

Planning Guidance Climate Change

October 2022



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ALPR	Ashfield Local Plan Review 2002
BGS	British Geological Survey
BNG	Biodiversity Net Gain
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Method
CH ₄	Methane
CHP	Combined Heat and Power
CIRIA	The Construction Industry Research and Information Association
CO ₂	Carbon Dioxide (CO ₂)

DEFRA	Department for Environment, Food & Rural Affairs
DER	The Dwelling Emission Rate
FSC	Forest Stewardship Council
GI	Green infrastructure
GPDO	General Permitted Development Order
GHG	Green House Gas
GWP	Global warming potential
IPCC	The Inter-governmental Panel on Climate Change
LED	Light-emitting diode
LEP	Local Enterprise Partnership (D2N2 LEP)
LPA	Local Planning Authority
LZC	Low and Zero Carbon
LULUCF	Land use, land use change and forestry
LLFAs	Lead local flood authorities
NO2	Nitrous Oxide
NOx	Nitrogen oxides
NPPF	National Planning Policy Framework.
PPG	Planning Practice Guidance
PV	Photovoltaic
SAP	Standard Assessment Procedure for the Energy Rating of Dwellings
SuDS	Sustainable Drainage Systems
UKCP	United Kingdom Climate Projection
WFD	Water Framework Directive



1.0 Climate Change and Ashfield

“Ashfield District Council recognises the scale and urgency of the global challenge from climate change. This Council recognises that local action on global warming can make a difference”.

“Reaffirm its commitment to doing everything possible to combat climate change including committing to a robust climate change strategy”.

1.1 The Council has produced this guidance to ensure that new development providing much needed homes and jobs positively contributes to carbon reduction. For planning applications this means that:

- a) Proposals for development should demonstrate an ambitious approach to the use of renewable energy, sustainable design and construction methods, with a high level of energy efficiency in new buildings.
- b) The measures set out in this Planning Guidance will need to be integrated into the design and layout of development within Ashfield, as climate change adaptation and mitigation will be considered in all development decisions.
- c) Applicants for planning permission should demonstrate how they have met the requirements set out in this Planning Guidance.

1.2 This Planning Guidance reflects that:

- Action is required **now** to meet national and local targets to reducing carbon emissions.
- Increasingly, flooding, overheating and other consequences of climate change have a major negative impact on places and communities. Consequently, there is an urgently need to tackle the climate crisis by future proofing development.
- Planning has a direct role to play in adapting to and mitigating the impacts of climate change, through practical nature-based solutions and design action promoting sustainable travel, urban cooling, natural flood defence and other steps, which will make a difference.
- Many of the actions proposed form an important part of creating well-designed and well-built places that benefit people and communities.

Why do we need to act now?

- 1.3 The evidence identifies that urgent action is required to tackle the impact of greenhouse gases, Figure 1. Climate change is resulting in more extreme weather events including extreme heat, droughts, flooding and wildfires. The adverse impacts of climate change have economic, social and environmental costs for local communities and for businesses with implications both for the natural and built environment.

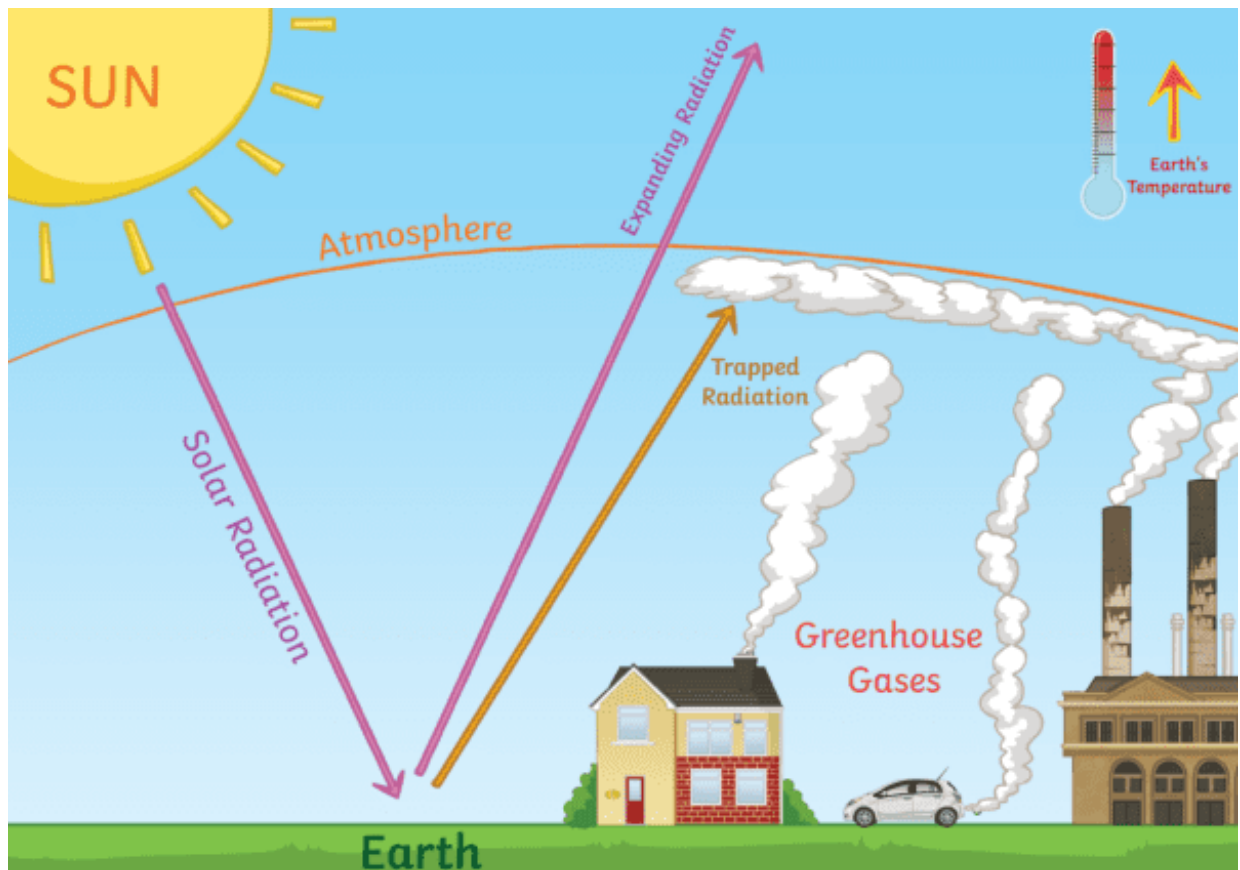


Figure 1: Climate Change – Greenhouse Gases

- 1.4 The Council's Climate Change Strategy identifies that it is key that action is taken as soon as possible to tackle the climate crisis at a local level. The Council has committed to reaching net zero, or closely to it as possible for the Councils Direct and Indirect (Scope1-2) emissions by 2030, and will work to minimise scope3 emissions (outside the Council's direct control) by 2050. The supporting evidence to the Strategy identifies that there is a need to reduce emission for the District at a greater rate if we are going to meet the Government's zero emissions by 2050.
- 1.5 Evidence on climate change reinforces the need to take steps now, Appendix 1.
- 1.6 The National Planning Policy Framework, Planning Practice Guidance, and the National Design Guide place an emphasis on the importance of responding to climate change. The National Design Guide 2021 identifies in relation to climate change:

“We expect continuing change as a consequence of climate change, changing home ownership models and technological changes. It is likely to emerge and embed in society rapidly. It will influence the planning, design and construction of new homes and places. So, for each of the ten characteristics, a Looking Forward box identifies some issues to consider as we are thinking ahead about our places. Both local planning policies and the design process need to take these into account.”

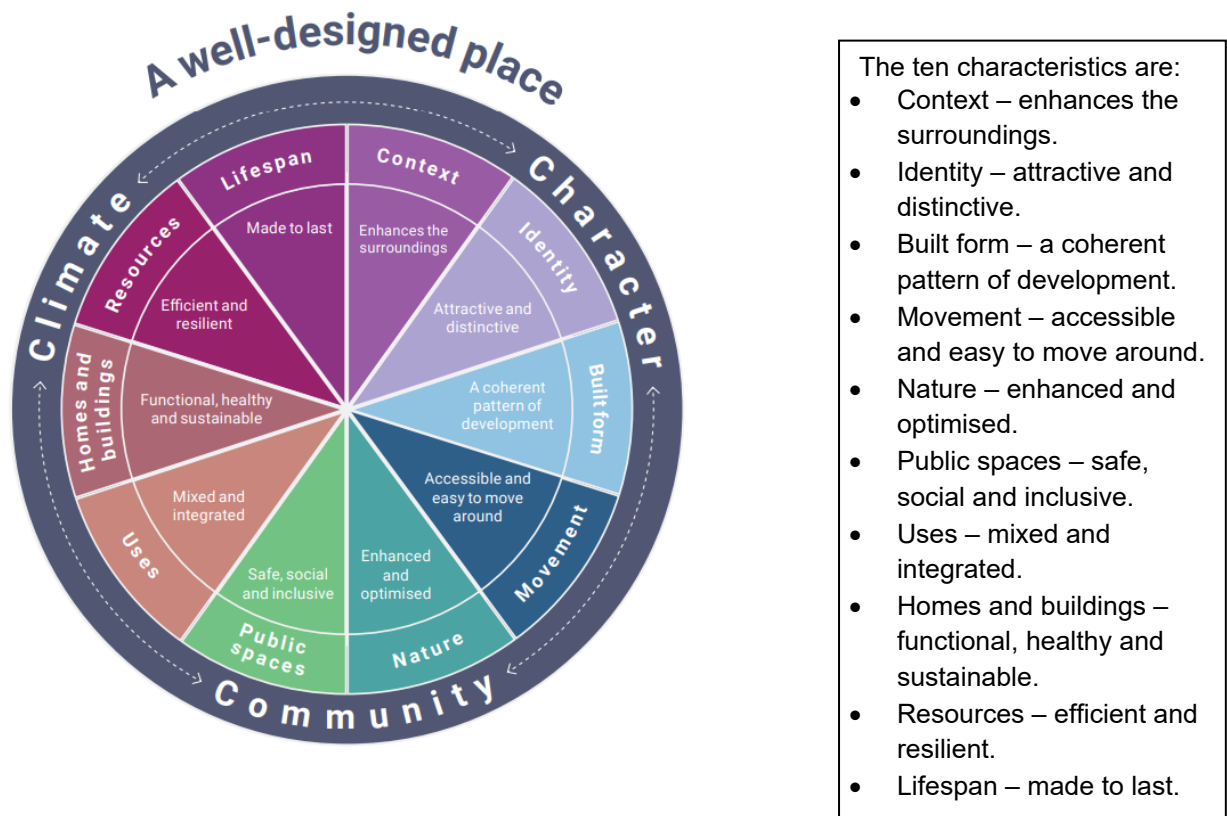


Figure 2: A Well Designed Place

Source: National Design Guide 2021 Planning practice guidance for beautiful, enduring and successful places.

1.7 Figure 2 emphasises that well-designed places have individual characteristics which work together to create its physical **Character**. The ten characteristics help to nurture and sustain a sense of **Community**. They work to positively address environmental issues affecting **Climate**. They all contribute towards the cross-cutting themes for good design set out in the National Planning Policy Framework.

1.8 Appendix 1, provides checklists for applicants, which should be used to inform a climate change statement to be submitted with the planning application, either as part of a Design & Access Statement, or standalone:

Note : Working in partnership with the Midlands Energy Hub and the D2N2 Local Enterprise Partnership, Nottinghamshire councils have jointly prepared planning guidance on low carbon development in order to help the relevant councils to achieve their stated objectives of reducing carbon emissions. The Ashfield Guidance Note on Climate Change takes account of the Nottinghamshire Guidance but it has been adapted to reflect the Council's local circumstances.

2.0 Green Infrastructure and Climate Change

- 2.1 Green infrastructure such as parks, open space and green walls/roofs makes a substantial contribution towards adapting to climate change and an important contribution towards mitigating climate change. There are also a range of other benefits to be gained through green infrastructure networks such as improved opportunities for walking and cycling, reduced carbon emissions and improved health and well-being of local communities. Such natural interventions are a desirable win-win approach combating climate change and delivering multiple other social, economic and environmental benefits.

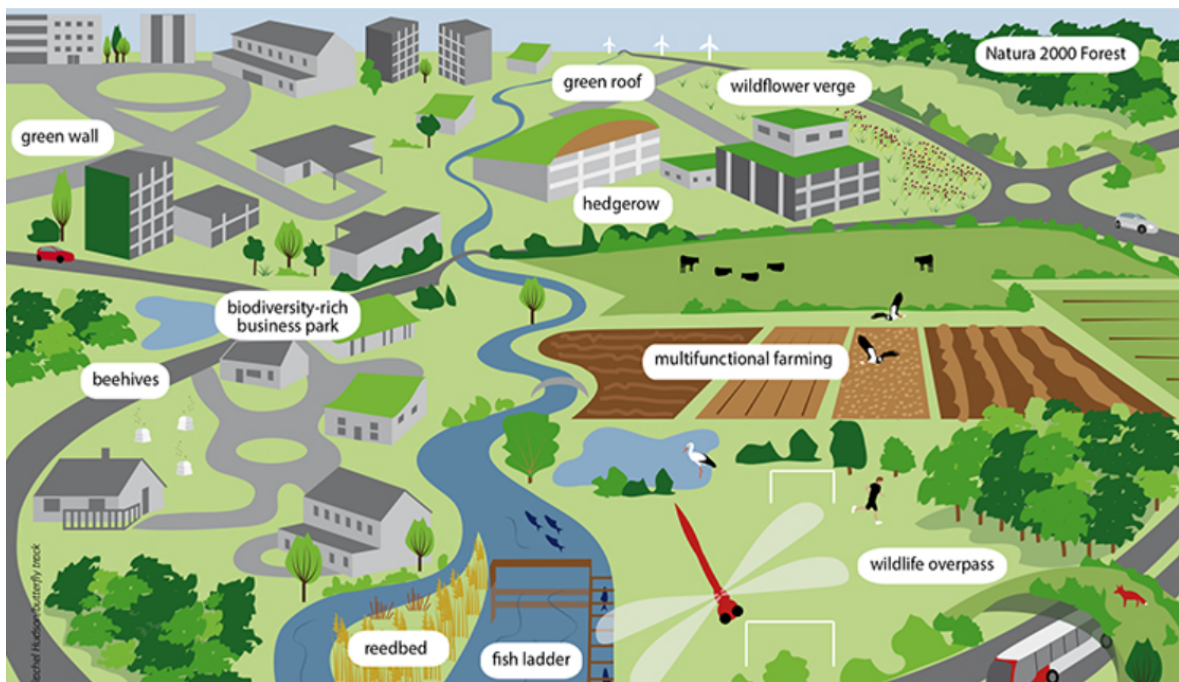


Figure 3: Potential components of green infrastructure

Source: European Commission 'The forms and functions of green infrastructure'.

- 2.2 Planning applications for development should integrate existing and new natural features into the multifunctional green infrastructure network including the provisions of natural play areas and the use of SuDS, Figure 4. Green infrastructure plays an important part of meeting biodiversity net gain which is required under the provisions of the NPPF and will become a mandatory requirement under the Environment Act 2021. Green corridors should be utilised to extend and enhance existing ecosystems.

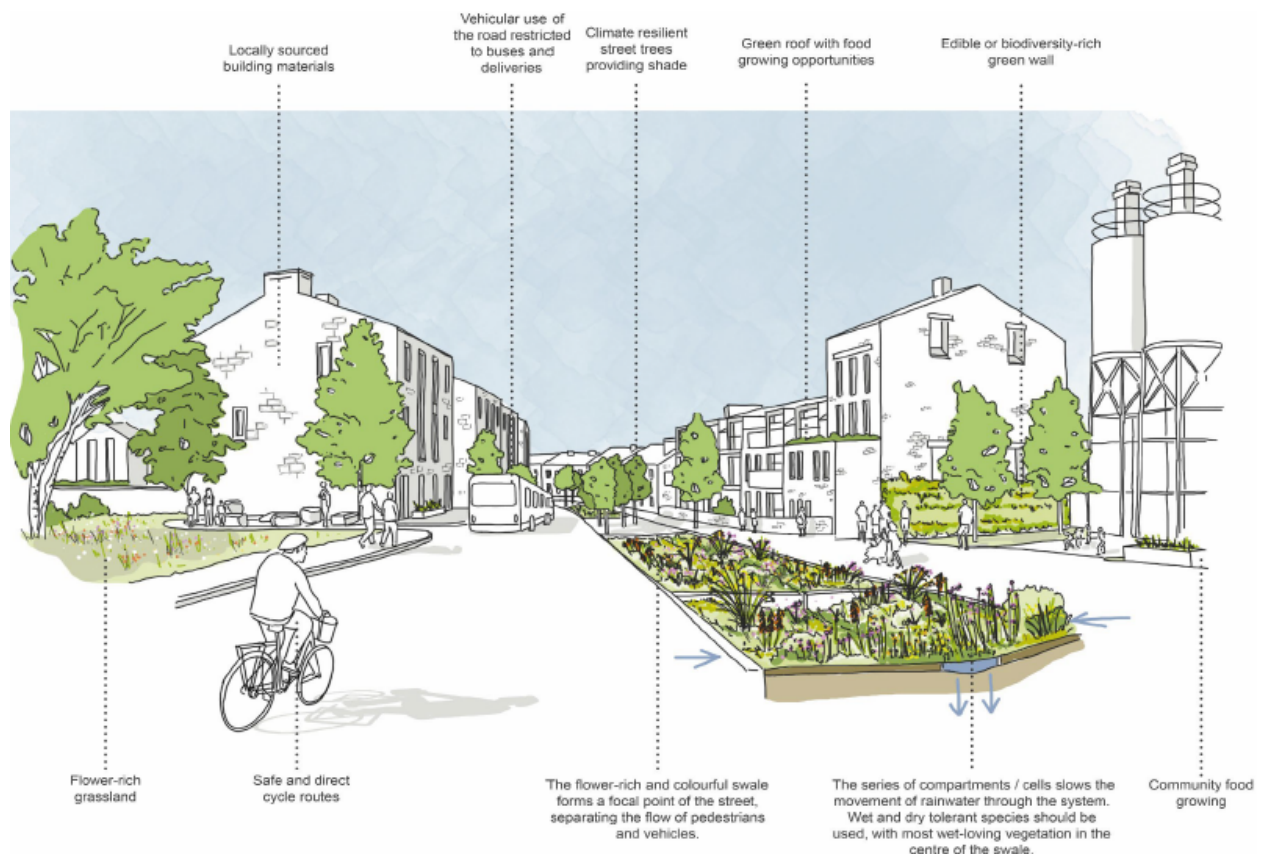


Figure 4: Application of green infrastructure and SuDS within the street scene

Sources: Waverley Borough Council Climate Change and Sustainability SPD 202

- 2.3 The Council's Green Infrastructure and Biodiversity Technical Papers ([Link to documents](#)) set out the strategic and local green infrastructure network which can be strengthened by connecting new development to the existing and planned cycleways and walking networks.
- 2.4 Green infrastructure should be considered at the earliest stages of design ensure that green infrastructure is integral to planning the layout and design of new buildings and development. In this context this includes:
- Taking into account climate change mitigation and adaption, integrating it into the planning, layout and design of buildings and developments. Figures 5 and 6.
 - The design of development should aim to reflect and enhance the area's locally landscape character. ([Link to supporting documents](#)). To achieve this, existing biodiversity features of environmental, historical or cultural interest, such as habitats of principle importance, ancient woodland and hedgerows, open spaces, and routes long used by local communities, should all be conserved and integrated into the design.



Figure 5: Sustainable design building incorporating green infrastructure elements

Sources: Southwark

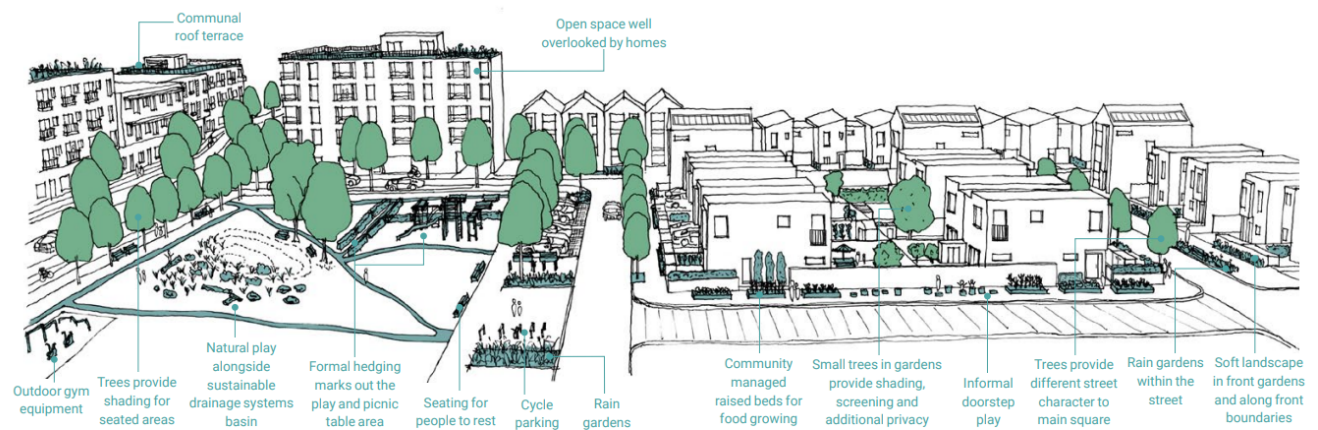


Figure 6: Provide a network of high quality, green open spaces with a variety of landscapes and activities, including play.

Source: National Design Guide 2018

- Deciduous trees should be planned as part of the scheme. In relation to climate change, trees and other green infrastructure help regulate air temperature, reducing the 'heat island effect' and protecting buildings from excessive summer heat through shading and from wind. Figures 7 and 8.
- Whenever possible, mature trees should be preserved as they have far greater benefit in lowering the Urban Heat Island effect than newly planted trees.

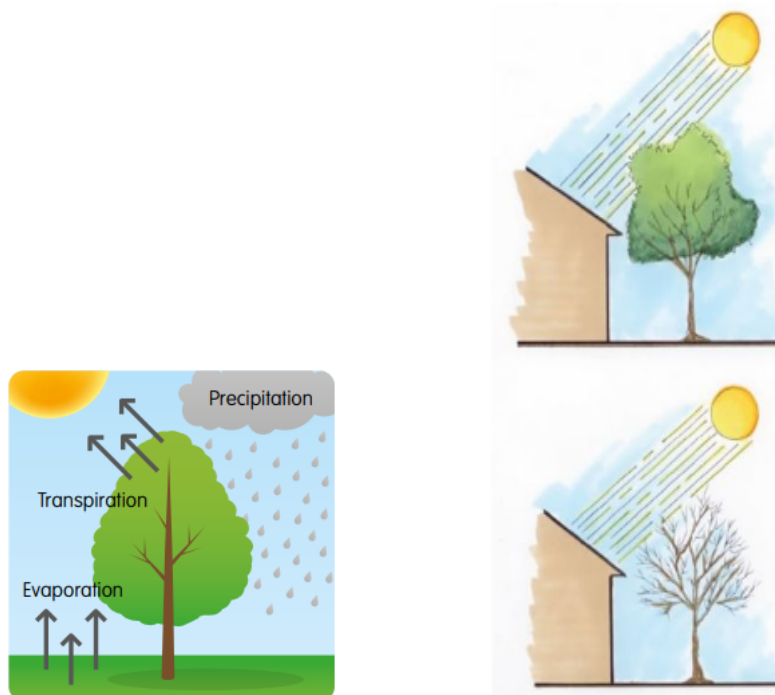


Figure 7: Trees regulate air temperature and deciduous trees provide natural shade in summer whilst allowing sunlight through in winter.



The urban heat island effect was clearly evident during the July 2021 heatwave. The Land Surface Temperature in Greenwich Park (measured using satellites), was up to 30% cooler than temperatures felt in nearby Isle of Dogs.

Figure 8: Urban heat island effect

Source: Environment Agency

- In public open space and outdoor seating areas provide trees for shade. Small trees should be planted in private gardens to provide shading. Figure 6.
- Plant street trees and other street planting to soften the impact of car parking, help improve air quality and contribute to biodiversity. Trees and hedgerows should be appropriate to local character, habitats and species.



Figure 9: Positive impact of street trees

Benefit of street trees include:

- Positive street scene with improvements to mental well-being.
 - Capture pollution, store CO₂, and give off oxygen.
 - A cooling and shading effect in summer.
 - Mitigate heavy rain by capturing some of it in their roots, leaves and branches
 - Creates a natural habitat.
-
- Where practical, green roof and living wall vegetation should be utilised. They can improve the energy performance of a building as they reduce energy heating but also cooling costs. They can contribute, to some degree, to reductions in surface water run-off and improve the local air quality and can be integrated on a variety of scales. They greatly add to the aesthetics, soften the urban form and provide net gains in biodiversity.
 - Plants that will be resilient to changing temperatures and native to the area should be utilised, for example, those that do not require a large amount of water with anticipated increase in drought conditions.
 - Where the scale of development permits, provide opportunities a local level for people to grow their own food. Allotments community gardens and orchards are important in helping to reduce food mileage, improve healthy lifestyle choices and support social interaction. Integrating community gardens and orchards within urban environments provides for healthy living and benefits local biodiversity.



Figure 10: Allotment garden

- 2.5 Green infrastructure requires management if it is to provide benefits and services in the long term. Consequently, how the management of green space is going to be funded needs to be identified as early as possible and factored into the design and implementation, balancing the costs with the benefits.

3.0 Managing Flood Risk, Drainage and Conserving Water

Water Conservation

- 3.1 Water conservation reflects using water efficiently to reduce unnecessary water usage. Water is a limited resource and conservation of water is critical both from a social, economic and environmental aspect. This reflects that:
- Energy is required to filter, heat and pump water to your home. Therefore, reducing water usage saves energy and reduces your carbon footprint.
 - Using less water, particularly during periods of drought, helps wetland habitats and helps maintain eco systems as by using water efficiently, less water is taken out of rivers and aquifers.
- 3.2 With climate change and a growing population, it is anticipated there will be more water shortages with an increased risk of drought. In this context:
- On the 1st July 2021, the Secretary of State for the Department for Environment, Food & Rural Affairs (DEFRA) determined that parts of the Midlands, including Ashfield as seriously water stressed areas. A letter from DEFRA of 1st September 2022 set out that *“recognising the clear need for immediate reduction in water use, we encourage Local Authorities to apply the tighter standard of 110 litres per person per day (l/p/d) set out in the ‘Housing: optional technical standards’ guidance and prescribed by regulation 36(2)(b) of the Building Regulations 2010’.”*
 - Severn Trent’s Water Resources Management Plan 2019, identifies that there will be a significant deficit between supply and demand for water over the medium terms unless it acts. It sets out that “Our assessment shows that without future investment, we face supply / demand shortfalls in our Strategic Grid, Nottinghamshire and North Staffordshire water resource zones.”
 - Local planning authorities must, in exercising their functions, have regard to River Basin Management Plans. The Humber River Basin Management Plan (page 46) recommend that Local Plans set out policies requiring homes to meet the tighter water efficiency standard of 110 litres per person per day.
- 3.3 A number of measures can also be utilised to secure greater economy in water use. This includes rainwater harvesting. At its simplest this can be rainwater collection tubs connected to a drainpipe. However, more sophisticated systems including storing of rainwater collected from the roof of the building, which can either be gravity fed or pumped, for purposes not requiring drinking water standards such as flushing toilets, washing machines or for watering the garden. (Grey water). Water can be harvested from green roofs although it is less clean and may have contaminants.
- 3.4 To conserve water, development within Ashfield will meet the requirement of 110 litres per person per day.

Mitigating and Adapting to Flood Risk.

- 3.5 Flood risk is an issue across Nottinghamshire and when it occurs it has a substantial impact on peoples' health and well-being, as well causing substantial economic damage. Climate Change is anticipated to increase the risk of flooding. Consequently, water management and reducing the risk of flooding from all sources is a key aspect of sustainable development.
- 3.6 The most common source of flooding is from watercourses. Water levels in rivers or streams rise and overtop their banks ('fluvial' flooding). However, flooding can also occur after short, intense downpours of rain which cannot be quickly enough evacuated by the drainage system or infiltrated to the ground (Pluvial flooding). There are limited areas within Ashfield that are within Flood Zones 2 and 3. Nevertheless there is a risk of flooding from watercourses in specific area, in particular, Hucknall and Jacksdale. The risk from surface water to properties and infrastructure in Ashfield is reflected in the Nottinghamshire Local Flood Risk Management Strategy 2021-27, see Table 1. The risk from surface water flooding is expected to increase with climate change.

Ashfield		High	Med	Low
Residential		881	2509	8733
Commercial & Industrial		114	241	546
Critical Infrastructure	Emergency Services	1	1	2
	Hospital	0	0	0
	Schools & Education	2	13	31
	Surgery or Health Care	2	2	7
	Residential Home	0	0	1
	Sewage Treatment	1	1	2
	Electricity Sub Station	3	12	43
	Sub Total	9	29	86
Other		233	482	1358
Total		1004	2779	9365

High – each year, the chance of flooding is greater than 1 in 30 (3.3%).

Medium – each year the chance of flooding is between 1 in 100 (1%) and 1 in 30 (3.3%)

Low – each year the chance of flooding is between 1 in 1000 (0.1%) and 1 in 100 (1%).

Very Low – each year the chance of flooding is less than 1 in 1000 (0.1%).

Table 1: Properties at risk of surface water flooding in Ashfield

Source: Nottinghamshire Local Flood Risk Management Strategy 2021-27. Appendix F

- 3.7 A Flood Map for Planning, is available through the Government's website. ([Link to website](#)), sets out information on flooding from various sources.
- 3.8 The priority for the Council is to avoid inappropriate development in areas at risk from flooding. Unless there are exceptional circumstances, it is not anticipated that development such as new homes in Flood Zones 2 or 3 or where the access is required through Flood Zones 2 or 3, will be permitted. This reflects that in Ashfield there will be sequentially other sites where development could be undertaken without giving rise to a flood risk from a watercourse. Where this is not possible, the Council will require flood resistance and flood resilience measures to be incorporated into the

design of buildings and other infrastructure so that the flood risk is managed and it does not increase the risk of flooding elsewhere.

- 3.9 The Council will apply national policy and guidance together with best practice in determine planning applications where there are any forms of risk from flooding with the aim of managing flood risk by directing development to areas with the lowest risk and to ensure that development does not increase the risk of flooding elsewhere.
- 3.10 A sequential approach to the location of development will be undertaken so that, as far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. A flood risk assessment will be undertaken which must have regard to a number of requirements. These include:
- flood hazards from all sources,
 - the probability of flooding including allowances for climate change,
 - flood risk management measures, including how SuDS will be incorporated into the design,
 - ensuing the development is safe from flooding during its lifetime,
 - safe access and egress,
 - off-site impacts,
 - residual risks,
 - opportunities to reduce flood risk and,
 - include a drainage assessment in accordance with the SuDS Manual or any updates or amendment.
 - assessing the impacts and demonstrate how mitigation measures have addressed them.

The assessment should demonstrate how flood risk will be managed now and over the development's lifetime, ensuring as a minimum that there is no increase in the risk of flooding to the development nor the surrounding area, taking climate change into account, and have regard to the vulnerability of future users.

- 3.11 National Planning Practice Guidance on Flooding and Coastal Change ([link to PPG](#)), sets out a hierarchy for the discharge of surface water:
1. into the ground (infiltration);
 2. to a surface water body;
 3. to a surface water sewer, highway drain, or another drainage system*;
 4. to a combined sewer.

Rainwater should be used as a resources, for example rainwater harvesting.

- 3.12 For applications which impact on Main Rivers, advice will be sought from the Environment Agency. Advice on other forms of flooding, including surface water, will be sought from the Nottinghamshire County Council as the Local Lead Flood Authority (LLFA). The LLFA aims to reduce the impact and likelihood of local flooding across the County. For major development, the LLFA requirements will include:

- Demonstrating that the proposals follow the discharge hierarchy with an emphasis on the use of SuDS in accordance with the NPPF paragraph 169.
- Using SuDS throughout the site as a primary means of surface water management and that design is in accordance with CIRIA C753, or any amendments.
- Limiting the discharge rate generated by all rainfall events up to the 100 year plus 40% (for climate change) to Qbar rates.
- Provide detailed design (plans, network details and calculations) in support of any surface water drainage scheme, including details on any attenuation system, and the outfall arrangements. Calculations should demonstrate the performance of the designed system for a range of return periods and storm durations inclusive of the 1 in 1 year, 1 in 2 year, 1 in 30 year, 1 in 100 year and 1 in 100 year plus climate change return periods.
- For all exceedance to be contained within the site boundary without flooding new properties in a 100 year + 40% storm.

It should be noted that:

- The LLFA does not consider oversized pipes or box culverts as sustainable drainage. Should infiltration not be feasible at the site, alternative sustainable drainage should be used, with a preference for above ground solutions.
- Surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management.
- Applicants should look to achieve greenfield run-off rates.
- Impermeable surfacing can have a substantial cumulative impact on surface water flood risk. Developments should prioritise permeable over impermeable surfaces to allow infiltration and reduce the amount of surface water runoff, for example driveways.

3.13 The Department for Communities and Local Government Improving the Flood Performance of New Buildings: flood resilient construction (2007) identified how to improve the resilience of new properties in low or residual flood risk areas using suitable materials and construction methods. ([Link to document](#)).

Sustainable Drainage Systems (SuDS)

3.14 The multifunctional aspects of SuDS are reflected in CIRIA four pillars for SuDS, Figure 11, with SuDS taking a variety of forms, Figure 12. Examples of types of SuDS include basins and ponds, permeable surfaces, filter strips and drains, swales, wetlands, rainwater harvesting and green roofs.

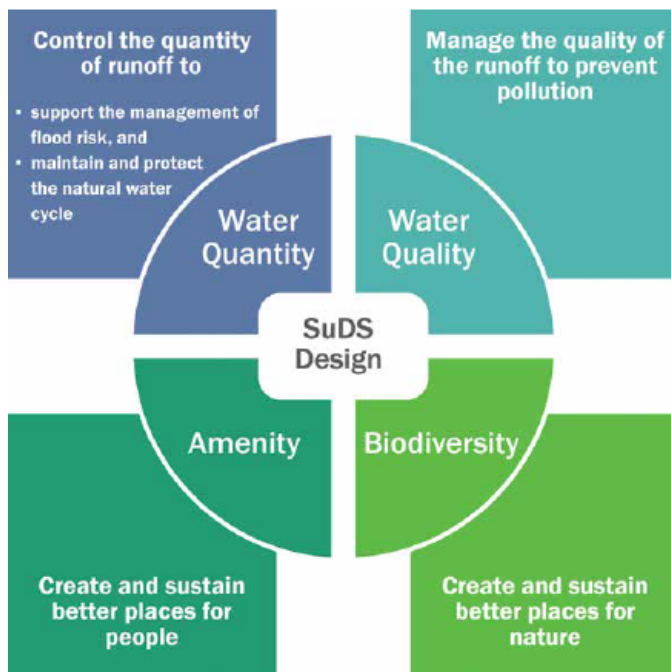


Figure 11: The four pillars of SuDS (CIRIA C753 The SuDS Manual)

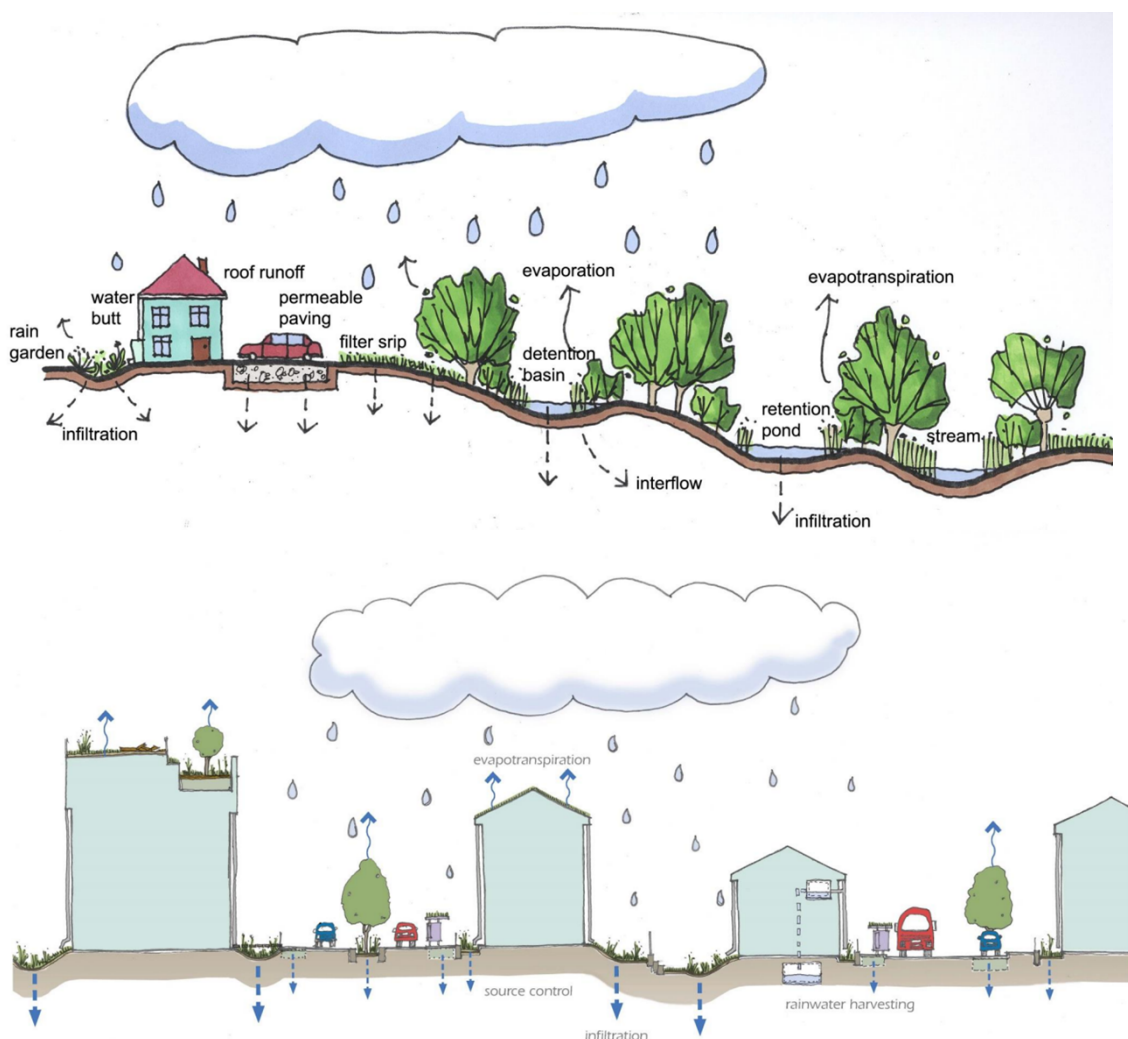


Figure 12: SuDS in a rural and urban environment

Source: Design of SuDS – key steps in the process. Trent Rivers Trust February 2018.

3.15 SuDS should incorporate green infrastructure which can help to protect against flash flooding and makes a significant contribution towards meeting biodiversity net gain. Trees intercept rainfall and slow the rate of run-off, while green space can be used as a temporary storage area for flood water. When positive water management is planned and delivered correctly, green infrastructure can greatly reduce the speed and volume of water reaching drains, sewers, and water courses, helping to conserve water and reduce the severity of flooding events.

3.16 In order to achieve positive water management, green infrastructure should be integrated into the drainage and wastewater management plans with the aims of providing:

- Making a positive contribution to the character of the area.
- Enhance public open space for a variety of recreational uses;
- Reduce flooding at catchment and local scales, working with natural processes;
- Provide water to create new or enhance existing wetland habitats and water courses;
- Minimise water pollution and improve water quality;
- Improve climate change resilience of freshwater habitats and species;
- Help connect recreational, natural green and blue spaces;
- Facilitate biodiversity, prioritising native species.

3.17 Blue infrastructure, such as rivers, canals and open water should be incorporated into the design of a scheme so that acts as a valuable corridor rather than a barrier for recreation and wildlife. Where practical, culverted watercourses should be opened up to form a natural open watercourse. Schemes such as that undertaken at Tichfield Park, Figure 13, create an environment for users to enjoy as well as benefiting biodiversity.



Figure 13: Tichfield Park. Stream culvert opened up and rewilded.

Source: Ashfield District Council

- 3.18 The Council will require the design of surface water drainage should be an integrated part of a well-designed development, which is considered at the earliest possible stages of the planning process
- 3.19 The Council will require SuDS water features that are integrated, contribute to well-designed places and positively address the character of the development. In this context, a wide variety of new water features should be integrated into the design of a development including swales, rain gardens, rain capture and other drainage water features.
- 3.20 The Council will require that any applications for development identify how surface water drainage will be managed and maintained for the lifetime of the development in the future.
- 3.21 The Council will require that opportunities are taken to facilitate blue infrastructure. Applicants should reinstating areas of watercourse meadows, restoring natural water courses and open up culverted water courses into a natural form.

4.0 Improving Building Design and Layout to Address Climate Change

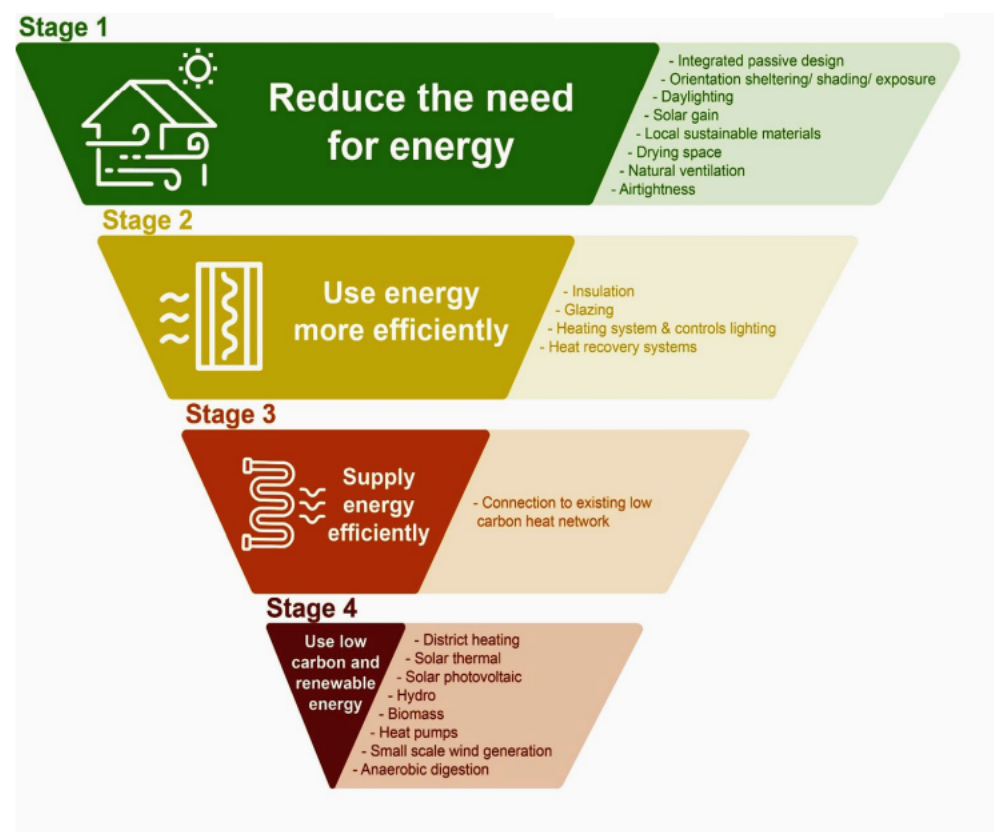


Figure 14: Energy hierarchy

- 4.1 The Energy Hierarchy, Figure 14, helps to guide decisions about which energy measures are appropriate in particular circumstances. Developers should aim to:

- Reduce the need for energy - the site layout and orientation of buildings can reduce the energy demand of buildings by capitalising on passive solar gain for heat and light.
- Use energy efficiently - there are a range of measures that can be incorporated which help save and efficiently use energy, including thermal efficient glazed windows, draught proofing, insulation, and energy efficient appliances (e.g. light fittings).
- Supply energy efficiently – Green House Gas (GHG) emissions can be significantly reduced by using existing energy supplies more efficiently e.g. by distributing waste heat energy via power networks or using Combined Heat and Power networks.
- Use renewable energy - incorporate technologies that obtain energy from natural sources such as the wind, water and sun (renewable energy sources).

Sustainable layout and design

4.2 Sustainability must be part of the whole design process from the very start with the objective of having an integrated approach to create "win-win" design solutions. The Government has produced National Design Guidance ([link to design guidance](#)) which is relevant in this context. Building for a Healthier Life also provides key principles for sustainable design. ([Link to Building-healthier-life](#)). Figure 15 identifies potential energy efficient measures that could be incorporated into new development.

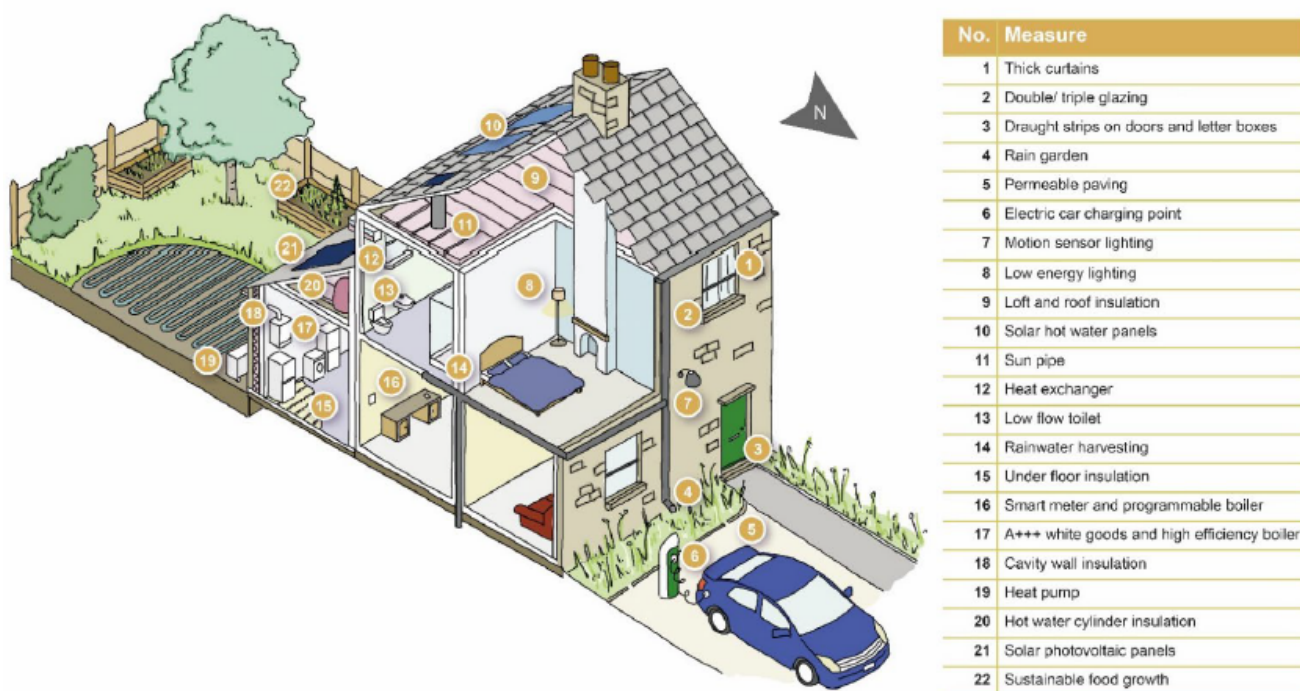


Figure 15: Common energy efficiency measures in new developments.

Source: Waverley Borough Council Climate Change and Sustainability SPD 2022

- 4.3 **Passive Solar Design** - Using the sun's energy and surrounding climate can achieve natural heating and cooling of a building. The orientation of buildings can significantly reduce overall energy consumption of a building. Buildings should be orientated to maximise solar gain during the high summer and low winter sun angles on southern exposures whilst minimising excessive solar gain on east and west exposures from low sun angles. This can significantly reduce the overall energy consumption of a building. Figure 16.

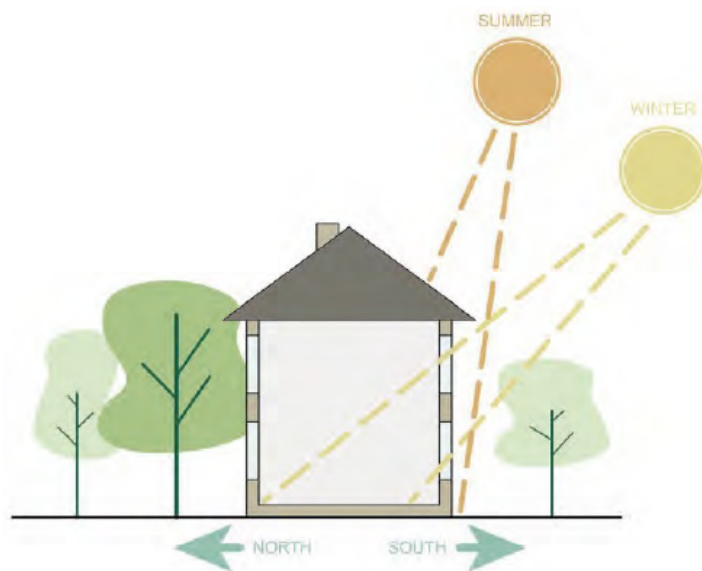


Figure 16: Solar orientation residential dwellings

Source: Derbyshire Dales Climate Change SPD.

- 4.4 **Overheating** - Climate change is expected to bring more extreme temperatures. The provision of natural shading such as building overhangs, balconies, grouping and trees is encouraged to reduce the risk of overheating during the summer and minimise heat loss in the winter.



Figure 17: 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

Source: National Design Guidance 2018.

- 4.5 **Densities** - Planning policies generally seek to ensure that new development does not create issues of overlooking, overbearing or overshadowing. Separation distances between residential units and their siting and orientation within the scheme relative to one another should seek to maximise solar gain across the scheme as a whole. The elevation with the most potential for solar gain should have a minimum distance of 11 m from the next building.
- 4.6 **Use Energy Efficiently** - There are a range of measures that can be incorporated, which help save and efficiently use energy, including thermal efficient glazed windows, draught proofing, insulation, and energy efficient appliances (e.g. light fittings).

Implications

- 4.7 Applicants should demonstrate how the energy hierarchy has been considered within the planning application to minimise carbon emissions.
- 4.8 When planning for and designing layouts, a number of aspects should be considered and reflected in the development:
- Use the layout, density and mix of development to support identified opportunities for decentralised energy.
 - Considering different layout options to achieve maximum solar gain and integration of solar panels.

- Consider the landform, layout, building orientation, tree planting, massing and landscaping to reduce likely energy consumption and increase resilience to increased temperatures;
- The design and integration of open spaces and green networks should reflect the opportunities for people, biodiversity, flood storage and carbon management provided by multi-functional green spaces and green infrastructure networks. This includes promoting urban cooling, shade and shelter, access to nature and healthy places.
- The use of low carbon technology.
- Support sustainable waste management by providing space for recycling and composting.

5.0 Low Carbon And Renewable Energy

Low or Zero Carbon Technologies

- 5.1 Renewable and Low and Zero Carbon technologies (LZC) integrated into the built environment at the community or individual building scale (sometimes known as micro-generation) will play a vital role in reducing carbon dioxide emissions. These can be undertaken on-site or in the immediate locality of the development.
- 5.2 Renewable energy technologies produce energy from natural resources that will not run out. The most common technologies are energy from wind (wind turbines), energy from the sun (solar panels), and energy from water (hydroelectricity). In addition, there is a growing sector of LZC technologies. These do not use purely renewable sources but instead have very limited (or even zero) carbon emissions. Examples include biomass fuelled boilers and ground source heat pumps.

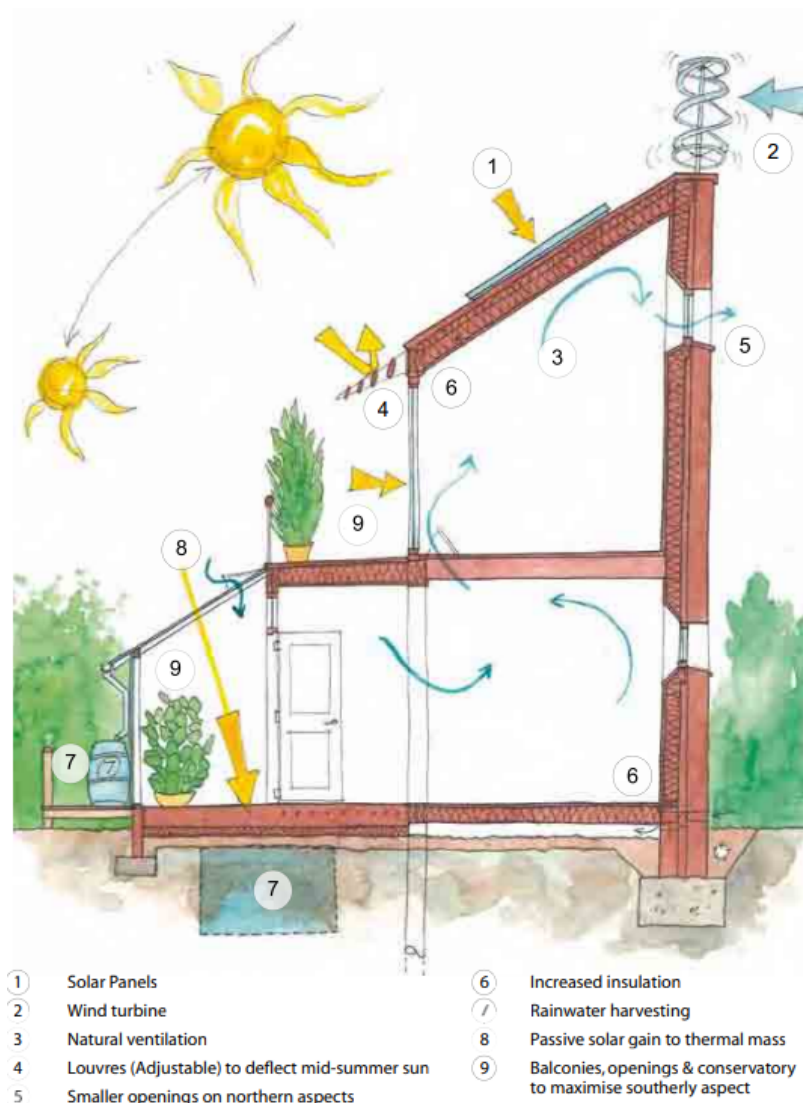


Figure 18: Sustainably design building

Source: Southwark Council

5.3 In broad terms, renewable and LZC can be seen to fall into three categories:

- Those that produce electricity;
- Those that produce heat, either for water or heating;
- Those that co-produce both electricity and heat.

Electricity Producing Technologies	Heat Producing Technologies	Combined Heat and Power Technologies
<ul style="list-style-type: none">• Photovoltaic solar panel• Wind turbines• Hydro-electric turbines	<ul style="list-style-type: none">• Solar hot-water collector• Ground source heat pumps• Water source heat pumps• Air source heat pumps• Biomass fuelled boilers• Biomass fuelled stoves• Anaerobic digesters (these can also produce electricity).	<ul style="list-style-type: none">• Combined Heat and Power Plants (CHP)

Table 2: Forms of LZC

- 5.4 Small-scale technologies such as solar PV, solar thermal, heat pumps and wind turbines can generate energy to meet some or all of the needs of a building. A single installation will produce a limited amount of energy but cumulatively these technologies will be an important element towards securing the future energy supply, and reducing energy costs for households and businesses.
- 5.5 The General Permitted Development Order (GPDO) (2015 as amended) grants the right to carry out certain limited forms of development without the need to apply for planning permission. The Planning Portal ([link to Planning Portal](#)) and the Energy Saving Trust ([link to Energy Saving Trust](#)) can provide guidance on the use of small scale technologies.

Heat Network

- 5.6 A heat network, sometimes called district heating, is a distribution system of insulated pipes that takes heat from a central source and delivers it to a number of domestic or non-domestic buildings. The heat source might be a facility that provides a dedicated supply to the heat network, such as a combined heat and power plant; or heat recovered from industry and urban infrastructure, canals and rivers, or energy from waste plants. Further information on the opportunities in this area is available on the Government's website. ([Link to website](#)).

Mine Water Heat

- 5.7 There are potentially opportunities for mine water heating for larger developments in Ashfield.

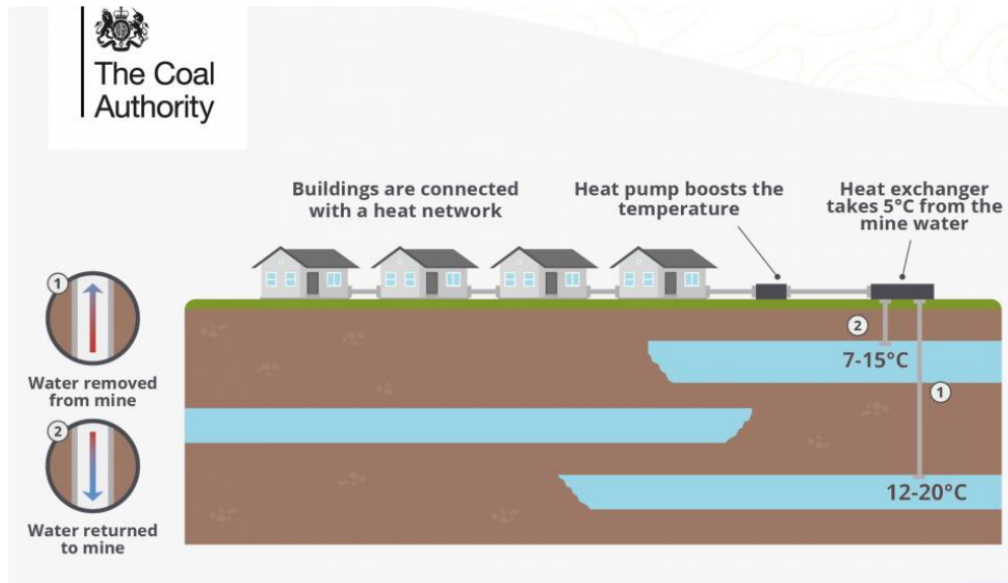


Figure 19: Mine Water Heat

Source: The Coal Authority

- 5.8 Mine water heat is an area where there are opportunities to provide heat for homes and businesses. Water within the mines is warmed by natural processes and can, if sustainably managed, provide a continuous supply of heat. Mine water temperatures are not affected by seasonal variations and subject to the right support, mine water can provide renewable, secure, low carbon heating for buildings in coalfield areas. In the case of a district heating network, this energy can be transferred to a pipe network using a heat exchanger, and then distributed to nearby homes. With heating accounting for 40% of energy use in the UK, mine water heat could improve the sustainability of the places while supporting a net zero future.
- 5.9 The Coal Authority business plan 2022 to 2025 July 2022 ([Link to Plan](#)) identifies that mine water: *“can provide heat for homes and businesses, while also delivering net zero carbon and levelling up outcomes for communities whose identity was built from coal and who could now benefit from low carbon, social and economic benefits from the warm water in the historic mining assets.”* The Coal Authority sets out its intention to work with a range of partners and to seek innovative funding mechanisms to enable this growth, partnering with public organisations and private sector companies.
- 5.10 British Geological Survey (BGS) and the Coal Authority have released maps that reveal the extent to which heat is stored in Britain’s abandoned coal mines. The map shows where the mines are and the extent by which temperatures increase with depth. ([Link to interactive map](#)).

6.0 Sustainable Transport – Reducing the Need to Travel

- 6.1 The ability to travel safely and reliably is essential for the economy and health and well-being. However, for Ashfield national data identifies that while carbon emission from industry and domestic have fallen significantly, transport has not seen the same level of reduction and as a percentage has increased from 26.95% of emissions in 2005 to 35.82% in 2018. ([Link to data](#)).
- 6.2 Department for Transport statistics extracted from the National Travel Survey confirm that a quarter of trips are under a mile in length, with almost half (46%) of trips under 2 miles in length. ([Link to data](#)). The majority of Ashfield's population live in the three towns of Hucknall, Kirkby-in-Ashfield and Sutton in Ashfield. Therefore, there are opportunities for an increased proportion of trips to be made on foot or by cycle within Ashfield's main settlements and larger villages.
- 6.3 Spatial planning can help shape the pattern of development and influence the location, scale, density, design and mix of land uses, which can in turn help reduce the need to travel and the length of journeys, and make it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking and cycling.
- 6.4 Transport for New Homes 2018, Foundation for Integrated Transport, ([link to doc](#)) considered the functioning of transport in relation to development based on various themes and a comparison to the Netherlands. It sets out a number of recommendations in relation to planning and transport. Poundbury is highlighted as an development where it has been successful in achieving higher rates of walking (32% of all trips).
- 6.5 A range of convenience retail and community should support large-scale residential developments uses in addition to providing local employment opportunities where possible, to reduce the need for residents to travel. The change to more agile working practices also reduces the potential need to travel and therefore, emissions generated by the travel mode. It also emphasised the need for development to include high-speed broadband to facilitate home working.
- 6.6 Major developments should be planned with respect to existing active travel and public transport networks. Developments should include active travel infrastructure throughout the site, and link to the existing external network and / or enhance the existing network wherever possible.
- 6.7 There is substantial emphasis on alternative forms on transport to the car set out in various national strategies:
- Decarbonising Transport: A Better Greener Britain in 2020. Department of Transport. The Plan includes clear actions to cut delivery traffic and make it low-carbon, including harnessing new technology and 'last-mile' delivery consolidation. It sets out the Government's commitments, actions and timings in relations to various forms of transport including cycling and walking, zero emission buses, and zero emissions fleets of cars, vans motorcycles and

scooters. Pages 9 to 11 sets out a summary of the commitments for decarbonise all forms of transport.

- The National Bus Strategy for England requires Local Transport Authorities to implement ambitious bus priority schemes and draw up Bus Service Improvement Plans. The Bus Service Improvement Plan for Nottinghamshire is available on the County Council's website. ([Link to Plan](#)).
- The Department for Transport sets a vision for cycling and walking within its Gear Change document ([link to gear change](#)) setting the following nine key principles. Applicants should seek to achieve the following principles:
 - Cyclists must be separated from volume traffic, both at junctions and on the stretches of road between them.
 - Cyclists must be separated from pedestrians.
 - Cyclists must be treated as vehicles, not pedestrians.
 - Routes must join together; isolated stretches of good provision are of little value.
 - Routes must feel direct, logical and be intuitively understandable by all road users.
 - Routes and schemes must take account of how users actually behave.
 - Purely cosmetic alterations should be avoided.
 - Barriers, such as chicane barriers and dismount signs should be avoided.
 - Routes should be designed only by those who have experienced the road on a cycle.
- Cycle infrastructure design (LTN 1/20) ([link to document](#)) Provides guidance and sets out good practice in relation to the design of cycling infrastructure to ensure that it is accessible to all.

6.8 The Government plans to stop the sale of new petrol and diesel cars by 2030. Consequently, there is a requirement to accommodate low or zero emission vehicles within new developments. As of June 15th, 2022, the building regulations require developers to ensure electric-vehicle (EV) charging points are installed within the following:

- New-build homes
- New-build workplaces
- Supermarkets
- Buildings undergoing major renovations.

The Regulations do not apply to work subject to a building notice, full plans application or initial notice submitted before that date, provided the work is started on site before 15 June 2023. ([Link to Building Regulations](#)).

6.9 A consideration in all planning applications will be that convenient pedestrian access should be provided to the nearest public transport facilities to promote the use of sustainable transport modes. This will need to meet the relevant standards for Nottinghamshire County Council, as the Highway Authority, which required major developments should be located between 250m and 400m maximum walk of the

nearest bus stops to promote public transport use in accordance with local and national planning policy. In rural areas the walking distance should not be more than 800m. (Nottinghamshire County Council's Highway Design Guidance, Part 3.1). Site accessibility reviews should be undertaken using actual walking distances rather than relying on radius measurements, with a commitment provided to implementing improvements to the local pedestrian network where required to support convenient access to local bus stops and rail stations.

6.10 Development should:

- Be located to maximise the opportunities for sustainable travel, promoting walking, cycling and public transport and offering a genuine choice of transport modes.
- Place an emphasis on cycling and walking. As part of a Transport Assessment, major development should undertake a comprehensive review of the surrounding highway network to identify, any shortfalls or deficiencies in connections to existing pedestrian and cyclist road crossings, cycle routes and pedestrian routes to local infrastructure such as schools, shops, community and leisure facilities. There will be a requirement to facilitate/improve access to local facilities through cycle and pedestrian route from new development.
- Providing dedicated traffic-free walk and cycle routes to key destinations such as schools, shops and leisure facilities (see minimum standards for cycle lanes and tracks set out in LTN 1/20 with extract below provided indicatively only).
- Providing safe, secure and convenient cycle parking in residential development, as well as in key destinations (see minimum standards for cycle set out in LTN 1/20). Particular consideration should be given to the need for secure storage of electric bikes (E-bikes).
- Supporting enhanced bus frequencies and off-site priority measures, such as priority at signals and bus lanes, from day one of occupation.
- Where practical delivering bus priority within sites, and work with bus operators to ensure the geometry of routes is suitable and stops are well located and designed.
- Consideration should be given to the diversion of existing, or provision of new bus services in association with large-scale sites to ensure that developments are accessible by public transport, and to reduce the level of trips generated by car.
- Increase the proportion of trips in the local area made by sustainable modes (particularly active travel modes), by:
 - giving comparative advantages to sustainable travel – for example by placing cycle parking closer to a main entrance than car parking (other than disabled parking);

- implementing travel plans (unless the scale of the development is small) so as to reduce greenhouse gas emissions;
 - requiring safe and attractive walking and cycling opportunities for all new developments, including secure cycle parking and, where appropriate, showers and changing facilities;
 - managing the provision of car parking, so that it is consistent with cutting greenhouse gas emissions, including the provision of electric vehicle charging infrastructure; and
 - improving public transport and utilising a travel planning approach.
- Vegetation along roads contributes to environment protection, in particular reducing noise and pollution, and can also have an adaptation function, for example protecting road from direct sunlight.
 - Support the rapid deployment of electric and plug-in hybrid vehicles and charging points.

Appendix 1: Climate Change Checklists

Appendix 2: Climate Change Background Information.

- i. The earth's temperature is getting warmer. It is estimated that Green House Gas (GHG) emissions have increased by a third in the last 100 years resulting in a rise in the earth's temperature by one degree centigrade. With this, has come more unpredictable weather patterns causing flooding, high winds and drought which have financial, social and environmental costs ([link to met office predictions](#)). New development must help to reduce GHG emissions particularly Carbon Dioxide (CO₂) and designing in resilience to climate change.
- ii. Greenhouse gases in the atmosphere, including water vapour, carbon dioxide, methane, and nitrous oxide, absorb heat energy and emit it in all directions (including downwards), keeping Earth's surface and lower atmosphere warm. Adding more greenhouse gases to the atmosphere enhances the effect, making Earth's surface and lower atmosphere even warmer.

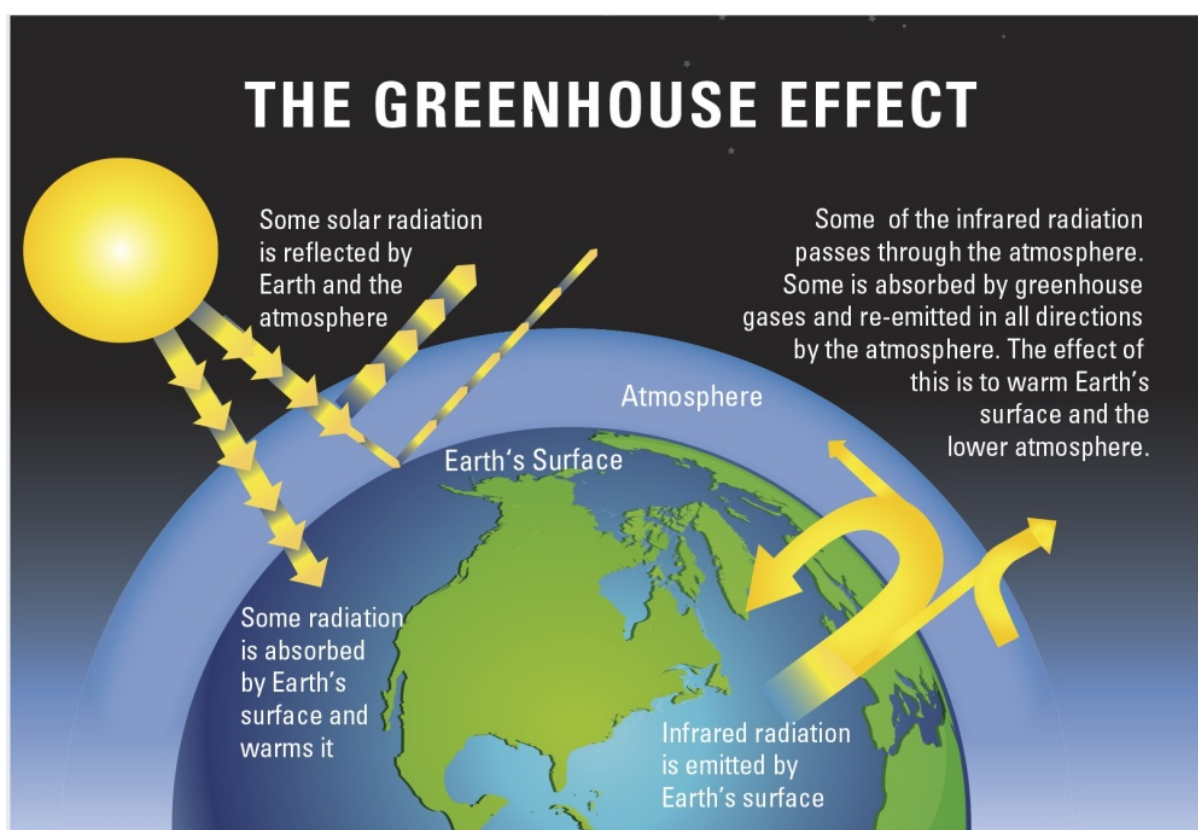


Figure 1: Impact of Green House Gases

Source: The Royal Society The Basics of Climate Change. Image based on a figure from US EPA

- iii. The Inter-governmental Panel on Climate Change (IPCC) issued its Fifth Assessment ([Link to Fifth Assessment](#)) which estimated that 50% of the increase in GHG emissions has occurred in the 40 years between 1970 and 2010. (Based on an assessment of a warming of 1.5°C and for comparison between global warming of 1.5°C and 2°C above pre-industrial levels). During the period, 2000 to 2010 annual emissions of GHGs also increased. The report estimates that due to human activities, a rise of around 1.5°C is likely to occur between 2030 and 2052, if current trends continue. The report concludes that this would result in even more extreme weather events including extreme hot spells and heavy rainfall. Rises in sea level are predicted to continue beyond the year 2100 under the various scenarios. Recent extreme weather events since the report was written enforce these findings.

- iv. To put this in perspective, the UKCP (UK Climate Projections) ([Link to document](#)) predicts that summer days could increase between 3.7- 6.8° C by 2070, including the frequency in which this occurs. Climate change has already increased the chance of seeing a summer as hot as 2018 to between 12-25%. With future warming, hot summers by mid-century could become even more common, near to 50%. Average winter precipitation is likely to increase by around a third. Whilst summer rain is predicted to be less, it will be heavier when it does rain. Overall, extreme rainfall events that typically occur every 2 years, will increase by around 25% in frequency. The Met Office UK Climate Projections 2018 study (UKCP18) provide information on how the UK's climate is expected to change. In the highest emissions scenario summer temperatures in the UK could be 5.4°C warmer by 2070 than the average summer temperature between 1981 and 2000. Average summer rainfall would, however, fall by 47% in this scenario. Winters could be up to 4.2°C warmer, with up to 35% more rainfall. ([Link to document](#)). The climate just tool ([Link to Climate Tool](#)) provides evidence on the vulnerability of local areas to both heat and flooding, which supports the need to address climate change.
- v. Through the Climate Change Act 2008 and as a signatory to international agreements, the Government has committed to:
- To bring all greenhouse gas emissions to net zero by 2050. Net zero means any emissions would be balanced by schemes to offset an equivalent amount of greenhouse gases from the atmosphere, such as planting trees or using technology like carbon capture and storage.
 - Contribute to global emissions reductions aimed at limiting global temperature rise to well below 2°C and to pursue efforts to limit temperatures to 1.5°C above pre-industrial levels.
- vi. The Climate Change Committee is an independent, statutory body established under the Climate Change Act 2008. Its purpose is to advise the Government and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change. Their June 2022 Progress Report to Parliament ([link to Report](#)) identified:
- The UK Government now has a solid Net Zero strategy in place, but important policy gaps remain.
 - Tangible progress is lagging the policy ambition. With an emissions path set for the United Kingdom and the Net Zero Strategy published, greater emphasis and focus must be placed on delivery.
 - Successful delivery of changes on the ground requires active management of delivery risks. Not all policies will deliver as planned. Some may be more successful than expected, while others will fall behind.
 - Action to address the rising cost of living should be aligned with Net Zero. There remains an urgent need for equivalent action to reduce demand for fossil fuels to reduce emissions and limit energy bills.
 - Slow progress on wider enablers. The Net Zero Strategy contained warm words on many of the cross-cutting enablers of the transition, but there has been little concrete progress.

- The United Kingdom must build on a successful COP26. The UK presidency of the UN COP26 climate summit in Glasgow last November successfully strengthened long-term global ambition and introduced new mechanisms to support delivery. It should prioritise making those new mechanisms work in practice and strengthening global 2030 ambition, while preparing for a focus on climate finance and adaptation at COP27 in 2022 and COP28 in 2023.
- vii. The Government set out local authority and regional greenhouse gas emissions for the period from 2005 to 2020. These statistics allow local authorities to track their greenhouse gas emissions trends over time, and measure progress against any targets they have. ([Link to statistics on greenhouse gases](#)). Estimates of greenhouse gas emissions have been produced for each local authority and National Park in the United Kingdom from the following broad source categories:
- Industry (including electricity-related emissions)
 - Commercial (including electricity-related emissions)
 - Public sector (including electricity-related emissions)
 - Domestic (including electricity-related emissions)
 - Transport
 - Land use, land use change and forestry (LULUCF) (including removals of carbon dioxide from the atmosphere, so that net emissions from this sector can sometimes be negative)
 - Agriculture (including electricity-related emissions)
 - Waste management (distributed based on the waste arising in each local authority)
- viii. The Table below sets out the latest estimates of end-user greenhouse gas emissions for Ashfield. It includes carbon dioxide (CO₂) methane (CH₄) and nitrous oxide (NO₂). Greenhouse gas emissions have decreased but a factor will be the impact of the coronavirus (COVID-19) pandemic in reducing road traffic and business activity as a result of the restrictions.

	Industry Total	Commercial Total	Public Sector	Domestic Total	Transport Total	LULUCF Net Emissions	Agriculture Total	Waste Management Total	Grand Total
2018	116.3	34.3	33.4	185.4	218.7	-3.4	11.8	15.3	611.7
2019	102.9	31.5	31.7	183.2	224.8	-3.4	11.8	18.1	600.5
2020	90.9	32.2	27.5	177.3	190.3	-3.4	11.3	17.1	543.3

Table 1: UK local authority and regional greenhouse gas emissions national statistics: 2005-2020 for Ashfield .

Source: Table 1.1: Local Authority territorial greenhouse gas emissions estimates 2005-2020 (kt CO₂e) - Full dataset. (LULUCF - Land use, land use change and forestry).

- ix. Research data by the Tyndall Centre for Climate Change (Manchester University) sets out the Ashfield area has a carbon budget of 4 MtCO₂ (Metric tons of carbon dioxide equivalent) for emissions between 2020 and 2100. If Ashfield emissions continued on the historic trend, this budget would be used up during 2028. All emissions past this point

would be contributing to a dangerously warmer world. In order to keep emissions below this carbon budget and achieve net zero emissions by 2050 in line with national targets, annual emissions reduction rates must be in the region of 14% per year, from 2022 to 2050.

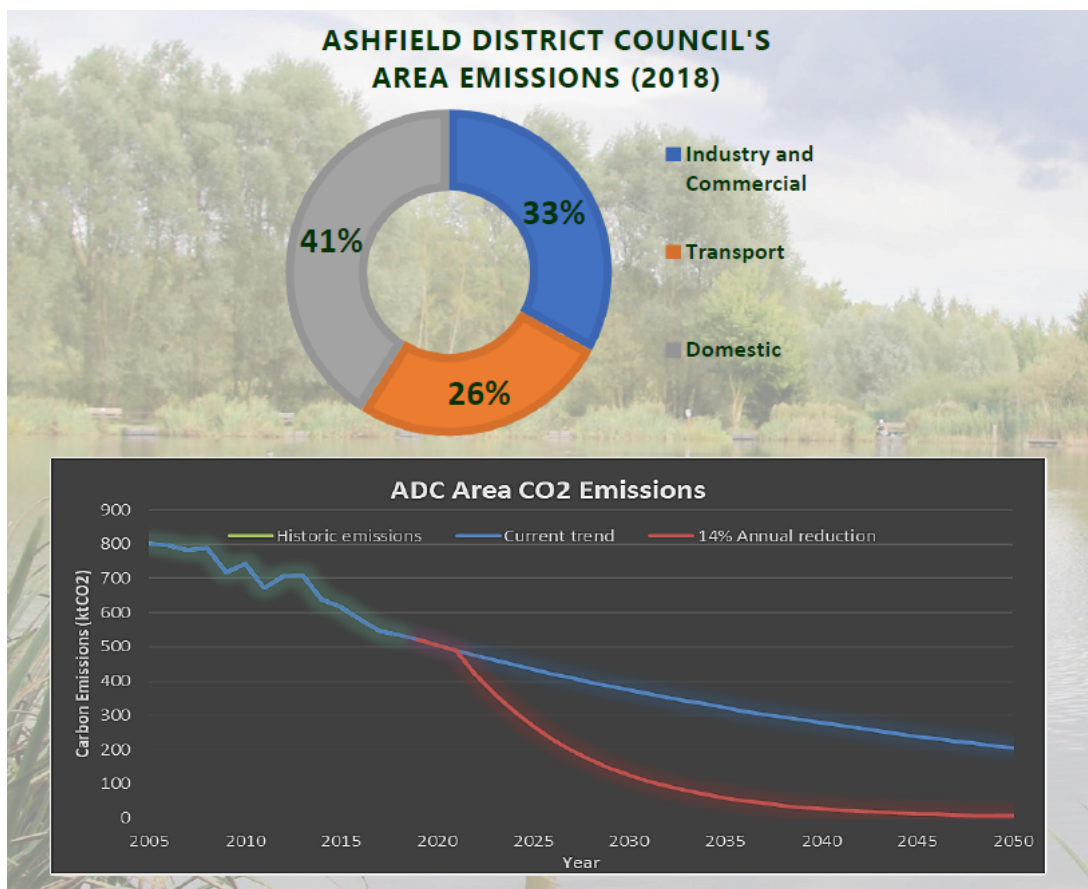


Figure 2: Ashfield climate change area emissions
Source: Ashfield Climate Change Strategy 2021 -2026

Appendix 3 – Climate Change Legislation and Policy

Legislation

- i. Various statutory requirements are in place in relation to climate change. These include:
- The Climate Change Act 2008, as amended, makes climate mitigation and adaptation central principles of plan-making. It includes a legally binding target to reduce the United Kingdom's greenhouse gas emissions to net zero by 2050.
 - The Planning and Energy Act 2008 allows Local Planning Authorities (LPAs) to set energy efficiency standards in their development plans policies that exceed the energy efficiency standards set out in the building regulations.
 - The Planning and Compulsory Purchase Act 2004 Section 19(1A) which requires
'Development plan documents must (taken as a whole) include policies designed to secure that the development and use of land in the local planning authority's area contribute to the mitigation of, and adaptation to, climate change.'
 - The Environmental Assessment of Plans and Programmes Regulations 2004 includes the issue of climate change of one of the likely significant effects on the environment (Schedule 2).
 - Flood and Water Management Act 2010 addresses the threat of flooding and water scarcity. In relation to flooding, the Environment Agency is responsible for managing risk from main rivers, critical drainage areas and reservoirs. Nottinghamshire County Council as the lead local flood authorities (LLFAs) is responsible for surface water and ordinary watercourses.
 - Environment Act 2021 allows the United Kingdom to enshrine environmental protection into law. It offers new powers to set new binding targets, including for air quality, water, biodiversity, and waste reduction. It makes biodiversity net gain from development mandatory from an as-yet unconfirmed date in November 2023.

National Strategy/Policy

Net Zero Strategy: Build Back Greener, October 2021 HM Government

- ii. The Net Zero Strategy sets out how the UK will deliver on its commitment to reach net zero emissions by 2050. It sets out:
- Measures to transition to a green and sustainable future, helping businesses and consumers to move to clean power, supporting hundreds of thousands of well-paid jobs and leveraging up to £90 billion of private investment by 2030.
 - Reducing Britain's reliance on imported fossil fuels will protect consumers from global price spikes by boosting clean energy

It stresses the importance of the planning system to common challenges like combating climate change and supporting sustainable growth.

Heat and Buildings Strategy (2021) HM Government

- iii. The Government's Heat and Buildings Strategy (2021) ([Link to Heat & Building Strategy](#)) sets out how the United Kingdom will decarbonise homes, and commercial, industrial and public sector buildings. It guides the transition to high-efficiency low-carbon buildings. It

focuses on improving building energy performance and lists relevant current and planned activities for the 2020s including:

- Future Homes Standard: a 75 – 80% reduction in carbon emissions from new homes compared to current standards, from 2025, with low-carbon heating and very high fabric standards.
- Future Building Standard: pathway to highly efficient new non-domestic buildings which use low-carbon heat.
- Building Regulation Part L and F Interim Standards: increase of energy performance standards for domestic and non-domestic buildings ahead of the Future Homes Standard and Future Buildings Standard, effective from June 2022.
- Consultation on ending new gas connections in new dwellings: consulting as to whether it is appropriate to end gas grid connections to homes constructed from 2025, in favour of alternative low-carbon heat sources.

A Green Future: Our 25 Year Plan to Improve the Environment, 2018

iv. The Government's 25 Year Plan focus on a number of goals including:

- Access to green space in urban areas. Goal 6. Enhancing beauty, heritage and engagement with the natural environment including *"Making sure that there are high quality, accessible, natural spaces close to where people live and work, particularly in urban areas, and encouraging more people to spend time in them to benefit their health and wellbeing."*
- Mitigating and adapting to climate change. Goal 7. Green infrastructure is an integral part of good design and plays an important role in the District's resilience to climate change. It is an important tool for reducing the effects of climate change and can assist in adaptation and mitigations. Green infrastructure can also deliver a range of related benefits by improving opportunities to walk and cycle, which in turn reduces carbon emissions, and improving the health and well-being of local communities.

National Planning Policy and Guidance

National Planning Policy Framework (NPPF)

v. The NPPF sets out three objectives in relation to sustainable development. This includes an environmental objective which identifies the need to mitigate and adapt to climate change, including moving to a low carbon economy.

vi. Policies includes:

- The need to plan to mitigate climate change. (Paragraph 11).
- Identifying that access to a network of high-quality open spaces and opportunities for sport and physical activity is important for the health and well-being of communities, and can deliver wider benefits for nature and support efforts to address climate change. (Paragraph 98).

- Transport issues should be considered from the earliest stages of plan-making and development proposals, so that [...] opportunities to promote walking, cycling and public transport use are identified and pursued. (Paragraph 104).
- The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. (Paragraph 105)
- That trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly planted trees, and that existing trees are retained wherever possible. (Paragraph 131).
- The planning system should support the transition to a low carbon future in a changing climate..... It should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure. (Paragraph 152).
- Plans should take a proactive approach to mitigating and adapting to climate change. (Paragraph 153). Footnote 53 identifies 'in line with the objectives and provisions of the Climate Change Act 2008.'
- '... a proposed wind energy development involving one or more turbines should not be considered acceptable unless it is in an area identified as suitable for wind energy development in the development plan; and, following consultation, it can be demonstrated that the planning impacts identified by the affected local community have been fully addressed and the proposal has their backing.' (Paragraph 158, footnote 54).

Note:

Whether a proposal has the backing of the affected local community is a planning judgement. The courts have ruled that 'addressed' does not mean 'resolved' or 'eliminated'.

Planning Practice Guidance Climate Change

- vii. Planning Practices Guidance (PPG) identifies that addressing climate change is one of the core land use principles which the NPPF expects to underpin both plan making and decision taking. (Paragraph: 001 Reference ID: 6-001-20140306) The delivery of sustainable developments is heavily interlinked with the ability to address climate change impacts so that climate change must be a fundamental consideration throughout the planning process from planning policy through to decision-making of planning applications.
- viii. The PPG advised how to identify mitigation and adaption measures in the planning process to address the impacts of climate change. It includes how suitable mitigation and adaptation measures can be implemented in the planning process in order to address the impacts of climate change. This includes examples of mitigating and adapting to climate change.

Examples of mitigation include:

- Reducing the need to travel and providing for sustainable transport.
- Providing opportunities for renewable and low carbon energy technologies.
- Providing opportunities for decentralised energy and heating.
- Promoting low carbon design approaches to reduce energy consumption in buildings, such as passive solar design.

Examples of adapting to climate change include:

- Considering future climate risks when allocating development sites to ensure risks are understood over the development's lifetime.
 - Considering the impact of and promoting design responses to flood risk and coastal change for the lifetime of the development.
 - Considering availability of water and water infrastructure for the lifetime of the development and design responses to promote water efficiency and protect water quality.
 - Promoting adaptation approaches in design policies for developments and the public realm.
- ix. It stresses that adaption and mitigation approaches can be brought together with a win-win solutions, for example:
- by maximising summer cooling through natural ventilation in buildings and avoiding solar gain;
 - through district heating networks that include tri-generation (combined cooling, heat and power); or
 - through the provision of multi-functional green infrastructure, which can reduce urban heat islands, manage flooding and help species adapt to climate change – as well as contributing to a pleasant environment which encourages people to walk and cycle.
- x. Provisions in Planning Practice Guidance in other subject areas will also be relevant to tackling climate changes.

Local Policy

- xi. Ashfield District Council has set out a Climates Change Strategy 2021 to 2026. It emphasises that globally, climate change has become a cause for concern, with human activities dangerously increasing greenhouse gas emissions. To prevent this, we must cut CO 2 emissions drastically by 2030 and reach net zero emissions by 2050. The Council will:
- Work to reach net zero, or closely to it as possible for the Council's Direct and Indirect emissions by 2030,
 - Work to influence and assist the wider community emissions to reduce Ashfield's overall carbon footprint, whereby District wide emissions need to reduce significantly year on year from 2022 to 2050 in order to keep emissions below the carbon budget (the maximum carbon to be emitted by the District) and achieve net zero emissions by 2050, in line with national targets.

- xii. The current Development Plan for Ashfield comprises the Ashfield Local Plan Review 2002 (ALPR) and two neighbourhood plans. The ALPR has a number of policies which will be relevant in relation to climate changes. These include:
- Policy ST1 places an emphasis on development not adversely affecting the character, quality, amenity or safety of the environment as well as considering the capacity of the transport system.
 - Transport policies place an emphasis on cycling and pedestrians in relation to development. (Policies TR2 and TR3). Policy TR6 places identifies the need for contributions to improve the public transport infrastructure the cycling network and pedestrian facilities.
 - The importance role of nature and green infrastructure is reflected in Policies EV4, EV5, EV6, EV8, HG6, RC2, RC3, RC5, and RC8.
 - Climate change measures form part of good design and the ALPR stresses the importance of design, through Policies ST1, HG3, HG5, HG8 and SH8.
- xiii. The indicators for the Council's Planning Services in relation to climate change are set out in the Table.

Implement grey water recycling (where possible) within new and existing developments.
Ensure that there are developer contributions towards sustainable transport and infrastructure options.
Promote travel plans amongst partner organisations in the District.
Promote sustainable travel through planning.
Encourage and assist (where possible) increase of local, affordable and accessible low carbon and renewable energy generation across the Ashfield District Council area.

Table 1: Ashfield District Council Climate Change indicators for Planning Services.
Source: Ashfield DC.

- xiv. The JUS't Neighbourhood Plan 2017 -2032 set out in Policy NP1: Sustainable Development that "development that leads to economic, social and environmental benefits and minimises its environmental impacts will be supported." The Teversal, Stanton Hill and Skegby Neighbourhood Plan 2016 -2031 has a similar Policy NP1: Sustainable development which identifies that "development that leads to economic, social and environmental benefits is encouraged. Both neighbourhood plans place an emphasis on Good Design with Annex 3 of the Teversal Plan identifying that:

"Good design is about more than just aesthetics; well-designed places let people have better lives by making places safe, easy to move through, economically and socially vibrant, and robust against climate change."

Appendix 4 Glossary

Aerosols - are defined as microscopic liquid or solid particles that enter the atmosphere through natural and man-made processes. Aerosols are more complicated than the typical greenhouse gas.

Air Quality Management Areas - An area declared by a local authority to exceed the relevant air quality strategy objective.

Air tightness - Air leakage is measured as the rate of leakage per m² of external envelope per hour at an artificial pressure differential through the envelope of 50 Pa. i.e. x m³/hr/m²@50Pa.

Anaerobic Digestion - A process through which natural matter is broken down in a sealed space, without oxygen, to produce biofuel which is then used for heating or to generate electricity.

Ancient Woodland - An area of land in which there has been a continuous cover of trees since 1600.

Anthropogenic emissions - environmental pollution and pollutants originating in human activity such as anthropogenic emissions of sulphur dioxide.

Biodiversity Net Gain - An approach used to improve a sites biodiversity value. Sites completed to a 'net gain' standard will have a positive ecological impact and deliver improvements through habitat creation and enhancements.

BREEAM Standards - widely used means of reviewing and improving the environmental performance of buildings. BREEAM assessment methods generally apply to commercial developments (industrial, retail etc).

Building for Life - a tool for assessing the design quality of homes and neighbourhoods in England, comprising 20 criteria, to assess the design quality of new housing developments.

Building Regulations - building regulations in the United Kingdom are statutory instruments or statutory regulations that seek to ensure that the policies set out in the relevant legislation are carried out. Building regulations set out required standards for building work and materials and Building Regulations approval is required for most building work in the UK. Part L sets standards for the energy performance of new and existing buildings.

Carbon Footprint - The total amount of carbon dioxide released into the atmosphere as the direct result of activities of an organisation, individual, or community.

Carbon Neutral – Resulting in no net release of carbon dioxide into the atmosphere, particularly as a result of carbon offsetting. For a building it has zero net energy consumption, meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site, or by renewable energy sources elsewhere. These buildings consequently contribute less overall greenhouse gas to the atmosphere than similar buildings. They do at times consume non-renewable energy and produce greenhouse gases, but at other times reduce energy consumption and greenhouse gas production elsewhere by the same amount.

Carbon Off-setting - Carbon offset means the increased carbon dioxide emissions from a new development are balanced by savings in carbon dioxide elsewhere, by making payment into a carbon offset fund.

Climate change - long-term changes in temperature, precipitation, wind and all other aspects of earth's climate. It is often regarded as a result of human activity and fossil fuel consumption.

Climate change adaptation - Adjustments to natural or human systems in response to the actual or anticipated impacts of climate change, to mitigate harm or exploit beneficial opportunities. This means altering our behaviour, systems, and—in some cases—ways of life to protect our families, our economies, and the environment in which we live from the impacts of climate change.

Climate change mitigation - Action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions. This means avoiding and reducing emissions of heat-trapping greenhouse gases into the atmosphere to prevent the planet from warming to more extreme temperatures.

Cumulative Effects - The likely effects that a development may have in combination with other relevant developments in its vicinity.

District Heat Networks - A distribution system of insulated pipes that takes heat from a central source and delivers it to a number of domestic or non-domestic buildings.

Dwelling Emissions Rate (DER) - The DER is the estimated carbon dioxide emissions per m² per year (Kg/CO₂/m²/year) for the dwelling, as designed. It accounts for energy used in heating, fixed cooling, hot water and lighting.

Embedded Carbon - Carbon dioxide emissions associated with the whole lifecycle of a building or piece of infrastructure, including emissions associated with building materials and the construction process. It has been estimated that approximately 20% of Green House Gases emissions are embodied in the construction sector.

Flood Plain - An area of land adjacent to a river that experiences flooding during periods of high discharge.

Full lifetime of development - Residential development should be considered for a minimum of 100 years unless there is specific justification for considering a shorter period.

Greater Nottingham - made up of the administrative areas of Broxtowe, Erewash, Gedling, Nottingham City and Rushcliffe Councils and the Hucknall part of Ashfield Council.

Green Corridors - Land that provides sufficient habitat to support wildlife and the movement of wildlife between two or more habitats.

Green and Blue Infrastructure - a network of multi-functional greenspace, water resources, urban and rural which is capable of delivering a wide range of environmental and quality of life benefits and can include parks, open spaces, playing fields, woodlands, wetlands, grasslands, river and canal corridors, allotments and private gardens.

Greenhouse gases - A gas that absorbs and emits radiant energy within the thermal infrared range, which causes the heating of the atmosphere, otherwise known as the greenhouse effect. The greenhouse effect is a warming of Earth's surface and the air above it. It is caused by gases in the air that trap energy from the Sun. These heat-trapping gases are called greenhouse gases. The most common greenhouse gases are water vapour, carbon dioxide, and methane.

Grey Water - Domestic wastewater that comes from showers, laundry, bath, and untreated spa water.

Infrastructure: facilities and services to meet the needs of the existing community and to meet the needs of new development. Includes transport infrastructure, public transport, education, health, affordable housing, open space, community facilities etc.

International Inter governmental commission on climate change: is the leading international body for the assessment of climate change, and a source of scientific information and technical guidance for Parties to the United Nations Framework Convention on Climate Change (UNFCCC), its Kyoto Protocol and Paris Agreement. The IPCC prepares comprehensive Assessment Reports about knowledge on climate change, its causes, potential impacts and response options. The fifth Assessment was published in 2014 and the Sixth is anticipated in 2022.

Local Plans: plans for the future development of the local area, drawn up by the local planning authority in consultation with the community. The current Aligned Core Strategies forms Part 1 of the Local Plan. Part 2 Local Plans include site allocations and development management policies.

Local Enterprise Partnership (LEP): a partnership body designated and established to determine economic priorities, drive sustainable economic growth and create jobs. Various funding streams are determined by the LEP. The D2N2 LEP covers Nottinghamshire and Derbyshire.

National Planning Policy Framework (NPPF): document setting out the Government's planning policies for England and how these are expected to be applied.

Net zero: The point at which the amount of greenhouse gases being put into the atmosphere by human activity in the UK equals the amount of greenhouse gases that is being taken out of the atmosphere

Paris Agreement - A legally binding international treaty on climate change, adopted on 12th December 2015.

Passivhaus - A leading international design standard for energy usage within buildings.

Renewable energy: includes energy for heating and cooling as well as generating electricity. Renewable energy covers those energy flows that occur naturally and repeatedly in the environment – from the wind, the fall of water, the movement of the oceans, from the sun and from biomass and ground heat.

Resilience: The capacity of people and places to plan for, better protect, respond to and to recover from flooding and coastal change [or other impacts of climate change].

Surface Water Runoff - The flow of water occurring on the ground surface when excess rainwater, stormwater, meltwater, or other sources can no longer infiltrate into the ground.

Standard Assessment Performance (SAP) - The Standard Assessment Procedure for the Energy Rating of Dwellings (SAP) was developed by BRE based on the BRE Domestic Energy Model (BREDEM) and was published by Building Research Establishment (BRE).

Sustainability Appraisal: examines the social, environmental and economic effects of strategies and policies in a local plan.

Sustainable development: The NPPF defines this as follows: “at a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.”

Sustainable urban Drainage systems (SuDS) - Systems and infrastructure that is designed to reflect a natural approach to manage the drainage of water.

Target Emission Rate – The **target CO2 emission rate** (TER) sets a minimum allowable standard for the energy performance of a building and is defined by the annual CO2 emissions of a

notional building of same type, size and shape to the proposed building. TER is expressed in annual kg of CO₂ per sq. m.

U Value - The U-value is a measure of how readily heat will flow through the structure, and describes how much energy in Watts (W) can pass through 1m² of material from inside to outside at a temperature differential of 1 Kelvin (K), or 1°C.

Wildlife Corridors - Green infrastructure that connects individual and sometimes isolated habitats, allowing wildlife to move freely and safely between these areas.

