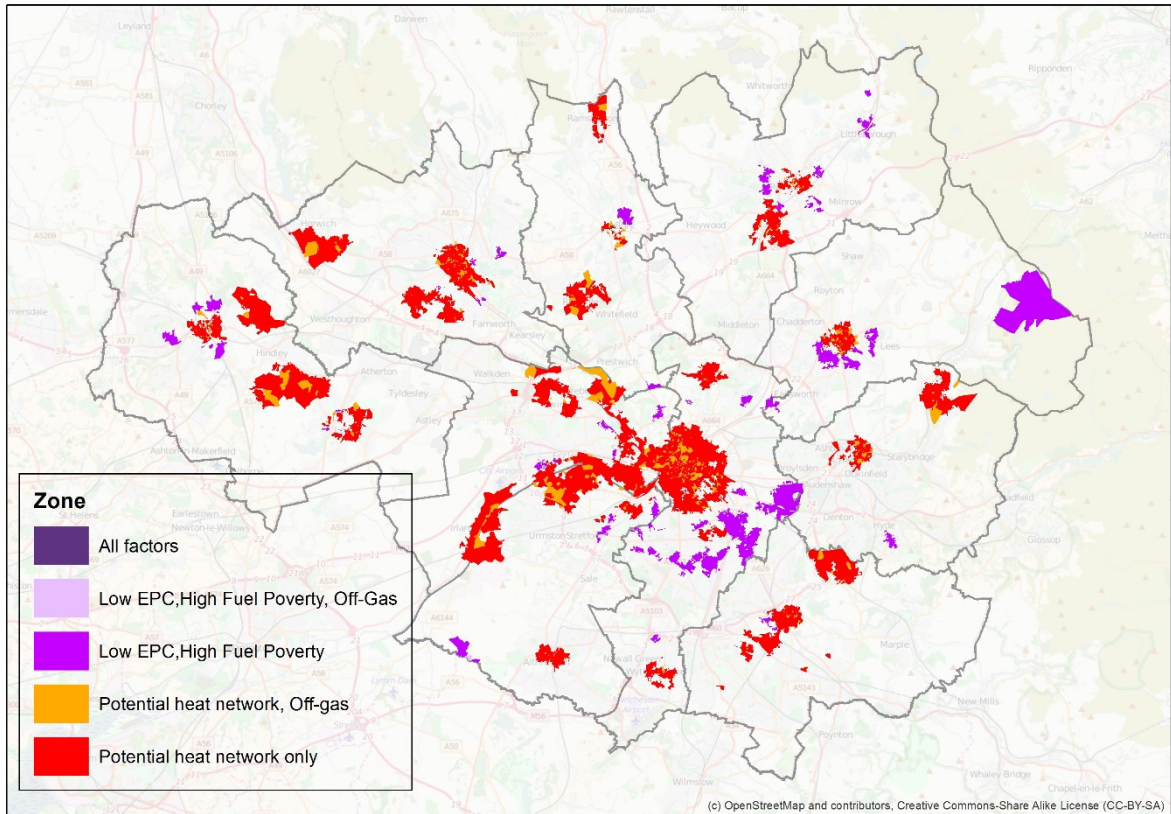| Local Authority	Proportion of properties in postcodes where 75% of properties are EPC rated D or worse	Proportion of properties in off gas grid postcodes	Proportion of households in fuel poverty	Proportion of properties within 500m of proposed Heat Networks
Bolton	23%	3%	10%	12%
Bury	51%	3%	11%	11%
Manchester	26%	3%	15%	18%
Oldham	40%	3%	11%	4%
Rochdale	26%	2%	11%	10%
Salford	20%	4%	11%	26%
Stockport	60%	3%	10%	13%
Tameside	33%	2%	10%	8%
Trafford	61%	3%	10%	15%
Wigan	32%	2%	10%	10%

Figure 1 Map of factors

1.2.2   Ranking of Consideration Factors

For each of the consideration factors above the local authorities were ranked from 1 to 10. They were then ranked on the sum of the individual rankings to give an overall ranking as shown in Figure 2. The area with the highest proportion of properties in the areas of interest is ranked 10.
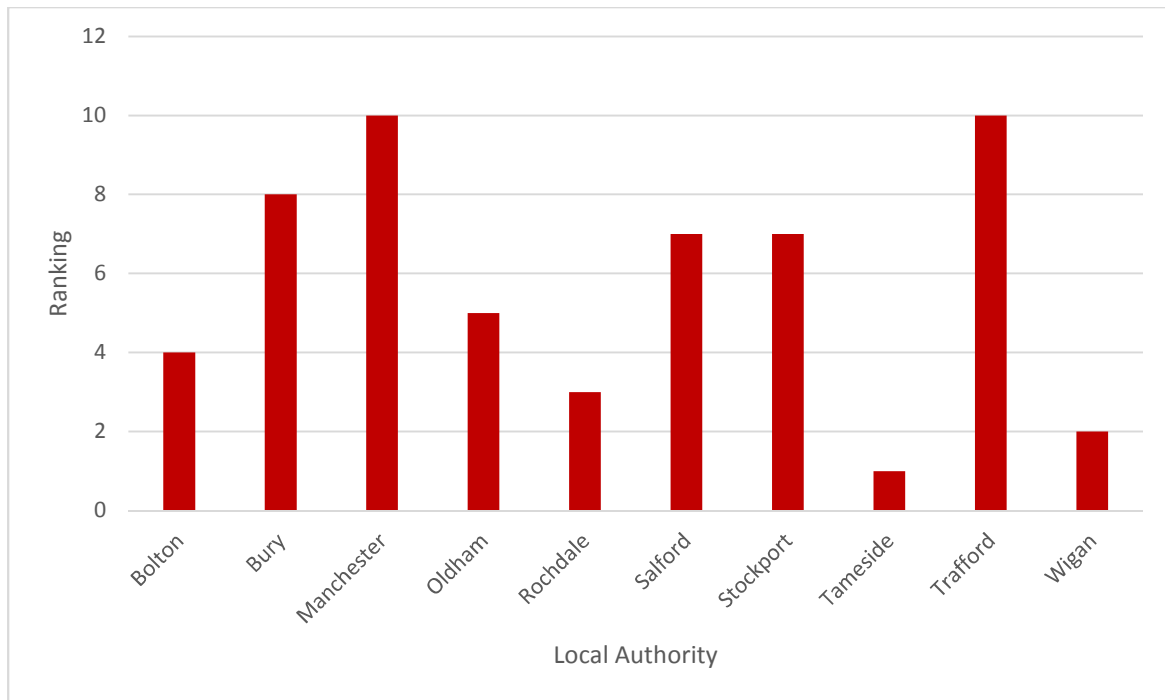
1.3   Modelling Complexity

The EnergyPath Networks modelling framework is still in the early stages of development and extremely complex environments can be challenging to analyse which could adversely influence the timescales for completion of any study. Area complexity is predominantly influenced by the number of buildings and the complexity of the local electricity network. Areas with a larger number of buildings and high voltage substations are more complex to analyse using EnergyPath Networks. These factors are shown in Table 2.

Table 2: Building and high voltage substation numbers by local authority

Bolton	117,985	6,751	11
Bury	79,186	3,049	6
Manchester	209,925	15,618	31
Oldham	90,958	4,915	9
Rochdale	88,325	4,871	13
Salford	106,327	7,261	16
Stockport	123,287	8,075	16
Tameside	96,422	8,329	11
Trafford	96,260	7,246	15
Wigan	138,269	15,786	9

1.3.1   Ranking of Modelling Complexity

For each of the complexity factors above the local authorities were ranked from 1 to 10. They were then ranked on the sum of the individual rankings to give an overall complexity ranking as shown in Figure 3. The most complex area is ranked as 1 with the least complex area ranked as 10.
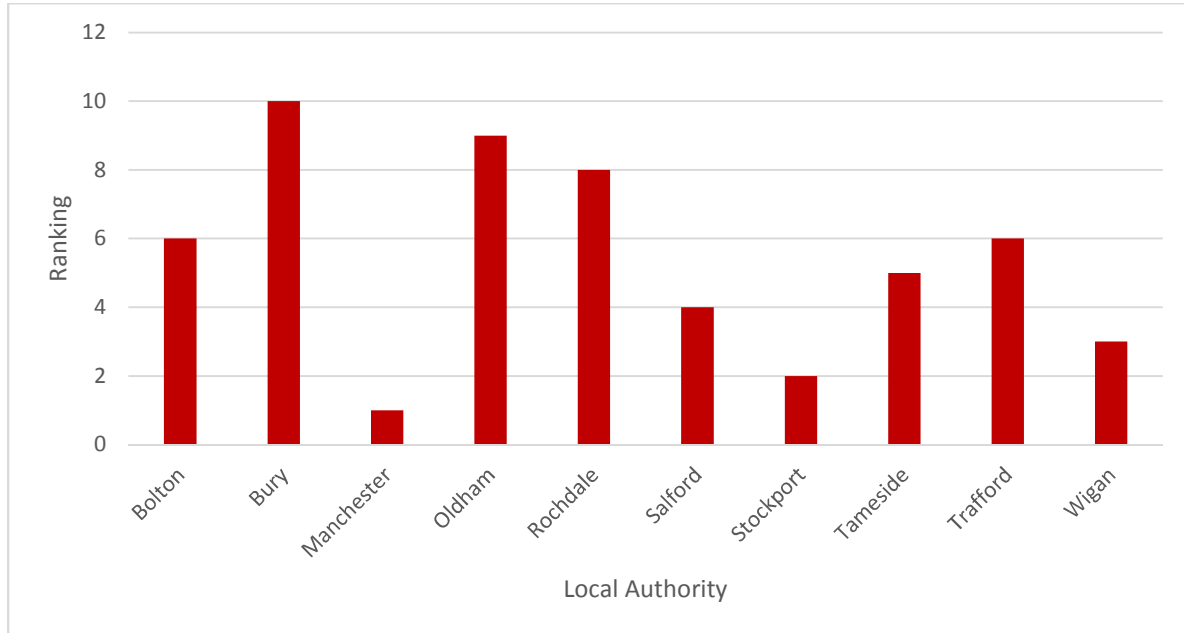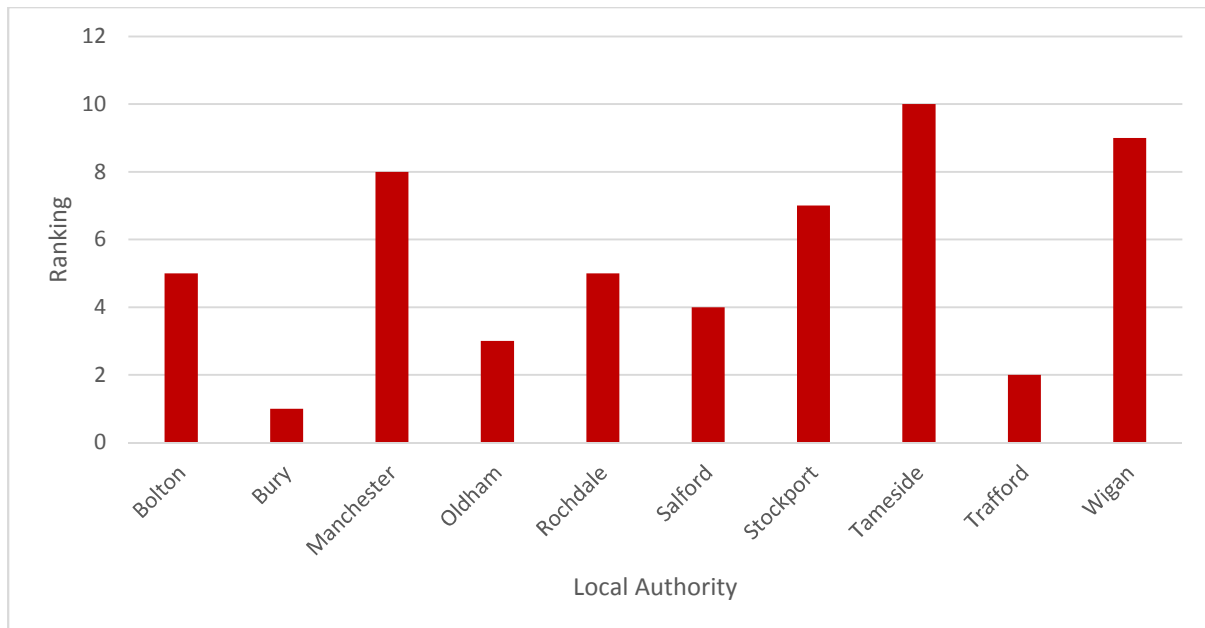

Figure 3: Local Authority ranking by complexity factor (low values are the most complex).

1.4   Overall Ranking

An overall ranking was calculated by multiplying the rankings for consideration and complexity as shown in Figure 4.

1.5   Conclusions

The following conclusions are based solely on the analysis set out above and do not consider the relative weighting of the factors or any other social, environmental or political factors which may be important to GMCA or individual local authorities within GM.

1) Bury is the local authority with the least complexity from a modelling perspective.
2) Manchester would be an extremely challenging area to analyse within EnergyPath Networks and may prove beyond the capability of the model at its current state of development. The Energy Systems Catapult would not recommend selection of Manchester for a detailed study at this stage.
3) Trafford has the same ranking of consideration factors as Manchester. The next highest ranked local authority is Bury.
4) The area with the highest combined score for consideration factors and modelling complexity is **Bury**. The next highest local authority is **Trafford**.

It should be noted that the ETI SSH Phase 1 programme funding is for production of a single local area energy strategy by the Energy Systems Catapult project team. It does not include for the provision of any modelling tool software to either the GMCA or Local Authority.

It will be important for the GMCA to confirm the selection of a local authority promptly and identify relevant local stakeholders to allow sufficient time for project initiation and completion of the EnergyPath Networks study.

ESC00049 Greater Manchester - SSH Phase 1

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