The Power of Your Local Plan to Address Climate Change

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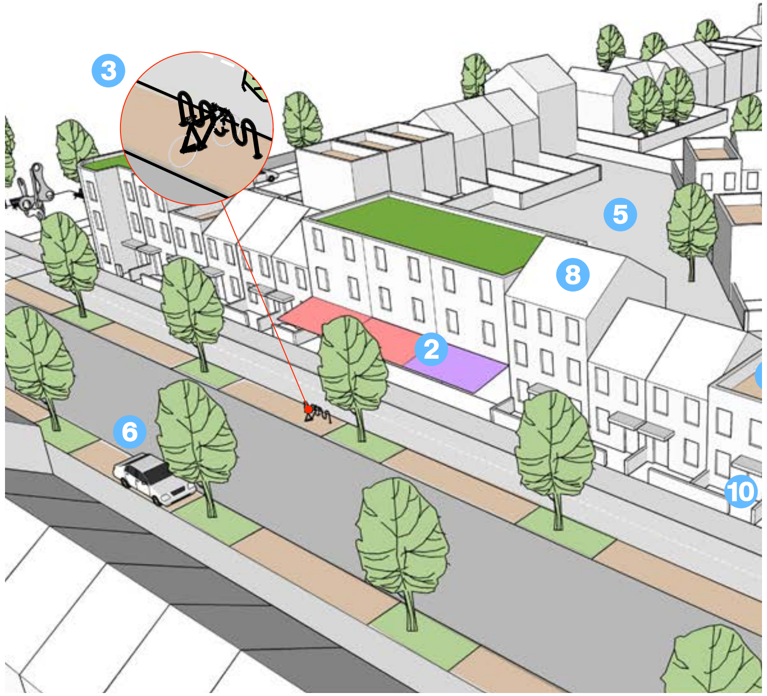
Renewable and Low Carbon Energy

Energy Efficient Buildings

Multi-Functional Green Infrastructure

Sustainable Transport

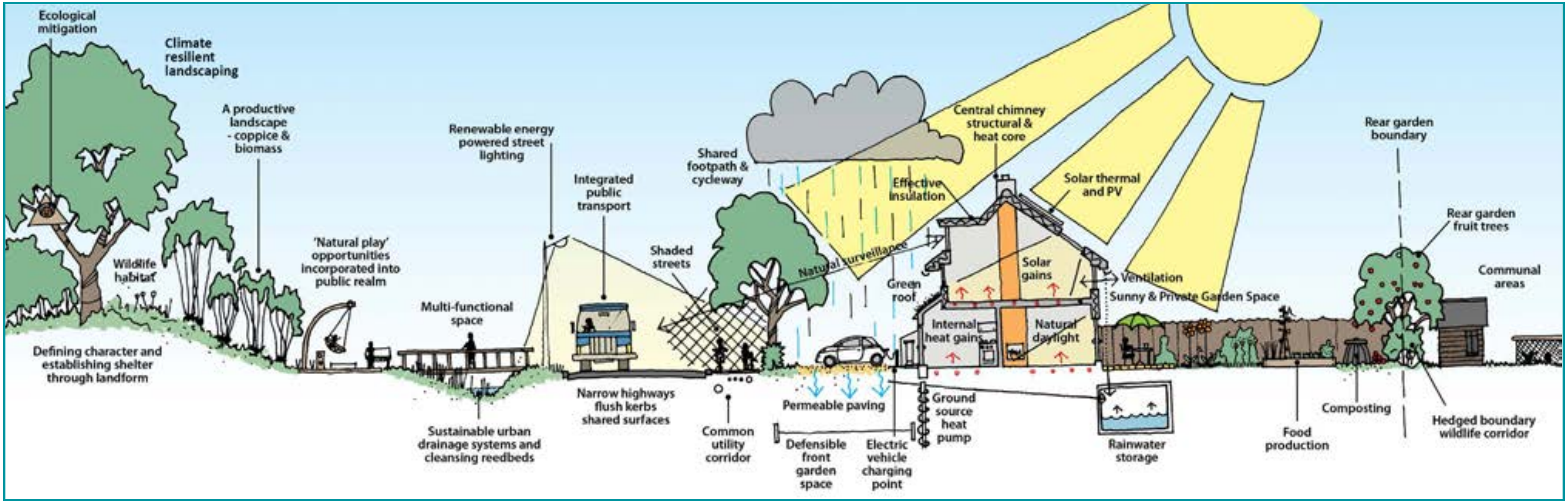
Compact and Smart Growth



Waste and Recycling

Climate Change Adaptation

Bringing it All Together

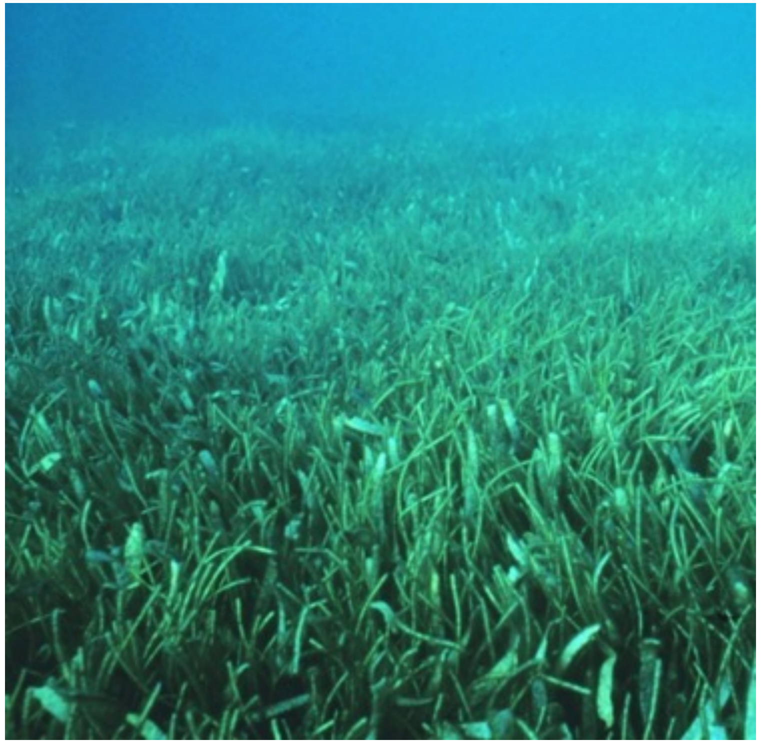


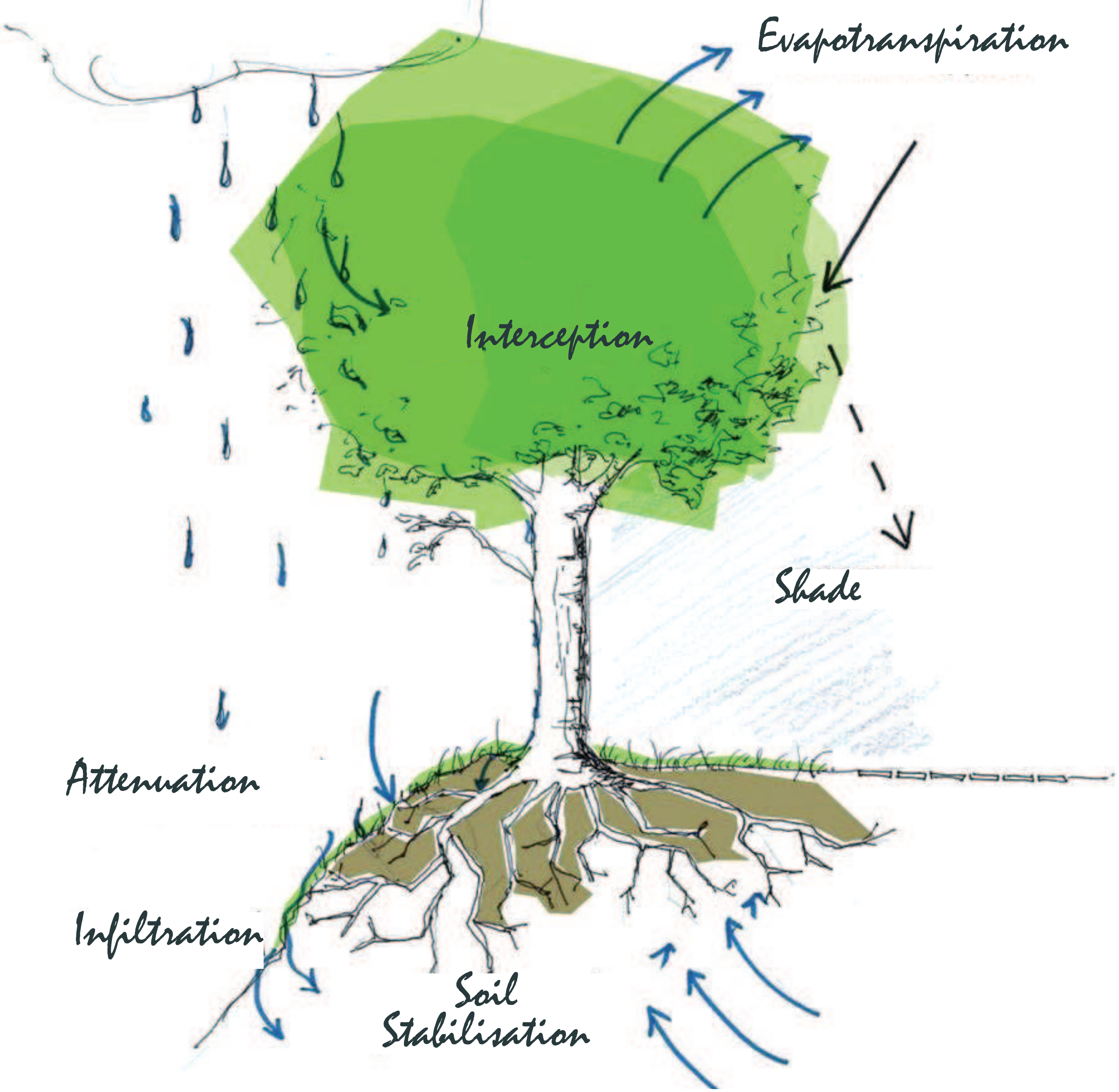
Health and Wellbeing

Sources of Guidance

- Local Plan Policy Development
- The role of design guidance and SPD's
- Planning positively for renewable energy
- Energy masterplanning
- Case studies and exemplar projects

Towards Net Zero





One adult tree = five air conditioning units working 20 hours/day = 11.4kWh of energy saved per day, amounting to 500 euros of energy cost saving per year (assuming a yearly energy consumption of 1000 kWh/yr)

Guildford borough Local Plan: strategy and sites

2015 – 2034

Adopted 25th April 2019

GUILDFORD
BOROUGH

Design

National Design Guide

Planning practice guidance for beautiful, enduring and successful places

Ministry of Housing,
Communities &
Local Government

National Design Guide

R1 Follow the energy hierarchy

138 Well-designed places and buildings follow the energy hierarchy of:

- reducing the need for energy through passive measures including form, orientation and fabric;
- using energy efficient mechanical and electrical systems, including heat pumps, heat recovery and LED lights; and
- maximising renewable energy especially through decentralised sources, including on-site generation and community-led initiatives.

139 They maximise the contributions of natural resources such as sun, ground, wind, and vegetation.

140 They make use of potential for renewable energy infrastructures at neighbourhood and building level. These include photovoltaic arrays, heat pumps and district heating systems, to reduce demand for non-sustainable energy sources. IT advances and app-based solutions allow users to take ownership or to manage these systems so as to use them most efficiently.

141 They follow the principles of whole life carbon assessment and the circular economy, reducing embodied carbon and waste and maximising reuse and recycling.

150 Well-designed buildings make the most of passive design strategies to minimise overheating and achieve internal comfort. These include:

- the layout and aspect of internal spaces;
- insulation of the external envelope and thermal mass;
- management of solar gain; and
- good ventilation to reduce overheating.

They are supported by other measures where necessary, such as mechanical ventilation with heat recovery for efficient ventilation in winter.

National Model Design Code

Resources

66. Standards relating to sustainability are important and can be incorporated into codes or covered in other policy, and the detail design of inter-related requirements resolved at project level. They might include the following (See Guidance Notes Code Content: Resources):

i **Energy efficiency standards:** Local authorities can set policies in local plans or design codes that are adopted in local plans for higher energy efficiency standards for their area or specific development sites. **See R.1.ii Energy Efficiency**

ii **Passive energy design:** Development should be designed to optimise passive solar gain without risking overheating. Orientation should be optimised in as far as it does not contradict other approaches in this guide. **See R.1.ii Energy Efficiency**

iii **Local low carbon, low energy networks:** May be encouraged by codes. **See R.1.iii Neighbourhood Energy Issues**

iv **Environmental standards:** Codes may set standards for new development to meet relating to:

- Embodied energy/carbon
- Whole life-cycle carbon
- BREEAM Ratings and other best practice guidance
- Modern Methods of Construction
- Water usage

v. **Onsite renewable sources:** The use of renewable energy sources should be maximised and a 'fabric first' approach where appropriate. **See R.2 Sustainable Construction**

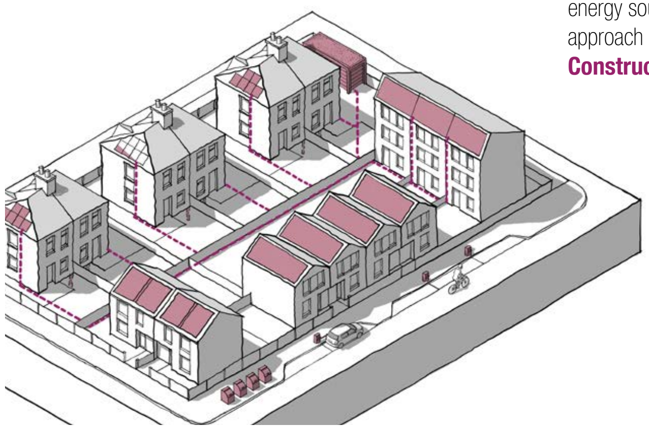


Figure 45. Low Energy Networks Extract See R.1.iii for examples of low energy network tools

Lifespan

67. Lifespan relates to way schemes are managed and the way that residents are involved in design and management. These issues can be included in design codes and may include the following (See Guidance Notes Code Content: Lifespan for more information):

i **Management plans:** These set out the approach to adoption and management, including the potential for community management. They may be a requirement for schemes over a certain size. **See L.1.i Management Plan**

ii **Community participation:** Codes may require that consultation take place on all schemes prior to the submission of a planning application. **See L.1.ii Participation in Design**

Figure 46. Management Plan Extract
See L.1.i for example management plan

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R.1 Energy

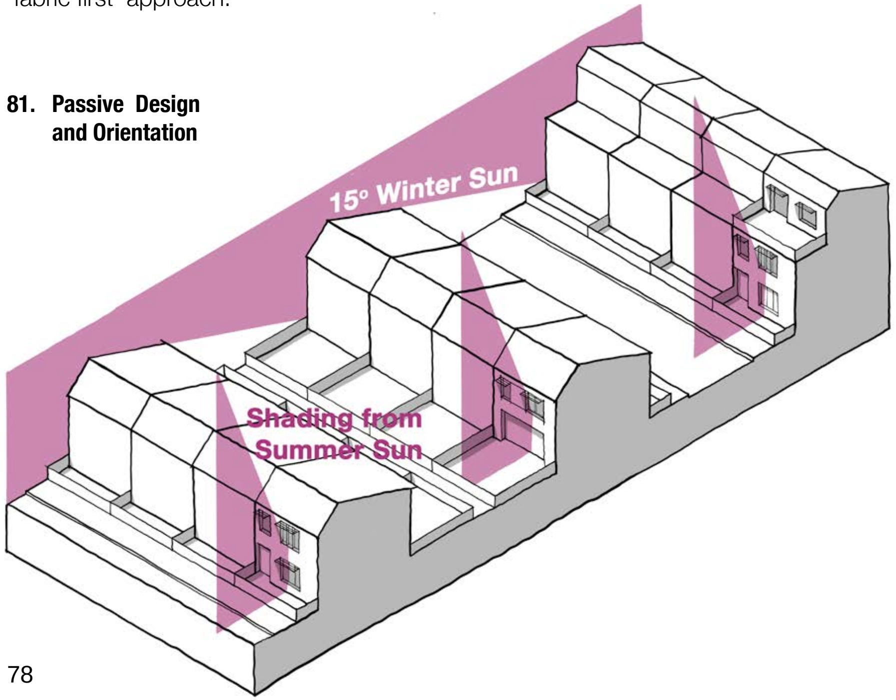
R.1.i Energy Hierarchy

200. The Energy Hierarchy is a classification of energy options, prioritised to assist progress towards a more sustainable energy system. Design codes can include a local energy hierarchy based on energy efficiency standards, renewable energy sources and renewable energy networks, following a ‘fabric first’ approach.

R.1.ii Energy Efficiency

201. Local authorities can set policies for higher energy efficiency standards for their area or in relation to specific development sites in local plans or design codes that are adopted in local plans. The materials, construction and orientation of buildings dictate their energy efficiency. There are multiple ways of reducing energy waste. In developing policies, consideration should be given to improving energy efficiency, which may address the selection of materials for thermal and solar performance, retrofitting existing buildings, design and orientation construction techniques and assessing whole life costs. These requirements need to be integrated with other design code considerations and the detail design of inter-related requirements resolved at project level.

81. Passive Design and Orientation



Passive design: The layout and orientation of new buildings contributes to reducing their energy needs by avoiding overshadowing, maximising passive solar gain, internal daylight levels and ventilation.

Solar energy generation: The layout and orientation of roofscapes need to maximise opportunities for solar PV generation with south-facing roof space and the use of reflective surfaces.

Other technologies: consider adequate space in masterplanning and plots for homes for new and emerging technologies such as ground and air source heat pumps for example.

Orientation: Ensuring good levels of natural lighting to habitable rooms whilst minimising the risk of overheating, provides benefits for both health and energy efficiency. Careful modulation of heights and roofscape can maximise the sunlight to each unit. South facing single aspect homes that lead to overheating and north-facing single aspect flats needs to be avoided.

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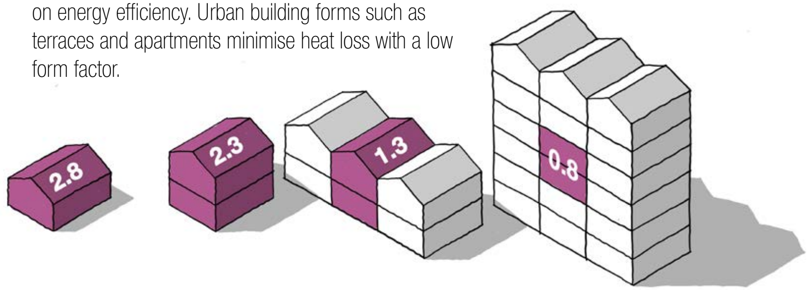
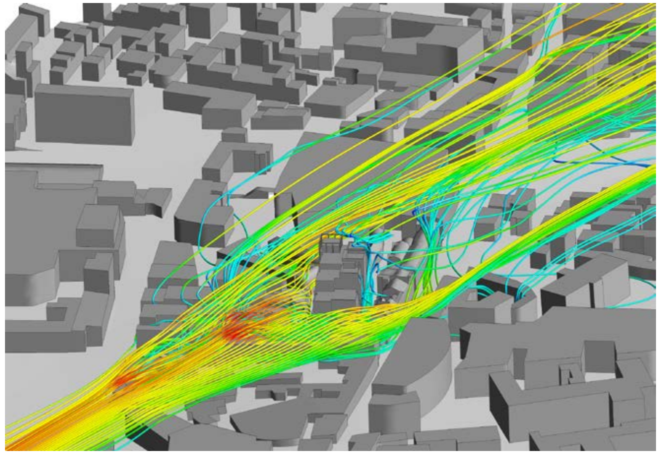
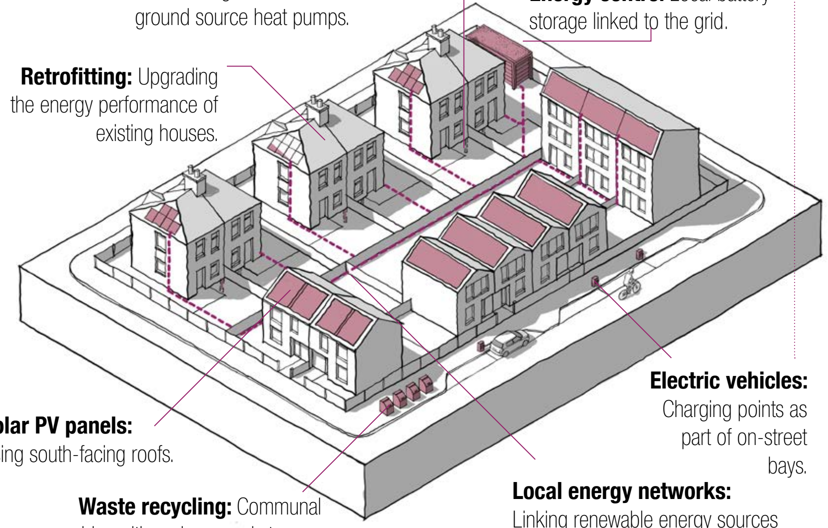
82. Form Factor: Is the proportion of floor area to external wall area and can have a significant impact on energy efficiency. Urban building forms such as terraces and apartments minimise heat loss with a low form factor.



83. Micro-climate: Schemes needs to consider micro-climate, particularly wind impact on exposed sites or where taller buildings are proposed. This affects the usability of the public realm and the energy demands of buildings.



84. Low Carbon Low Energy Networks:



National Model Design Code

202. The design of windows needs to consider orientation to balance heat loss and beneficial solar gain, daylight and sunlight. Southern-facing glazing can be beneficial in contributing to overall energy demand in winter. It can lead to overheating in summer and excessive heat loss on cold cloudy days in winter. Glazing needs to be sized appropriately for context and passive measures such as external shading devices or provision for future installation of shading devices needs to be considered to reduce reliance on mechanical ventilation.

R.1.iii Neighbourhood Energy Issues

203. Some energy issues are most appropriately dealt with at the level of the neighbourhood rather than at building level. Design codes can address neighbourhood level issues that contribute to meeting energy efficiency targets, support supply and demand at the local level and reduce transmission losses. See Figure 84.

R.2 Sustainable Construction

204. Sustainable construction is the practice of creating buildings using processes that are environmentally responsible and resource efficient. Design codes can include guidance on sustainable construction including embodied energy, approach to construction and use of water.

R.2.i Embodied Energy:

205. Embodied energy is the energy consumed by all the processes associated with the production of a building.

206. Reducing embodied energy can be achieved by remodel and reuse of buildings where possible rather than rebuild, using low energy materials, designing to use materials efficiently, reducing the energy used in construction, the re-use of materials and design for disassembly and adaptability so that the carbon locked in the building can be retained or reused in future. This can be achieved by:

- ☐ Reuse and refurbishment in preference to new construction.
- ☐ Embedding circular economy principles to reduce embodied carbon / energy and reduce waste
- ☐ Energy used in construction.
- ☐ Reuse of materials.
- ☐ Design for disassembly.
- ☐ Foundations that accommodate trees.

R.2.ii Sustainable Construction

207. All demolition and construction processes and materials production and application have environmental impacts. In addition to embodied energy, issues relate to the impacts of extraction, pollution, ozone, water extraction, and waste disposal. Design codes can include standards and guidance that address these issues.

R.2.iii Modern Methods of Construction:

208. 'Modern methods of construction' is a term that embraces a range of off-site manufacturing and on-site techniques that provide alternatives to traditional housebuilding. Such techniques can contribute to the efficient use of resources. Design codes could encourage innovative methods of off-site construction and modular production to improve building performance, productivity, waste reduction

Local Nature Recovery Strategies

Strategic Planning