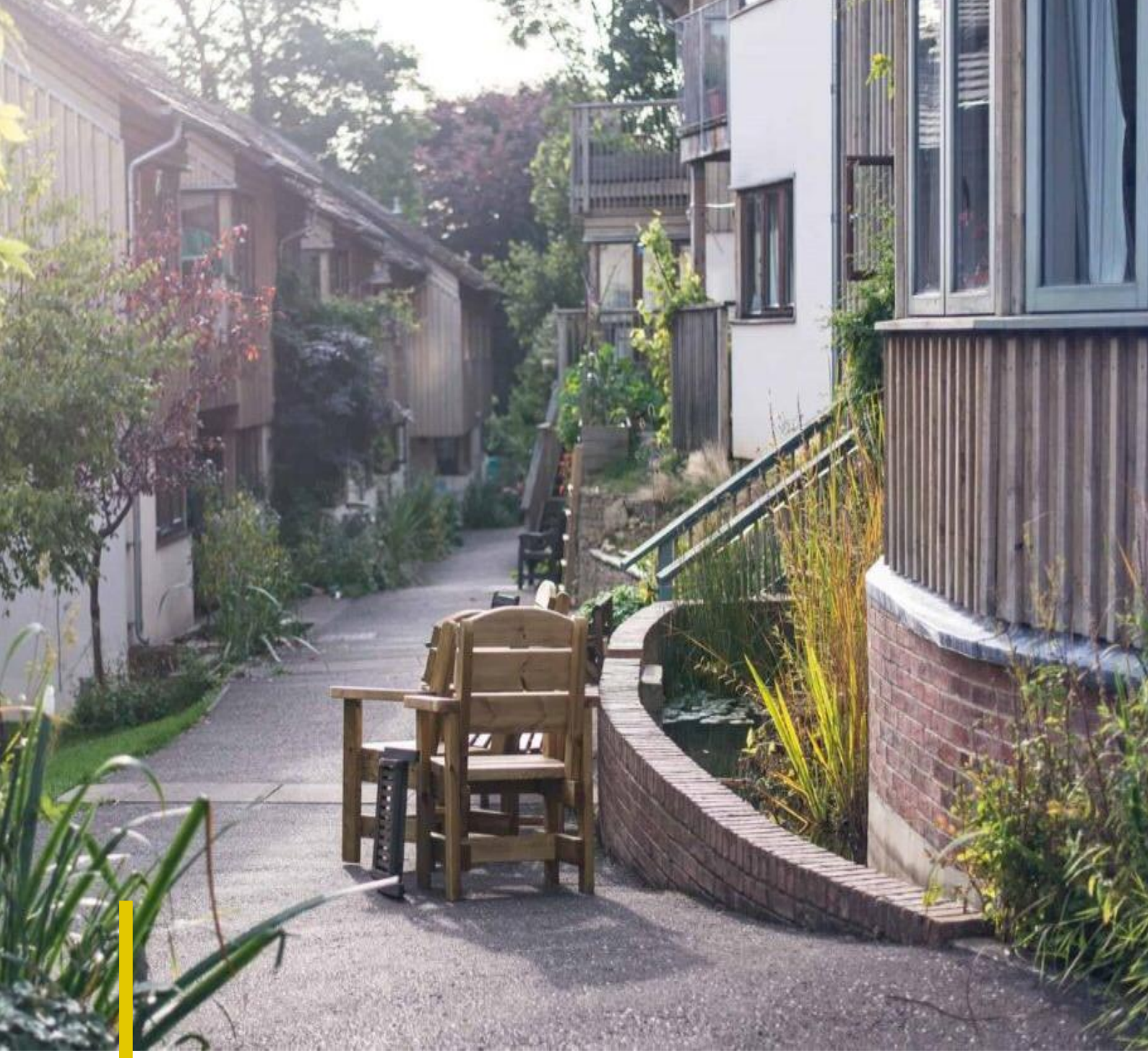

Designing places for climate resilience

Topic resource

Planning for the Climate Crisis: A guide for local authorities

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Introduction

The design of new development, at all scales, must be driven by the need to build resilience to the climate crisis. This requires both reducing vulnerability to future climate risks and ensuring that new development is flexible to meet the changing demands on places arising from the transition to net zero.

Development should be planned to avoid exposure to predicted risks over the lifetime of the proposed development. For residential development, this means looking ahead at risks including flooding, overheating and water scarcity for at least the next 100 years.

Local authorities play a key role in shaping the design of new places, both through setting policies in the development plan, and through engaging with developers and communities to secure the best possible outcomes from proposals.

This topic resource focuses on design and placemaking interventions local authorities can make the most of, to enhance the climate resilience of places. It should be read alongside other topic resources from the Climate Guide for Local Authorities, particularly 'Planning for long-term adaptation', which provides an introduction to more detailed adaptation guidance.

Policy Context

The National Planning Policy Framework advocates for good design and expects local planning authorities to set clear expectations for design through planning policy, to develop design codes and design guides, and encourage developers to utilise design tools such as masterplans and design review. There is an opportunity through each of these activities for proper consideration of climate resilience.

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The National Design Guide[1] and the National Model Design Code[2] are framed around ten design principles, through which climate is a cross-cutting theme. Many of the interventions and considerations promoted through this national planning guidance support climate resilience, such as promoting connectivity and compact development, resource efficiency, and addressing overheating.

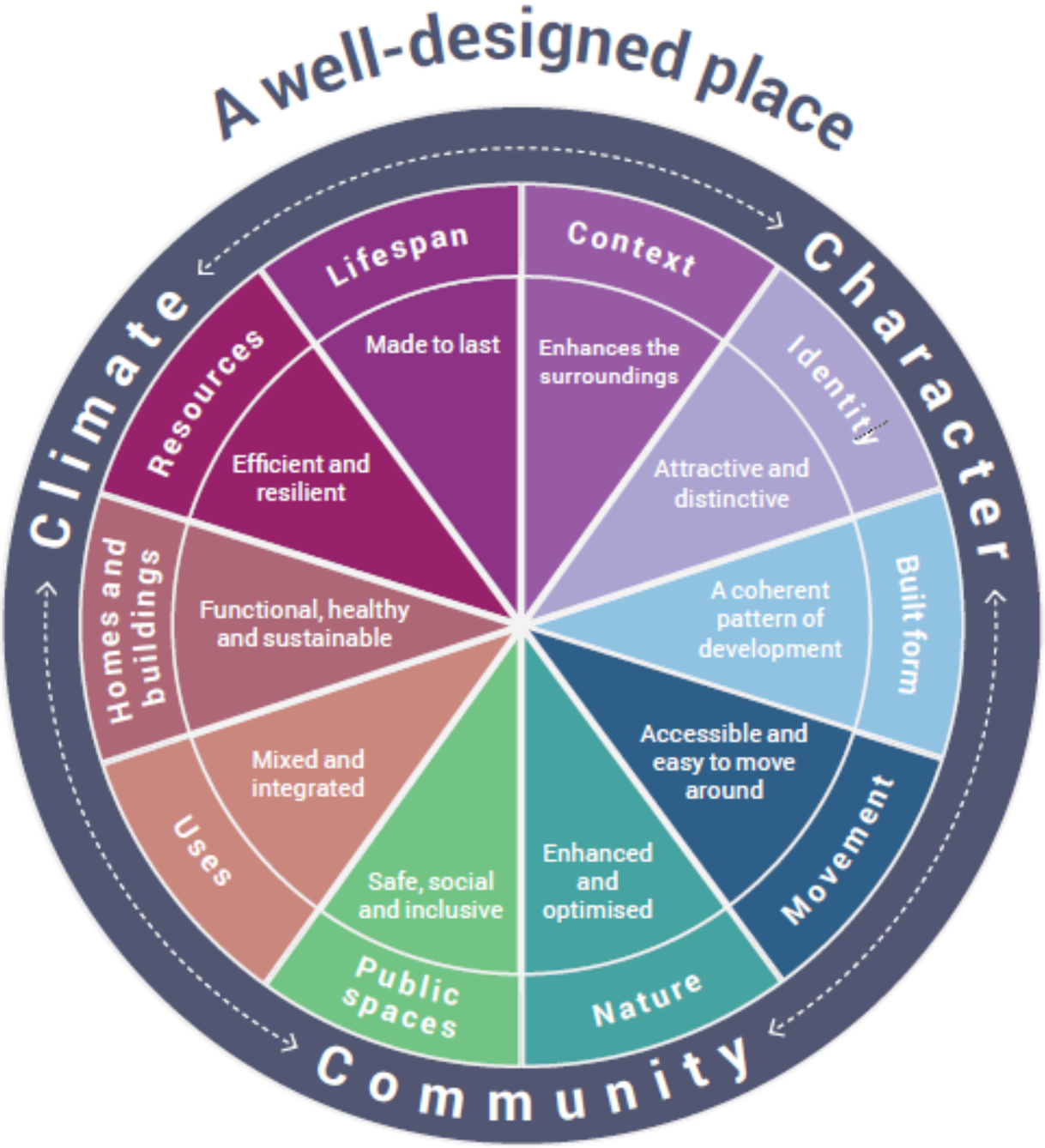

Figure 1: The ten characteristics of a well designed place. Source: The National Design Guide / MHCLG.

Key principles

Consideration of the long-term resilience of development should inform design through all stages, from site allocation through to detailed design. This should be underpinned by the following principles:

- Start with the right site – allocations and planning applications must be screened for climate constraints such as flood risk and water scarcity. Do not try and retrofit sites that fundamentally are not resilient.
- Make sure the design team have a good understanding of climate risk and vulnerability, drawing on national and local data to consider the impact of the full range of climate impacts at different scales, including:
    - Overheating risk at the individual building and place scale.
    - Flood risk over the lifetime of the development, accounting for climate change.
    - Water scarcity in the context of increasing demand on water supply.
- Engage meaningfully with local communities at an early stage to inform the design and identify opportunities to improve resilience for the wider area, particularly for those most vulnerable to climate change.
- Where there is uncertainty in climate modelling, apply a reasonable worst-case scenario to understanding climate risk.
- Long term climate resilience should be considered at an early stage, so that:
    - Opportunities for interventions that need to be integrated into the design from the beginning can be secured.
    - Flexibility is built into the design of a site, leaving space for resilience measures that might be needed in future.
    - Avoid maladaptation, for example where measures to make a site resilient to climate risks worsen the impact felt elsewhere or create problems in the future.
- A multi-functional lens should underpin the project. For example, sustainable drainage systems can be designed to support biodiversity net gain on site and deliver wider gains for the community.
- Thinking long term also requires early consideration of ongoing maintenance and stewardship of the assets that will help secure climate resilience.[3]

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Good practice for plan making

Development plan policies should set clear expectations for the quality of development, and measures to secure climate resilience should be a central aspect of good design.

This can be achieved through design policies which:

- Respond to the specific climate risks identified at the national, local and site specific level, such as sea level rise, flooding, increased temperatures, instability and extreme weather events.
- Require green infrastructure that achieves multi-functional outcomes for people and nature.
- Where supported by evidence, set clear standards that go beyond national policy and building regulations, for example on water efficiency, green space requirements, managing overheating and property flood resilience.
- Give policy weight to interventions set out in guidance (such as the National Design Guide) where justified, for example through requiring the design and layout of development to utilise passive design strategies to minimise overheating.
- Require planning applicants to utilise appropriate design strategies and tools to identify interventions that support climate resilience, for example the Green Infrastructure Framework[4] in England and the Place Standard in Scotland.[5]

Figure 2: Planting schemes can bring multiple benefits, such as reducing the urban heat island effect, slowing water runoff and encouraging wildlife.
Source: Sunnyside Community Gardens

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Glasgow Claypits

Case study

Transforming urban brownfield into a climate-resilient nature reserve

Glasgow Claypits was a neglected, post-industrial site that straddled a branch of the Forth and Clyde Canal corridor. It had contamination issues and suffered from anti-social behaviour. LUC worked with Scottish Canals and local partners to reimagine the area as an urban nature reserve, improving biodiversity, water management and community amenity.

LUC's design approach integrated climate resilience principles throughout. The team integrated swales and wetland areas to manage surface water run-off which, in turn, facilitated the delivery of adjacent housing developments. Planting focused on native species and the creation of a habitat mosaic capable of withstanding climate variability, supporting urban cooling and enhancing habitat connectivity. Habitats include open water, marginal wetlands, riparian woodlands, mixed dry woodlands, and open grassland and wildflower meadows. Paths, bridges, boardwalks, and recreational spaces have made the site accessible to the local community, providing vital access to nature.

A key part of the process was collaboration. LUC engaged with various statutory and non-statutory stakeholders, Glasgow City Council, and conservation groups to ensure the site would meet ecological and community needs. Historic Environment Scotland was also a key stakeholder given the canal's designation as a Scheduled Monument. Site visits, design workshops and exhibitions informed the design process, helping translate resilience principles into practical interventions that are replicable elsewhere.

Since completion, the reserve has become a thriving urban green space. Water is better managed, biodiversity has increased, and residents now enjoy accessible nature in the heart of the city. The project demonstrates how thoughtful design can simultaneously address environmental challenges, support climate adaptation, and provide social value.

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Learning for local authorities

- Integrate nature-based solutions into urban planning for multifunctional benefits.
- Early stakeholder engagement ensures resilience measures meet both ecological and community needs.
- Designing for water management and biodiversity together creates long-term, adaptable green infrastructure.

Figure 3: Glasgow Claypits is now a thriving urban green space providing multiple benefits for people and nature. Source: LUC

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Decision making

Local planning authorities should engage constructively with developers to deliver well designed sustainable buildings and high-quality local environments that are suitable for net-zero living and resilient to climate change impacts.

It is reasonable for local planning authorities to expect proposals to demonstrate how the proposed development complies with the good practice criteria below.

Local authorities should also use national and local design policy and guidance to ensure developers are appropriately considering climate change mitigation and adaptation. Encouraging the use of design review for development schemes can help identify design approaches to support climate change mitigation and adaptation.

One of the most important tools for securing good design outcomes, particularly for larger scale developments, is the masterplan. The masterplan is the guiding hand which can ensure that adaptation policy is effectively delivered. It should be used to set a spatial framework and vision for the new community and provide the basis for integrating and visually representing how policy outcomes can be achieved in practice. This should be used to support decision making throughout the planning process, including post-permission stages to ensure that design ambitions are not reduced at later stages.

In determining planning applications, local planning authorities are advised to expect proposed new development to:

- Ensure it does not make existing or proposed developments more vulnerable to the impacts arising from climate change.
- Maximise the opportunities of new development to enhance resilience by, for example, reducing the causes of flooding.
- Provide public or private open space so that an accessible choice of shade and shelter is offered, and securing opportunities to enhance biodiversity, flood storage and social value.
- Ensure the implementation of sustainable drainage systems that follow best practice in design.[6]

- Seek opportunities for water harvesting and wastewater recycling that can be gained from attentive design.
- Use landform, layout, building orientation, shading, tree planting, massing and landscaping to reduce likely energy consumption and provide shade.
- Make sure that the layout, density and mix of development supports opportunities for decentralised energy generation.
- Support sustainable waste management by providing space for recycling and composting.
- Integrate safe and attractive walking and cycling opportunities to, and within, development sites, and improve public transport connectivity. Provide shelter and shade to promote active and public transport use.
- Demonstrate engagement with relevant stakeholders, such as the Environment Agency and water companies, has been taken into account in the scheme design.

Further Resources

TCPA Garden City Practical Guides

More information on how to incorporate net zero, climate resilience and green infrastructure into new large scale communities can be found in the TCPA Garden City Practical Guides.
Link: https://www.tcpa.org.uk/collection/garden-city-standards-21st-century/

Natural England – Green Infrastructure Framework

The Green Infrastructure Framework provides a national toolkit to help local authorities, developers, and communities plan, design, and deliver high-quality green infrastructure.
Link: https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Home.aspx

UK Green Building Council Resilience Roadmap

The UK Green Building Council's Resilience Roadmap outlines a strategic framework to embed climate resilience across the built environment, focusing on governance, finance, design, and delivery.
Link: https://ukgbc.org/our-work/topics/resilience-roadmap/

University of Exeter Local Climate Adaptation Tool

The Local Climate Adaptation Tool brings together data to assess climate risks at a local authority level and identify tailored adaptation actions. Link: https://www.lcat.uk/

References

[1] The National Design Guide applies in England and is available from:
https://www.gov.uk/government/publications/national-design-guide

[2] The National Model Design Code applies in England and is available from:
https://www.gov.uk/government/publications/national-model-design-code

[3] The TCPA has a comprehensive toolkit on stewardship for new communities which can be accessed online at:
https://www.tcpa.org.uk/areas-of-work/new-towns/long-term-stewardship/

[4] Natural England's Green Infrastructure Framework:
https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Home.aspx

[5] Available from: https://www.gov.scot/publications/our-place-website/

[6] For example, by following the National standards for sustainable drainage systems, updated in summer 2025.
https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems

Cover image: Springhill co-housing Stroud. Source: Robert Bray Associates.
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