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EFDC SUSTAINABILITY GUIDANCE & CHECKLIST

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MINOR DEVELOPMENTS *(1-9 units)*

DRAFT - REVISION 06
FEBRUARY 2021



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Issue and Revision Record

REVISION	DATE
01	August 4th, 2020
02	August 28th, 2020
03	October 7th, 2020
04	October 30th, 2020
05	February 3rd, 2021
06	February 16th, 2021

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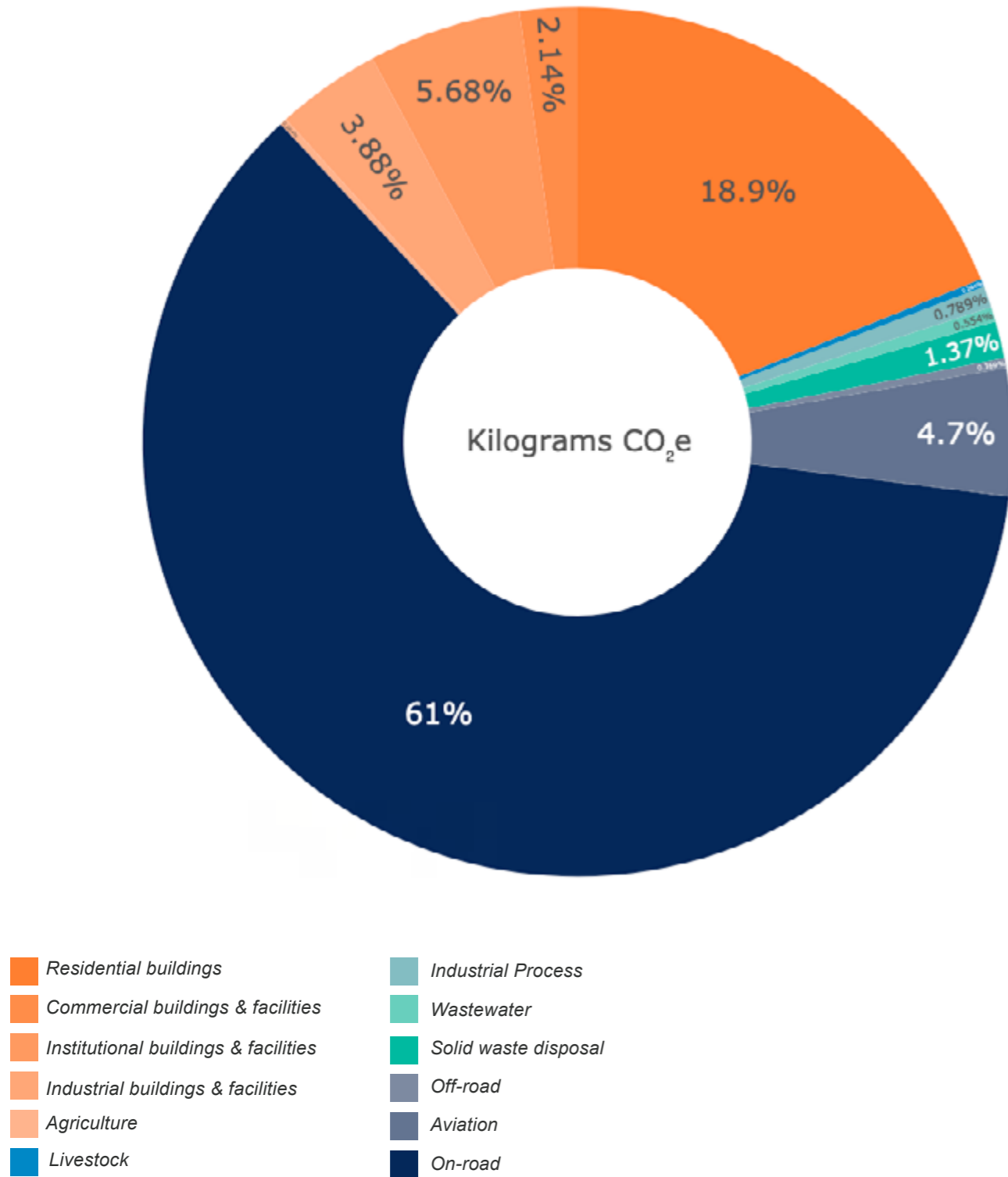
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INTRODUCTION

This document supports the highest environmental commitment across the District
- to become Carbon-Neutral by 2030

Overview

Epping Forest District has an annual carbon emission contribution of 2,048 CO₂ (kt) across all industries (2017 data). The graph below provides a break down of the District's emissions based on sector:



Source: scattercities.com

Overview

CLIMATE EMERGENCY

The UK Government and Epping Forest District Council have declared a Climate Emergency.

The global climate is changing, primarily as a result of greenhouse gas emissions from human activity. Communities, businesses and the natural environment are already feeling the impacts of the changing climate. Continued change is now unavoidable and will disrupt everyday life, with higher average temperatures and more extreme weather events.

This Sustainability Guidance supports the highest commitment across the District, which is to produce net zero carbon emissions by 2030. It sets out practical solutions to set out a clear design and construction process for any new development, into a net zero future. EFDC believes that in order to meet our climate change targets, all new buildings must operate at net zero carbon by 2030.

Sustainability focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs. High quality sustainable developments require adopting a holistic approach to environmental, social and economic sustainability.

EPPING FOREST DISTRICT COUNCIL

The Council's emerging Local Plan sets out the most significant level of development to be brought forward across the District in a generation.

Within the period 2011-2033 the growth proposed in the emerging Local Plan will provide for a minimum of 11,400 new homes. Much of this will be delivered through larger strategic sites which will require planning applicants to take a proactive and considered approach to matters of environmental and socio-economic sustainability.

The emerging local plan looks to balance future development alongside ecological well-being, responding to the climate emergency and meeting objectives to improve health and well-being.

PLANNING POLICY CONTEXT

There is a strong and committed national and local policy context for planning environmentally, socially and economically sustainable places and developments, and climate adaptation.

The National Planning Policy Framework (NPPF) (February 2019) sets out national policy for local planning authorities and decision makers. The NPPF states that there is a presumption in favour of sustainable development (paragraph 11), with sustainable development having economic, social and environmental objectives.

The environmental objective is that development should protect and enhance the natural, built and historic environment as well as protecting biodiversity, minimising pollution and adapting to climate change and the demands of a low carbon economy.

COVID-19 RECOVERY

The guidance has been developed during the COVID-19 pandemic, which has highlighted stark health inequalities relating closely to environmental, social and economic inequalities.

Now more than ever, high quality, sustainable and resilient design and development is needed to ensure that existing and new residents of Epping Forest District recover from the pandemic in a long term and locally-led manner.

Opportunities to foster community strength, provide job opportunities, support green and local economies and bolster residents health must be taken. All stakeholders are therefore expected to work collaboratively to contribute to this recovery, and ensure that the District is a joyful and sustainable place to live, work and play.

How to use this guidance?

1 / PURPOSE OF THIS GUIDANCE

The purpose of this guidance is to help applicants meet EFDC's goals of becoming net zero carbon by 2030, as well as building strong and integrated communities across new and existing places.

Planning for significant growth in the District, new developments need to have in place the foundations to enable exemplar placemaking and long term sustainability. This document provides practical and technical guidance on how relevant Sustainability indicators and policies (environmental, social, and economic) in the Epping Forest District Local Plan will be applied to new minor residential and non-residential developments across the district.

The Sustainability Guidance will promote good and best practice and whilst it will be a material planning consideration in determining planning applications, it will not be adopted policy. Planning officers will need to make a judgement in terms of compliance with the Guidance, and this will feed in to the decision making process. Planning officers will also recognize that not all of the checklist questions will be relevant to each application (due to scale, site constraints etc.)

2 / WHO USES THIS GUIDANCE?

Applicants + Agents:

The document is to be used by developers, design teams, consultants and contractors in shaping development proposals, This will guide design, and ensure coordinated and integrated consideration of sustainability principles and targets at an early stage.

Local Authority Officers and decision-makers:

This document will be endorsed to have material planning weight and the Checklist will help guide the assessment of planning applications for developments coming forward within the District. It will inform pre-application discussions and assist decision-makers in sustainability matters.

The EFDC Quality Review Panel (QRP):

This Checklist will be utilised for QRP reviews to help form the basis of Sustainability discussions. The QRP panel members are independent experts, and applicants are advised to be in a position to discuss issues on all categories raised in this guidance.

3 / WHEN TO USE THIS GUIDANCE?

Pre-Application; The Sustainability Checklist should accompany pre-application discussions to ensure all applications have considered and incorporated sustainability measures from the outset of their design.

Planning Application; A Sustainability Strategy incorporating the Checklist, with relevant certification, is to be submitted alongside planning applications.

Post-Planning; Relevant conditions will be discharged and planning obligations and monitoring will be coordinated to ensure that sustainable measures are in place through to delivery and beyond. Tools such as Post-Occupancy Evaluation for ongoing monitoring will be expected relating to key indicators.

4 / HOW TO USE THIS GUIDANCE?

High quality and sustainable development requires environmental, social and economic sustainability to be holistically considered. The guidance is split into the following two sections:

1. Environmental Sustainability
2. Socio-Economic Sustainability

Each section comprises the following categories:

1. Objectives & Requirements
2. Key Local Policy & Guidance
3. Case studies
4. Checklist (to be completed and submitted)

There is also a glossary within the Appendix at the end of the document.

5 / SUBMISSION REQUIREMENTS

1. Sustainability Checklist
2. Sustainability Statement

The Sustainability Statement should be accompanied with relevant certifications.

6 / APPLICATION OF GUIDANCE

The guidance is applicable to all minor developments within Epping Forest District. This will include:

- All minor residential-led developments and associated infrastructure proposals (1-9 units, or floorspace of up to 999 sq.m.)
- Change of Use resulting in minor development

7 / THE CHECKLIST

The Checklists indicate the quality of development in line with the District's standards. These will be assessed in the round to ensure a holistic approach to sustainability is being considered. Each theme will be assessed in the context of factors that may be unique to a development, providing flexibility in how each development is assessed. The applicant is expected to identify unique sustainability aspects of their development and include these in the 'Sustainability Statement'.

Minimum Requirements (Low Quality)	Net Zero-Carbon by 2050 (Medium Quality)	Net Zero-Carbon by 2030 (High Quality)
<i>Policy-compliant / Building Regulations compliant only</i>	<i>These targets meet ultimate goal, but 20 years slower</i>	<i>These targets meet our goal and Climate Declarations</i>

8 / RELATIONSHIP TO THE LOCAL PLAN

This guidance has been endorsed to have material planning weight and should be read in conjunction with the policies found in the [Epping Forest District Council Local Plan](#). It compliments the Local Plan policies by providing a practical tool for enhancing the sustainability of development in the District.

9 / PARTNERSHIP WORKING

Epping Forest District Council is committed to working with relevant organisations, service providers and community groups to ensure proposals are developed collaboratively and with thorough consideration of local priorities.

10 / REVIEW & MONITOR

The guidance will be reviewed and updated every 3 years. It will be reviewed upon national adoption of the Future Homes Standard. Current Building Regulations fall short of the 2030 net-zero carbon commitment by the District.

11 / INCENTIVES FOR SUSTAINABILITY

Design and Planning

Compliance with these sustainability standards will lead to a smoother planning process and faster assessment time.

Awards and Recognition

Exemplar schemes will be shared as case studies. The Council will work with applicants to put their schemes forward for local and national awards and partnership opportunities.

Cost Benefits

By 2030 all new buildings will need to operate at Net Zero (i.e. annual net zero carbon emissions), which means that by 2025 all new buildings must be designed to net zero carbon.

Net zero capital homes can be achieved at a capital cost uplift of between 3.5% - 15% for residential developments, or at equal cost - depending on economies of scale in alignment with various reports. (e.g. study of tower developments shows that net zero carbon homes can be achieved at a capital cost uplift of between **3.5% - 5.3%**). This capital cost of sustainable buildings is likely to decrease over time as legislation improves, our electricity grid decarbonises, our supply chain upskills and cost of technologies decrease.

Costs can be offset by value benefits, including: [increased rental premiums](#), lower tenancy void periods and lower offsetting costs. Furthermore, long-term operation costs of new homes are vastly reduced due to the lower energy demand from homes, eliminating changes such as fuel poverty, and providing cost savings of 30%-40% over 30 years. In a post COVID-19 society, more people are working from home, making sustainable homes and communities more attractive to homeowners and thereby providing a commercial benefit to developers.

ENVIRONMENTAL SUSTAINABILITY

This section looks at how Epping Forest District Council can become net zero carbon by 2030.

Design Approaches: First Principles

The following 'First Principles' are to be incorporated to ensure new developments are sustainable, and bring practical solutions towards good design. The principles act as an iterative design process, encouraging a wholistic approach to sustainability. The incorporation of these principles at an early stage of a development will make it easier to meet performance targets set out in the remainder of the Sustainability sections.

1 / LANDSCAPE LED DESIGN

The District is characterised by different types of landscapes. Study of existing strategies, analysis, survey and mapping should be undertaken of existing green infrastructure and ecological value of features. These include; topography, trees, hedgerows, woodland, grasslands, wetlands, meadows, farmlands, hills and lowlands, flood plains, views and vistas. Drawings, surveys, site photographs and precedent images should be utilised.

Design should be landscape led from the start and across all design stages. The best design and development outcomes will be delivered by engaging landscape and ecology consultants at an early stage. Additional spending on design fees will be very likely outweighed by the speed and ease of securing planning permission.

2 / SUSTAINABLE MOVEMENT

Identifying sustainable movement and active transport infrastructure is key to the success of sustainable growth in the District as they embed connectivity through movement corridors; playing a significant role in location, form and scale of development.

Local routes for everyday journeys to work, schools, and shopping should be identified as opportunities to knit communities together, rather than sever them. Strong transport links can tie-in with historic pathways identified through fine-grain analysis. Priority should be given to pedestrian and cycle networks that link to wider sustainable transport networks.

3 / ORIENTATION & FORM

Solar orientation must inform the topography, scale and massing of development at early stages of masterplanning, with south-facing buildings, fenestration, and amenities designed to take advantage of passive solar gain – absorbing the sun's heat energy to warm buildings and spaces. Building axis' should be orientated in the east-west direction – to take advantage of maximum daylight and heat from the sun which significantly reduces the energy consumption of a building, and can reduce a homes' heating and cooling costs by up to 85%. To stay cool in the summer months and avoid overheating, external shading provisions should be made to the buildings and surrounding areas, including the use of green infrastructure.

A Daylight / Sunlight Assessment can help provide more information on how much natural light your development will be exposed to.

4 / ENERGY HIERARCHY

New developments should comply with the following Energy Hierarchy principles:

BE LEAN: Use less energy: minimising the energy demand of new buildings through fabric performance: This step requires design that reduces the energy demand of a development. Energy Strategies need to demonstrate how energy efficiency measures reduce the energy demand in line with performance targets highlighted in this document.

BE CLEAN & GREEN: Supply energy efficiently: utilising energy efficiently in buildings including for space heating & cooling: Consideration must be given to how heat and energy will be provided to the development using low-carbon heating networks.

BE SEEN: Monitor & Report performance: for at least 5 years post-completion to remove the performance gap: This requires all major developments to monitor and report their energy performance post-construction to ensure that the actual carbon performance of the development is aligned with the EFDC ambitions of a net zero-carbon target.

5 / ADAPTABLE & FUTURE PROOF DESIGN

Building strong communities is aided by giving households the opportunity to have accommodation that can adapt to respond to their changing needs and abilities. This means looking at the macro-scale provision of green and blue infrastructure and management for climate adaptation, futureproofing infrastructure for technological innovation, a range of house types, adaptable facilities and meanwhile use spaces. And through to the micro-scale; for example the space and ease in ability to extend homes and facilities (physical and digital) to work from home.

It is important that strong communities are not broken due to the lack of adaptable design.

6 / FABRIC-FIRST APPROACH

A fabric-first approach requires the building envelope to be a high-performance thermal envelope, reducing energy waste. This means the proposed buildings must have external walls, roofs, floors, windows & doors that are: super insulated, airtight, and windtight.

A fabric-first approach includes the windows and doors – which provide significant heat loss and heat gains – depending on solar orientation. Windows and doors must therefore incorporate high-performance glazing to provide comfortable internal temperatures. A high-performance thermal envelope delivers exceptional indoor comfort and building energy efficiency.

7 / VENTILATION & OVERHEATING

A mixed-mode (natural and mechanical) ventilation strategy is encouraged for excellent indoor air quality. This involves the incorporation of a whole-house mechanical ventilation with heat recovery system (MVHR) – which is key to delivering radically energy efficiency and exceptional comfort, through providing clean, filtered air into habitable spaces.

Early stage overheating analysis will be expected to be carried out at design stage to identify key factors contributing to overheating risk. Where developments are at risk of overheating, additional detailed assessment and mitigation measures will be expected to be incorporated.

8 / EMBODIED & OPERATIONAL ENERGY

All design teams are expected to think about, and reduce the embodied energy required to develop their schemes. For example, depending on location, height, and site suitability, materials like timber could be favoured over less sustainable alternatives such as concrete.

In terms of operational energy, Developments should be aiming for net zero carbon – where energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources. Developments should be designed using realistic predictions of operational energy to avoid performance gap in a buildings' energy use.

9 / RENEWABLE TECHNOLOGIES

Renewable energy uses natural resources such as sunlight, wind, tides and geothermal heat which are naturally replenished. Most forms of renewable energy are cheap to operate, but can be expensive to install.

Examples of technologies include; PV's, solar thermal, biomass, ground/air source heat pumps, wind, hydro. The choice of renewable technologies should be dependent on an assessment on site and development suitability.

10 / AIRTIGHT & THERMAL BRIDGE FREE

An airtight strategy focuses on the internal comfort of a building, and will be required to develop a draught-free building envelope. The draught-free building ensures high energy efficiency, internal user comfort, and protects the building envelope. The airtight strategy must be continuous to ensure there are no unintended gaps in the building envelope that allow uncontrolled air to leak in and out of the building.

Internal comfort can be affected by excessive heat loss through the building fabric caused by poor detailing around junctions in the building envelope. Gaps in the insulation barrier or large areas of conductive thermal bridging should be designed out.

Post-occupancy evaluation enables air tightness and thermal bridging to be measured, to help close the known performance gap in these areas.

Energy Efficiency & Carbon

OBJECTIVES & REQUIREMENTS

The transition to net zero-carbon by 2030 must begin with providing genuinely affordable homes. Beyond the planning system, the government is considering changes to legislation and policy that will promote lower carbon buildings. Changes to Building Regulations to improve the energy efficiency of new homes were recently subject to consultation.

All new buildings should look to adopt a fabric-first approach (e.g. Passivhaus Standards), with the expectation that as our grid system decarbonises and, we build more energy efficient homes, emphasis will be placed on the embodied energy involved in constructing new buildings.

With the decarbonising of the National Grid, achieving net zero-carbon will mean developments must respond to the key components of whole-life carbon; embodied carbon and operational energy. Achieving net zero operational energy means the building does not burn fossil fuels and is 100% powered by renewables.

A [Whole Life Carbon \(WLC\) Assessment](#) should be undertaken both at the pre-application stages and after practical completion, as new homes are expected to last 60+years, with carbon emission reduction in line with the targets in the Checklist.

Embodied Carbon Reduction Strategy:

- Using circular economy principles of reuse and refurbish, and designing for disassembly at end of life with processes including using offsite construction.
- Building low-energy homes, using fossil fuel-free technology to supply heating and power to them. Using renewable energy where necessary

Operational Carbon Reduction Strategy:

- Not burning fossil fuels for supply to homes
- 100% powered by renewable energy i.e.heat pumps
- Achieving energy performance in line with checklist

Embodied carbon can be measured by design teams by various software that allow quick analysis and visual representation of carbon use.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP2** Place Shaping
- **SP3 (xvii)** Highest standards of energy efficiency
- **T1** Sustainable transport choices
- **T2** Safeguarding of routes and facilities
- **DM9** High Quality Design
- **DM20** Low Carbon and Renewable Energy
- **DM21** Local Environmental Impacts, Pollution and Land Contamination
- **DM 22** Air Quality

Net Zero Carbon Buildings: A Framework Definition (UKGBC)

CASE STUDIES



Cassiobury Park, Watford
Multi-purpose community hub, designed with minimal energy consumption. It won the Most Sustainable Construction award at the 2018 Building Futures Awards.



Goldsmith Street, Norwich
Built to Passivhaus standards, needing little energy for heating and cooling.



Johnson Court, West Dene
A small development of rural affordable housing, designed to Passivhaus standards in Hertfordshire and shortlisted for sustainable construction excellence at the 2018 Building Futures awards.

SUBMISSION CHECKLIST		Minimum Requirement	Net Zero-Carbon by 2050	Net Zero-Carbon by 2030
En.1	Operational Energy (KWh/m2/y) (includes both regulated and unregulated energy use in the building, as measured at the meter)	146	< 70	< 0 - 35
En.2	Embodied Carbon (kgCO2e/m2)	1000	< 450	< 300
En.3	Space Heating Demand (KWh/m2/y)	54.26	25	15
En.4	Airtightness (air changes/ hr @ n50)	5	3	≤ 0.6
En.5	Ventilation Strategy (m3/hr/person)	Natural - extract fans	Mechanical with extract fans	Mechanical Heat Recovery (30)
En.7	What is the on-site reduction in CO2 emissions against Building Regulations Part L (2013)?	0-34%	35%-50%	≥ 50%
En.8	What Fabric U-Values has the proposal been designed to meet? W/(m2K)			
	External Walls	0.30 - 0.16	0.15 - 0.13	< 0.13
	Floor	0.25 - 0.11	0.10 - 0.08	< 0.07
	Roof	0.20 - 0.13	0.12 - 0.10	< 0.10
	Windows (triple glazing) & Doors	2.00 - 1.4	1.3 - 1.00	< 0.9
Please attach Tables 12 & 13 of your Whole Life Carbon Assessment (see Appendix 3)				
Please attach relevant certification of the above standards you have chosen, and use 'Sustainability Summary' pages where you are adding any further information.				

Renewable Energy

OBJECTIVES & REQUIREMENTS

Our recent extreme weather has highlighted the need to ensure that buildings constructed today are fit for the future, and, designed for resilience over the next 60+ years. New developments have a unique opportunity to ensure that the heating and hot water they generate are fossil fuel free, as heat demand is estimated at more than 40% of the energy consumed across the District.

On-site renewable technologies such as Heat Pumps, Solar Photovoltaics, and Solar Thermals should be explored for adoption, and combined to provide the greatest benefit to new developments.

Applicants are to use the [LETI Heat Decision Tree](#) throughout the design stages, to assist them in choosing the most appropriate heating system. Renewable systems should be prioritised over connecting to district heating networks, which depend on fossil fuels.

New Developments should be designed to;

- Minimise system temperatures: high temperatures in heating systems are synonymous with fossil-fuel combustion
- Reduce Heat Demand at point of use: The greatest opportunity to meeting net zero-carbon emissions is to reduce the amount of heat needed: achieved through a fabric-first approach and limited hot water use, coupled with reuse of low temperature waste heat sources.
- Lean Design: load modelling can predict energy use and help size plant requirement.
- Harness Waste Heat: heat released as a by-product of an existing process enables otherwise wasted heat to contribute to meeting energy demands.

Please note that whilst categorised as a source of renewable energy, biomass has negative impacts on air quality and climate change, and therefore EFDC will not support applications where biomass is proposed.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP3 (xvii)** Highest standards of energy efficiency
- **DM9** High Quality Design
- **DM19** Sustainable Water Use
- **DM20** Low Carbon and Renewable Energy

CASE STUDIES



Passivhaus, Devon
This Passivhaus by architects McLean Quinlan in a rural setting in Devon operates full on renewable energy from solar panels and air source heat pumps.



Active Homes, Neath, South Wales
Battery technology used to store energy and solar PV & TSC's to generate 60% energy.



Tallack Road, Waltham Forest, London
Large-scale communal Air Source Heat Pump to feed ambient temperature heat network

SUBMISSION CHECKLIST		Minimum Requirement	Net Zero-Carbon by 2050	Net Zero-Carbon by 2030
Rn.1	What on-site renewable energy technologies have been included in your development?	PV's + EV charging / CHP's	Low-temperature District Heating	Heat Pumps / Solar Thermal
Rn.2	What percentage of CO2 emission reduction will be provided from on-site renewable energy sources? <i>(SAP 10 carbon emission factors to be used for calculation)</i>	> 20%	> 50%	> 70%
Rn.3	What percentage of household electricity will on-site renewable technology provide? <i>(Net zero operational carbon does not burn fossil fuel and is 100% powered by renewables)</i>	> 35%	> 50%	100%
Rn.4	Have any relevant government incentivised schemes been taken advantage of? <i>i.e. Non-Domestic Renewable Heat Incentive (RHI)</i>	None		Non-Domestic RHI
Rn.5	Space Heating Peak (W/m ²)			10 (Equiv. to 6 kWh/m ² .yr renewable electricity from the grid)
Rn.6	Domestic hot water peak (W/m ²)			6 (Equiv. to 9 kWh/m ² .yr renewable electricity from the grid)
Please attach Energy Assessment				
Please attach relevant certification of the above standards you have chosen, and use 'Sustainability Summary' pages where you are adding any further information.				

Green Infrastructure & Air Quality

OBJECTIVES & REQUIREMENTS

Epping Forest District has a predominantly agricultural landscape, with remnants of an extensive ancient forest reflected in both Epping Forest as well as pockets of woodland and mature trees located across the District. New developments risk harm to the Epping Forest Special Area of Conservation (SAC), already under pressure due to pollution and recreational use. The delivery of new multi-functional green infrastructure will reduce the burden on the Forest, and the Council will pro-actively encourage developments that do so.

New developments also risk cumulatively increasing local pollution levels which can negatively impact on human health.

Proposals must be landscape-led from the start and across all design stages, as set out in the [EFDC Green Infrastructure Strategy](#). They should respond to the District's distinctive setting and support a sustainable and diverse environment. The GI Strategy details how provision of Suitable Alternative Natural Greenspace (SANG) can help relieve pressure on the SAC, as well as other important sites of ecological and natural heritage importance. Where applicable for a development, a Landscape Framework should be submitted detailing the provision of SANG.

The latest [Environmental Bill](#) requires development to deliver at least a 10% Biodiversity Net Gain (BNG). Stewardship and Maintenance strategies should clearly set out net gain outcomes, through habitat creation or enhancement for a minimum of 30 years.

New developments should take in to consideration the District's requirements on Air Quality Management Areas, Local Air Quality Action Plan, and development Air Quality Assessments. Developments should aim to improve local air quality, even if the area already complies with the air quality objectives. An air quality neutral assessment can assist with this.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP2** Place Shaping
- **SP6** The Natural Environment, Landscape Character and Green and Blue Infrastructure
- **DM1** Habitat protection and improving biodiversity
- **DM2** Epping Forest SAC and the Lee Valley SPA
- **DM3** Landscape Character, Ancient Landscapes and Geodiversity
- **DM5** Green and Blue Infrastructure
- **DM6** Designated and undesignated open spaces
- **DM8** Local Plan Review
- **DM9** High Quality Design
- **DM15** Managing and reducing flood risk
- **DM22** Air Quality

- EFDC Green Infrastructure Strategy
- EFDC Open Space Strategy
- EFDC Air Pollution Mitigation Strategy

- Green Essex Strategy
- Essex Biodiversity Action Plan
- Stort Catchment Management Plan
- Green Arc Strategy

CASE STUDIES



Ecology of Colour, Dartford by Studio Weave
Part of a project to bring public function and engagement with local ecology to a neglected corner of Dartford.



Thames Basin Heaths Special Protection Area
In order to allow new development while safeguarding the integrity of the area, the Council has put in place mitigation measures including SANG.

SUBMISSION CHECKLIST		Low Quality	Medium Quality	High Quality
Gr.1	Has a high quality landscape-led approach been demonstrated as set out in the EFDC Green Infrastructure Strategy ?	No	Some landscape analysis undertaken	Ecology, topography, vistas, landscape character & features driving design
Gr.2	What % of Biodiversity Net Gain does your development achieve? (<i>Environmental Bill requires min. 10%</i>)	0-9% BNG	10-15% BNG	15%+ BNG
Gr.3	Does Ecology report show process of mitigation and location hierarchy, with Stewardship and Maintenance strategy provided for green infrastructure and BNG?	No strategy	Outline strategy provided	30 year strategy with input from community
Gr.5	Has an overheating assessment or modelling been provided, as set out in UKGBC's Housing Standards Playbook , taking into account impact of green infrastructure?	No	Yes - some assessment	Yes - UKGBC Playbook followed
Gr.6	Have measures been taken to reduce the need for car travel, and provide alternative zero and low-emission travel options?	No		Yes
Gr.7	Have mitigation measures as described in the District's Air Pollution Mitigation Strategy been adhered to?	No		Yes
Gr.8	Where the development has the potential to impact on air quality, has an air quality assessment been undertaken to ensure present and future occupants are not exposed to unacceptable levels of air pollution?	No		Yes
Please attach relevant certification of the above standards you have chosen, and use 'Sustainability Summary' pages where you are adding any further information.				

Sustainable Movement

OBJECTIVES & REQUIREMENTS

Sustainable movement and active transport infrastructure are key to the success of sustainable growth in the District, as 61% of the District's carbon emissions are caused by on road vehicles (refer to p.6). The provision of sustainable transport choices and securing modal shift away from reliance on the car is a key component in mitigating the future impacts of air-borne pollutants on the health of the Epping Forest SAC and local residents, and achieving net zero carbon by 2030.

Development should minimise the need to travel, promote opportunities for sustainable transport modes, improve accessibility to services and support the transition to a low carbon future.

Development proposals that are likely to generate significant amounts of vehicle movement (as defined in the Council's list of Validation Requirements) will be required to submit a Transport Assessment or Transport Statement and be supported by a Travel Plan.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP3 (xvii)** Highest standards of energy efficiency
- **T1** Sustainable transport choices
- **T2** Safeguarding of routes and facilities
- **DM20** Low Carbon and Renewable Energy
- **DM21** Local Environmental Impacts, Pollution and Land Contamination
- **DM 22** Air Quality

- Essex County Council Travel Plan Guidance
- Epping Forest District Cycling Action Plan

CASE STUDIES



Mini-Hollands, Involve a range of innovative improvements for cyclists, including cycle training, cycle roadshows, bike maintenance courses and cycle parking.

SUBMISSION CHECKLIST		Low Quality	Medium Quality	High Quality
Tr.1	Has cycle parking been designed to be high quality, safe, secure and easy to access?	Cycle parking not provided	Suitable quantity of spaces provided	Suitable quantity and high quality environment provided
Tr.2	Have inclusive design principles / accessibility for all regarding sustainable movement been achieved?	Meets Equalities Act	Inclusive Design Statement provided	Exemplary inclusive design provided
Tr.3	Has a high quality transport assessment been undertaken?	No	Yes - assessment undertaken	Yes - qualitative assessment undertaken
Please attach relevant certification of the above standards you have chosen, and use 'Sustainability Summary' pages where you are adding any further information.				

Water Management

OBJECTIVES & REQUIREMENTS

The Environment Agency has identified EFDC as being in an area of 'serious water stress'. It is important that any new development does not lead to an overall increase in demand for water. The Local Plan puts in place an approach which will secure the incorporation of water saving measures and provide targets for water efficiency standards.

The incorporation of sustainable drainage systems (SuDS), that mimic natural drainage and encourage passive infiltration and attenuation, will be encouraged. New developments should also look to minimise use of mains water by incorporating water saving measures and equipment, and by designing residential developments so that mains water consumption is reduced in accordance with requirements found in the table below. For more information on SuDS please refer to the EFDC Green Infrastructure Strategy.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP3 (xvii)** Highest standards of energy efficiency
- **DM9** High Quality Design
- **DM16** Sustainable Drainage Systems
- **DM19** Sustainable Water Use
- **DM20** Low Carbon and Renewable Energy

CASE STUDIES



Ladywell Fields, Lewisham (SuDS) Designed to create more sustainable drainage and reduce flooding, the river channel was modified to create a naturalistic setting incorporating backwaters and wetlands.

SUBMISSION CHECKLIST		Minimum Requirement	Net Zero-Carbon by 2050	Net Zero-Carbon by 2030
W.1	Potable Water: What is the expected internal water use (litres/person/day)?	110	95	75
W.2	What water collection or recycling measures will be used?	100% provision of water butts	Rainwater harvesting systems	Grey water recycling & harvesting
W.3	How much of the hard surfaces within the development and conveyance systems will be permeable (i.e streams, swales)	50%	75%	100%
W.4	Will water saving devices be installed wherever possible in the development? e.g. low flush toilets, smaller baths, taps and showers with flow regulators	No		Yes
W.5	Have other SuDS measures have been proposed? (i.e. permeable surfaces, rain gardens, green roofs, ponds/wetlands, soakaways)	No		Yes
Please attach relevant certification of the above standards you have chosen, and use 'Sustainability Summary' pages where you are adding any further information.				

Circular Economy & Waste

OBJECTIVES & REQUIREMENTS

New developments within EFDC should promote circular economy outcomes and aim to be net zero waste. In the UK, the largest contributor to waste nationally is the construction and demolition industry, where a third of all waste is generated. New developments are to be designed to reduce construction waste and enable ease of access for future occupants to recycle and reduce waste. This can be encouraged through adopting a circular economy approach and the Waste Hierarchy found in the [DEFRA Guidance](#).

Homes should be designed to be adaptable and flexible by considering the intended lifespan of each independent building layer, optimising building longevity and maximising material reclamation at end-of-life.

3 Key Principles expand the Circular Economy process:

1. Conserve Resources, Increase Efficiency, Source Ethically:

- Minimise the quantities of materials used by specifying low embodied carbon materials, and reusable materials.
- Minimise the quantities of other resources used including energy, water, and land.

2. Eliminate waste and ease maintenance by:

- Long-life & Loose fit: build to adapt to changing social, physical and economic environments.
- Design for Disassembly: at the commencement of the project, set out deconstruction plan and capture asset value.

3. Manage waste sustainably and at the highest value:

his includes construction, demolition & excavation waste, operation & municipal waste

Applicants are therefore expected to explore innovative ways to reduce waste at design stages, increase efficient recycling opportunities, and reduce household residual waste. A Circular Economy Statement and Operational Waste Strategy should be provided to demonstrate chosen approach.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP3 (xvii)** Highest standards of energy efficiency
- **DM9** High Quality Design
- **DM19** Sustainable Water Use
- **DM20** Low Carbon and Renewable Energy
- **DM7** Heritage Assets
- **DM8** Heritage at Risk
- **DM11** Waste recycling facilities on new development
- **DM18** On site management of waste water and water supply

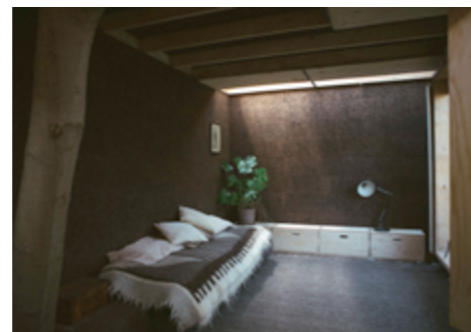
CASE STUDIES



Illford Community Market, London
Designed for five years and will be dismantled and reconfigured on future meanwhile sites.



The Barn by Pad Studio
Planks of wood reclaimed from an old barn were used to clad this house in Hampshire, England, designed by Pad Studio.



Cork Housing, Studio Bark
A garden building made almost entirely out of cork, constructed as a building that can be completely recycled, reused or composted.

SUBMISSION CHECKLIST		Minimum Requirement	Net Zero-Carbon by 2050	Net Zero-Waste by 2030
Ce.1	How much of the materials used on site are sourced from ethical and responsible supply chains?	80%	95%	100%
Ce.2	How much of the materials used are non-toxic?			100%
Ce.3	How much of the materials used can be easily extracted, recycled, and manufactured?	80%	90%	95%
Ce.4	The new buildings are circular-by-design to what amount?	20%	40%	65%
Ce.5	How much construction, demolition and excavation (CD&E) waste will be recycled?			≥ 95%
Ce.6	How much municipal waste (operational waste) will be recycled or composted vs sent to landfill or energy recovery?			65% : 35%
Ce.7	How much of the materials used are 'reusable'?			80%
Ce.8	How much of the materials used are 'reused'?			50%
Ce.10	Has early engagement been undertaken with the EFDC Waste Management team to ensure their processes are taken into consideration?	No, LPA not engaged		Yes, demonstrated
Ce.11	Have developments been designed to encourage ease in waste recycling?			Yes
		Please attach the Design Stage Circular Economy Statement		
		Please attach the Construction, Demolition and Excavation Waste Strategy		
		Please attach the Operational Waste Management Strategy promoting reuse & recycling		
		Please attach relevant certification of the above standards you have chosen, and use 'Sustainability Summary' pages where you are adding any further information.		

Non-Domestic Development

OBJECTIVES & REQUIREMENTS

Epping Forest District Council seeks to ensure that climate resilience is built-into every project built in the District for decades to come, including non-domestic development.

It is recommended for all new non-domestic developments to follow the BREEAM assessment method, and to provide the relevant certification as part of the submission.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP3 (xvii)** Highest standards of energy efficiency
- **DM 9** High Quality Design
- **DM 16** Sustainable Drainage Systems
- **DM 17** Protecting and enhancing watercourses
- **DM 19** Sustainable Water Use
- **DM 20** Low Carbon and Renewable Energy

CASE STUDIES



External Shading
External shading devices can be incorporated to prevent excessive internal solar gains and avoid overheating



Green Roofs
Green roofs can increase the thermal mass of a building, absorbing solar energy through the day and releasing heat at night.



Low-Carbon District Heating
The use of district heating to help manage the demand and supply of heat efficiently across larger developments.

SUBMISSION CHECKLIST		Minimum Requirement	Net Zero-Carbon by 2050	Net Zero-Carbon by 2030
ND.1	What BREEAM rating is the development targeting?	Very Good	Excellent	Outstanding
ND.1	What annual building Operational Energy targets will your building/s achieve? (kWh/m ² /y)	< 170	< 110	0 - 55
ND.2	What annual building Embodied Carbon targets will your building/s achieve? (kgCO ₂ e/m ²)	<800	<650	<500
ND.3	What is the Potable Water Use designed for? (Litres/person/day)	16 l/p/d	13 l/p/d	10 l/p/d
	Please use the 'Sustainability Summary' pages to describe what measures have been incorporated to design out the risk of overheating, giving priority to architectural approaches.			
	Please attach relevant certification of the BREEAM standards that the development is targeting, and use 'Sustainability Summary' pages where you are adding any further information.			

Assuring Performance

OBJECTIVES & REQUIREMENTS

Post construction energy and quality monitoring is required to bridge the 'performance gap' (difference between predicted performance and as-built performance of a building) found in new developments and achieve net zero-carbon. Achieving this requires a true understanding of a buildings' operational energy.

Addressing the performance gap in new homes and buildings is critical, as this affects both the 'happiness' of residents as well as the performance quality of the building. A poor performing building leads to higher energy bills due to poor building fabric, and risks exasperating challenging health conditions.

Studies undertaken by Innovate UK and the Zero Carbon Hub show that the majority of built projects do not meet their intended performance targets when tested, fall short even of compliance with Part L and Park F of Building Regulations.

For all new developments, design teams are required to undertake a Post Occupancy Evaluation (PoE), assessing both performance targets as well as the quality of life of current occupants. All developments will be required to monitor and report on residents' wellbeing and the actual operational energy performance of the building. The evaluation should be undertaken within the first two years of a building's occupation.

A template PoE form can be found [here](#) and should be used to demonstrate compliance. Broadly; evaluation will be required at the following stages:

1. Planning; predicted performance assessment
2. As-built; performance assessment
3. In-use; quality of life / wellbeing assessment

Further information can be found on the [GLA website](#) and the [Zero Carbon hub website](#).

KEY LOCAL POLICY & GUIDANCE

In line with RIBA best practice, a Post Occupancy Evaluation is expected for submission, and should cover the following key areas:

1. Build Quality: performance of the completed buildings
2. Functionality: how useful the building is in achieving its purpose
3. Impact: how well these developments add social, economic, cultural and environmental value for occupants

SOCIAL & ECONOMIC SUSTAINABILITY

Social and economic sustainability refers to the ways in which places are planned, designed, maintained, built and operated to improve local health and wellbeing, create jobs and bolster economic growth, and strengthen the community.

Introduction

OBJECTIVES & REQUIREMENTS

This section looks at the direct impacts of places on people - specifically how new developments will affect the communities they connect to.

Designing for social sustainability requires a framework for both creating new communities that thrive and ensuring existing communities are integrated in to new developments. It is important to address social sustainability at the beginning of development, as managing the long-term costs and consequences of decline and failure in new settlements is an issue of public value and political accountability.

The checklist in this section is designed as a socio-economic sustainability toolkit. Rather than provide a set of quantitative targets, the toolkit asks that developers carry out the appropriate engagements with the relevant communities and stakeholders, based on a demonstrable understanding of local needs. The guidance's aim is to ensure that new developments are equipped to incorporate the necessary 'community ingredients' that enable communities to thrive and that boost individual wellbeing - not just during occupation, but throughout all stages.

Community Ingredients should therefore cut across the different stages of developments, including:

1. Planning & design
2. Construction & occupation
3. Long-term stewardship

The list of key documents listed in the adjacent table should be used as reference by developers and applicants in understanding local socio-economic needs, and in planning engagement sessions. The list is not exhaustive but is intended to provide a starting point from which to develop more focused engagement sessions with local groups.

KEY LOCAL POLICY & GUIDANCE

EFDC Local Plan Policy:

- **SP2** Place shaping
- **H1** Housing Mix and Accommodation Types
- **H4** Traveller Site Development
- **E1** Employment Sites
- **E4** The Visitor Economy
- **DM9** High Quality Design
- **DM10** Housing Design and Quality
- **D2** Essential Facilities and Services
- **D4** Community, Leisure and Cultural Facilities

EFDC Statement of Community Involvement

[EFDC Infrastructure Delivery Plan](#)

[EFDC Green Infrastructure Strategy](#)

EFDC Economic Development Strategy

[EFDC Health and Wellbeing Strategy](#)

[EFDC Cultural Strategy](#)

[EFDC Playing Pitch Strategy](#)

[EFDC Open Space Strategy](#)

EFDC Employment and Skills Plan

[Epping Forest District Tourism Strategy](#)

[NHS Healthy New Towns](#)

[HGGT Healthy Town Framework](#)

[RIBA Social Value Toolkit](#)

[Essex Design Guide](#)

[Essex Rights of Way Improvement Plan](#)

[Essex + Herts Digital Innovation Zone](#)

[essexmap.co.uk](#)

[Live Well Accreditation](#)

[Play England - Design for Play](#)

Health & Wellbeing

OBJECTIVES & REQUIREMENTS

The health and wellbeing of residents should be the priority within any new developments. Measures should be taken to ensure this, including good accessibility to sustainable transport options; embedding the design of high-quality public and green spaces; the use of green infrastructure and biodiversity to promote good mental and physical health; and investment in long-term resilient buildings and infrastructure.

In order to promote the health and wellbeing of all of the new and existing communities of new developments, the Epping Forest District Council asks all new developments to take the following steps:

- Encourage physical activity, active living, active travel, and sport activities for residents
- Promote mental health and wellbeing through clear connections to existing support services
- Promote wellbeing through keeping noise pollution of new developments (both during construction phases and during occupation) to a minimum
- Encourage older people to live independent lives through increased community support and reduced winter pressures
- Support children and young people by incorporating access to affordable activities such as outdoor gyms, community allotments, travelling farms, and urban farming - helping to grow local fruits and vegetables for an improved diet

VOICE & INFLUENCE

New developments should look to amplify the voice and influence of residents. This involves governance structures to represent existing residents and engage new ones in shaping local decision-making and stewardship.

RESILIENCE & ADAPTABILITY

New developments should be forward-planning; including housing, infrastructure, and services that can adapt over time; as well as the incorporation of meanwhile use of buildings and public spaces.

CASE STUDIES



Urban Roof Greening



Great Kneighton, Cambridge - allotments embedded as part of new development



Outdoor / Park Gyms

Community Strength & Social Infrastructure

OBJECTIVES & REQUIREMENTS

New developments should ensure that they integrate existing communities with new ones through shared social infrastructure. Collective activities and social architecture allow the fostering of local networks, creating a sense of belonging and community identity. Measures such as stakeholder engagement and post-development governance will provide residents with ownership of their built environment.

New developments will be expected to provide certain key infrastructures, or contributions towards their provision. The incorporation of these both formal and informal amenities will work towards enabling social inclusion between the members of a community.

New developments should also look to promote long-term growth and development opportunities for local communities, as well as the facilities to develop new skills.

Social facilities for children and teenagers; particularly access to early years childcare and leisure centres, are lacking in the District. Developments that provide these and locate them within existing communities will be encouraged.

Further information can be found in the Epping Forest District Council Infrastructure Delivery Plan (IDP), which highlights the local infrastructure requirements of the District, along with their priorities for the area (critical, essential or desirable). These include, but are not limited to:

- Health, Social Care and Emergency Services
- Community Halls
- Walking and Cycling Initiatives
- Education
- Sports Facilities
- Suitable Alternative Green Space (SANGS)

New developments should refer to the IDP, and planning applications should highlight what infrastructure will be provided, alongside contributions to ensure local community needs are met.

CASE STUDIES



Bromley by Bow Centre
A pioneering charity that combines an extensive neighbourhood hub with a medical practice and a community research project.



The Big Lunch (Eden Project)
An annual national event that provides a hook for people to organise lunch with their neighbours, at home or in the street, supported by advice and ideas available on the web.



Castlebank Horticultural Training Centre, Lanark (EKJN)
A collection of neglected outbuildings have become a thriving horticultural training centre, a valuable community resource.



The Portland Inn (Baxendale Studio)
A commission to design a building that will host a diverse cultural programme. Part of the brief was that the local community would be able to participate in its construction.

Additional Case Studies



The Portland Inn (Baxendale Studio)
Baxendale was commissioned to build a temporary external structure that would help deliver a diverse programme with, given its limited budget, a key set of requirements as part of the brief. These were that the local community should be able to participate in its construction.



Higham Hill Theatre (VPPR Architects)
The project is a small community amphitheatre in Higham Hill Park in Walthamstow, part of Waltham Forest's Making Places initiative to deliver public realm improvement works to every ward in the borough.



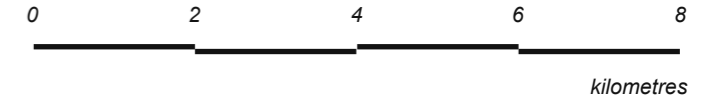
Argal Workshops (Gluckman Smith)
A Cornish former farmstead, previously derelict, was transformed into rural workshops for a local furniture and product designer, to Passivhaus standards, making a new working community for the area.

Socio-Economic Checklist

SUBMISSION CHECKLIST

S.1	Explain how the proposals have been informed by the key stakeholders. (Include in response: the stakeholders you have engaged with, the findings from these sessions, and how you have implemented stakeholder recommendations) <i>(max. 250 words)</i>
S.2	Explain how the socio-economic needs identified in this section have been implemented in your proposal (include the ease of accessibility for existing communities to use new facilities and networks). <i>(max. 250 words)</i>
S.3	Explain how the proposal responds to, and has been impacted by, the list of key documents highlighted in this section (include list of documents used and key findings). <i>(max. 250 words)</i>
Please include your responses to the questions above in the "Sustainability Statement" pages which form part of your submission	

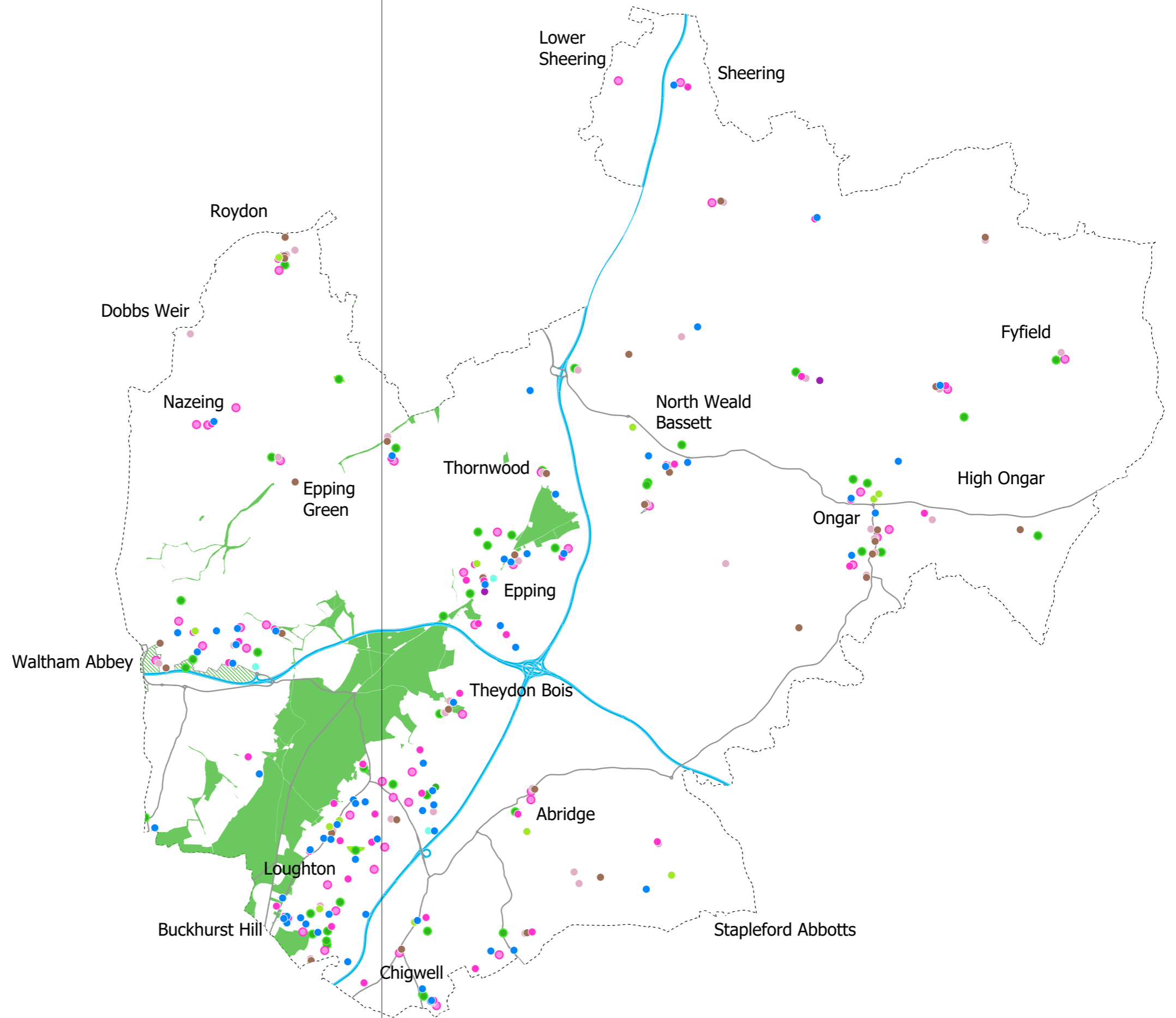
EFDC Social Infrastructure Map



The map and list on this page highlight existing social infrastructures and community groups within the District. These are not exhaustive but are intended to provide a starting point from which applicants are to develop more focused engagement sessions with local groups.

Please also refer to essexmap.co.uk for an interactive and live map of social infrastructures across Essex.

- EFDC Youth Council
- EFDC Community Champions
- Voluntary Action Epping Forest
- EFDC Health and Wellbeing Board
- Epping Forest District Dementia Action Alliance
- Epping Neighbourhood Action Panel
- Epping Forest Multi Faith Forum
- Rural Community Council of Essex



SUBMISSION

This section includes the list of submission requirements, and the sustainability statement.

Submission

1. Submit the following as evidence of the completed Quality checklists. Please note that this list is in addition to, and does not supersede, the general submission requirements listed in the EFDC Planning Application Validation Requirements Checklist.

Design Principles	
Daylight and Sunlight Assessment	
Environmental Sustainability	
Energy Efficiency & Carbon	
Whole Life Carbon Assessment	
Overheating Design Assessment	
Renewable Energy	
Energy Assessment	
Sustainable Movement	
Sustainable Travel Plan	
Transport Assessment	
Water Management	
Water Management / SUDS Strategy	
Green Infrastructure	
Ecological Report (to include Biodiversity Impact Assessment)	
Lighting Assessment	
Landscape Character and Tree Surveys	
Circular Economy	
Circular Economy Report (linked to Construction Management Statement)	
Construction Management Statement	
Waste Management	
Operational Waste Strategy	
Air Quality	
Air Quality Impact Assessment	
Assuring Performance	
Post-Occupancy Evaluation	
Socio-Economic Sustainability	
Health Impact Assessment	
Health Framework Action Plan	
Community Engagement Strategy	
Stewardship / Maintenance Strategy	

2. Include any additional strategies that have not been covered by the Quality checklists in the space below. All submitted assessments / reports will be conditioned to the LPA at post completion / pre-occupation stage to ensure that all new developments are being completed to the specified design standards in order to close the performance gap and create truly sustainable communities.

APPENDIX

Appendix 1: Climate Emergency Declaration

EPPING FOREST DISTRICT COUNCIL

Declaration: Climate Emergency

Date of Declaration: 19th September 2019

CLRs: S.Nevile + J.Phillip

Adopted Motion / Commitment:

1. Declare a 'Climate Emergency';
2. Pledge to do everything within the Council's power to make Epping Forest District Council area Carbon Neutral by 2030;
3. Call on Westminster to provide the powers and resources to make the 2030 target possible;
4. Work with other governments (both within the UK and internationally) to determine and implement best practice methods to limit Global Warming to less than 1.5°C;
5. Continue to work with partners across the district and region to deliver this new goal through all relevant strategies and plans;
6. In the special circumstances of this district, resolves to protect the Special Area of Conservation through the Local Plan and every other means;
7. Implement an Air Quality Strategy and bring forward Sustainability Guidance on planning; and
8. Engage with young people when considering the issue of climate change and appoint a 'Youth Ambassador' from the Epping Forest Youth Council."

Appendix 2: Building Performance Standards



Net Zero Carbon Buildings - UKGBC



Passivhaus



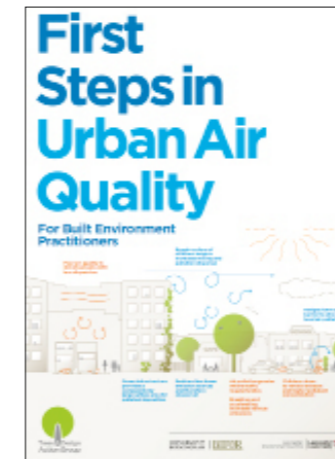
BREEAM Communities



BREEAM HQM



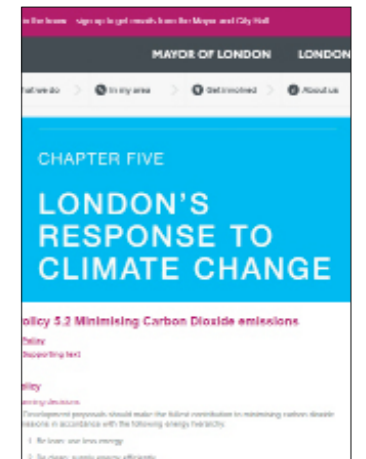
RIBA 2030 Climate Challenge



First Steps in Urban Air Quality



RICS Whole Life Carbon Assessment



London Plan: Energy Hierarchy



Future Homes Standard 2020



National Design Guide



Transport for New Homes Checklist

Appendix 3: Whole Life Carbon Assessment

These tables have been taken from the *RICS Whole Life Carbon Assessment for the Built Environment*, (November 2017). Please refer to the document for detailed guidance on how to fill out the assessments.

TABLE 12: THE PROJECT ID MATRIX

Date of assessment	Date of assessment completion			
Verified by	Verifier name and organisation			
Project type	New build or refurbishment of existing structure			
Assessment objective	Brief assessment purpose statement			
Project location	Full address			
Date of project completion	Anticipated date of practical completion			
Property type	Residential, public/civic, retail, office, infrastructure, etc. State planning use class			
Building description	No. of storeys, structural frame, façade type, basement?, brief description of associated external areas and any ancillary structures			
Size	NIA, GIA, volume, etc.			
Project design life	In years			
Assessment scope	Building parts and life stages/modules included			
Assessment stage	Design stage at which the assessment has been conducted at			
Data sources	List all data sources used in the assessment including building information and carbon data sources			
Building elements coverage	#	Building parts/element groups	Building elements	Coverage [%]
	0	Facilitating works	0.1 Temporary/Enabling works/ Preliminaries 0.2 Specialist groundworks	
	1	Substructure	1.1 Substructure	
	2	Substructure	2.1 Frame 2.2 Upper floors incl. balconies 2.3 Roof 2.4 Stairs and ramps	
			2.5 External Walls 2.6 Windows and External Doors	
	3	Superstructure	2.7 Internal Walls and Partitions 2.8 Internal Doors	
			3.1 Wall finishes 3.2 Floor finishes 3.3 Ceiling finishes	
	4	Fittings, furnishings and equipment [FF&E]	Building-related Non-building-related	
	5	Building services / MEP	5.1-5.14 Building-related services Non-building-related	
6	Prefabricated Buildings and Building Units	6.1 Prefabricated Buildings and Building Units		
7	Work to Existing Building	7.1 Minor Demolition and Alteration Works		
8	External works	8.1 Site preparation works 8.2 Roads, Paths, Pavings and Surfacing 8.3 Soft landscaping, Planting and Irrigation Systems 8.4 Fencing, Railings and Walls 8.5 External fixtures 8.6 External drainage 8.7 External Services 8.8 Minor Building Works and Ancillary Buildings		
Assumptions and scenarios	List all assumptions and scenarios used in the assessment including brief justifications			

TABLE 13: RESULTS REPORTING TEMPLATE

Global Warming Potential GWP [TCO ₂ e]	Benefits and loads beyond the system boundary [D]*	TOTAL* normalised [A] to [C] cradle to grave (kgCO ₂ e/m ² or equivalent)	End of Life (EoL) stage			TOTAL* [A] to [C] cradle to grave	building-related items	building-related systems	non building-related systems								
			[C]	[C2]	[C3]												
										[C1]	[C2]	[C3]					
Product stage	Construction process stage	Use stage	[A]	[A3]	[A4]	[A5]	[B1]	[B2]*	[B3]*	[B4]*	[B5]*	[B6]	[B7]	building-related systems	building-related systems regulated	non building-related systems	non building-related systems
Building element category			Biogenic (sequestered) carbon											building-related systems	non building-related systems		
Demolition prior to construction 0.1 Toxic/Hazardous/Contaminated Material Treatment 0.2 Major Demolition Works																	
Facilitating works														building-related items	building-related systems	non building-related systems	
0.3 Temporary Support to Adjacent Structures														building-related items	building-related systems	non building-related systems	
0.4 Specialist Ground Works														building-related items	building-related systems	non building-related systems	
0.5 Temporary Diversion Works														building-related items	building-related systems	non building-related systems	
0.6 Extraordinary Site Investigation														building-related items	building-related systems	non building-related systems	
1 Substructure														building-related items	building-related systems	non building-related systems	
Superstructure														building-related items	building-related systems	non building-related systems	
2.1 Frame														building-related items	building-related systems	non building-related systems	
2.2 Upper Floors														building-related items	building-related systems	non building-related systems	
2.3 Roof														building-related items	building-related systems	non building-related systems	
2.4 Stairs and Ramps														building-related items	building-related systems	non building-related systems	
Superstructure														building-related items	building-related systems	non building-related systems	
2.5 External Walls														building-related items	building-related systems	non building-related systems	
2.6 Windows and External Doors														building-related items	building-related systems	non building-related systems	
Superstructure														building-related items	building-related systems	non building-related systems	
2.7 Internal Walls and Partitions														building-related items	building-related systems	non building-related systems	
2.8 Internal Doors														building-related items	building-related systems	non building-related systems	
3 Finishes														building-related items	building-related systems	non building-related systems	
4 Fittings, furnishings & equipment														building-related items	building-related systems	non building-related systems	
5 Services (MEP)														building-related items	building-related systems	non building-related systems	
6 Prefabricated Buildings and Building Units														building-related items	building-related systems	non building-related systems	
7 Work to Existing Building														building-related items	building-related systems	non building-related systems	
8 External works														building-related items	building-related systems	non building-related systems	
TOTAL														building-related items	building-related systems	non building-related systems	
TOTAL - normalised (kg CO ₂ e/m ² or equivalent unit to be stated)														building-related items	building-related systems	non building-related systems	

Appendix 4: Glossary

Air Quality Management Area

Air Quality Management Areas (AQMA) are designations used by DEFRA (Department for Environment, Food and Rural Affairs) to manage areas with air pollution, that are unlikely to meet the Government's national air quality objectives.

Air Quality Action Plan

A document produced by the Council with Natural England setting out the steps that will be taken to reduce pollution within an Air Quality Management Area (AQMA). This could include steps to reduce car usage and promote public transport.

Airtightness

Building airtightness is defined as the resistance to air leakage through unintentional points or areas in the building envelope. Heat can be lost through these gaps in the walls, floors and roofs of buildings creating draughts and so it is extremely important to make sure these are eliminated. This down to good detailing and good site workmanship.

Biodiversity

The variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.

Blue Infrastructure

Infrastructure provision relating to water. This includes natural features such as rivers, streams and ponds, semi-natural features such as sustainable drainage systems, bio-swales and canals, and other engineering features such as dams, weirs and culverts. Blue and green infrastructure are often considered together, placing emphasis on the importance of biodiversity and flood risk mitigation.

BREEAM

BREEAM is one of the leading sustainability assessment methods for masterplanning projects, infrastructure and buildings. It is used for assessments across the built environment lifecycle, from new construction to in-use and refurbishment. BREEAM does this through third party certification of the assessment of a building's environmental, social and economic sustainability performance, using standards developed by BRE (Building Research Establishment).

Building in Layers

The concept of building in 'layers' was first proposed by architect Frank Duffy in the 1970s, and developed by Stuart Brand in the 1990s. It means that each element may easily be separated and removed. This facilitates reuse, remanufacture and recycling. For example, facades or heating systems may be designed and fitted as independent entities, integrated with other building systems but not entwined with the fabric of the building.

Carbon Footprint

The amount of carbon dioxide released into the atmosphere as a result of the particular individual, organisation or community. The carbon footprint of a development is counted over its lifetime i.e. the materials used and their sources, construction, lifetime use and demolition.

Circular Economy

The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended.

Cold Bridge

Occurs when there is a thermal break in the insulating materials between the inside and outside of a building e.g. a gap in the wall or roof insulation, allowing heat to escape.

Development

'Development' includes building operations (e.g. structural alterations, construction, rebuilding, most demolition); material changes of use of land and buildings; engineering operations (e.g. groundworks); mining operations; other operations normally carried out by a person operating a business as a builder; subdivision of a building (or any part of it) used as a dwelling house for the use as two or more separate dwelling houses. As defined by section 55 of the Town and Country Planning Act 1990.

Embodied Energy

The sum of the energy requirements associated, directly or indirectly, with the delivery of a good or service. This includes: the energy required to initially produce the building (the processing and the manufacture of the materials of the building as well as their transportation and assembly on site), the energy needed to refurbish and maintain the building over its lifetime, and the energy necessary to demolish and dispose of the building at the end of its life.

Environmental Impact Assessment

A procedure to be followed for certain types of projects to ensure that decisions are made in full knowledge of any likely significant effects on the environment.

Fossil Fuel

Fossil fuel is a general term for buried combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the earth's crust over hundreds of millions of years. The burning of fossil fuels by humans is the largest source of emissions of carbon dioxide, which is one of the greenhouse gases that allows radiative forcing and contributes to global warming.

Green Belt

Land protected by a policy and land use designation to protect areas of largely undeveloped or agricultural land surrounding or neighbouring urban areas. Review of Green Belt boundaries is undertaken as part of the production of Local Plans where Green Belt exists.

Green Infrastructure

Green infrastructure is a network of high quality and multifunctional green spaces, both urban and rural, including environmental features such as parks, public open spaces, playing fields, sports pitches, woodlands, and allotments, which are capable of delivering a wide range of environmental and quality of life benefits for local communities. The provision of green infrastructure can provide social, economic and environmental benefits close to where people live and work.

Infrastructure Delivery Plan

This will contain the key infrastructure required to support the homes and commercial development in the Local Plan. This includes physical infrastructure such as transport energy and water, social and community infrastructure such as health, education and emergency services and green infrastructure such as open spaces and allotments. The Infrastructure Delivery Plan (IDP) sits alongside the Local Plan and will contain a programme identifying when items of infrastructure are expected to be in place, funding and costs. It will be regularly updated as more information becomes available.

Local Plan

The plan for the future development of the local area, drawn up by the local planning authority in consultation with the community and stakeholders. Once adopted the Local Plan will legally form part of the Development Plan for the District, superseding the Replacement Local Plan (2006).

Appendix 4: Glossary (cont.)

Meanwhile Use

The term 'meanwhile use' refers to the short-term use of temporarily empty buildings such as shops until they can be brought back into commercial use. The landlord will continue to look for a new commercial occupant for the space during the meanwhile use. Meanwhile uses are generally for the benefit of the local community, for example; meeting spaces, informal training and learning spaces, temporary rehearsal spaces, pop-up shops and exhibitions, and so on.

Modal Shift

Modal shift means a switching of energy consumption methods, such as when people switch from fossil fuel reliant forms of transport (such as cars) to sustainable transportation options such as busses, trains and (electric) bicycles.

National Planning Policy Framework

National Planning Policy Framework (NPPF) sets out the Government's planning policies for England, and provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflects the needs and priorities of their communities.

Operational Energy

Operational energy is the energy required during the entire service life of a structure such as lighting, heating, cooling, and ventilating systems; and operating building appliances.

Passivhaus

A Passivhaus is a building in which thermal comfort can be achieved solely by post-heating or post-cooling the fresh air flow required for a good indoor air quality, without the need for additional recirculation of air.

Performance Gap

The difference between predicted performance and the as-built performance of a building.

Post Occupancy Evaluation

Post-occupancy evaluation (POE) of a building demonstrates how well it is performing in use and how far it is achieving against its intended purpose. POE also highlights any gaps in communication and understanding amongst building managers and occupants that may hinder a building's operational performance.

Quality Review Panel

An independent panel of planning, architecture, urban design and construction experts set up by the Council to provide impartial expert advice to both applicants and local authorities on design issues in relation to important new development schemes and proposals for important public spaces including significant minor applications, major planning applications, pre-application development proposals, strategic masterplans and concept frameworks. The Quality Review Panel's feedback is a material consideration for local authorities and the planning inspectorate when determining planning applications. The purpose of the Quality Review Panel is to ensure that new development is of a high quality and contributes to place making.

Renewable Energy

Renewable energy is energy that is collected from renewable resources, which are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat.

Special Area of Conservation

Area given special protection under the European Union's Habitats Directive which is transposed into UK law by the Habitats and Conservation of Species Regulations 2010.

Strategic Masterplan

A masterplan is the process by which organisations undertake analysis and prepare strategies, and the proposals that are needed to plan for major change in a defined physical area. It acts as a context from which development projects come forward for parts of the area.

Suitable Alternative Natural Greenspace

Suitable Alternative Natural Greenspace (SANG) is the name given to greenspace that is of a quality and type suitable to be used as mitigation to offset the impact of residential development and visitor pressure on Special Protection Areas (SPAs). The purpose of SANGs is to provide alternative greenspace to attract visitors away from SPAs.

Sustainable Drainage Systems

These are drainage systems designed to manage surface water and groundwater to sustainably reduce the potential impact of new and existing developments on flood risk. They can form part of a wider integrated water management approach.

Sustainable Transport

Efficient, safe and accessible means of transport with overall low impact on the environment, including walking and cycling, low and ultra-low emission vehicles, car sharing and public transport.

Thermal Bridging

It is important to make sure that the gap between the window frame and the wall is well sealed otherwise heat will be lost around the window even if the window itself is very energy efficient.

Transport Assessment

A comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be required to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport and what measures will need to be taken to deal with the anticipated transport impacts of the development.

Transport Statement

A simplified version of a transport assessment where it is agreed the transport issues arising out of development proposals are limited and a full transport assessment is not required.

Validation Requirements

The information that is required to be submitted with a planning application in order to be considered 'valid'. This includes particular plans or supporting documents that must be included with a planning application. It includes national requirements and local requirements which are specific to Epping Forest District. The up to date requirements are set out in the 'Epping Forest District Council Planning Application Validation Requirements Checklist' document.

Whole Life Carbon

Considering operational as well as embodied carbon emissions combined over a project's expected life cycle.

Zero Carbon

Causing or resulting in no net loss of carbon dioxide into the atmosphere. A zero carbon building is one with zero net energy consumption or zero net carbon emissions on an annual basis.