

3. Identifying the opportunities

Finding the opportunities and using local resources at every scale

The study sought to identify the strategic opportunities for low and zero carbon sources of energy across the City Region and at a range of scales - from wind farms and power stations to neighbourhood heating networks and solar roofs.

The study identified four strategic energy opportunities each of which have distinct characteristics and very different implications for planning and investment.

Below we briefly describe these four main opportunities. Across the page we then illustrate the **potential heat and energy sources** identified by the study, and map the **broad spatial areas and locations**.



Opportunity 1. Micro-generation

Heat and power supplied to individual buildings by technologies such as solar photovoltaics or biomass boilers.



Opportunity 2. Energy networks

Heat, power and cooling supplied by power stations, CHP stations, geothermal wells, heat pumps and boilers.



Opportunity 3. Standalone energy

Power generated by technologies such as wind turbines located to make use of renewable energy resources.



Opportunity 4. Biofuel supply

Production and distribution of fuels such as wood chips, biodiesel and biogas from wood and organic wastes.

Potential Heat and Power Sources

Biogas CHP

Waste heat from biogas produced from sewage and organic waste.



Large gas-fired CHP

Waste heat from Carrington power station.



Energy from waste CHP

Power and waste heat from a range of different treatment plant.



Hydroelectric

Power from small generators using weirs, lock gates and mill ponds.



Landfill gas CHP

Waste heat from generators burning landfill gas.



Wind clusters & single turbines

Power from sites and clusters of between 1-10 large turbines.



Geothermal heat

Heat extracted from shallow and deep aquifers, and old mine workings.



Biofuel supply

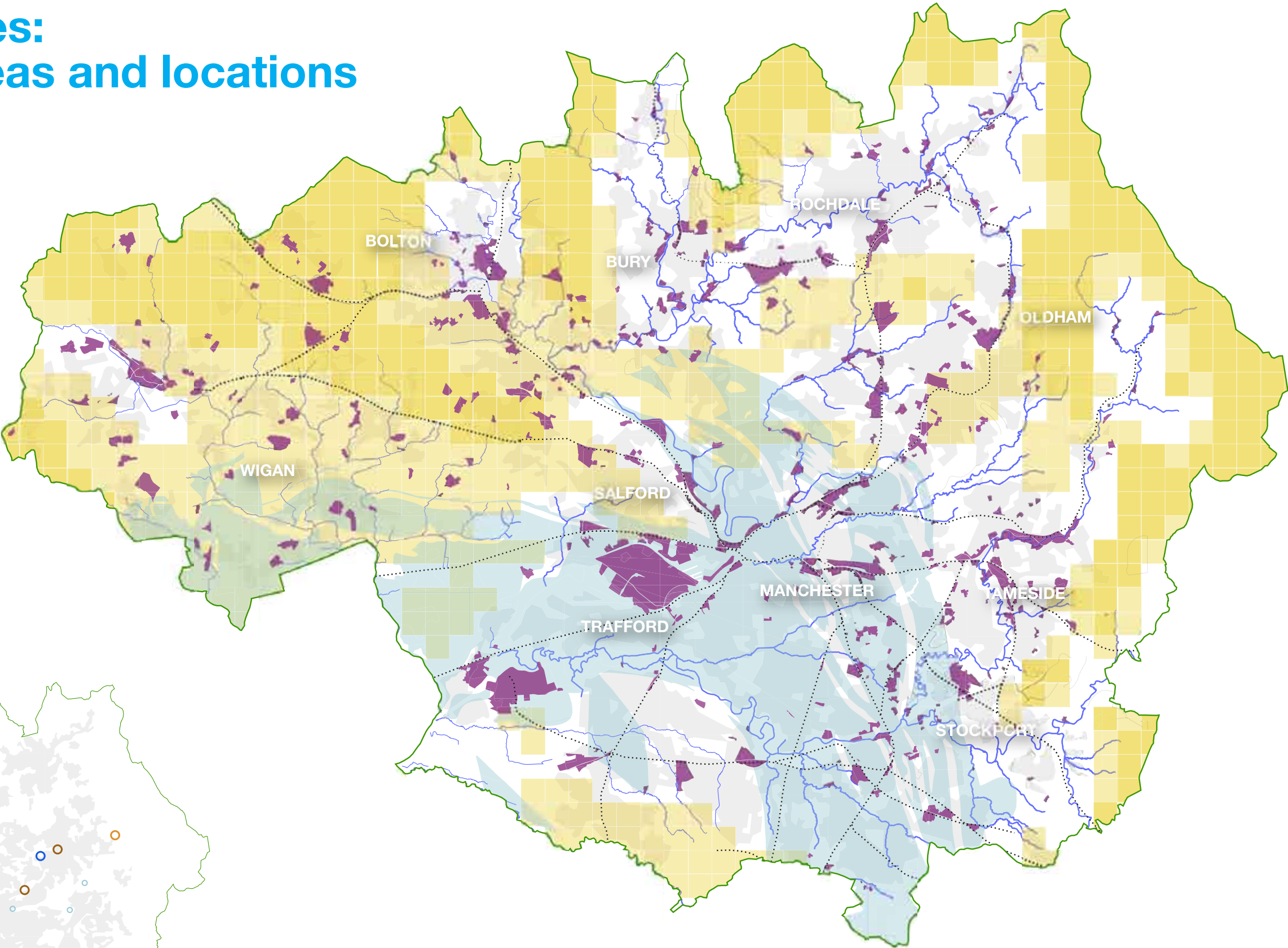
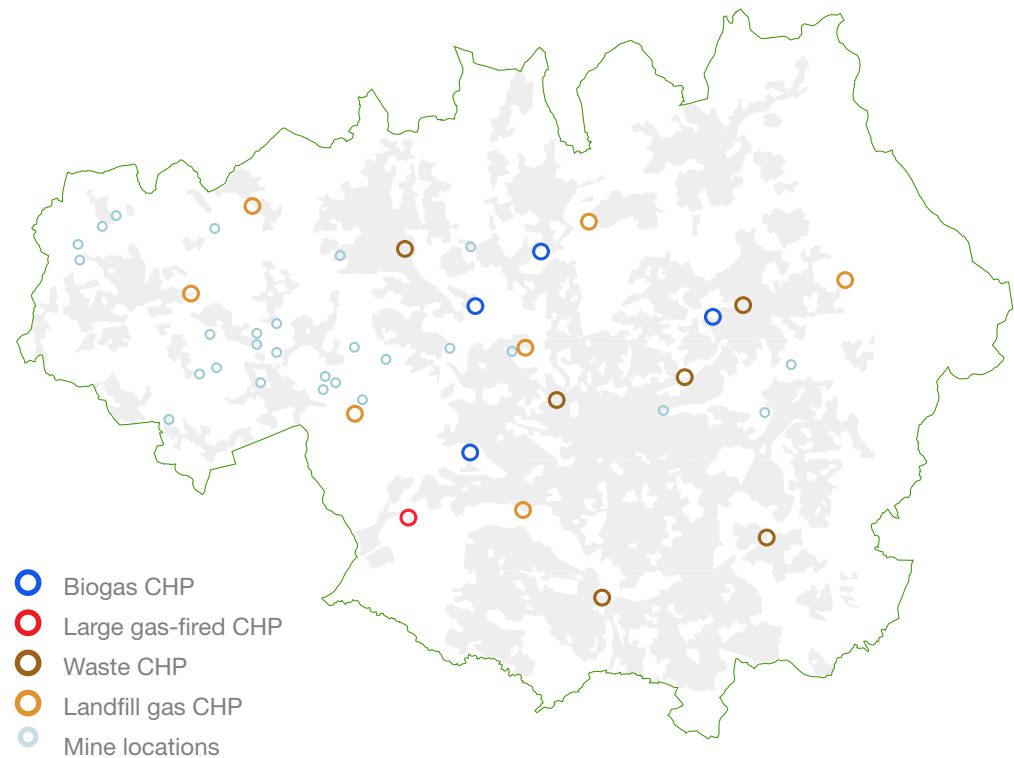
Processing, production and storage served by road & rail.



Energy Resources: Broad spatial areas and locations

The study identified specific locations where waste heat from existing and proposed power generators could be exploited, as well as broad areas for renewable energy sources. These opportunities have been mapped on the adjacent plans using the corresponding colour key for heat and power sources.

Energy source locations



4. Making connections

Matching up the opportunities in order to make real progress

The study sought to characterise development across the City Region and explore how carbon emissions could be reduced through a planned approach tailored to each opportunity.

The study began by identifying **character areas of change** to understand the nature of new development across the City Region. With input from the ten districts 13 representative case studies were then chosen for more detailed analysis.

For each case study, analysis was carried out to identify the most beneficial and cost effective opportunities for decentralised energy. This drew upon several **layers of information needed for energy planning**.

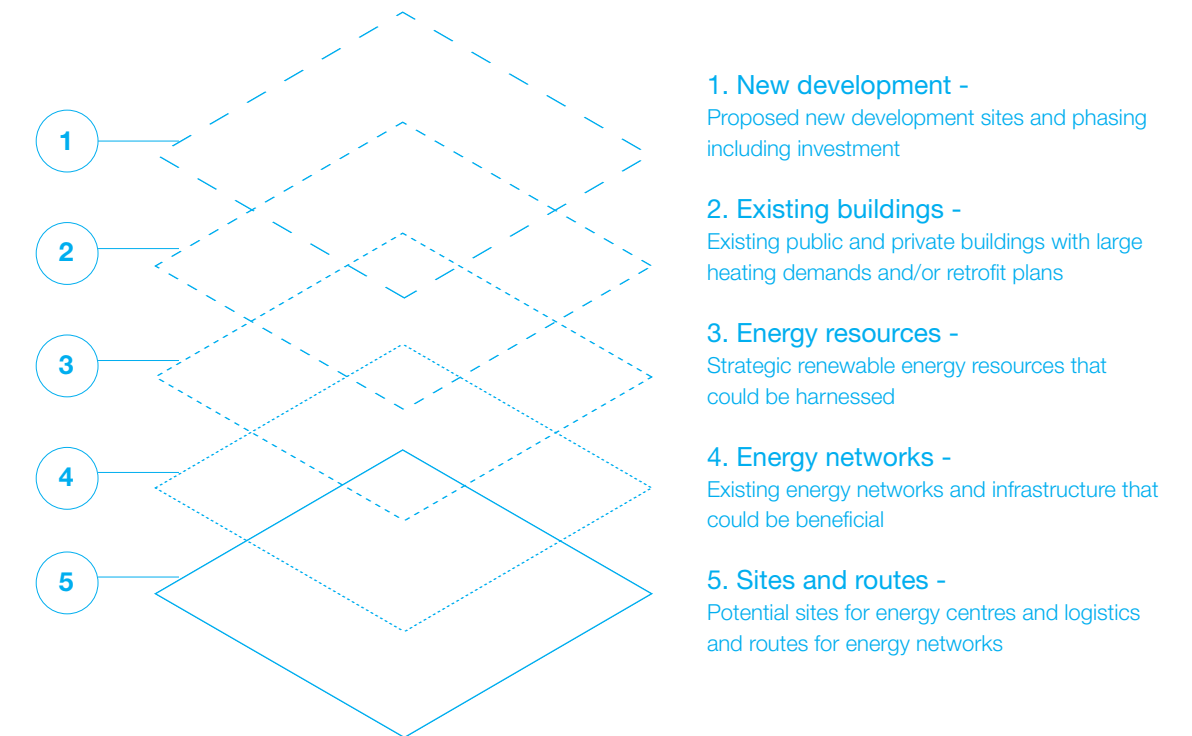
An energy plan was drawn up for each of the case studies identifying how different opportunities might be taken forward, supported by projections of future energy use and carbon emissions.

This was used to develop a policy approach to planning and delivery. This included the proposed use of planning policies, targets and contributions to encourage, require and enable things to happen. On pages 14-15 we use case studies 3 and 5 to illustrate the approach in more detail.

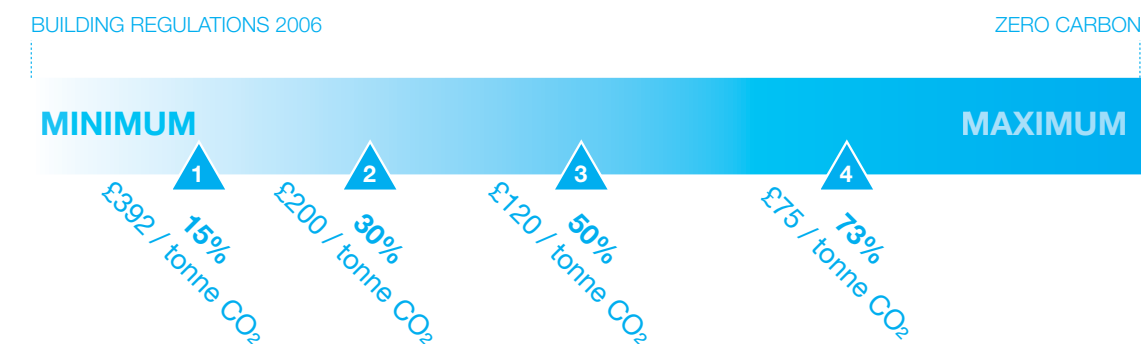
Data from the case studies was used to create a **sliding scale for carbon reduction targets** based on the cost per tonne of CO₂ for infrastructure opportunities – the cheaper the opportunity the higher the target, as illustrated by the diagram below.

The study concluded that rather than looking at individual sites zero carbon can be achieved more cost effectively by allowing developers to contribute to lower cost infrastructure opportunities at local, district or City Region scale.

The layers of information needed for energy planning



Creating a sliding scale for carbon reduction targets



Opportunity 1. Homes with solar photovoltaic roofs

Opportunity 2. District centre scale CHP/district heating scheme

Opportunity 3. Community micro-generation scheme

Opportunity 4. Power station waste heat supplying district heating connections



Holt Town masterplan, Manchester



Exchange Greengate masterplan, Salford



Prestwich Village Centre improvements, Bury



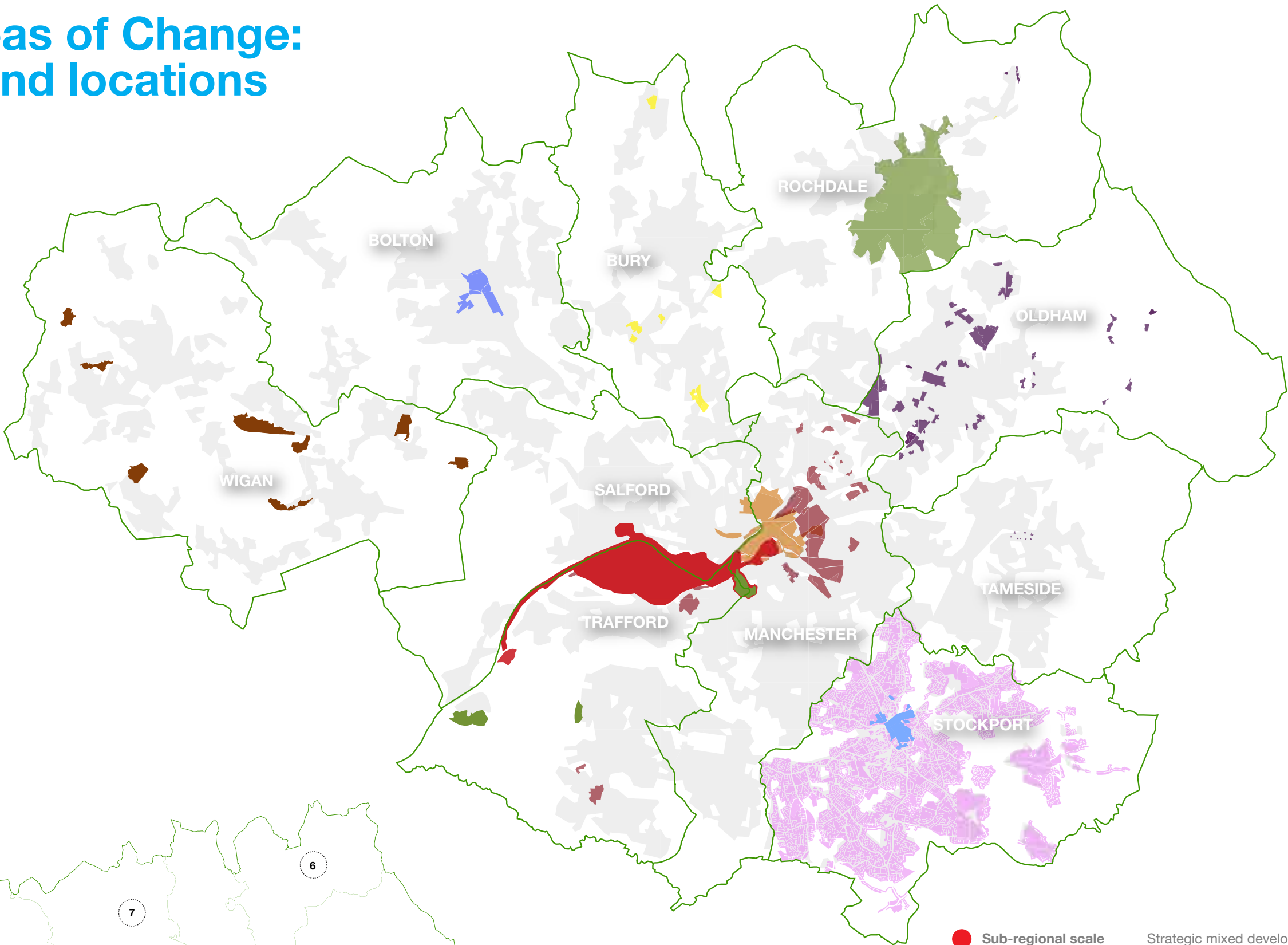
Old Trafford regeneration masterplan, Trafford

Character Areas of Change: Broad areas and locations

These plans illustrate how case studies were identified in order to be representative of distinct character areas of change across Greater Manchester.

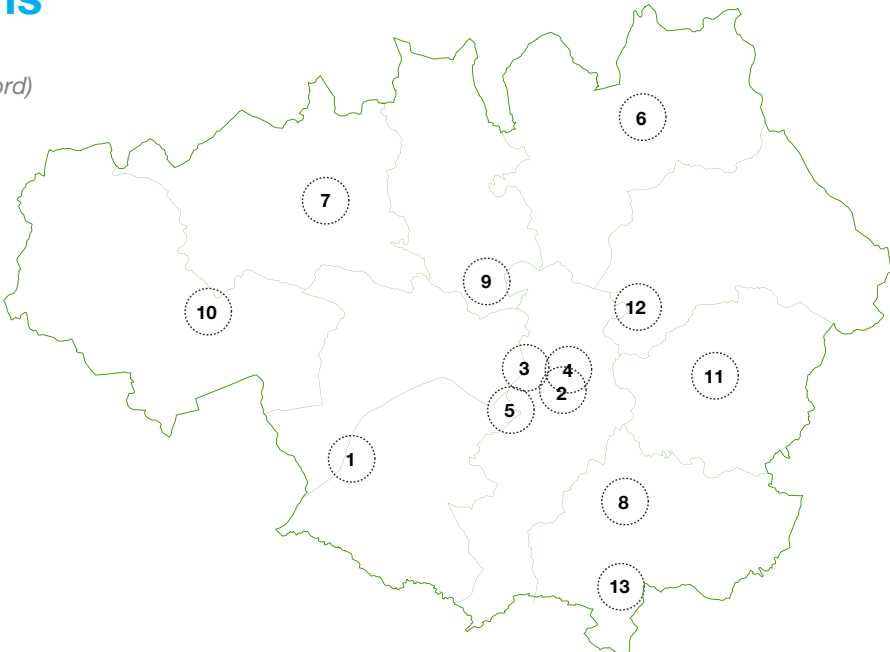
The larger plan shows the character areas of change, highlighting only those that relate to a case study from a district. The smaller plan below locates the 13 case studies.

Any one district is likely to contain several of each of the character areas. Districts can therefore refer to equivalent case studies from other districts as an evidence base.



Case study locations

- 1. Carrington Power Station (*Trafford*)
- 2. Chancellor Place (*Manchester*)
- 3. Greengate Exchange (*Salford*)
- 4. Holt Town (*Manchester*)
- 5. Old Trafford (*Trafford*)
- 6. East Central (*Rochdale*)
- 7. Five Quarters (*Bolton*)
- 8. Shopping Centre (*Stockport*)
- 9. Prestwich Village (*Bury*)
- 10. North Leigh (*Wigan*)
- 11. Tower Mill (*Tameside*)
- 12. Hollinwood (*Oldham*)
- 13. Bramhall (*Stockport*)



● Sub-regional scale	Strategic mixed development corridor
● Regional centre	Mixed commercial and residential
● Regional centre	Large growth point residential
● Regeneration area	Estate improvement/HMR terrace in-fill
● Regional town centre	Mixed use and public sector led precincts
● Sub-regional centre	Retail-led investment
● Sub-regional housing	Strategic housing allocations
● Sub-regional employment	Refurbishment and new build / office
● Existing residential	Improvements and property sales