

Local Plans and Climate Change

APSE Energy Event Newcastle

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Renewable and Low Carbon Energy



Energy Efficient Buildings



Embodied Carbon

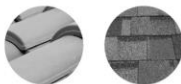
MATERIALS WITH HIGH EMBODIED CARBON *USE LESS OF THESE...*



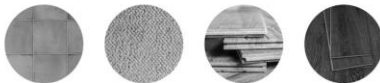
Steel framing



High- and average-carbon concrete



Clay tile and asphalt shingle roofing



Tile, carpet, engineered wood, and vinyl flooring



Vinyl-framed windows



Mineral wool and closed-cell rigid and spray foam insulation



Gypsum drywall interior cladding

MATERIALS WITH LOWER EMBODIED CARBON *... AND INSTEAD, USE THESE*



Wood and TJI framing



ICF (insulating concrete forms) and low-carbon, high-SCM (supplementary/alternative cementing materials) concrete



Cedar shake and steel roofing



Softwood, linoleum, and hardwood flooring



Wood-framed and aluminum-clad wood-framed windows



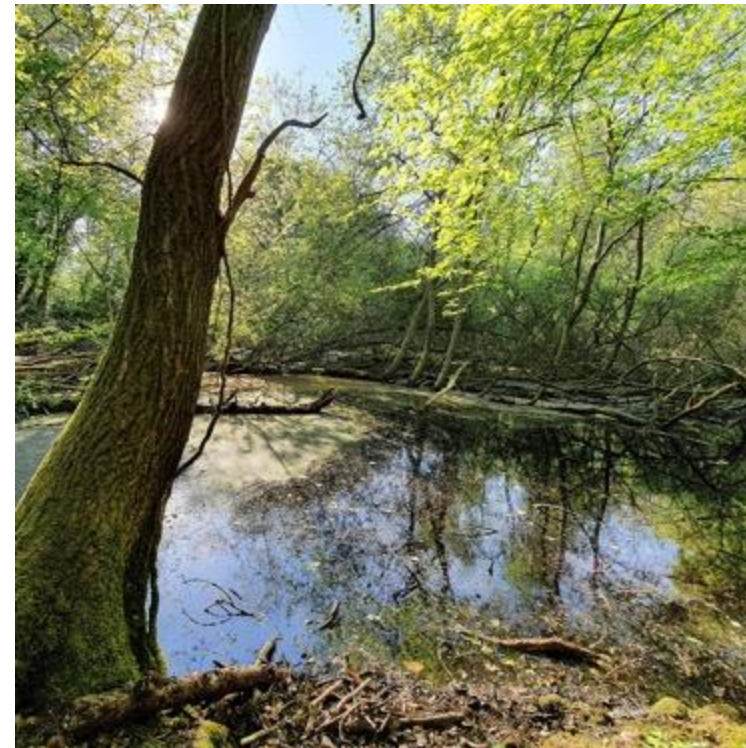
Compressed straw, wood fiberboard, cork, wool, dense pack cellulose, and denim



Wood and recycled (e.g. ReWall) interior cladding



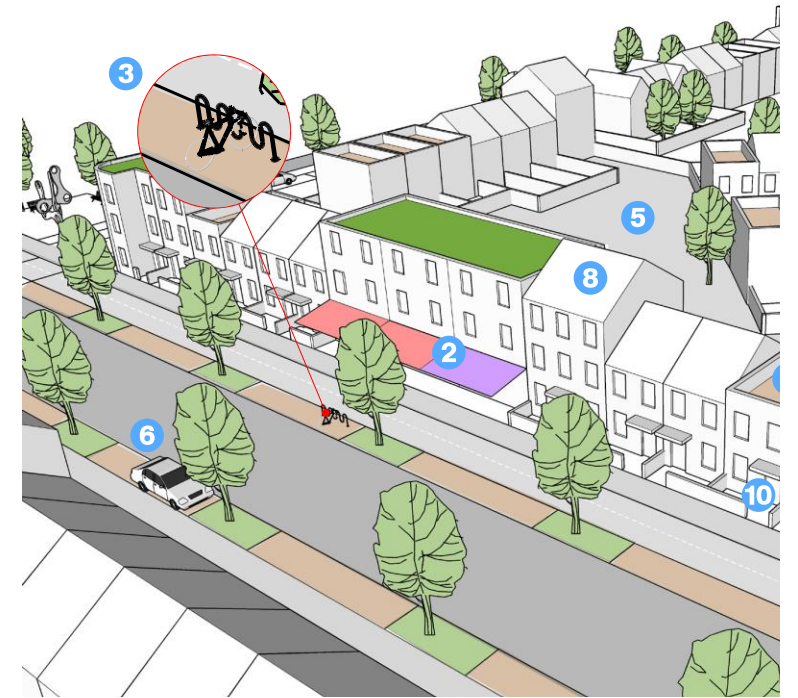
Multi-Functional Green Infrastructure



Sustainable Transport



Compact and Smart Growth



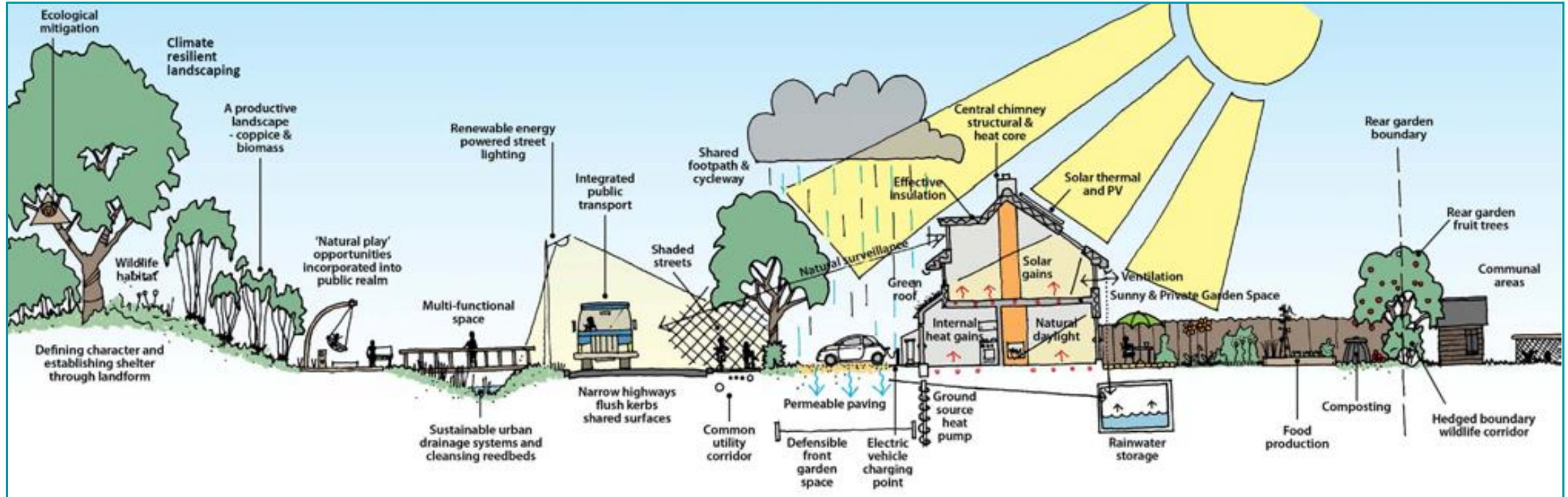
Waste and Recycling



Climate Change Adaptation



Bringing it All Together

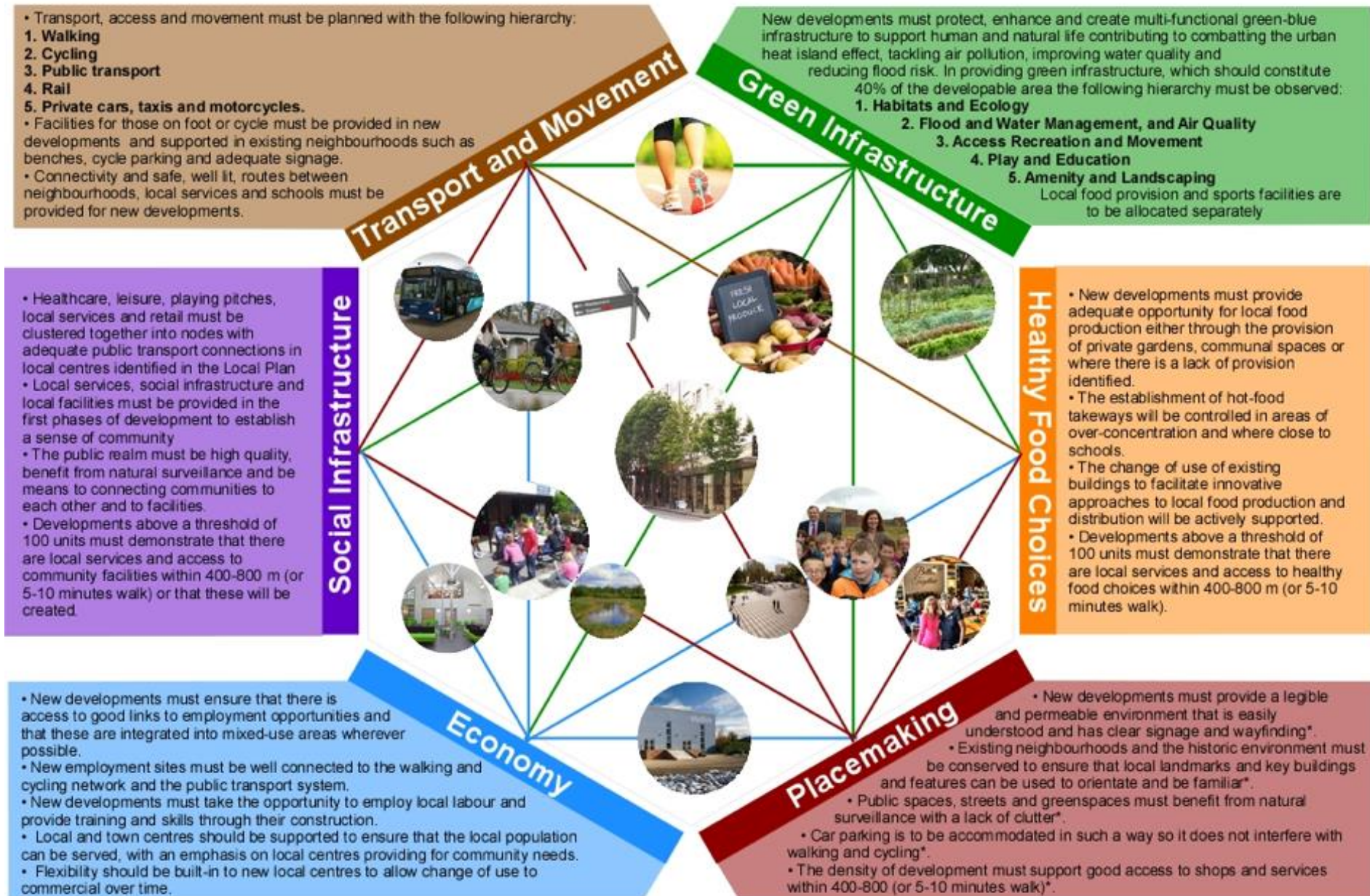




Health and Wellbeing



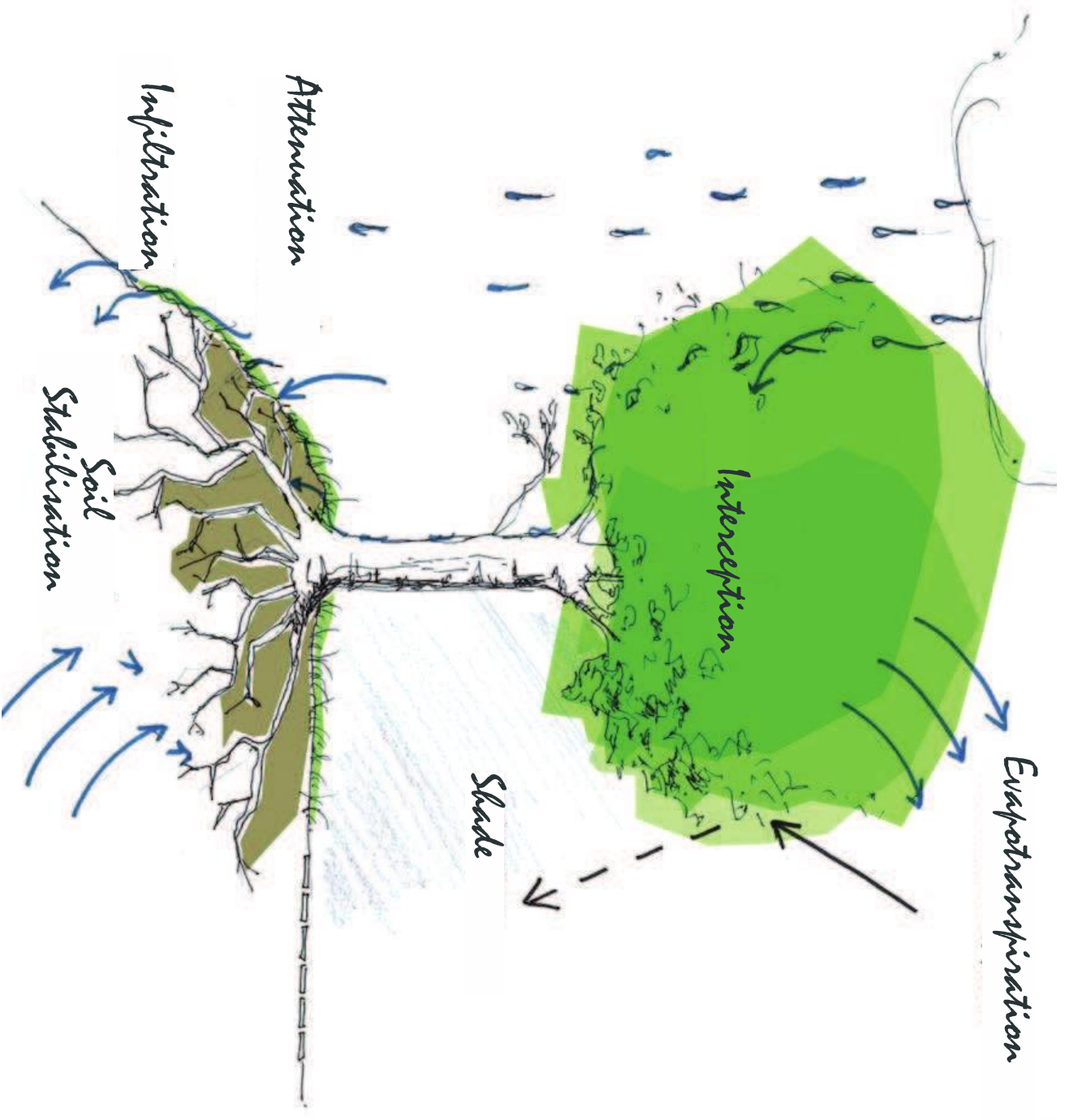
HEALTHY NEW TOWNS - DESIGN PRINCIPLES



* Denotes measures that support a Dementia Friendly Environment

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)



Green Smart Cities



National Design Guide



Resources

Efficient and resilient

135 Well-designed places and buildings conserve natural **resources** including land, water, energy and materials. Their design responds to the impacts of climate change by being energy efficient and minimising carbon emissions to meet net zero by 2050. It identifies measures to achieve:

- mitigation, primarily by reducing greenhouse gas emissions and minimising embodied energy; and
- adaptation to anticipated events, such as rising temperatures and the increasing risk of flooding.

136 A compact and walkable neighbourhood with a mix of uses and facilities reduces demand for energy and supports health and well-being. It uses land efficiently so helps adaptation by increasing the ability for CO₂ absorption, sustaining natural ecosystems, minimising flood risk and the potential impact of flooding, and reducing overheating and air pollution.

137 Well-designed places:

- have a layout, form and mix of uses that reduces their resource requirement, including for land, energy and water;
- are fit for purpose and adaptable over time, reducing the need for redevelopment and unnecessary waste;
- use materials and adopt technologies to minimise their environmental impact.

Low energy housing with passive solar design, including shading to prevent overheating in summer, and highly insulated thermal mass construction.
Great Bow Yard, Langport, Somerset

6.13 MATERIALS

Materials should express their structural or functional role or historic use. Unfinished concrete or concrete cladding panels are not acceptable.

<p>Section 6.7 A. BRICK A variety of brick types can be used but should reflect local context and type. Bricks should be predominantly red in colour and only in exceptional circumstances should other colours be specified. All bricks need to be agreed. The detailing of brickwork is very important. Brick should not be used as a cladding material in panels. Reuse may be appropriate.</p>		<p>Z1 Z5 Z2 LT Z3 EZ Z4</p>
<p>Section 6.7 B. STONE Stone, other than in the rural context, is primarily dressed and reserved for important buildings. Where used it is laid in courses throughout the elevation. Stone is also used for details, creating openings and bays. Polished stone may be used for stallrisers on shopfronts. Artificial stone should only be used for details in Z1, Z2 and LT, subject to heritage considerations.</p>		<p>Z1 Z5 Z2 LT</p>
<p>Section 6.7 C. CERAMICS Terracotta, faience and modern ceramics are suitable for detailing and as cladding materials.</p>		<p>Z1 Z5 Z2 LT EZ</p>
<p>D. GLASS Other than as a window material, glass walls may be used in certain circumstances, subject to environmental performance considerations.</p>		<p>Z1 Z2 EZ</p>
<p>E. RENDER Subject to local context, render may be an appropriate wall finish. It should be detailed in such a way to resist discolouration by weathering and should not be used directly abutting the public realm as this can encourage graffiti. In all zones, render should be white, cream or natural self coloured. Other colours may be appropriate in some contexts which should be identified through the design appraisal.</p>		<p>Z5 Z2 LT Z3 EZ Z4</p>
<p>F. TIMBER CLADDING Timber cladding is a renewable building material, appropriate to a number of contexts. Timber cladding should not directly abut the public realm and should not be painted or coated with coloured treatments. Timber may be treated against weathering.</p>		<p>Z5 Z2 Z3 EZ Z4</p>
<p>G. METAL Metal may be an appropriate wall finish in some contexts. Metal cladding might take the form of smooth panels, a beaten finish or profiled.</p>		<p>Z2 EZ</p>

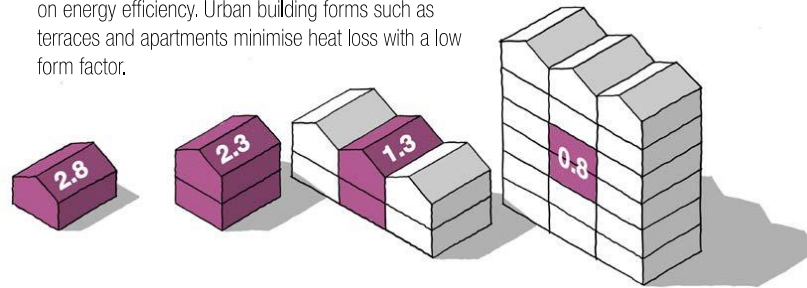
6.11 GREEN INFRASTRUCTURE



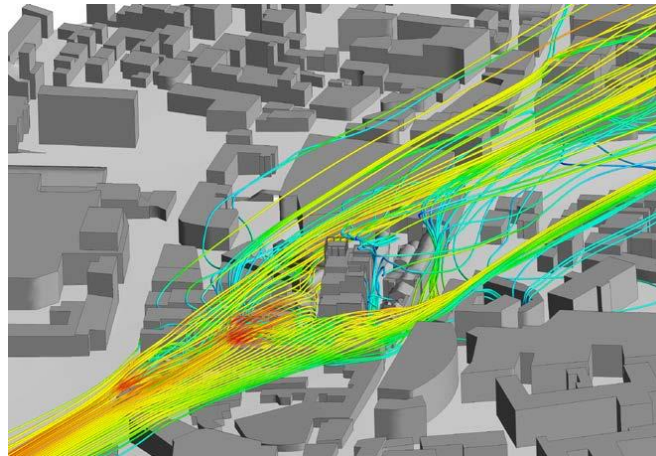
<p>A. PLAYGROUND Designed specifically for children's recreation, playgrounds should be enclosed, have limited points of access and benefit from natural surveillance from nearby roads and streets. Playgrounds should be designed not to cause noise nuisance to local residents and can be stand alone provision or integrated with other open space.</p>		<p>Z1 Z5 Z2 LT Z3 Z4</p>
<p>Section 6.12 B. PLAZA Defined by building frontages a plaza is designed for recreational, commercial or civic purposes. Trees should form part of any design. Plazas should be placed to benefit from high footfall, commercial or leisure attractions and be constructed of high quality materials. PUBLIC ART is encouraged in all plazas.</p>		<p>Z1 Z2 LT Z3 EZ</p>
<p>C. GREEN SQUARE OR PUBLIC GARDEN Squares are defined by building frontages and streets appropriate to the locality and may be used for informal recreation. Predominantly green in character, with tree cover offering habitats and shade, squares should contain seating and in areas away from the street, adequate lighting. Paths should be provided along key desire lines to facilitate ease of movement. Informal sport may be appropriate.</p>		<p>Z1 Z2 LT Z3 EZ Z4</p>
<p>D. GREEN SPACE A larger open space partially defined by frontages and streets but may also have an interface with the countryside and green corridors. Greenspace should benefit from natural surveillance, with paths and routes accessible to all. A greenspace should incorporate a variety of open space types to promote multifunctionality and greater use during the day and evening. Informal sport may be appropriate.</p>		<p>Z2 LT Z3 EZ Z4</p>
<p>E. PARK A semi natural large open space, that may have defined boundaries close to streets and residences, but which may interface with the wider green infrastructure network. Natural surveillance should be maintained where possible with buildings fronting the park, separated by a road or street. Informal sport may be appropriate.</p>		<p>Z5 Z2 Z3 Z4</p>
<p>Section 6.10 F. NATURE RESERVE An area set aside for nature conservation. Appropriate access should be accommodated in all zones to provide an outdoor classroom for all ages.</p>		<p>Z5 Z2 LT Z3 EZ Z4</p>
<p>G. GREEN CORRIDOR Fulfilling the needs of transport and access as well as providing wildlife and habitat opportunities, corridors are appropriate in all zones as part of the green infrastructure network. Open space needs must be considered alongside recreation, transport and sustainable drainage needs. In terms of natural surveillance, corridors should be treated the same way as streets in terms of building orientation. Informal sport may be appropriate.</p>		<p>Z1 Z5 Z2 LT Z3 EZ Z4</p>

National Model Design Code

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 need 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:

Low renewable energy:

Delivered through air, water and ground source heat pumps.

Energy centre: Local battery storage linked to the grid.

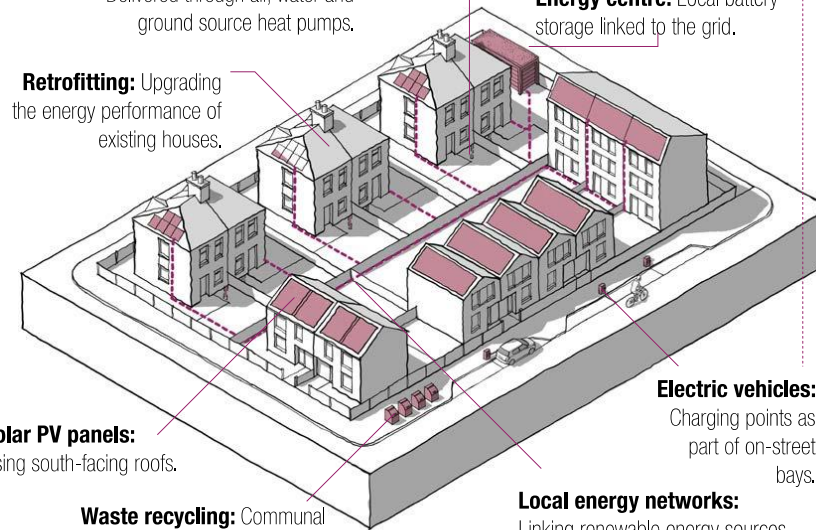
Retrofitting: Upgrading the energy performance of existing houses.

Solar PV panels: Using south-facing roofs.

Waste recycling: Communal bins with underground storage.

Electric vehicles: Charging points as part of on-street bays.

Local energy networks: Linking renewable energy sources to local heat and power networks.



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

Thank You!

Questions and Comments