# Draft Sustainability SPD

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# Contents

# Contents

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# 1 Introduction

## 1.1 Context

1.1 Significant growth is happening in East Herts, with a minimum of 18,458 new homes being built by 2033 and provision of 19-20 hectares of new employment land. The District Plan (2018) vision sets out the importance of implementing this growth sustainably, to protect the environment and the quality of life of people who live, work and visit the District. Climate change is a key challenge facing society and the Council is committed to tackling its causes and impacts. In July 2019 the Council declared a climate change motion, with the goal that both the Council and East Herts as a district will be carbon neutral by 2030.

1.2 This Supplementary Planning Document (SPD) supports the implementation of policies in the District Plan and sets out detailed, technical guidance on how to mitigate and adapt to climate change, to minimise resource use and protect and enhance biodiversity.

## 1.2 What is Sustainability?

1.3 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. This SPD focuses on the environmental dimensions of sustainability.

1.4 Buildings are responsible for almost half of the UK's carbon emissions, half of the water consumption, about one third of landfill waste and about a quarter of all raw materials used in the economy. The design and construction of new buildings, and the spaces around the buildings, therefore has a key role in delivering sustainable development, which is at the heart of the planning system. Designing and constructing development to improve its environmental performance will reduce the environmental impact of new development and address climate change. There are also economic and social benefits associated with sustainable design and construction including; reduced energy bills, improved health and well-being and more resilience to market fluctuations and climate change adaptation.

## 1.3 Purpose and structure of the SPD

1.5 The purpose of the SPD is to support the implementation of District Plan policies by providing technical guidance on sustainable design and construction to improve the environmental sustainability of new development.



The SPD covers a number of topics to encourage a more prudent use of resources, protect environmental assets, mitigate the impact of climate change and adapt to its impacts:

- **Design led approach**- taking a holistic approach to design
- **Energy and Carbon** – how to reduce carbon emissions and create more energy efficient developments, incorporating renewable technologies.
- **Climate Change Adaptation**- How to mitigate overheating and increased risk of flooding
- **Water Efficiency**- How to reduce the use of mains water
- **Pollution**- How to address air, light and noise pollution
- **Sustainable Transport**- How to design development to reduce the need to travel and incorporate sustainable transport options.
- **Biodiversity**- How to conserve and enhance biodiversity
- **Waste Management**- How to reduce construction waste and design schemes that allow occupants to manage waste sustainably.

1.6 Whilst the SPD cannot introduce new targets or standards that supersede the policies in the District Plan, it will add value in a number of ways:

- By providing transparent, holistic guidance for applicants with more detail about policy requirements and expectations.
- By requiring applicants to consistently submit information to demonstrate compliance with policy. For an application to be validated, a combined checklist will need to be submitted, as detailed below.
- By helping officers and councillors assess the environmental credentials of developments and make decisions.
- Encouraging developers to go further than current policy, to demonstrate excellence in sustainable development.

1.7 The guidance will help transition towards the Council's goal for carbon neutrality by 2030, but further detail will be considered as part of the Review of East Herts District Plan.

## 1.4 Policy Context

1.8 This section provides an overview of the policy context, further details relevant to each topic are provided in each section of the SPD.

1.9 The Climate Change Act (2008) established a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% in 2050 from 1990 levels. In May 2019, the Government declared a climate emergency. The Committee on Climate Change recommended that the Government adopted a new emissions target for the UK: net zero greenhouse gas emissions by



2050.[1] This would keep the UK in line with the commitments it made as part of the 2016 Paris Agreement to keep global warming below 2°C. As a result the Government amended the legislation in June 2019 to require the UK to bring all greenhouse gas emissions to net zero by 2050.

1.10 The built environment has a clear role in helping to deliver these national targets. Section 19(1A) of the Planning and Compulsory Purchase Act 2004 requires local planning authorities to include in their Local Plans "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".

## National Policy

1.11 The National Planning Policy Framework (2019) states that planning and development should contribute toward the environmental objective of sustainable development, which includes making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution and mitigating and adapting to climate change.

1.12 Section 14 makes it clear planning must address climate change. New development should be planned for in ways that minimise vulnerability and improve resilience; help the reduction of greenhouse gas emissions and support renewable and low carbon energy and associated infrastructure.

## Local Policy

1.13 The adopted District Plan (2018) expects development proposals to incorporate design and construction measures to mitigate and adapt to the impact of climate change, minimise the impact of pollution and reduce pressure on resources such as water.

1.14 The East Herts District Plan includes a number of policies which require applicants to 'take account of' or 'demonstrate how' different aspects of sustainable design and construction are incorporated into proposed development. However, with the exception of water use (WAT4) the Plan does not require compliance with a target.

1.15 The Council recognises that mandatory targets in policy, particularly in relation to energy and carbon emissions, are likely to be important to meet the national agenda. This issue will be explored and progressed as part of the District Plan Review.

1 Committee on Climate Change (May 2019) Net zero: The UK's contribution to stopping global warming. Available online at: https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/



1.16 In addition to the District Plan, development should comply with relevant Neighbourhood Plans policies.[2] Details are provided on East Herts Council's website . Also a significant proportion of growth in East Herts is within Harlow and Gilston Garden Town. The Council remains the decision-maker for both policy documents and planning applications within East Herts, but current governance and management arrangements have been set up in partnership with Epping Forest and Harlow Districts and Hertfordshire and Essex County Councils to help ensure collaborative working.[3]Therefore applications in the Gilston Area will need to consider the relevant policy context, including the Gilston Charter SPD and emerging Harlow and Gilston Garden Town Sustainability Guidance.

## 1.5 How to use the SPD?

1.17 Applicants should use the design guidance in this SPD to inform the design and construction of their scheme. Depending on the scale or type of development proposed, statements or surveys may be required to support an application. Details about the planning application submission requirements are set out in each topic section. Further details about submission requirements are provided on the Council's website: https://www.eastherts.gov.uk/planning-building/make-planning-application

1.18 All proposals should apply the principles in this SPD. Applications for new development that result in a residential net gain of 1 plus dwellings or an increase in non-residential floorspace should submit the combined Sustainable Design and Construction checklist in Appendix A. This will demonstrate that the principles of environmental sustainability outlined in this SPD have been considered and addressed. Information provided should be proportionate to the scale and type of development proposed. Once adopted the SPD will be a material consideration in the determination of planning applications. It will replace the Air Quality Planning Guidance (2016).

2 https://www.eastherts.gov.uk/planning-building/planning-policy/neighbourhood-planning-activity-east-herts
3 https://www.eastherts.gov.uk/about-east-herts-0/harlow-and-gilston-garden-town



# 2 Design Led Approach

## 2.1 Context

2.1 Good urban design and sustainable design and construction are mutually inclusive. The NPPF (2019) sets out that achieving high quality places and buildings is fundamental to the planning and development process. The National Design Guide emphasises how well-designed places, that are beautiful, enduring and successful can be achieved in practice. The importance of taking account of climate and environmental change is raised as an issue that infiltrates through the whole design process. The guidance identifies 10 urban design characteristics, including the importance of context and identity. Good design is built on a foundation of thorough analysis of a site's relationship to a settlement and its immediate locality and should enhance its surroundings and be attractive and distinctive. Recent Homes England guidance, Building for a Healthy Life, explains how the integration of nature, blue and green infrastructure and pedestrian and cycle connections underpins high quality design and healthy, attractive places.

2.2 Designing and achieving more sustainable forms of development requires consideration at a strategic scale, before moving down to consider the more detailed site and construction aspects. Development sites come in a variety of sizes and level of complexity but in all cases the local context is essential in determining how the site relates to the surrounding environment, for example in terms of its character, visual relationship, proximity to open space, facilities and services and environmental conditions of the local microclimate. The context informs the layout and form of development, which then underpins the sustainability of a development and how it mitigates and adapts to climate change. These principles are explained below in Figure 1.

**Further Guidance**

- National Design Guide (2019), MHCLG: https://www.gov.uk/government/publications/national-design-guide
- Building for a Healthy Lifestyle (2020), Homes England: https://www.designforhomes.org/project/building-for-life/

## 2.2 Taking a holistic approach

2.3 The sustainable design considerations set out in this guidance should form an integral part of the design process so that sustainability principles are incorporated and minimum standards met where relevant (and where possible exceeded) in the most timely and cost effective way possible. It is therefore recommended that this guidance is referred to from the very start of the design process, including in early discussions with the client. Early and meaningful collaboration of sustainable design specialists in the design team - including BREEAM or Passivhaus advisors, services engineers,



sustainable drainage specialists and landscape and biodiversity experts- is also strongly encouraged. Integrating sustainable design into the building procurement process will help development move towards net zero carbon.

**2.4** If sustainable design is not fully considered from an early stage of the design/procurement process then problems, delays and increased costs can result. For example, if an air quality assessment is not completed until late in the design process and the study reveals a need for changes to the layout, this could raise new planning/design issues. Similarly, if the sustainable drainage strategy is only developed at a late stage rather than as an integral part of site layout and landscape planning then it could result in a need for costly late changes to comply with policy requirements. Sustainability has so much to do with location and connectivity. Engagement of landscape/townscape, ecology, heritage, drainage, transport professionals during early-stage site feasibility work is key and should be encouraged.

**2.5** Equally if developers want the credibility of achieving best practice associated with meeting BREEAM and Homes Quality Mark requirements this will be far simpler if these standards inform the design process rather than being considered late on as a tick-box exercise. Figure 1 below outlines the different stages of the design process and how it should be a reiterative, holistic process from concept design to construction and end use.

**Further Guidance**

- RIBA's Green Overlay to the RIBA Outline Plan of Work www.architecture.com
- Building Hub, Designers Handbook: www.thebuildingshub.co.uk

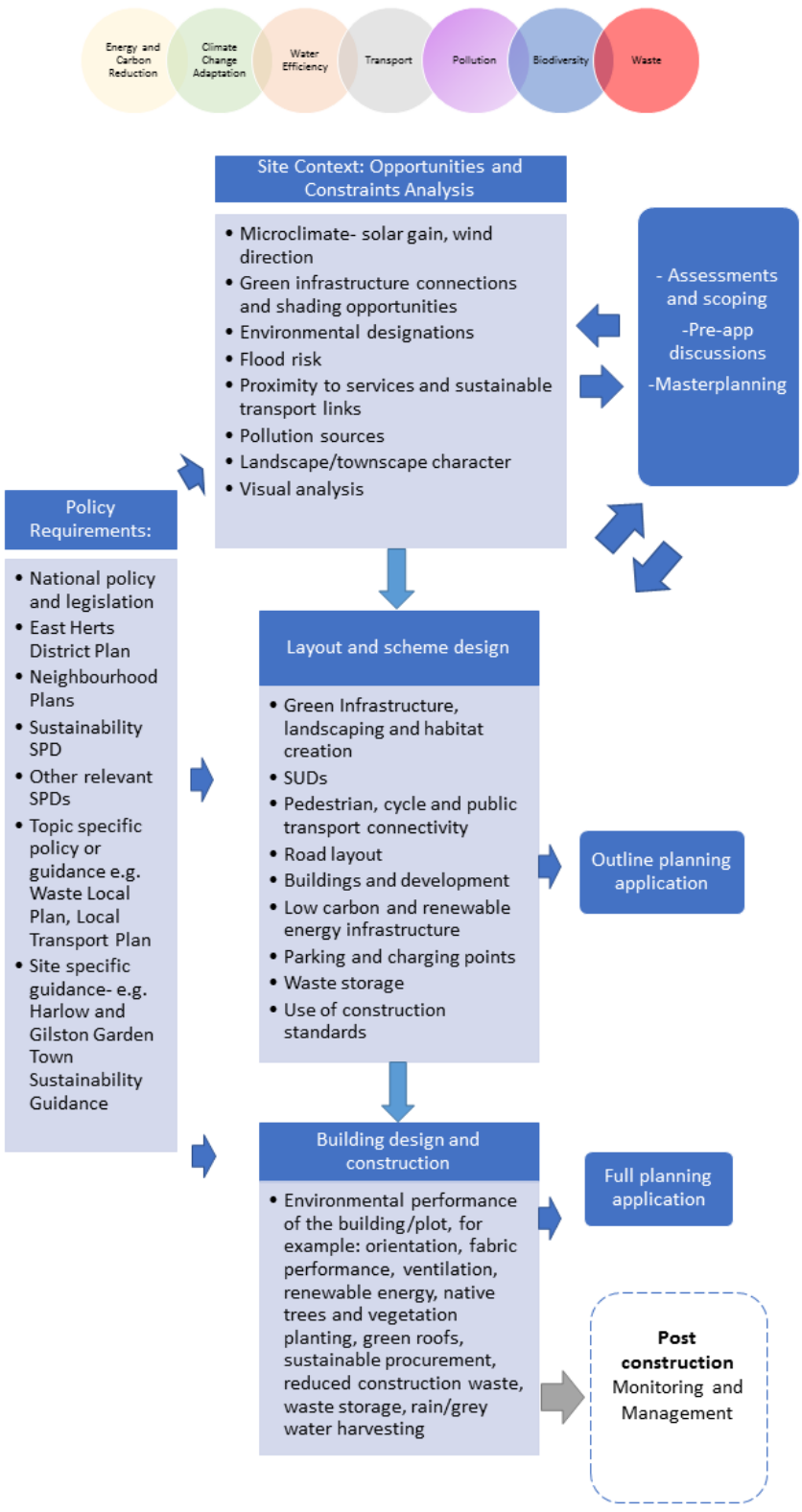



**Figure 1: Taking a holistic design approach incorporating environmental sustainability**



## 2.3 Historic Environment

2.6 East Herts historic environment is one contextual issue that must be taken into account to preserve the district's character and distinctiveness. East Herts has numerous listed building and conservation areas, historic parks and gardens and scheduled monuments. In accordance with national policy and the District Plan (2018), proposals should seek to avoid harm to historic assets and preserve and enhance the character and appearance the historic environment. Actions required to limit further damaging emissions and adapt to a changing climate are likely to have important implications for the historic environment. Yet the significance and integrity of historic assets can be threatened by poorly designed interventions. Where a historic asset or its setting may be affected, careful selection and high quality design of measures is therefore fundamental. Where applicable, advice should be sought from the Council's conservation team.

**Further guidance**

2.7 Further information on climate change and the historic environment is available:

- Historic England: www.historicengland.org.uk

## 2.4 Construction Standards

2.8 The Council encourage, high quality sustainable development and recommend the use of construction standards to demonstrate excellence in sustainable development. The latest version of standards should be used and appropriate evidence must be submitted with a planning application to demonstrate compliance. The following provides a summary and overview of some of the recognised schemes:

- **BREEAM** - Building Research Establishment's (BRE) Environmental Assessment Methodology (BREEAM) is one of the most renowned standards for non-residential development. Credits are awarded across a range of topics and a final accreditation is awarded from good to outstanding. The Council recommend that the higher levels are met where possible, which can only be achieved if it is taken into account early in the design process. To demonstrate the appropriate level can be achieved a pre-assessment certificate should be submitted with an application. There are different BREEAM schemes, including new construction which relates to individual buildings and BREEAM Communities for development on a wider scale. Further details are available on the BREEAM website: https://www.breeam.com/
- **Housing Quality Mark (HQM)** - Following the Government's decision to abolish the Code For Sustainable Homes, BRE introduced the HQM as an equivalent to BREEAM to assess the environmental and social





performance of new homes. More details are available on the HQM website: https://www.homequalitymark.com/

- **Passivhaus**- Highly efficient housing design, using building fabric performance to achieve high levels of insulation and ventilation: https://www.passivhaustrust.org.uk/
- **Building futures** is an interactive Hertfordshire guide to promoting sustainability in development, which provides further information on the topics within this SPD. It can be accessed at www.hertfordshire.gov.uk/microsites/building-futures/building-futures.aspx. Exemplar developments in East Herts can achieve recognition at the Building Futures annual awards.

**Case Study: Cassiobury Park Hub Building, Watford**

Cassiobury Park multi-purpose community hub building won the Most Sustainable Construction award at the last Building Futures Awards in 2018. The building is integrated within the landscape rather than on it and is designed to have minimal energy consumption. The orientation and layout of the building facilitate solar gain, it is built with high levels of insulation and uses energy generated by solar panels on the roof. A low-energy air-source heat pump maintains a constant temperature and a rainwater-harvesting tank collects water.

**Source: Knox Bavan Architects**


**Case Study: Hertford Theatre- aspiring to BREEAM Excellent**

The Council led project to redevelop Hetford Theatre is being designed to achieve BREEAM excellent.

The use of BREEAM has been integrated into the design process and a range of sustainable design and construction principles are being developed in order to achieve the excellent rating:

- Retaining as much of the existing building as possible;
- specifying materials with low embodied energy;
- Upgrading building fabric to increase energy efficiency and reduce carbon;
- Using air source heat pumps;
- Using intelligent building systems to reduce operational energy;
- Creating flexible, adaptable spaces so the building had longevity.

Many of these principles are addressed within this SPD.



# 3 Energy and Carbon Reduction

## 3.1 Policy Context

3.1 Half of all national carbon emissions come from the energy used in constructing, occupying and operating buildings.[4] The Government's Clean Growth Strategy[5] makes it clear that a key Government priority is to reduce the energy demand and carbon emissions created by both new and existing homes. It outlines the progress already made by measures such as improved thermal insulation and increased efficiency of boilers, and sets out what more needs to be done to minimise climate impact from buildings and help reduce energy costs.

### National Policy

3.2 Section 14 of the NPPF clearly sets out the role of planning in addressing climate change. New development should be planned for in ways that minimise vulnerability and improve resilience; help the reduction of greenhouse gas emissions and support renewable and low carbon energy and associated infrastructure. Paragraph 149 retains the link between planning policy and the provision of the Climate Change Act 2008. This means all local plans have a duty to reduce the carbon emissions associated with new development, contributing to England's carbon reduction targets as set out in the Climate Change Act.

3.3 Further guidance is provided in the Climate Change section of the National Planning Guidance (NPPG), which has been taken into consideration in the production of this SPD.

3.4 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. Plans for low carbon heating and high levels of energy efficiency will be introduced by 2025 and in a phased approach to this change the government has consulted on a potential 20% or 31% reduction in carbon emissions from new homes by the end of 2020. The response to this consultation has not yet been published, but it will result in mandatory improvements to the energy performance of new homes. Similar proposals for non-domestic buildings are proposed in due course. Likewise, another government consultation this year identifies the importance of using heat networks to de-carbonise heating in the UK and proposes regulations and guidance, which may impact planning policies and decisions.

4 Good practice Guidance: Sustainable Design and Construction, Cross Sector Group on Sustainable Design and Construction, August 2012.

5 https://www.gov.uk/guidance/climate-change



## Local Policy

**District Plan policies**

- Policy CC2 Climate Change Mitigation
- Policy DES4 Design of Development
- Policy CC3 Renewable and Low Carbon Energy

**Type of Development**

- Residential and non-residential development

**Submissions Requirements**

- Sustainability checklist
- Sustainable Construction, Energy and Water Statement
- Carbon reduction template (can be an appendix to Statement)

**Link to Sustainability checklist**

- En.01, En.02, EN.03, En04, En05, En06

3.5 **Policy CC2** of the District Plan promotes zero and low carbon development by requiring all new developments to demonstrate how carbon emissions will be minimised in accordance with the energy hierarchy by using less energy, increasing energy efficiency and incorporating low and renewable energy (see Figure 2). There are no mandatory targets included within the policy but achieving requirements beyond the requirements of Building Regulations is encouraged. Carbon reduction should be met on site, unless it can be demonstrated this is not feasible or viable. In such cases offsetting will then be permitted. The policy also expects that the energy embodied in construction materials is reduced through re-use and recycling of existing materials and the use of sustainable materials and local sourcing.

3.6 **Policy DES4** reiterates and expands on the requirements for sustainable design and zero and low carbon development in East Herts. The policy expects development to achieve a high standard of design, which includes the use of zero or low carbon energy technologies, sustainable construction methods and electric vehicle charging points.

3.7 **Policy CC3** encourages the generation of clean energy, which include schemes to provide low carbon and renewable energy generation to specific developments or wider generation proposals. The policy recognises that renewable, zero and low carbon proposals must be considered within their local context. The policy states the Council will permit the development of sources of renewable energy generation subject to assessment of the impact



on the local environment and amenity. It is vital that any impacts associated with the proposed technology are considered as part of the planning process. Guidance related to this is already available via the national Planning Practice Guidance and as such it is not considered necessary to repeat this guidance in the SPD, although pointers to this guidance will be included in the SPD.

## 3.2 Topic Guidance

### 3.2.1 Energy and carbon reduction in East Herts

**3.8** East Herts has a carbon emission contribution of 675 $CO^2$ (kt).[6] The Council is committed to reducing carbon emissions and has pledged that both the Council and the district will be carbon neutral by 2030.

**3.9** Some reduction in carbon dioxide emissions from energy use has been achieved already but there remains a need and scope for further reductions. The reductions achieved have largely resulted from the national decarbonisation of electricity supply. As the population of the district increases this reduction may slow. There has been less progress in reducing emissions relating to gas consumption. The Committee on Climate Change has advised the Government that there is now an urgent need to eliminate the use of gas in new buildings.

### 3.2.2 Energy Hierarchy

**3.10** Central to policy requirements is the hierarchical approach to reducing energy demand and associated carbon emissions. District Plan Policy CC2 requires applicants to demonstrate how development takes account of the energy hierarchy set out in Figure 2.

6 National Atmospheric Emissions Inventory (2017), local authority data https://naei.beis.gov.uk/laco2app/



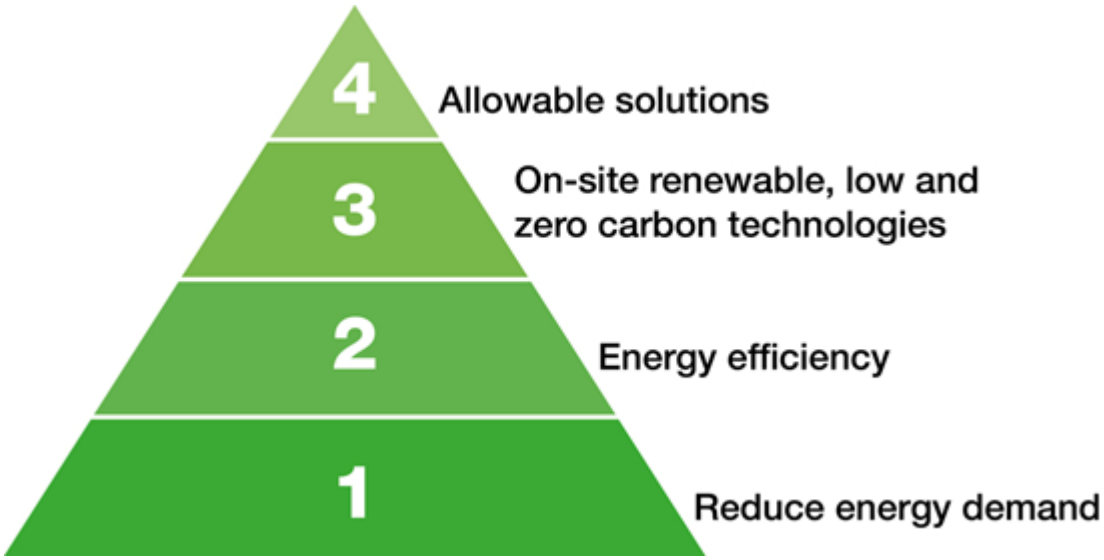



**Figure 2: Energy Hierarchy**

3.11 The energy hierarchy, as set out in the District Plan (Figure 22.1), is a sequence of steps that minimise energy consumption in a building: via passive design and orientation; fabric performance and energy efficiency. Once the demand for energy has been reduced to a minimum in a building the next step is to supply energy efficiently via renewable and low carbon energy and connection to decentralised heat and energy networks.

3.12 Buildings designed in line with the energy hierarchy prioritise lower cost passive design measures and fabric improvements over high cost systems such as renewable energy technologies. This will make developments more cost-effective and allows investment costs to be recovered through operational savings. On some developments it may be appropriate to have a mixed approach as the best outcome, drawing on options 1 to 3.

3.13 The mix of options selected should be supported in the Sustainable Construction, Energy and Water Statement by evidence of the costs of the options appraised and associated detailed cost information on the chosen option in the viability assessment.

3.14 If on site provision is not feasible or viable, on-site carbon emissions may be offset off-site (step 4). These are known as allowable solutions.

### 3.2.3 Minimising Energy Use (stages 1 and 2)

#### Passive Design

3.15 The first part of the energy hierarchy is addressed by how a building is located, oriented or designed to reduce energy consumption.



## Orientation and Layout

3.16 By ensuring passive design elements are optimised to reduce the need for artificial lighting, heating and cooling, the design of buildings can play a significant role in reducing a building's overall energy demand. It is also important to balance this approach by minimising overheating in the summer. This is addressed in Section 4 of this SPD: Climate Change Adaption.

Key principles of using orientation and layout to reduce energy demand:

3.17 **Site layout and relationship between buildings and adjacent uses -** All development should maximise the potential for passive solar gain.[7] Early in the design process the site layout, landscape and relationship between buildings should be considered in relation to the aim to maximise the capture and use of passive solar energy whilst avoiding excessive solar gain in summer. It is important to avoid the over-shadowing of the solar orientation of buildings. Site layout should also use landform and landscape to provide shelter to minimise heat losses in winter and adequate shade in summer.

3.18 **Building orientation and form-** To minimise heating, lighting and cooling demands, all development should use building orientation, form and the layout of rooms to ensure those spaces that require most warmth and daylight receive most passive solar gain and those spaces that need least warmth/daylight receive least. Use of a simple external building form (minimising surface area in relation to volume) can reduce heat loss. Where site constraints restrict suitable orientation or form, the Council will expect innovative techniques or approaches to be used to maximise daylight and increase solar gain, for example the use of sun pipes.[8]

- **Residential solar gain**- If possible building axis should be orientated in an east-west direction to provide optimum solar gain (see Figure 3). This can reduce a home's heating and cooling costs by up to 85%. Where possible, habitable rooms (such as living rooms and bedrooms) should be located on the south elevation to maximise heating and light from the sun, particularly in the winter. Potential for excessive gain in the summer should however be taken into account. On sites where building are orientated on a north-south axis, they should be angled as shown in Figure 4 to maximise heating in the morning and evening when it's needed most. This will also help minimise overshadowing between buildings due to the shadow angle created by the sun's path. It is preferable if habitable rooms are on the west elevation to maximise light and heating later in the day.

7 Making the best use of solar energy to heat and illuminate buildings
8 Sun pipes are a natural lighting system that maximises the concept of renewable energy by channelling natural daylight from roofs to indoor environments

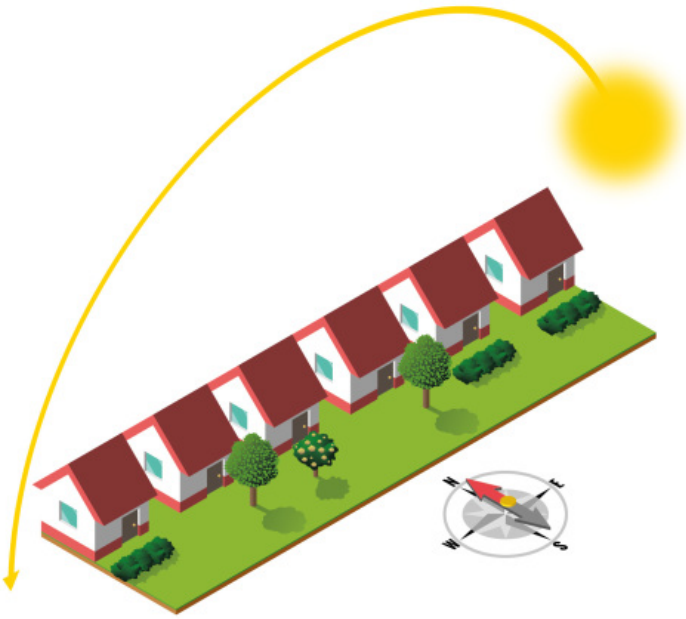


**Figure 3: Development orientated on an east-west access**

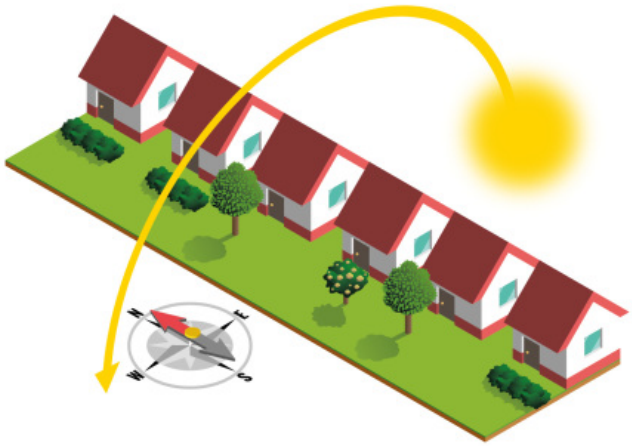


**Figure 4: Development orientated on a north-south access**



- **Non-residential solar gain**- Commercial properties are usually occupied during the day and often need to minimise solar gain because of heat intensive uses (such as computer use). An east-west axis is preferable with glazing on the north elevation to maximise light and prevent excessive heat gain.
- To avoid overheating in summer months buildings should incorporate eve design to allow shading, support shading devices and use green infrastructure in surrounding spaces to increase shading (see Climate Change Adaption section of this SPD for cooling advice)

3.19 **Provide thermal mass and storage**- Thermal mass involves using the mass of the buildings to moderate the temperature. It should not be confused with insulation and u-values; it is a passive design feature, not a method of insulation. Materials have a capacity to absorb and store heat and ultimately release it when it is cooler. It is of most value when there are temperature fluctuations, i.e. between day and night. Materials such as concrete and bricks have a higher thermal mass and others such as timber have a low thermal mass. However, the design and use of thermal mass will depend on context and needs to be considered in relation to the specific building. For example, in highly insulated buildings, with some mechanical ventilation (such as Passivhaus) there will be less temperature fluctuations and high thermal mass could cause potential for overheating. As outlined in the Climate Change Adaption section of this SPD, this needs to be taken into account.

3.20 **Provision of natural ventilation**- This is the process of supplying and removing air through an indoor space without using mechanical systems. This enables the flow of external air to an indoor space as a result of pressure or temperature differences. Different options are explored in the Climate Change Adaption Section of this SPD.

3.21 **Planting and soft landscaping**- Vegetation, trees, green roofs and green walls are also important for reducing energy required to cool buildings. They provide shade and stabilise microsystems. Trees can also help with $CO^2$ absorption and they trap particles so have an air quality benefit.

## Fabric First approach

3.22 Once the demand for energy has been reduced, measures to make the best use or most efficient use of energy should be considered. The energy efficiency of a building is influenced by the use of space, insulation and materials within a building.

3.23 Making the building fabric perform more efficiently tends to be those measures which fall within building regulation process. This means that proposed buildings should have external walls, roofs, floors, windows and doors that are super insulated, airtight and wind tight. Window and doors should incorporate high performance glazing.






**3.24** A good building fabric consists of:

- Continuous insulation (low U-values)
- Minimal thermal bridging (low PSI-values)
- Continuous air barrier (low air permeability)

**3.25** It is recommended that buildings should achieve the highest possible standards of thermal insulation, air tightness and energy efficient lighting. The Council recommends the use of good practice standards in residential and non-residential development.

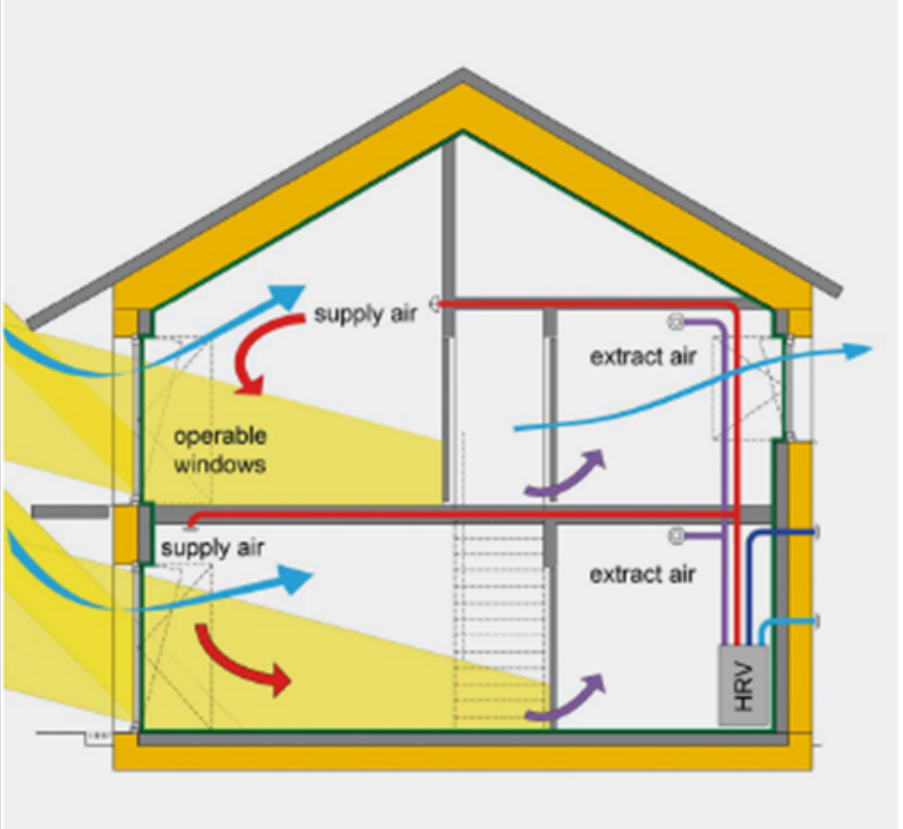
**Fact box: Passivhaus**

Insulation and airtightness to Passivhaus standards are encouraged by the Council as good practice.

Passivhaus takes a fabric first approach to low energy building. It reduces heating and cooling to a minimum whilst creating excellent air quality. It uses passive principles to their full extent before active systems are explored. Key features include:

- Higher levels of insulation and triple glazing
- High standards of air tightness (20 x more than a standard build)
- Mechanical ventilation with heat recovery

For more information visit the website: https://www.passivhaustrust.org.uk/




3.26 **Case Study**: Johnson Court, West Dene. A small development of rural affordable housing, designed to passivhaus standards in the Hertfordshire village of Gaddesden Row, achieved a shortlist nomination for sustainable construction excellence at the Building Futures awards in 2018.



### Key principles

3.27 **Insulation**- Thermal insulation is an important way of improving energy efficiency by reducing the heat losses through the fabric of the building. The thermal insulating properties of building structures are compared using U-values.[(9)]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 material from inside to outside. The lower the U-value, the less heat is transferred through it, so the more efficient it is. The most efficient buildings have a continuous insulation around the building envelope.

3.28 **Air-tightness and thermal bridging**- An airtight building envelope is draught-free, so ensures high energy efficiency and internal comfort. To enable a continuous air tight barrier, gaps in the fabric should be minimised. Measures include sealing joints and gaps around windows and door frames. Reducing the air permeability of the fabric requires controlled ventilation to minimise build-up of moisture, $CO^2$ and other internal pollutants. For low energy homes an air permeability of 3m3/h.$m^2$ @50pa or below should be targeted to enable efficient heat recovery ventilation. Thermal bridging is where heat is lost through a material that is more conductive than the surrounding materials, such as a metal fastener or concrete bean, or where a wall meets an external wall. Significant thermal bridges should be designed out.

### Other energy efficiency measures

In addition to changes to the fabric of the building the Council will expect internal lighting, services and appliances to be energy efficient.

### Further guidance

- Green Building Hub Handbook: http://thebuildingshub.co.uk

9 The U-value is a measure of how readily heat will flow through the structure, and describes how much energy (Watts) can pass through 1mg of material from inside to outside at a temperature differential of I Kelvin (K).



### 3.2.4 Supplying Energy More Efficiently (stage 3)

**3.29** For buildings to maximise carbon reduction and certainly to move beyond building regulations towards net zero carbon, the residual energy requirements (once the design and fabric of new development has minimised the energy needed for heating, cooling and powering) should be supplied as efficiently as possible using renewable and low carbon energy. Policy CC2 Climate Change Mitigation requires carbon reduction on site unless it can be demonstrated that this is not feasible or viable.

**3.30** Zero carbon technologies are those that harness renewable non fossil fuel energy to create heat or generate electricity. They are called zero carbon because they produce no carbon dioxide ($CO^2$) emissions when producing heat or power. These technologies are sometimes referred to as micro generation, producing heat or energy locally on a small scale. Low carbon technologies are those that use fossil fuels in a highly efficient way.

## Using low carbon heating and cooling systems

**3.31** Heating is the most essential component of the UK's current residential energy consumption. Gas boilers make a large contribution to the 14% of UK greenhouse gas emissions from homes. Alternative heating systems are therefore encouraged, such as heat pumps. Heat pumps are generally more energy efficient than standard panel heating, particularly if used on a communal scale (small number of dwellings or a block of flats). The siting of air source heat pumps on buildings should be carefully considered to take account of potential noise impacts. Useful information about the efficiency of different heat pumps is available online: http://www.bregroup.com/heatpumpefficiency/index.jsp

**3.32** On a larger scale, a heat network or district heating distributes heat generated at a central location to a number of residential and non-residential buildings. The Climate Change Committee estimates that if the UK is to meet its carbon targets cost effectively, around 18% of UK heat will need to come from heat networks [(10)]Various sources of heat can be used. A district heating scheme provides heat from a central source and distributes it to multiple buildings. Combined Heat and Power (CHP) is a technology that produces electricity close to the point of use and captures the waste heat that is normally lost to provide heating, hot water and sometimes cooling. The Hertfordshire Renewable and Low Carbon Energy Study (2010), was produced as part of the evidence base to the District Plan.(https://www.eastherts.gov.uk/evidencebase) The study identifies the potential for district heating networks in East Herts towns where heat demand is highest. The heating opportunity areas are set out in figure 6.1 of the study.

10 Heat Networks www.gov.uk/guidance/heat-networks-overview.

3.33 Gas-fire CHP is currently considered a low carbon technology, so please see the advice note in Appendix D. However, applicants should take account of the Government's intention to ban gas boilers in new homes from 2025 in a bid to tackle climate change.[11] Likewise, the decarbonisation of mains electricity (proposed changes to the carbonisation of electricity in SAP10, [12] means a long-term view of the carbon emissions associated with gas fired CHP should be taken into consideration. Electric heat pumps or renewable energy are other heat sources that are becoming increasingly popular in heating networks and are key in the move towards net zero carbon buildings.

3.34 It is essential that CHP and heat networks are installed and operated appropriately. Design of heat networks should achieve the best practice standards of the ADE & CIBSE Code of Practice for Heat Networks.[13] Impact on air quality must also be taken into account and emissions must not exceed guidance in the Pollution section of this SPD.

**Marmalade Lane. Source: https://www.buildingfor2050.co.uk/**

3.35 **Case Study: Marmalade Lane,** Cambridge- Development of 42 homes built using a fabric first approach, incorporating mechanical ventilation and heat recovery and timber panels constructed off site. Air source heat pumps are used to supply heat and hot water.

3.36 In East Herts there are currently no existing district heating networks, so connecting to existing networks is not possible. However, the Council recommend that large-scale development seeks to establish district heating networks and if this is not feasible, applicants should at least consider installing heating and cooling equipment that is capable of connection at a later date. Large-scale mixed use development is most suitable because it enables good anchor load and diversity of heat demand. To facilitate the consideration of district heating potential all major new development allocated in the District Plan **or** located in the heat opportunity areas in Figure 6.1 of the Hertfordshire Renewable and Low Carbon Energy Study

11 HM Treasury (2019) Spring Statement 2019

12 Standard Assessment Procedure (SAP) is the assessment used in building regulations. SAP10 is the most recent version of this assessment, and was released alongside the Government's consultation on proposed changes to Part L- The Future Homes Standard.

13 https://www.cibse.org

should assess the feasibility of providing new district heating network. The Council recognises that low temperature, fossil free district heating is the most sustainable option.

## Incorporating renewable energy

**3.37** The use of onsite renewable technologies is encouraged to increase $CO^2$ emissions, particularly for those developments seeking to achieve net zero carbon developments. The Hertfordshire Renewable and Low Carbon Study (2010) explored a range of renewable and low carbon technologies and their feasibility and viability implications. Table 1 sets out a list of renewable energy technologies and their suitability in East Herts. It is acknowledged that new technologies may also be developed so the Council will also consider alternative proposals if relevant.

**Photovoltaic panels generating electricity. Alternatively solar thermal roof panels can be used to generate hot water.**

| Renewable Technology | Suitability |
|---|---|
| Solar PV | Yes |
| Micro Wind | No, unlikely to be economic because of poor energy yields experienced in practice. |
| Large scale wind | Yes, in appropriate locations with sufficient wind speeds (see figure 6.1 of Hertfordshire Renewable Study). |
| Biomass boilers | Unlikely to be supported within an Air Quality Management Area or where it may impact on residents unless it can be clearly demonstrated that there will be no adverse impact on air quality. |
| Solar thermal | Yes |



| | |
|---|---|
| Air source heat pumps | Yes, where communal solutions are not possible |
| Ground source heat pumps | Yes, where communal solutions are not possible |
| Water source heat pumps | Yes, best suited to large scale communal heating solutions |

**Table 1: Overview of renewable technologies and suitability in East Herts**

3.38 The feasibility of the renewable energy proposal should be considered in relation to the site context and the identified considerations in Policy CC3. Likewise, if relevant, appropriate licenses should be sought from the regulation body. For example water and ground source heat pumps may require licenses from the Environment Agency in some instances. It is recommended that early discussions take place with the relevant organisation to ensure the appropriate technology is selected in the appropriate location.

3.39 The Council recognises that renewable and low carbon technologies are not always feasible or viable. However, if this is the case, applicants should provide justification in their Sustainable Construction, Energy and Water Statement (see submission requirements).

### 3.2.5 Site Wide Approaches to Energy

3.40 All significant development proposals, that meet the definition for masterplanning in DES1, offer opportunities to consider site wide approaches to renewable and low carbon energy provision. For example, in some sites the mix of uses and densities may enable the use of district heating, or provide opportunities for the development of large scale renewable energy installations adjacent to new development, for example solar arrays linked to battery storage and electric vehicle charging provision to create a smart grid to energy infrastructure (see transport section of this SPD). Such approaches will also help development transition to low and zero carbon in the future as once the infrastructure is in place to support site wide energy approaches, the technologies behind this infrastructure can more easily be upgraded to reflect advances in technology. Therefore, in the Sustainable construction, energy and waste Statement, consideration should be given to the technical feasibility and viability of site wide approaches to energy provision. This should include both the technology and associated infrastructure (heat networks and smart energy grids).



3.41 At Harlow and Gilston Garden Town (HGGT), the emerging Sustainability Guidance and Checklist will guide a site wide approach to energy and carbon reduction across the Garden Town. Applicants with development within the Gilston Area will also need to take account of the HGGT sustainability guidance as a material consideration.

### 3.2.6 Sustainable Construction

3.42 Another means of reducing carbon emissions of buildings is considering the carbon locked in construction materials, known as embodied energy. Policy CC2 requires that the energy embodied in materials is reduced through re-use and recycling and the use of sustainable sources and local sourcing. Consideration of embodied carbon is likely to become increasingly important as society transitions to a low and indeed zero carbon society. It also forms part of achieving a circular economy, which is explained in more detail in the waste management section of this SPD.

3.43 The World Green Building Council estimates that, globally construction accounts for 11% of carbon emissions.[14] When sourcing materials for a development, applicants should consider the following principles for improving the environmental performance of materials that should be used:

- Environmental impact- Use materials that have low embodied energy (e.g. lime based products or timber) which have been manufactured through processes with low consumption of energy.
- Responsible sourcing- Use materials from sustainably managed sources.
- Re-use of materials- Re-using materials from the development site and reclaimed or recycled materials for a range of uses.
- Transport- Use local materials to reduce transportation costs

3.44 The greatest opportunity for impact on embodied carbon comes at the design stage, in particular in the building structure. If opportunities are not taken at this early stage, the embodied carbon savings are lost for the entire lifetime of the building. The Council recommend early engagement as part of the pre-application process for schemes looking to utilise materials with low embodied carbon. Opportunities for sustainable procurement should also be explored, encouraging the use of contractors and suppliers that have zero and low carbon credentials.

3.45 The Council support the use of modern methods of construction- essentially off-site construction- because it can help reduce embodied energy by reducing waste on site and increasing the speed on construction.

14 https://www.worldbc.org/embodied-carbon



**Further guidance**

3.46 For further guidance on the responsible sourcing of materials and embodied carbon, please see:

- Green book live. Available online at: http://www.greenbooklive.com/
- RICS professional standards and guidance, UK. Whole life carbon assessment for the built environment, 1st edition, November, 2017. Available online at: https://www.rics.org
- WRAP Embodied Carbon Database: http://ecdb.wrap.org.uk/Default.aspx

## 3.2.7 Transition to Net Zero carbon

3.47 As set out above, District Plan Policy CC2 Climate Change Mitigation requires development to reduce emissions, encouraging standards above the requirements of Building Regulations and Policy DES4 expects proposals to incorporate sustainable construction techniques including zero or low carbon energy. Policy requirements expect new development to follow the hierarchical approach to reducing energy demand and associated carbon emissions. The submission requirements section outlines the need to provide evidence of carbon reduction. Whilst there are no mandatory reduction targets in current policy, table 2 identifies benchmarks that applicants are advised to work towards to address the national and local pledges to move towards net zero carbon. The table presents a tiered approach to carbon reduction to explain how the proportionate reductions relate to the time frame for achieving net zero carbon development.

| **Suggested carbon reduction benchmarks** | **Explanation** |
|---|---|
| 19%-34% improvement of 2013 Part L Building Regulations (residential)<br><br>BREEAM Very Good (non-residential) | A 19% reduction is used as a baseline in many Local Plan policies, [15] and can be achieved through energy efficiency measures or a combination of energy efficiency and renewables (i.e. photovoltaics). Research suggests it will involve only a modest increase in build costs.[16] Changes to Building Regulations by the end of 2020 are expected include a 20% or 31% improvement to building regulations, so this level of carbon reduction is likely to become mandatory. |

15 Equivalent to Code for Sustainable Homes level 4 (prior to its abolition in 2015).
16 Policy playbook (2020), Driving Sustainability in new homes – a resource for local authorities: https://www.ukgbc.org



| | |
|---|---|
| 35%-50 improvement of 2013 Part L Building Regulations (residential )<br><br>BREEAM Excellent (non-residential) | This level of reduction would contribute towards a goal of all buildings being net zero carbon by 2050.<br><br>The Climate Change Committee indicates that buildings will need to be net zero carbon by 2050 to meet national climate change targets. |
| 50% + improvement of 2013 Part L Building<br><br>Regulations<br><br>BREEAM – Excellent (non-residential) Nb. BREEAM outstanding can only be achieved if unregulated energy is reduced, not just energy regulated by Building Regulation (see 'Direction of Travel' section below). | This level of reduction would contribute towards a goal of all buildings being net zero carbon by 2030. |

**Table 2: Carbon reduction benchmarks that applicants are advised to achieve**

## Direction of travel

**3.48** The zero carbon agenda is an evolving area which future planning policies will need to address in order to address the Council's declaration to aim for carbon neutrality across the district by 2030. The decarbonisation of the electricity grid (increasing use of renewable energy generating electricity for the grid) offers opportunities to assist in the aspiration for net zero carbon building but this will need to be coupled with increases in the energy efficiency of buildings and renewable sources of energy. The definition of net zero carbon varies, but there is a growing direction of travel[17] from looking at net zero carbon in terms of emissions regulated by building regulations during the construction of a building towards achieving net zero carbon in terms of the whole life carbon of a building, which effectively includes:

- Embodied energy- Carbon emissions emitted during the manufacture, transport and construction of building materials, together with end of life emissions (as referenced above).
- Operational energy- buildings are supplied 100% renewable energy and operate fossil fuel free (including all unregulated energy such as lighting and appliances)

17 UKGreen Building Council (UKGBC) and London Energy Transformation Initiative (LETI) reports (see further guidance section below)



3.49 The Council will assess the approach to net zero carbon when it starts to review the District Plan policies within the next year. However, in light of this emerging agenda this SPD encourages new development to demonstrate excellence in sustainable development by taking innovative approaches to net zero carbon, including the following:

- Measuring the embodied energy in materials through the life of the development.
- Using tools to calculate whole life-cycle carbon of new developments, such as RICS[(18)]
- Monitor the operational carbon use annually
- Develop sustainable procurement processes

3.50 It is not a requirement to submit evidence of carbon reduction in household applications, but retrofitting is important to ensuring all buildings contribute to carbon neutrality. As such, applications to improve the sustainability of existing buildings/ extensions are encouraged.

**Further Guidance**

- Energy Saving Trust: www.energysavingtrust.org.uk
- Policy playbook (2020), Driving Sustainability in new homes – a resource for local authorities: https://www.ukgbc.org
- LETI (2020) Climate Emergency Design Guide: https://www.leti.london/cedg

## 3.3 Submission Requirements

3.51 To ensure compliance with the relevant District Plan policies all new residential and non-residential development must submit a completed Sustainability Checklist and a Sustainable construction, Energy and Water (ScEW) Statement to demonstrate:

- All relevant checklist criteria relating to energy and carbon (including sustainable construction) have been considered and explained in the ScEW Statement as required.
- How the developer has minimised CO2 emissions in line with the stage of the energy hierarchy to demonstrate compliance with Policy CC2 and guidance in this SPD.
- To evidence this reduction with a summary of the calculations, applicants should submit the carbon reduction template in Appendix B, as an appendix to the ScEW Statement. This must:
    - Be applied to each unit or residential building envelope proposed as part of a development.

18 RICS (2017) Whole life carbon assessment, https://www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf.



- Use the Target Emission Rate (TER) and Dwelling Emission Rate (DER) derived from the calculations carried out for Building Regulations compliance (Part L).
- Include sample Standard Assessment Procedure (SAP) [19] calculations appended to the Carbon Reduction template as evidence of compliance. It is recommended that SAP 10 carbon intensity figures are used, to take account of the decarbonisation of electricity. Applicants should be mindful of Government's intention to ban gas boilers in new homes from 2025.
- Calculations should be shown relative to existing Part L regulations, so it is clear how well the development performs above building regulations.

- Where renewable energy technologies are proposed they should be an integral part of the design and the location and indicative layout of those technologies should be shown on drawings. Final layouts will be secured by planning condition as appropriate.
- Applicants proposing Combined Heat and Power should adhere to admissions advice (see pollution section of this SPD and advice note in Appendix D)
- If carbon reduction is not possible on-site, feasibility and viability evidence should be submitted.
- The Sustainable construction, Energy and Water Statement (including carbon reduction template) and checklist must be submitted for outline applications

## 3.4 Checklist

**3.52** Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in table 3 below. More detail about the approach should be included in the Sustainable Construction, Energy and Water Statement.

| **Energy and carbon reduction** | | |
|---|---|---|
| **Ref** | **Checklist criteria** | **Summary of approach to address the criteria** |
| En. 1 | Have carbon reduction calculations been included in the Sustainable construction, Energy and | |

19 SAP is the assessment procedure required by Part L of Building Regulations.



| | | |
|---|---|---|
| | Water Statement? (See Appendix B for a carbon reduction template)? | |
| En.2 | How have the site layout and building orientation and form been designed to minimise energy use? | |
| En.3 | What proportion of the total number of buildings, are orientated to secure optimum solar gain? (East-West axis) | |
| En.4 | How has the energy hierarchy been applied to prioritise reducing the need for energy and implementing the 'fabric first approach'? | |
| En.5 | How will you ensure that where renewable/ low carbon technologies have been included to reduce carbon, that these will be successfully integrated into the design of the development? | |
| En.6 | How has the energy embodied in construction materials been reduced? (e.g. reuse and recycling/ sustainable materials/ locally sourced) | |

**Table 3: Energy and Carbon Reduction Checklist**

**3.53** The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.



# 4 Climate Change Adaption

## 4.1 Policy Context

4.1 The changing climate means the UK will need to adapt to extreme rainfall events, warmer, wetter winters and hotter, drier summers. The potential for hazards such as heatwaves, flooding and droughts will increase and it is essential the built environment is adapted to increase resilience to such events.

### National Policy

4.2 Under section 19 (1A) of the Planning and Compulsory Purchase Act 2004, as amended under the Planning Act 2008, local authorities are required to reduce future climate risks through the planning system. The National Planning Policy Framework (2019) requires local plans to contribute to climate change adaptation and include appropriate measures to ensure future reliance for communities and infrastructure to the impacts of climate change. Paragraph 149 states:

*'Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures'.*

4.3 The Climate Change and the Flood risk and Coastal Change sections of the Planning Practice Guidance (NPPG) [(20)] provides further guidance about how the design and location of development can contribute towards adaption to climate change.

20 https://www.gov.uk/government/collections/planning-practice-guidance




## Local Policy

**District Plan policies**

- CC1 Climate Change Adaptation
- DES4 Design of Development
- WAT5 Sustainable Drainage

**Type of Development**

- Residential or non-residential development

**Submissions Requirements**

- Sustainability Checklist
- Sustainable Construction, Energy and Water Statement
- Flood risk and drainage assessment, when relevant

**Link to Sustainability Checklist**

- CA.1, CA.2, CA.3, CA.3, CA.5, CA.6, CA.7

4.4 The District Plan includes a range of policies to address the impact of climate change. **Policy CC1** Climate Change Adaption states that all new development should demonstrate how the design, materials, construction and operation of development will minimise overheating and enhance the integration of green infrastructure. **Policy DES4** Design of Development states that development proposals that create new or have a significant impact on the public realm must maximise opportunities for urban greening. **Policy NE4** promotes the need to protect and enhance green infrastructure networks.

4.5 Addressing the potential for increased flooding, District Plan **Policies WAT1** Flood Risk Management and **WAT5** Sustainable Drainage require development to assess the risk of flooding when selecting and designing a site, take into account the impacts of climate change and to utilise drainage in accordance with the Sustainable Urban Drainage (SUDs) hierarchy.

## 4.2 Topic Guidance

### 4.2.1 Climate Change Adaptation in East Herts

4.6 The draft Sustainable Hertfordshire Strategy (2020) identifies national statistics about our changing climate that are equally as relevant to Hertfordshire:



| Climate Trend | | Projections |
|---|---|---|
| | Hotter Summers | Heatwaves, like those experienced in 2018, are likely to occur every other year by 2050. The hottest day could also be up to 2.5˚C warmer by 2030 and 4.4 warmer by 2050. |
| | Warmer Winters | Mean winter temperatures could increase by up to 2˚C by 2030 and 3˚C by 2050. Rising winter temperatures are likely to reduce the amount of snowfall in winter. |
| | Drier Summers | Projections suggest up to a 28% decrease in summer rainfall in 2030 and a 45% decrease by 2050. |
| | Wetter Winters | Winter rainfall could increase by up to 14% by 2030s and up to 25% by the 2050s. |
| | Increased Storminess | We will see heavier downpours leading to local flooding. There may be an increase in the frequency and intensity of storms, which is likely to lead to more flash flooding. However, there is currently uncertainty in projections. |

**Source: Sustainable Hertfordshire Strategy, 2020**

**4.7** At a county and district level there is a strong commitment to addressing the impacts of these climate changes. The draft Sustainable Hertfordshire Strategy encourages partnership working with districts to ensure that planning delivers development that is climate resilient. Tackling flood risk in collaboration with the Environment Agency and delivering sustainable urban drainage is identified as a key issue.

### 4.2.2 Overheating

**4.8** When applicants address the guidance in the Energy and Carbon Reduction section of this SPD to maximise solar gain and improve the fabric performance of buildings, it is essential this is considered alongside measures to reduce overheating. High indoor temperatures can have a detrimental impact on quality of life and excessive or prolonged high temperatures significantly affect the health and well-being of occupants. There are approximately 2,000 heat related deaths each year in the UK. In urban areas summer temperatures are predicted to rise by between 2 and 4 degrees by 2050.[21]

**4.9** The 'urban heat island effect' is a phenomenon whereby urban temperatures are higher than the surrounding rural areas due to heat being stored and 'trapped' within building structures. The result is urban centres that can be a lot warmer than the surrounding countryside, especially at night. According to the South East Climate Change Partnership the urban heat island currently adds up to a further 5-6°C to summer night temperatures and will intensify

21 UKGBC (2020) Policy play book: https://www.ukgbc.org/wp-content/uploads/2020/03/The-Policy-Playbook-v.1.5-March-2020.pdf

in the future. Consequently, overheating of the external environment needs also to be addressed and developers must have regard to the heat island effect on any urban development.[22]

4.10 Air conditioning is often used to cool buildings, particularly offices. However, this increases carbon emissions and is costly for consumers to purchase and maintain. Therefore other mitigation measures should be prioritised.

## Cooling hierarchy

4.11 To meet the requirements in Policy CC1 to minimise overheating, applicants are expected to follow the cooling hierarchy set out in Figure 5.


**Figure 5: The Cooling Hierarchy- adapted from Cambridge Sustainable Design and Construction SPD, 2020**

4.12 It is recommended that thermal modelling is used to understand the performance of a proposed new development, with buildings designed and built to meet CIBSE's (Chartered Institute of Building Service Engineers) latest overheating standards. As part of this, consideration should also be given to future climate scenarios, for example using CIBSE future weather data. Where officers have concerns about the potential for overheating, a planning condition may be used to secure overheating analysis, for example for a sample of units on a site.

## Passive Design

4.13 Whilst solar gain helps minimise energy use (see energy and carbon reduction) it is important it is controlled to prevent overheating. Different measures of solar control include considering the size, type and location of window openings and glazing, the use of shading devices (such as brise soleil[23]) and the use of green roofs and shading for shaping and evaporative cooling.

22 Climate Change Adaptation, Building Futures: https://www.hertfordshire.gov.uk/microsites/building-futures/building-futures.aspx

23 A device, such as a perforated screen or louvres, for shutting out direct or excessive sunlight

**Shading device at University of Cambridge Primary School. Source: University of Cambridge, Eddington, Cambridge**

4.14 Figure 6 shows how roof design and planting of vegetation can reduce solar glare, whilst still allowing in daylight and warmth from the sun. Building fabric measures (as detailed in the energy and carbon reduction section of this SPD) also help cooling. A well-insulated, airtight building prevents heat penetrating and minimises uncontrolled air permeability. Using materials with high thermal mass, stores heat in the day and dissipate it at night, usually via a ventilation system.

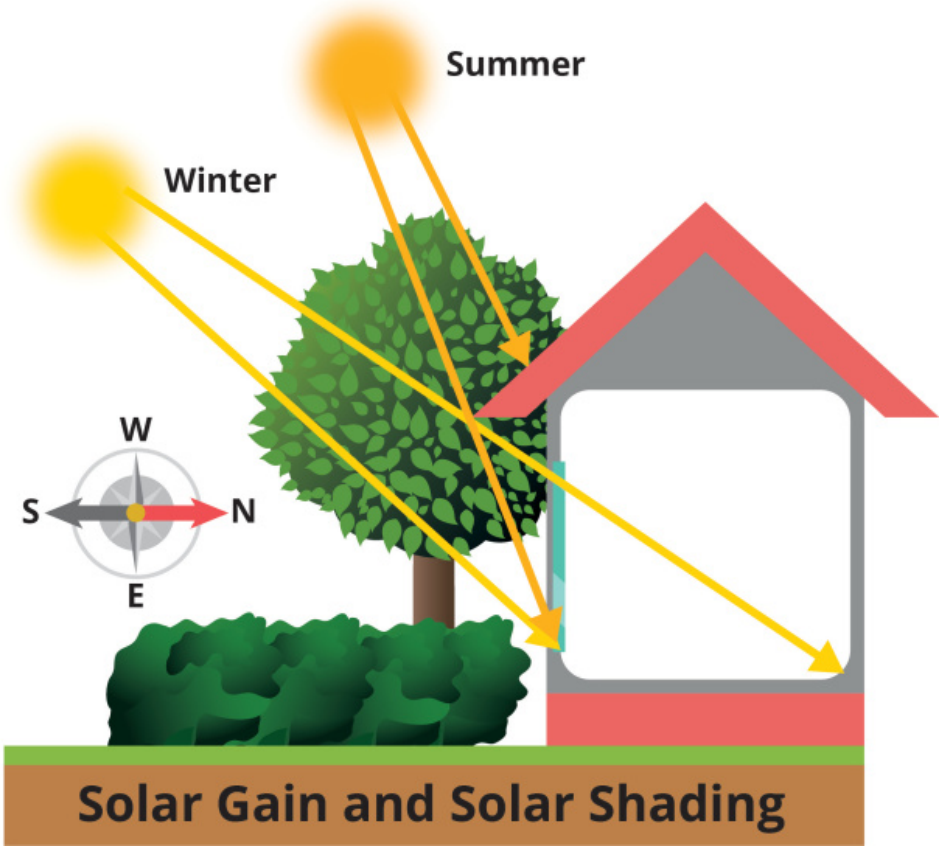



**Figure 6: Passive cooling from building design and landscaping**



## Passive/ natural cooling

4.15 The next stage in the hierarchy is using natural ventilation to circulate natural air around a building, without the use of a mechanical cooling system. It should be noted that there may be circumstances (such as proximity to noise or air pollution sources) where this is not suitable so the local context is important. Some of the different techniques that can be used include:

- Cross ventilation- Simple passive cooling with openable windows.
- Passive stack ventilation- Uses ducts to circulate air around the building. Brings cool air in and expels warm air from the top of the building.

4.16 Single aspect dwellings should be avoided for all schemes as effective passive ventilation can be difficult or impossible to achieve. Windows and/or ventilation panels should be designed to allow effective and secure ventilation. In winter when passive ventilation is not required vents can be closed.

## Mixed Mode Cooling

4.17 The third stage of the hierarchy encourages the use of local mechanical ventilation/cooling where required to supplement the above measures using (in order of preference): firstly low energy mechanical cooling (e.g. fan powered ventilation with/without evaporative cooling or ground coupled cooling); Secondly, air conditioning, which is not a preferred approach as these systems are energy intensive. This approach provides more control over the internal temperature.

### Mechanical ventilation/ cooling system

4.18 This approach involves using a whole building mechanical ventilation/ cooling system, such as using air conditioning throughout an office building. This approach should be the last resort and the lowest carbon systems should be used.

### Further guidance

4.19 For further detailed guidance on overheating see:

- Building Futures, Climate Change Adaptation Module. Available online at: https://www.hertfordshire.gov.uk/microsites/building-futures/building-futures.aspx
- Good Homes Alliance (2019). Tool and guidance for identifying and mitigating early stage overheating risks in new homes. Available online at: https://goodhomes.org.uk/overheating-in-new-homes
- CIBSE Guides (note there is a charge to access these documents for non-members):
    - CIBSE Guide A: Environmental Design (2015).



- CIBSE TM52: The Limits of Thermal Comfort: Avoiding Overheating in European Buildings (2013).
- CIBSE TM59: Design Methodology for the Assessment of Overheating Risk in Homes (2017).

### 4.2.3 Green Infrastructure

4.20 Multi-functional green infrastructure at various scales has an important role to play in enhancing environmental sustainability, as well as wider value in terms of place shaping and health and wellbeing. This section explains how it is essential to the district's resilience to climate change. In accordance with polices CC1 Climate Change Adaption, DES4 Design of Development and NE4 Green Infrastructure, applicants will need to demonstrate how green infrastructure has been used at different scales to address the impacts of climate change.

## Urban extension/ neighbourhood scale

4.21 Trees, woodlands, vegetation, landscape and water can provide a significant contribution to helping adapt to climate change. They can help to dissipate the impact of heavy rainfall, reduce urban temperatures, and provide shaded outdoor areas and streets to protect against the detrimental effects of sunlight. The preference will be to, where possible, use large canopy species that provide more benefits for climate adaptation. There will also be a need to use tree species that can themselves adapt to changing climate conditions particularly the higher temperatures and potential drought conditions in summer. It is essential that new provision complements existing green infrastructure. Protecting and enhancing existing green infrastructure is key, mature trees and woodlands should be retained and enhanced wherever possible. More detail is provided in the biodiversity section of this SPD. At a larger scale, landscape across large sites/ urban extension can help mitigate overheating. For example, in the Harlow and Gilston Garden Town, a landscape-led approach will help increase resilience to climate change in addition to creating a sense of character.[(24)]

## Buildings

4.22 As outlined in Figure 6 vegetation helps to reduce overheating in buildings by providing shading. Deciduous trees in particular are very beneficial. They allow sunlight to reach buildings during the cooler winter months and protect from sunlight (UV) and overheating during the warmer summer months. Species selection and siting should be carefully considered to maximise the ecosystem benefits of trees on a development site.

4.23 When combined with other measures, or integral, as part of sustainable urban drainage schemes, trees have a major role to play in both the development of green infrastructure and reduction of flood risk relating to new development, alongside other landscaping, such as green roofs.

## Green roof and walls

4.24 Where possible, applicants should integrate green roofs and walls into buildings as they have many benefits that enhance resilience to climate change:

- Reduce surface runoff, which is likely to increase due to increases in extreme rainfall events.
- Green roofs have been shown to have a significant effect in cooling buildings, particularly areas directly under them because they have substantial thermal mass so can provide moderate insulation. They can cool internal temperatures by 2°C. In addition, green roofs work well with solar panels and can increase the panel's efficiency by regulating temperature. As a green roof is more able to maintain a more constant temperature around the panels than a traditional flat roof, their combined use can help to maximise the efficiency and power output of solar panels. Where solar panels are proposed, biosolar roofs should be incorporated under and in-between the panels. An array layout will be required incorporating a minimum of 0.75m between rows of panels for access and to ensure establishment of vegetation.

4.25 Green roofs also have wider benefits; enhancing biodiversity and reducing air pollution. More information about these functions is set out in the biodiversity and pollution sections of this SPD. It is important to consider the maintenance requirements when proposing to use a green wall or roof. As set out in the biodiversity section of this SPD, some types require less management.

**An example of an extensive green roof, which requires little management**

### Further guidance

4.26 For further guidance on Green Infrastructure see:





- East Herts Green Infrastructure Plan: https://www.eastherts.gov.uk/evidencebase
- Planning for Green and Prosperous Places. TCPA (January 2018). Available online at: https://www.tcpa.org.uk

### 4.2.4 Sustainable Urban Drainage

Sustainable urban drainage (SuDS) is an approach to managing surface water run-off which seeks to mimic natural drainage systems and retain water on or near the site as opposed to traditional drainage approaches. In addition to flood reduction benefits it can also help manage pollution and provide landscape and biodiversity benefits.

**4.27** Climate change will increase the risk of flooding due to wetter winters and more intense summer rainfall. Applicants should take account of the East Herts Strategic Flood Risk Assessment, which has considered the changing weather patterns associated with climate change at a strategic scale.

**4.28** In accordance with Policy WAT 5 Sustainable Drainage, applicants should use Sustainable urban drainage (SUDs) to manage surface water on site and prioritise the most sustainable forms of drainage systems. Further advice on SUDs should be sought from Hertfordshire County Council as the Lead Local Flood Authority (LLFA). The NPPF requires all major developments to include SUDs (paragraph 165). The LLFA must be consulted so they can assess the suitability of surface water drainage arrangements to ensure the development will not increase the risk of flooding elsewhere. Guidance for developers on the requirements for SUDs in East Herts is available on the County Council website as detailed below. Pre-app discussions with the County Council (and the Environment Agency if River flooding is an issue) are encouraged to ensure any drainage and flooding issues are addressed early in the design process.

**SUDs incorporated into new development in north-west Cambridge. Source: University of Cambridge, Eddington**

### Further Guidance

Local Flood Risk Management Strategy (2019) Hertfordshire County Council

Guidance for developers, Hertfordshire County Council

Climate Change Allowance note (2016) Hertfordshire County Council

https://www.hertfordshire.gov.uk

## 4.3 Submission Requirements

**4.29** To ensure compliance with the relevant District Plan policies all new residential and non-residential development must submit a completed Sustainability Checklist and a Sustainable construction, Energy and Water Statement (ScEW) to demonstrate:

- All relevant checklist criteria below relating to climate change adaption have been considered and explained.Any overheating assessments and Green Infrastructure plans and proposals are explained.
- All major development (10 dwellings and over 1000sqm of non-residential floorspace) must submit a Flood Risk Assessment, which includes details of SUDs. The Council will then consult Hertfordshire County Council on proposals.[25]

25 The Environment Agency should also be consulted if there is potential for flooding from a main river.



## 4.4 Checklist

**4.30** Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in Table 4 below. More detail about the approach should be included in the Sustainable construction, Energy and Water Statement (ScEW).

| **Climate Change Adaption** | | |
|---|---|---|
| **Ref** | **Checklist criteria** | **Summary of approach to address the criteria** |
| CA. 1 | How have the site layout and buildings been designed to mitigate overheating, giving priority to measures in line with the cooling hierarchy? | |
| CA.2 | Has an overheating assessment been undertaken? | |
| CA.3 | What Green Infrastructure is proposed? | |
| CA.4 | How have existing landscape features such as trees/woodlands and hedgerows been protected and incorporated within a Green Infrastructure network? | |
| CA.5 | Have green roofs or walls been included? Please explain your answer. | |
| CA.6 | Have measures been included to address surface water runoff? | |
| CA.7 | If the application is major development, have details of SUDs been submitted? | |

**Table 4: Climate Change Adaptation Checklist**


4.31 The checklist needs to be submitted with applications for all new development. A combined checklist is included in Appendix A. The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.





# 5 Water Efficiency

## 5.1 Policy Context

5.1 Abstracting sufficient water to meet human consumption is likely to become increasingly difficult. Climate change, leading to hotter, drier summers combined with population growth is putting pressure on water availability.[26] The Government is committed to reducing water consumption over the next 25 years. [27]

### National Policy

5.2 Planning has a role to play in improving the water efficiency of new developments. The NPPF requires plans to take into account the implications for water supply when seeking to address the impacts of climate change. Following the technical standards review in 2015, technical standards relating to water efficiency have been incorporated into building regulations, In water stressed areas such as East Herts, compliance with the water consumption standard of 110 litres per person per day in new homes can be applied. This level is in line with the optional water efficiency requirement contained within Part G of Building Regulations and is supported by the Environment Agency.

### Local Policy

**District Plan policies**

- Policy WAT4 Efficient Use of Water Resources

**Type of Development**

- Residential and non-residential development
- Residential target of 110 litres per person per day

**Submissions Requirements**

- Sustainability Checklist
- Sustainable Construction, Water and Energy Statement

**Link to Sustainability checklist**

- Wa.1, Wa.2, Wa.3

26 The State of the Environment; Water Resources Report (2018): https://www.gov.uk/government/publications/state-of-the-environment

27 25 Year Environment Plan (2018): https://www.gov.uk/government/publications/25-year-environment-plan



5.3 **Policy WAT4** Efficient use of Water Resources requires development to minimise the use of mains water by incorporating water saving measures and equipment; grey water recycling and natural filtration measures and designing new residential development to meet a target of 110 litres or less per head per day.

## 5.2 Topic Guidance

### 5.2.1 Water efficiency in East Herts

5.4 Between 2007 and 2012 the average resident of East Herts consumed 160 litres per person/day of water, which is above the national average. Given that the Environment Agency has identified this area as being particularly water stressed, the high consumption is a key concern, particularly in the context of climate change. One of the water supply companies to the area, Affinity Water, estimates that climate change is likely to reduce the supply of water in its central area by 39 million litres a day by 2080. In this context, there is likely to be less water available and potentially negative impacts on the water environment, as low river flows can impact on ecology. Therefore, there is a greater need for demand management and water efficiency in the area. As a result, designing new developments for optimal sustainable water consumption will become even more important.

### 5.2.2 Compliance with residential target

5.5 All new residential development should comply with the water consumption target in Policy WAT4 of 110 litres or less per head per day. The Sustainable Construction, Water and Energy Statement should indicate what measures have been used to comply with the target. Water efficient measures (such as meters) and appliances can often be used to meet the target (see submission requirements section).

5.6 Building regulations also allow for a fittings approach to be used to comply with the target. Table 5 replicates the table from Part G of the Building Regulations 2010 (2015 Edition with 2016 amendments), which sets out the values fittings must not exceed to meet the target. Table 5 also includes advanced fitting standards set out in the Housing Quality Mark accreditation as the Council supports the use of good practice.

| Water fitting | Building regs Part G2, optimal requirement- max consumption | Advanced consumption, Housing Quality Mark Standard |
|---|---|---|
| WCs | 4/2.6 litres dual flush | 4/2 litres dual flush (max 3 litres effective flushing vol) |
| Showers | 8L/min | 6L/min |



| | | |
|---|---|---|
| Baths | 170 litres | 170 litres |
| Basin taps | 5L/min | 5L/m |
| Kitchen sink taps | 6L/min | 6L/min |
| Dishwashers | 1.25l/place setting | 1.25l/place setting |
| Washing machines | 8.17L/ kilogram | 8.17/kiologram |

**Table 5: Water Fitting Standards**

5.7 In addition to the use of water efficient appliances, water recycling systems (see below) could also be used to reduce mains water consumption. The Council will support good practice design and construction, which exceeds policy requirements and achieves less than 110 litres per head per day.

### 5.2.3 Non-residential development

5.8 Whilst there is no consumption target, Policy WAT4 also requires non-residential development to minimise the use of mains water. The use of water saving measures and equipment, as outlined in table 5, is expected. Rainwater recycling systems (see below) should be incorporated, where possible. Sustainable construction standards, which demonstrate water efficiency are encouraged and are a useful tool for demonstrating the sustainability credentials of a building and delivering good practice. For example, BREEAM credits can be gained for particular improvements on building regulations.

**Fact box: Use of BREEAM: Compliance with WAT01**

2 credits for WAT01: demonstrates a 25% improvement on building regulation requirements- can be achieved by using water efficient fittings.

All credits for WAT01: demonstrates a 55% improvement on building regulation requirements- the use of water harvesting or recycling technologies will be required, alongside other water efficiency measures.

**Further guidance**

5.9 For further guidance on the BREEAM Assessment please see https://www.breeam.com/

### 5.2.4 Rainwater and Greywater Recycling

**5.10** Typically, less than 20% of domestic water is consumed for drinking and food preparation. Flushing toilets, washing machines and outdoor use account for more than half of domestic water consumption. This wastes energy and resources that is consumed making this water potable. Correctly collected and stored, rainwater can meet all these requirements without further treatment. Re-using grey water (the waste water from baths, showers and washbasins) can save up to 18,000 litres of water a year for each person, or a third of daily household water use. The Sustainable Construction, Energy and Water Statement should include consideration of the following techniques:

- Rainwater Harvesting Techniques – Where possible, harvested rainwater should be substituted for mains water. It can be used for flushing toilets (unless harvested from a green roof), watering plants/ gardens, topping up garden ponds and wetland habitats, and for general cleaning tasks such as car washing. In the simplest form, water butts and rainwater collection tanks can be used to capture rain for reuse in a low-cost way. However, more complex rainwater harvesting systems should be connected to the mains supply to ensure that water is always available, even at times of low rainfall. Where this is not possible, the Council recommend futureproofing development by providing 'stage 1 fit' pipework for rainwater harvesting so that residents can purchase their own rainwater harvesting systems without incurring the significant expense of an interior retrofit. SUDS can also be integrated with rain-water harvesting schemes and can be designed to provide water attenuation.
- Grey water recycling – Water that has already been used in washbasins, showers and baths can be filtered using sand or SUDs (i.e. reed filter) and disinfected before being used again in toilet flushing and other non-potable activities (e.g. watering the garden or washing the car).

**5.11** Rainwater and grey water harvesting can be used for both residential and non-residential buildings and must be built in accordance with the relevant British Standards.[(28)]

**An example of a rainwater harvesting tank**

**Further guidance**

- Building Futures Water Modules:

28 BS 8525-1:2010 Greywater systems. Code of practice



https://www.hertfordshire.gov.uk/microsites/building-futures/building-futures.aspx

## 5.3 Submission Requirements

**5.12** To ensure compliance with the relevant District Plan policies all new residential and non-residential development must submit a completed Sustainability Checklist and a Sustainable construction, Energy and Water Statement (ScEW), which demonstrates:

- All relevant checklist criteria below relating to water efficiency have been considered and explained.
- All new residential development demonstrates compliance with the water consumption target in Policy WAT4. This includes submitting assessments of modelled residential consumption using the Government's Water Efficiency Calculator for New Dwellings[(29)] or the Fittings Approach (replicated in Table 1 above) set out in Part G of the Building Regulations 2010 (2015 Edition with 2016 amendments) or successor documents.

## 5.4 Checklist

**5.13** Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in Table 6 below. More detail about the approach should be included in the Sustainable Construction, Energy and Water (ScEW) Statement.

| **Water Efficiency** | | |
|---|---|---|
| **Ref** | **Checklist criteria** | **Summary of approach to address the criteria** |
| Wa. 1 | For new residential proposals, have you demonstrated compliance with the target for mains water consumption to be 110 litres or less per heard per day in the Sustainable construction, Energy and Water Statement? | |
| Wa.2 | For non-residential development, have measures been taken to | |

29 Appendix A, Part G: https://www.gov.uk/building-regulations-approval





| | | |
|---|---|---|
| | reduce water consumption in the proposed development? | |
| Wa.3 | Have water recycling systems been considered and incorporated? Please explain your approach. | |

**Table 6: Water Efficiency Checklist Adaptation Checklist**

**5.14** The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.



# 6 Pollution

## 6.1 Air Quality

### 6.1.1 Policy Context

6.1 The impact of development on air quality is a material consideration and must be regarded at all stages in the planning process. The planning system plays an active role in managing local air quality when considering the impact of new development and finding sustainable solutions.

### National Policy

6.2 The NPPF (2019) states that planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing developments from contributing to, or being put at unacceptable risk by unacceptable levels of soil, air water or noise pollution. Where possible developments should improve environmental conditions.[30]

6.3 The NPPF also emphasises that planning policies and decisions should ensure that development is appropriate for its location with consideration of the cumulative impacts of pollution on health, living conditions and the natural environment. As such mitigation measures will be location specific and proportionate to the likely impact of the development. As outlined in paragraph 181 developers must work with the local authority to ensure that unacceptable risks are prevented and adhere to the following:

‘ Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.’

6.4 In addition, NPPF paragraphs 102 and 105 recognise the impact of traffic on air quality and health and the benefits of sustainable transport modes.

30 Para 102 (e)



6.5 The government has also set out its proposal for tackling air pollution in the UK in the Clean Air Strategy 2019.[31] It promises new legislation with a stronger framework for tacking air pollution. The UK has adopted stringent legally binding targets to cut emissions by 2020 and 2030 with the goal to reduce the harm to human health from air pollution by half.

6.6 The strategy sets goals for two key relevant issues. It sets goals relating to the emissions from the home, in particular the impact of solid fuel appliances and the consequent personal exposure to pollutants in the home. It also sets goals to reduce emissions from transport supporting a move to lower emission road vehicle and more active forms of travel.

## Local Policy

**District Plan policies**

- Policy EQ4
- Policy CC1
- Policy TRA1
- Policy DES4

**Type of Development**

- Residential and Non-residential development

**Submissions Requirements**

- Sustainability Checklist
- Air Quality Impact Assessment
- Air Quality Neutral Assessment

**Link to Sustainability checklist**

- AQ.1, AQ.2, AQ.3, AQ.4, AQ.5, AQ.6, AQ.7

6.7 District Plan **Policy EQ4** requires that development should include measures to minimise air quality impact at the design stage and should incorporate best practice in the design, construction and operation of all developments. Where development (on its own or cumulatively) will have a negative impact on local air quality during either construction or operation, mitigation measures will be sought that will remove overriding impacts, such as an air quality neutral or negative development. Evidence of mitigation measures will be required upfront. Where on-site mitigation is not sufficient, appropriate off-site mitigation measures may be required. Where adequate mitigation cannot be provided, development will not normally be permitted.

31 https://www.gov.uk/government/publications/clean-air-strategy-2019



6.8 Developments must not:

- lead to a breach or worsening of a breach of UK or EU limit values;
- lead to a breach or worsening of a breach of an Air Quality objective or cause the declaration of an Air Quality Management Area or;
- prejudice the implementation of any Air Quality Action Plan or local air quality strategy

6.9 The Council's overarching aim for developments is to be 'air quality neutral' in operation, not to lead to further deterioration of existing poor air quality, and, where possible, to improve local air quality ('air quality positive') through additional measures on and off site.

6.10 Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution. Development must not lead to the designation of a new Air Quality Management Area (AQMA) or worsen pollutant levels within an AQMA. For this reason mitigation must achieve an air quality natural or positive status.

6.11 The Local Transport Plan (2018)[(32)] highlights the role of transport as a major contributor to air pollution in the county and its consequent impact on human health. It states that transport and growth presents a threat to the local environment and that this threat must be understood and minimised. The diesel car is highlighted as the biggest contributor to overall pollution. Both reducing car use and supporting new fuel and energy technologies are recommended as a way to help improve air quality at the point of use. The importance of tackling air quality in Hertfordshire is also outlined in Hertfordshire County Council's Air Quality Strategy 2019.[(33)]

## 6.1.2 Topic Guidance

### 6.1.2.1 Air Quality in East Herts

6.12 Pollution to air can arise from many sources and activities, including traffic and transport, industrial processes, domestic and commercial premises, energy generation and construction sites. This section relates to air pollution from all potential sources, in any potential form and includes temporary dust pollution from construction sites.

6.13 In East Herts, the main source of air pollution is road traffic. This is influenced by a number of factors:

- The District's population;

32 Hertfordshire County Council (2018) Local Transport Plan: https://www.hertfordshire.gov.uk/services/recycling-waste-and-environment/planning-in-hertfordshire/transport-planning/local-transport-plan.aspx

33 https://www.hertfordshire.gov.uk/services/recycling-waste-and-environment/planning-in-hertfordshire/transport-planning/transport-policy-and-supporting-strategies.aspx



- The distribution of that population, commercial, community and residential centres;
- The road network and its capacity;
- Neighbouring population centres and notable destinations.

6.14 The main pollutants of concern associated with motor vehicle emissions are nitrogen oxides ($NO_x$), in particular nitrogen dioxide ($NO_2$), and particulate matter ($PM_{10}$ & $PM_{2.5}$). They are generated by the combustion of diesel and petrol fuels within vehicle engines and are released to the atmosphere through vehicle exhaust. Brake pads and tyre friction also release particulates. East Herts Council has a statutory duty to review air quality in its area and focus its resources on the areas where busy roads pass through residential areas as required by Defra.

**pollution from exhaust fumes**

6.15 Three Air Quality Management Areas (AQMAs) have been declared in East Herts. These are areas within which pollutant levels exceed the national objective for $NO_2$. Within these areas, greater weight needs to be given to the consideration to the impact of development on air quality. The maps of the AQMAs in East Herts can be found on the Council's website.

6.16 There is no safe level of pollution.[(34)] Exposure to air pollution has been found to have a close relation to cardiovascular and respiratory diseases. Public Health England estimates that 26,000-36,000 deaths are attributable to human made air pollution in the UK every year.[(35)] The East Herts Health and Wellbeing strategy 2019-2023[(36)] sets out a priority to 'create healthy places and sustainable communities'. Good spatial planning can reduce exposure to air pollution and provide wellbeing benefits ensuring East Herts is a healthy and sustainable place to live and work.

**Aims**

6.17 The overall aims set out in this section:

34 COMEAP (2018) Associations of long-term average concentrations of nitrogen dioxide with mortality: https://www.gov.uk/government/collections/comeap-reports

35 PHE (2019) Review of interventions to improve outdoor air quality and public health: https://www.gov.uk/government/publications/improving-outdoor-air-quality-and-health-review-of-interventions

36 https://www.eastherts.gov.uk/community-wellbeing/community-wellbeing-partnerships



- To achieve as a minimum air quality neutral status
- To aim for air quality positive status
- To follow the minimum standards required for all new development
- To follow the hierarchy of design, mitigate, offset
- To ensure the correct air quality assessment is provided with any application
- To ultimately ensure new developments do not lead to a worsening of local air quality

### 6.1.2.2 Minimum Standards

6.18 This section sets out minimum standards that apply to all new development in East Herts. The recommended minimum standards are applicable to all development. District Plan Policy EQ4 states that all development should aim to have as little negative environmental impact as possible, taking into account the cumulative effects of local development and to achieve air quality neutral status. Delivering sustainable development should be a key theme from the outset and be demonstrated wherever possible.

6.19 It is expected that planning applications will comply with these recommended minimum standards to ensure development is in line with national and local policy.

- All gas-fired boilers must have low NOx emissions and meet a minimum standard of 40mgNO×/kWh.[37]
- All gas-fired CHP plants are to meet a minimum emission standard of:
  - Spark ignition engine: less than 250 mgNO×/Nm³
  - Compression ignition engine: less than 400 mgNO×/Nm³
  - Gas turbine: less than 50 mgNO×/Nm³[38]

- New development must be designed to minimise public exposure to pollution sources, for example, by locating habitable rooms away from busy roads.
- Sensitive development (such as schools, hospitals and play grounds) must be sited at least 100m away from busy roads.
- New development must not lead to the creation of a new street canyon,[39] or a building configuration that inhibits effective pollution dispersion.

37 IAQM (2017) Land-Use Planning & Development Control: Planning For Air Quality: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

38 IAQM (2017) Land-Use Planning & Development Control: Planning For Air Quality. Available online at: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

39 A street canyon is defined as a relatively narrow street with buildings on both sides where the height of the buildings is general greater than the width of the road



- Green infrastructure must be integrated into the design from the beginning, for example through the use of appropriate tree planting, green roofs and walls and soft landscaping.
- Comply with the Electric Vehicle specifications outlined in the Council's emerging Vehicle Parking Supplementary Planning Document.

6.20 Applications will need to be accompanied by additional submissions as set out in the submission requirement of this chapter. All development will need to submit the air quality checklist in Appendix A. Development above the minor classification will need to submit an Air Quality Impact Assessment,[(40)] which must include an Air Quality Neutral Assessment. In addition to this, any development in or near to an AQMA must also submit an Air Quality Neutral Assessment. See the submission requirement section below and Figure 9 for further details.

### 6.1.2.3 Hierarchy

6.21 The air quality hierarchy addresses air quality in the planning process, with a focus on the design stage, providing clarity to developers and defining sustainability in air quality terms. As outlined in Figure 7 there is a hierarchy for the approach to air quality consideration that should be followed by all developments.


**Figure 7: Hierarchical process for air quality consideration in development**

6.22 Compliance with the recommended minimum standards will ensure that development is in line with national and local policy and guidance. The principles outlined in the design section will provide ways in which to reduce human exposure and limit emissions from the outset of the development. Early on in the planning process it may be necessary to redesign if the original plans are not deemed sufficient by the local planning authority. Where redesign has not provided sufficient air quality consideration, developers must implement mitigation in order to reduce the impact of the development. As a last resort, developers may have to offset provide planning contributions in the form of Section 106 contributions. East Herts may refuse the application if adequate measures have not been applied. To help navigate the hierarchy, Figure 8 details what is covered in each of the sections.

40 The latest guidance should be followed, at present this is the IAQM's Planning for Air Quality (2017) and the Defra's Local Air Quality Management; Technical Guidance TG16 (2018).

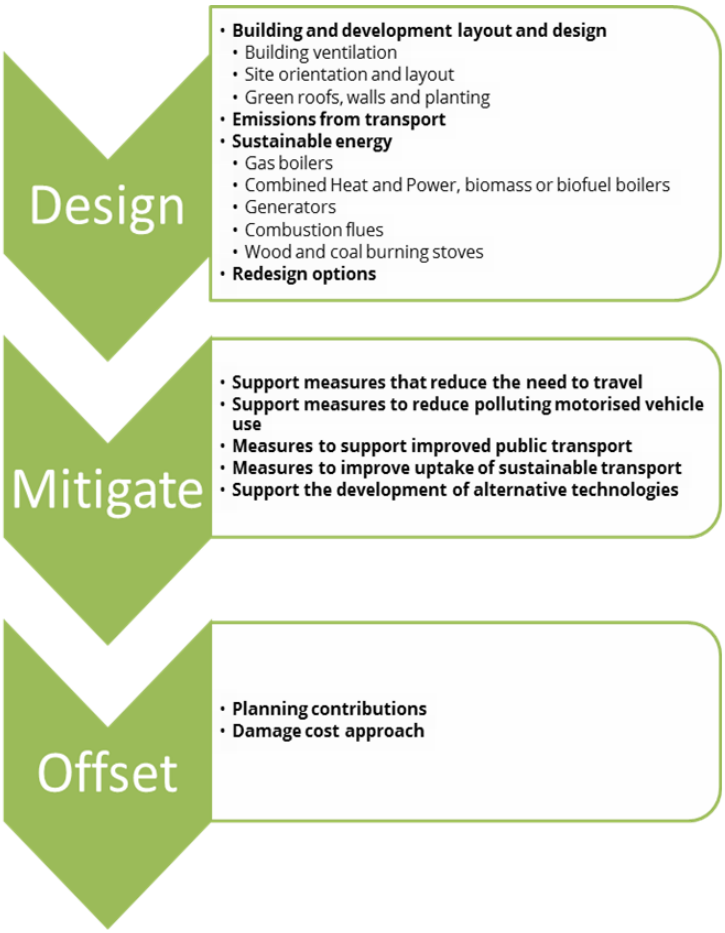



**Figure 8. Design, mitigate, and offset content summary**

### 6.1.2.4 Design

**6.23** It is important that good design principles are incorporated from the offset in order to avoid costly and problematic alterations further down the line. Careful consideration to building design and layout can assist in minimising exposure to future occupants.

**6.24** The design principles outlined in this section are applicable to all development and can be implemented regardless of the outcome of any Air Quality Impact Assessment. These principles should be presented with the planning application to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Adopting good design at an early stage has the potential to reduce the need to mitigate the impact of development.

**6.25** All developments should adopt sustainable design principles that reduce emissions, minimise human exposure to pollutants, facilitate a reduction in vehicle movements and contribute to better air quality management. Minimising pollution through design also applies to reducing emissions associated with building operation. Basic good design should result in no



additional exposure to increased air pollution for existing or future occupants. Best practice design should be implemented in all development and aim to achieve at least air quality neutral status as detailed in Policy EQ4.

## Building and development layout and design

6.26 Developers should minimise exposure through appropriate building and open space location and design. Suitable layout and building design can increase distances between sources of air pollution and human receptors, thereby reducing the pollution exposure of building occupants and outside space users. Minimising exposure can be achieved through:

- building ventilation
- site layout
- green roofs, walls and planting

### Building ventilation

6.27 The impact of outdoor air pollution on indoor air quality in new developments should be taken into account at the earliest stages of building design. This includes:

- Ensuring ventilation inlets and the location of opening windows are on higher floors away from sources of air pollution at the ground level, and away from stationary sources such as combustion plant.
- Fitting air conditioning systems with filters which filter particulates and $NO_2$. Filters should be maintained following installation.
- Considering mechanical ventilation to overcome potential exposure to poor air quality. This may involve sealed windows/triple glazing with trickle vents and a forced ventilation system.

### Site orientation and layout

6.28 The location of outdoor space in relation to sources of air pollution (such as flues and busy roads) should be considered. The distance between sources of pollution and human receptors must be maximised. This is particularly relevant where developments include sensitive uses such as schools, medical centres and residential units.

6.29 Site layout should be designed appropriately, considering the following examples:

- Exposure should be minimised through appropriate positioning and orientation of the space away from sources of air pollution. New developments must not create a new ‘street canyon’, or a building configuration that inhibits effective pollution dispersion.
- When included in development, the public realm should be considered. The site layout should encourage low pollution routes through the



development where people can spend more time away from busy roads where possible.

- Recreational, seating and exercise areas should be positioned away from or screened from sources of pollution.

**Use of cycle lanes**

## Green roofs, walls and planting

**6.30** Greening can help trap fine particulates (PM10 and PM2.5) as well as increase biodiversity. While there is conflicting evidence as to whether green infrastructure can help reduce concentrations of $NO_x$, it is acknowledged that certain types of shrubs and trees are effective for trapping particles. This has been supported by Public Health England in their review of interventions to improve outdoor air quality and public health, stating that measures such as green infrastructure provision should be considered at the planning stage.[41]

**6.31** Hedges, green walls and frameworks for climbing plants may offer some protection between a pollution source such as a road and dwellings. Development above the scale of a single household is expected to utilise green walls and hedging as set out in Policy CC1. See the Biodiversity and Energy and Carbon Reduction sections of this SPD for further guidance, including details about the types of plants that may be beneficial.

**An example of a green wall**

41 Public Health England (2019) Review of interventions to improve outdoor air quality and public health: https://www.gov.uk/government/publications/improving-outdoor-air-quality-and-health-review-of-interventions



### Emissions from transport

6.32 East Herts promotes infrastructure for modes of transport with low impact on air quality through the Local Plan, policies TRA1 and TRA3 apply in particular. Developments should seek to facilitate a reduction in vehicle movements and prioritise modes of transport other than the car to encourage green travel patterns to aid air quality. The layout of new development and the design of the street environment can directly influence activity levels. Development should be designed to promote active travel where possible in order to reduce the impact on the environment and improve the health of occupiers and visitors.

6.33 Prioritising sustainable transport such as cycling and walking improves local air quality and encourages healthy communities. Therefore, strong emphasis will be placed on seeking the provision of new bus, cycle and pedestrian transport routes and networks. Developers are also encouraged to extend and strengthen existing provision, including through supporting community-led transport schemes. More detail on these issues is provided in the Sustainable Transport section of this SPD.

6.34 Development should incorporate the following principles where possible:

- Provision of cycling facilities such as secure cycle storage and cycle paths;
- Car clubs (prioritising the use of electric vehicles);
- Sufficient provision of infrastructure for low emission vehicles;
- Encourage sustainable means of transport (public, cycling and walking) via subsidised or free-ticketing;
- Improved infrastructure and layouts to improve accessibility and safety.

6.35 Traffic management schemes may also be utilised to minimise exposure to emissions from traffic, where appropriate, for example:

- Traffic restrictions in areas of high exposure to poor air quality;
- Defined ‘engine off’ areas, such as bus stands, taxi ranks and tourist coach parking and outside of schools;
- Soothing the flow of traffic by reducing congestion, stop-start traffic and traffic queues and the consequent emission ‘spikes’;
- Design that separates areas of the public realm from areas of poor air quality such as busy roads;
- Provide alternative ‘quiet’ cycle and pedestrian routes away from main roads.

**An example of shared cycle facilities**

## Sustainable energy

**6.36** New development provides an opportunity to reduce and improve overall emissions in the area. This can be done by incorporating new, cleaner technologies from the outset. The adoption of technologies to generate heat and energy from efficient and/or renewable sources, such as solar water heating or air and ground source heat pumps in major developments can help minimise polluting emissions.

**6.37** Building design should prioritise energy efficiency in order to reduce the need and size of heating plants. This will overall minimise the buildings impact on air quality. The use of low and zero emission technology is encouraged to fulfil the remaining needs as required by Policy DES4.

**6.38** Giving thought to the wider environmental impacts of the system early on and ensuring the system is optimised for the proposed use not only helps reduce issues later on, but also helps minimise costs. The retrofitting of abatement equipment at a late stage is likely to be far more costly than giving time and consideration at the planning stage. More details on these issues are provided in the Energy and Carbon Reduction section of this SPD.

### Gas boilers

**6.39** Where is it is possible, the building design should be so that there is no need for combustion plant. If gas boilers are installed in developments they must be low $NO_x$ boilers, this includes where installation is part of a refurbishment. As a minimum standard, boilers must be less than 40mg$NO_x$/kWh. The use of ultra-low NOx technology (less than 1540mg$NO_x$/kWh) is encouraged.[(42)]

42 Applicants should note that the Government has proposed that gas boilers will not be fitted in new development from 2025.



### Combined Heat and Power, biomass or biofuel boilers

**6.40** CHP, biomass and biofuel boilers can have benefits in terms of carbon emissions (as detailed in the Energy and Carbon Reduction section). However, In common with any combustion technology, CHP systems will have an impact on air quality. The feasibility of Combined Heat and Power (CHP) systems should be evaluated.

**6.41** The impact on air quality will depend upon the emission performance of the CHP plant, dispersion of emissions from the plant and the emissions performance of any existing on-site plant that the CHP system replaces. All development should try to minimise the use and emissions from combustion plant within the building.

**6.42** The use of biomass combustion is unlikely to be supported within an AQMA or where it may impact on residents unless it can be clearly demonstrated that there will be no adverse impact on air quality. Consideration will also need to be given to the responsible sourcing of biomass fuel and of the transportation impacts of fuel delivery.

**6.43** Where CHP, biomass or biofuel boilers are proposed, emissions must be evaluated as part of a detailed Air Quality Impact Assessment. The appliance will be required to meet the following minimum standards:

- Spark ignition engine: less than 250 mgNOx/Nm³;
- Compression ignition engine: less than 400 mgNOx/Nm³;
- Gas turbine: less than 50 mgNOx/Nm³.[43]

**6.44** CHPs and biomass boilers will also be required to meet high standards of air pollution control with emphasis on:

- Boiler design and operation;
- Pollution abatement equipment;
- The servicing and maintenance regime;
- Fuel quality, storage and delivery;
- Exhaust stack height.

**6.45** The developer or managing agents must ensure that any energy plant installed in a development has arrangements in place to keep it operated in accordance with manufacturer's instructions throughout its functional life.

**6.46** A guidance note for developers on CHP systems can be found in Appendix D.

43 IAQM (2017) Land-Use Planning & Development Control: Planning For Air Quality: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf



### Generators

**6.47** Diesel generators have high emissions of $NO_x$ and $PM_{10}$ and their use is strongly discouraged. A secondary electrical power supply should be sourced. Where this cannot be assured, alternative technology generators should be sourced for the building where possible (for example, battery reserve or gas generators). For construction sites, a temporary building supply should be secured prior to the commencement of works in order to avoid the sure of diesel generators on site. Where there diesel fuelled generators have to be used, they should meet the latest Euro standard and their use limited to emergency situations.

### Combustion flues

**6.48** All combustion plant must terminate as a minimum 1 metre above the highest point of the building of which the plant serves, or as agreed with the planning authority. The layout of the site should have regard of this requirement, considering the needs of the outside amenity space associated with the development and the surrounding area.

**6.49** A Clean Air Act 1993 Chimney height approval needs to be sought where either of the following is met:

- a furnace is burning liquid or gaseous matter at a rate of 366.4 kilowatts or more an hour;
- a furnace is burning pulverised fuel or any solid matter at a rate of more than 45.4 kilograms or more an hour.[44]

**6.50** Flues associated with this plant should therefore be at the recommended heights above nearby buildings and installed at least 3m above any general access areas and should meet discharge velocities above the recommended minimum.[45]

44 DEFRA (2018) Local Air Quality Management Technical Guidance (TG16): https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf

45 Environmental Protection (2009) Biomass and Air Quality Guidance for Local Authorities: https://www.environmental-protection.org.uk/wp-content/uploads/2013/07/Biomass_and_Air_Quality_Guidance.pdf

Pullution caused by combustion fumes

### Wood and coal burning stoves

6.51 New development should ensure that air quality is considered when installing domestic burners. All stoves need to be Defra approved as a minimum. Stoves should comply with the 'EcoDesign Ready' specifications introduced by The Stove Industry Alliance. A list of compliant stoves can be found on the HETAS website.[46]

6.52 Applicants should note the Government's goals in the 2019 Clean Air Strategy relating to emissions in the home. In particular, the following government goals should be taken into account:

- Legislate to prohibit the sale of the most polluting fuels;[47]
- Ensure that only the cleanest stoves are available for sale by 2022;
- Work with consumer groups, health organisations and industry to improve awareness of non-methane volatile organic compounds (NMVOC) build-up in the home, and the importance of effective ventilation to reduce exposure;
- Consult on changes to Building Regulations standards for ventilation in homes and other buildings, to help reduce the harmful build-up of indoor air pollutants.

## Redesign Options

6.53 Where redesign is necessary developers should refer to the concepts outlined in this section to identify opportunities for optimising the development to minimise emissions. The design concepts previously mentioned in this section should be applied. Examples of potential further adjustments to the design of a proposed development that may result in a reduced impact on air quality are summarised below:

- Reduced car parking provision;
- Consider Home Zones;
- Avoid installation of balconies (particularly at ground and first floor levels);

46 HETAS, Ecodesign Compliant Stoves & Boilers. Website: https://www.hetas.co.uk/ecodesign-compliant-stoves/

47 From February 2021 the government has proposed a mandatory certification scheme demonstrating that wood sold in volumes under 2m ³ is dry (less than 20% moisture) and a ban on the sale of all bagged traditional house coal.



- Consider placing habitable rooms away from the façade fronting the pollution source e.g. in flats place stairwells and corridors in these locations instead;
- Locate non-residential buildings fronting the pollution source where the development is a mixed use site;
- Consider the use of non-opening front windows in worst affected locations.

6.54 This is not an exhaustive list and further options may be implemented.

### 6.1.2.5 Mitigation

6.55 Where redesign cannot reasonably reduce the significance of the air quality issue, it may be acceptable to include measures to mitigate the air quality issues that arise. These measures should not be considered as an alternative to fundamental redesign and should be considered alongside additional measures to offset the air quality impact in order to be air quality neutral.

6.56 Many developments will require a mix of design and mitigation measures that have been tailored to be appropriate for the site. Each approach will be location specific, taking into account local air quality issues and assessing the proportional impact of the development. The design and mitigation package should be presented with the planning application.

6.57 Examples of mitigation include:

**Support measures that reduce the need to travel**

- Alternative work practices – flexitime, teleworking, homeworking, videoconferencing;
- Local sourcing of staff, products and raw materials;
- Development and use of hub distribution centres employing low emission deliveries;
- Provision of discounted on-site shopping, eating, child-care, banking facilities.

**Support measures to reduce polluting motorised vehicle use**

- Development of car clubs and car sharing with financial incentives and; promotion;
- Provision of sufficient electric vehicle charging;
- Provision of dedicated low emission shuttle buses / managed pick-up and drop-off;
- Reduced emissions, low emission fuels and technologies for fleet operations;
- Vehicle maintenance, driver training and emissions testing regimes for fleets of cars, lorries or buses associated with the development;

- Restrict vehicle speeds within the development;
- Sponsor public information and monitoring campaigns.

**Measures to support improved public transport**

- Provision of bus infrastructure including stands, shelters, bus gates, information displays;
- Invest in new and upgraded buses;
- Provision of free ticketing with time limited uptake.
- Measures to improve uptake of sustainable transport
- Provide a bike/e-bike hire scheme;
- Provide a car share scheme/car pool scheme;
- Improved pedestrian links to public transport stops;
- Resident LEV purchase support with time limited uptake;
- Improved convenient and segregated cycle paths to link to local cycle networks;
- Provision of managed travel plans for the development.

.

**An example of an electric bus**

**Support the development of alternative technologies**

- Contribution to renewable fuel and energy generation projects;
- Support the development of alternative fuel delivery infrastructure.

6.58 The above list provides an example of acceptable mitigation measures but it is not an exhaustive list and further measures may be accepted. Any development that is not suitably redesigned or mitigated will be recommended for refusal on air quality grounds.

6.59 An emissions assessment should be carried out to demonstrate how the development is compliant with the requirement to be air quality neutral and included as part of an air quality neutral assessment. It should:

- Calculate the additional transport emissions associated with a development;





- Determine the appropriate level of mitigation required to help avoid, minimise and/or off-set the impact on air quality;
- Enable an evidence-based and proportionate approach.

6.60 The assessment must include:

- The calculated emission increase and damage cost (see the Damage Cost Approach fact box below)
- Proposed mitigation/compensation measures
- Estimated mitigation emission and damage cost reduction.

**Further Guidance**

6.61 Detailed guidelines for undertaking an emissions assessment can be found at the Low Emission Partnership. The latest guidance should be followed, at present this is the EMA-TG-2.0 (2016):

http://www.lowemissionstrategies.org/les_planning_guidance.html

### 6.1.2.6 Offset

6.62 Where redesign and mitigation measures are not adequate, developers have an obligation to offset their emissions. Offsetting by providing money for schemes that improve overall air quality should be a last resort but may need to be combined with good design and mitigation in some circumstances to be air quality neutral. These obligations will be proportional to the nature and scale of the development proposed and the level of concern about air quality.

6.63 All development above a minor classification will be required to provide an emissions assessment as part of the Air Quality Neutral requirement outlining the emissions produced and what mitigation is being applied. If the mitigation is not deemed adequate, developers must provide the rest in financial contributions.

## Planning contributions

6.64 Obligations may go towards funding measures, including those identified in the Air Quality Action Plan, designed to offset the impact on air quality arising from new development. In some cases it may be the case that it is not possible to secure acceptable air quality mitigation and in such cases the local authority may deem the development unacceptable.



## Damage cost approach

6.65 Offsetting will be based on a quantification of the emissions associated with the development. These emissions can be assigned a value based on the 'damage cost approach' used by Defra (Department for Environment, Food and Rural Affairs). The latest damage cost values can be found on the Defra website.[48]

6.66 This value will indicate the level of offsetting required, or may be provided as a financial contribution from the developer. This guidance follows the principle that environmental costs should fall on those who impose them. This is known as the 'polluter pays' principle.

6.67 The latest Defra Emissions Factor Toolkit should be used.[49]This will provide the relevant pollutant emissions outputs for the mitigation calculation which is then multiplied to provide a 5 year exposure cost value. This assessment should be carried out by an air quality consultant. Discussions with the Council's air quality officer may be necessary at this stage.

6.68 When the damage cost is calculated, it is the developer's responsibility to implement mitigation to reduce emissions by at least this value and be air quality neutral (or preferably below existing levels to be air quality positive). The mitigation should be approved with the local planning authority to ensure that mitigation is appropriate for the type, size and location of the development. Where this is not possible, the rest should be provided in the form of planning obligations.

48 DEFRA (2020) Air quality appraisal: damage cost guidance website: https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance

49 DEFRA (2020) Air quality appraisal: damage cost guidance website: https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance



**Damage Cost Approach**

The calculation process includes:

• Identifying the additional trips generated by the proposal;

• The emissions calculated for the pollutants of concern ($NO_x$ and $PM_{10}$) [from the Emissions Factor Toolkit];

• The air quality damage costs calculation for the specific pollutant emissions (from DEFRA IGCB);

• The result is totalled for a five-year period to enable mitigation implementation.

The calculation is summarised as follows:

**Road Transport Emission Increase = [Estimated trip increase for 5 years X Emission rate per 10km per vehicle type X Damage Costs]**

### 6.1.2.7 Construction Phase

**6.69** It is important that the impact on air quality is considered during any demolition and site preparation phase and during the construction phase. Although these phases will have a defined beginning and end they still have the potential for bringing about exceedances of air quality objectives for particulates ($PM_{10}$). All construction sites should aim to reduce emissions during the demolition and construction phases through the use of low emission technology and good site management.

**6.70** Exhaust emissions from engines powering construction specific activities such as cranes, excavators, generators and diesel-powered trucks involved in the transportation of materials to site can contribute significantly to local air quality.

**6.71** Schemes to minimise the production of airborne dust and release of exhaust emissions during the construction period may be required by planning condition. Developers should ensure that the construction phase is compliant with the IAQM Guidance on the Assessment of Dust from Demolition and Construction.[50]

**Further Guidance**

**6.72** Additional best practice can be found from the Greater London Authority:https://www.london.gov.uk

50 IAQM (2014) Guidance on the assessment of dust from demolition and construction: http://iaqm.co.uk/wp-content/uploads/guidance/iaqm_guidance_report_draft1.4.pdf



### 6.1.3 Submission Requirements

**6.73** A single development may have a very small impact on air quality, but many developments will, together, have a larger impact. The following will be considered when reviewing a development proposal:

**6.74** The 'baseline' local air quality;

- Whether the proposed development worsens the local air quality;
- Whether the proposed development is located within an AQMA;
- Whether the proposed development could lead to the declaration of a new AQMA;
- The potential cumulative effects of local developments on air quality;
- Whether the development will introduce new public exposure into an area of existing poor air quality;
- Whether the development will materially affect any air quality action plan or strategy;
- What mitigation has been provided to try and achieve air quality neutral status.

**6.75** To ensure compliance with the relevant District Plan policies and the guidance in this SPD, applications for new residential and non-residential developments must submit a sustainability checklist to demonstrate how impact on air quality will be minimised (see Appendix A).

**6.76** Assessments should be proportional to the nature and scale of development proposed and the level of impact on local air quality. The criteria for the submission of these assessments are set out below and in the flowchart in Figure 9.

**6.77** Consideration of air quality and air pollution will be relevant during both the operational and the development phase. Development may give rise to air pollution as well as, for example, air quality issues associated with demolition, construction and remediation of contamination. All factors should be considered when assessing the impact of development.

**6.78** This guidance does not prescribe the measures to be included in the assessments as it is considered more appropriate to take a flexible approach and allow for the continuous technological improvements. Consultation with the Council's air quality officer early on will be beneficial to agree an appropriate method and data set. Assessments should be carried out by an air quality consultant.

## Air Quality Impact Assessment

**6.79** An Air Quality Impact Assessment must be submitted at the application stage for all development above a minor classification.



6.80 The scope of an Air Quality Impact Assessment is:

- to assess current baselines in the area;
- to consider the cumulative impact of known future developments within an area;
- to predict the future impact, both with and without the proposed development including the proposed mitigation measures by calculating statistics that can be compared with the air quality objectives.

6.81 Air Quality Impact Assessments should be carried out in line with the best practice guidance set out in the latest industry-prepared best guidance documents. At present, these are the IAQM's Planning for Air Quality (2017)[(51)]and the Defra's Local Air Quality Management; Technical Guidance TG16 (2018).[(52)]The latest available emission factors, background maps and conversion factors shall be used.

6.82 Given the time required for dispersion modelling and monitoring of air quality for a detailed assessment as well as collection of traffic data to support the planning application, discussions should be sought with the local authority well before submission of a planning application.

## Air Quality Neutral

6.83 East Herts requires all major developments and any development (above household level) within or adjacent to an AQMA to be 'air quality neutral'. This approach will manage and prevent further deterioration of existing air quality in line with Policy EQ4 Air Quality.

6.84 Within the application process, major developments must submit an air quality neutral assessment as part of an Air Quality Impact Assessment. Minor developments in or near to an AQMA must submit an Air Quality Neutral Assessment (they will not be required to submit an Air Quality Impact Assessment). The assessment should take into account the following elements and compare them to the Air Quality Neutral Benchmarks provided in Appendix B.

6.85 Determine the relevant emission benchmark for buildings for $NO_2$ and $PM_{10}$ at the site, based on its land use class and location. Calculate the site's $NO_2$ and $PM_{10}$ emissions from buildings and compare them with the buildings benchmark. The assessment should present the data used in the calculation, including the plant emission data.

6.86 Determine the relevant emission benchmark for transport for $NO_2$ and $PM_{10}$ at the site. Calculate the site's $NO_2$ and $PM_{10}$ emissions from transport and compare them with the transport benchmark. The assessment should present the data used in the calculation.

51 http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf
52 https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf



6.87 Both building and transport emission benchmarks should be met in order to achieve air quality neutral requirements. Where the benchmarks cannot be met developers must undertake mitigation in discussion with the Council's air quality officer and/or make a contribution to offsetting their emissions as described in Section 6.1.2 of this SPD.

6.88 All developments requiring an Air Quality Neutral Assessment should also demonstrate how air quality impacts will be mitigated. This is done by including an emissions assessment as detailed in Section 6.1.2.

6.89 It is acknowledged that there is an emerging requirement for developments to be 'air quality positive' rather than 'air quality neutral'. Developers are encouraged to meet these standards within any size of development.

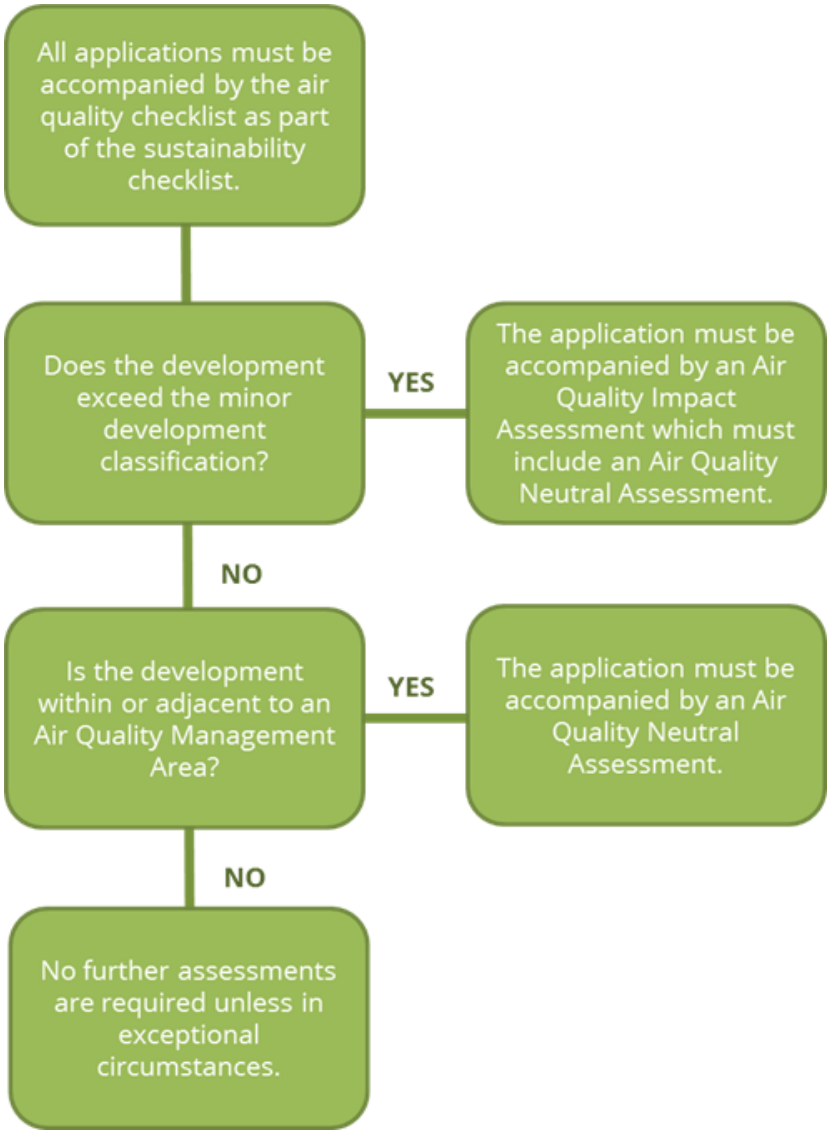



**Figure 9: Flow chart- What air quality information to submit with a planning application**



### 6.1.4 Checklist

**6.90** Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in Table 7 below. If relevant, more detail about the approach should be included in the Air Quality Impact Assessment or Air Quality Neutral Assessment.

| **Air Quality** | | |
|---|---|---|
| **Ref** | **Checklist Criteria** | **Summary of approach to address the criteria** |
| AQ.1 | How has the proposal addressed the minimum air quality standards?<br><br>These apply to all new development as set out in section 6.1.2.2 of the SPD. | |
| AQ.2 | How does the proposal show consideration of air quality in the design of new development?<br><br>Design should address the following principles:<br><br>• Building and development layout and design<br>• Emissions from transport<br>• Sustainable energy | |
| AQ.3 | How has emissions mitigation been incorporated into the proposal? | |
| AQ.4 | How will emissions be minimised through the construction and demolition phase of the development? | |



| | | |
|---|---|---|
| | Measures should follow the national guidance set out in section 6.1.2.7 of this SPD. | |
| AQ.5 | Has an Emissions Assessment been carried out as part of the Air Quality Neutral Requirement?<br><br>The assessment should utilise the Damage Cost Approach. | |
| AQ.6 | Has an Air Quality Impact Assessment been submitted?<br><br>This must be submitted if the proposal meets any of the criteria listed in section 6.1.3 of this SPD. | |
| AQ.7 | Has an Air Quality Neutral Assessment been submitted?<br><br>This must be submitted if the proposal meets the criteria listed in section 6.1.3 of this SPD. | |

**Table 7: Air Quality Checklist**

**6.91** The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.



## 6.2 Light Pollution

### 6.2.1 Policy Context

### National Policy

6.92 Section 15 of the NPPF (2019) sets out the role of planning in addressing pollution, in which light pollution is included. It states that planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution. In particular, the NPPF states that the planning system should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

6.93 Light pollution has also been deemed a potential statutory nuisance since 2005. An amendment to section 79 of the Environmental Protection Act 1990, contained within the Clean Neighbourhoods and Environment Act 2005 states:

"Artificial light emitted from premises so as to be prejudicial to health and nuisance constitutes a 'Statutory Nuisance' and it shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint".

**District Plan policies**

- Policy EQ3 Light Pollution

**Type of Development**

- Residential and non-residential development

**Submissions Requirements**

- Sustainability Checklist

**Link to Sustainability checklist**

- LP.1, LP.2, LP.3

6.94 **Policy EQ3** Light Pollution in the District Plan requires all external lighting schemes to ensure they do not have an unacceptable adverse impact on neighbouring uses or the wider landscape. Plans must ensure that they minimise harm to the amenity of residents and road users and prevent



impacts on the local ecology. Light pollution can cause sleep disturbance and annoyance to neighbours and have an impact on health and wellbeing. Consideration must be given to the impact of light pollution on wildlife as dark night skies are important for the conservation of natural habitats and the behaviour of nocturnal animals and birds.

**6.95** The policy also states that the light design must minimise the potential glare and spillage. Light pollution is a sign of wasted energy from excessive lighting and it is required that only the minimum required for security and operational purposes is installed. It may be necessary for the council to control the times of illumination where the impact is deemed unacceptable.

### 6.2.2 Topic Guidance

**6.96** New lighting schemes should be appropriate to the type of development and its location. Proposals for outdoor lighting should not have an unacceptable adverse impact by reason of light spillage or glare on neighbouring building/uses, amenity of residents or road users or ecology in line with Policy EQ3. Where appropriate, a light impact assessment will be required as part of the application submission.

**6.97** In order to minimise light and energy wastage is recommended that lights are switched off when not required for safety, security or operational purposes. Large quantities of energy are consumed and vast amounts of greenhouse gases are produced due to the wastefulness of all night shop advertising and display lighting, building illumination, upward flood lighting and permanent domestic and industrial security lights.

**6.98** Consideration will be given to the relationship between the use of the facility and the benefits to the general public, interests of conservation, amenity and safety. Where the impact of a proposal is considered to be unacceptable or cannot be mitigated through ameliorative measures, the protection of those recognised interests will prevail. The Council may seek to control the times of illumination where appropriate.

**6.99** Design is key to ensuring compliance with policy and reducing the risk of being a statutory nuisance in the future. The Institute of Lighting Professionals state that 'good design equals good lighting[(53)]and emphasise the importance of design, maintenance and installation. Design should ensure that the intensity and direction of light does not disturb others. This may be done by ensuring that beams are not pointed directly at windows of other houses. Light should be directed downwards wherever possible to illuminate its target and not upwards.

53 Guidance Notes for the Reduction of Obtrusive Light GN01:2011



6.100 Schemes will be considered against the latest national guidance and lighting standards. Further technical advice can be found from the Institute of Lighting Professionals 'Guidance Notes for the Reduction of Obtrusive Light (2020).[54] The most applicable British Standards for lighting that relate to the proposed development is BS EN 12464-2: 2014- Lighting of Work Places (Outdoor work places).

### 6.2.3 Submission Requirements

6.101 To ensure compliance with the relevant District Plan policies all new residential and non-residential development must submit a completed Sustainability Checklist as part of the application process. Completion of the checklist must demonstrate how all relevant light pollution checklist criteria have been considered.

6.102 A light impact assessment may be required by the Council if it is deemed that there may be an unacceptable impact on the natural surroundings as a result of the development. Where this is required, it is expected that the latest industry guidance is referred to in order to ensure that the assessment is correctly carried out. At present the latest guidance is the Professional Lighting Guide PLG 04 "Guidance on Undertaking Environmental Lighting Impact Assessments" Institution of Lighting Professionals (ILP):2013.

### 6.2.4 Checklist

6.103 Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in table 8 below. If relevant, more detail about the approach should be included in the Light Impact Assessment.

| **Light Pollution** | | |
|---|---|---|
| **Ref** | **Checklist criteria** | **Summary of approach to address criteria** |
| LP.1 | Does the proposal materially alter light levels outside the development and/or have the potential to adversely affect the neighbouring uses or amenity of residents and road users or impact on local ecology? | |

54 https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2020/



| | | |
|---|---|---|
| LP.2 | Is the proposed light design the minimum required for security and operational purposes? | |
| LP.3 | Does the proposal minimise potential glare and spillage?<br><br>Please detail the design measures adopted to ensure this | |

**Table 8: Light Pollution Checklist**

6.104 The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.

## 6.3 Noise Pollution

6.105 The impact of noise on the environment can be detrimental to health and quality of life, so it is important that the planning system controls both the introduction of noise sources into the environment, as well as ensuring new noise sensitive development is located away from existing sources of significant noise. **Policy EQ2** Noise Pollution requires development to be designed and operated to minimise the impact of noise on the surrounding environment and the future occupants of the new development. To address these requirements all residential developments will be required to comply with BS:8233 noise standards as a minimum in line with World Health Organisation guidance. All developments involving industrial or commercial noise sources will be required to comply with BS:4142 standard. Consideration must also be given to sufficient ventilation and the prevention of overheating.

6.106 This SPD does not address noise issues any further because more detailed noise guidance will be available for applicants in due course. Hertfordshire noise guidance is being developed jointly by a number of Hertfordshire local authorities.



# 7 Biodiversity

## 7.1 Policy Context

7.1 Biodiversity describes the number and variety of plant species and animals within a habitat and also the diversity of habitats within an ecosystem. Enhancing and conserving biodiversity is an important component of designing and constructing sustainable development. It has benefits for wildlife and ecology, including securing ecosystem services such as pollination, hydrology and pest control, but also more widely in terms of community well-being; carbon capture; reducing flood risk; clean air and water and adaptability to climate change.

### National Policy

7.2 National Policy sets a clear intent to protect and enhance the natural environment, moving from the past outcomes of development resulting in a net loss of biodiversity to achieving net gains for biodiversity within the development process. Taking forward the objectives of England's Biodiversity Strategy,[55] the NPPF (2019) outlines that new development has a key role in the preservation, restoration and re-creation of priority habitats, ecological networks, green infrastructure and the protection and recovery of priority species populations. International, national and local designations must be protected and enhanced relative to their status and importance. Development should only be permitted if harm to biodiversity is avoided, adequately mitigated or as a last resort, compensated.[56]

7.3 Planning Practice Guidance (PPG) Natural Environment provides further guidance on the role of green infrastructure in new development and how to conserve and enhance biodiversity.

7.4 The Environment Bill (2020), which is currently progressing through parliament, seeks to further strengthen the role of the planning system in conserving and enhancing biodiversity. It proposes amendments to planning legislation introducing a mandatory requirement for biodiversity net gain.

55 DEFRA (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services
56 Paragraph 175



## Local Policy

**District Plan policies**

- Policy NE1 International, National and Locally Designated Nature Conservation
- Policy NE2 Sites or Features of Nature Conservation Interest (Non-Designated)
- Policy NE3 Species and Habitats
- Policy NE4 Green Infrastructure
- Policy DES4 Design of Development
- Policy WAT3 Water Quality and the Environment

**Type of Development**

- Residential and non-residential development

**Submissions Requirements**

- Sustainability Checklist
- Biodiversity Checklist
- Ecology Survey
- Protected Species Survey

**Link to Sustainability checklist**

- Bio.1, Bio.2, Bio.3, Bio.4, Bio.5, Bio.6, Bio,7

7.5 The District Plan policies place a strong emphasis on delivering a net gain in biodiversity across East Herts at various scales, on designated and undesignated sites. **Policy WAT3** Water Quality and the Environment aims to preserve or enhance the ecological value of the watercourses. **Policy NE1** International, National and Locally Designated Nature requires that development use the mitigation hierarchy to protect and enhance designated sites commensurate with their status, their importance and contribution to ecological networks. **Policy NE2** Sites or Features of Nature Conservation recognises that there is biodiversity value throughout East Herts and even on non-designated sites applicants should assess the ecological value and aim to enhance it. **Policy NE3** Species and Habitats focuses specifically on protecting species and habitats and ensuring new development facilities opportunities for habitat creation and ecological connectivity.

7.6 Expanding on this objective and taking a holistic approach, **Policy NE4** Green Infrastructure recognises the biodiversity value of Green Infrastructure in East Herts and promotes protecting and enhancing the network: within the built environment and the countryside beyond. **Policy DES4** reiterates



this aim, expecting proposals to maximise opportunities for urban greening, for example through planting trees and other soft landscaping where possible.

## 7.2 Topic Guidance

### 7.2.1 Biodiversity in East Herts

7.7 The natural environment of East Herts is a key contributor to its character and distinctiveness. The district has a diverse range of green infrastructure and sites of local, national and international importance. This includes the following three international sites:

- Wormley- Hoddesdonpark Woods-Special Area of Conservation (SAC)[57]
- Rye Meads and Amwell Quarry- part of the Lee Valley Special Protection Area (SPA)[58]
- Rye Meads and Amwell Quarry- part of the Lee Valley Ramsar Site[59]

7.8 There are also 16 Sites of Special Scientific Interest (international sites are also designated SSSIs), a National Nature Reserve (Broxbourne Hoddesdon – Park Woods), 542 local wildlife sites (led and coordinated by Herts and Middlesex Wildlife Trust), a Local Nature Reserve and 14 Herts and Middlesex Wildlife Trust Reserves. More broadly there is a network of ancient woodlands, watercourses, parks, open spaces and trees across the rural and urban areas, which provide opportunities for biodiversity and form part of the wider ecological network. Designated sites and key areas of open space are identified on the Policies Map: https://www.eastherts.gov.uk/planning-building/planning-policy

7.9 A number of species found within East Herts are protected under European and National legislation. The protection afforded to these species results in them being a material consideration in dealing with planning applications.

7.10 Information about biodiversity in East Herts is available from a range of sources. Herts Environmental Records Centre (HERC), hosted by Herts and Middlesex Wildlife Trust, manages data on Hertfordshire's habitats, species and sites. The Hertfordshire Biodiversity Action Plan (2006) identifies those habitats and species which are a priority for conservation and is a valuable source of information on the county's natural assets. [60]

57 European Union's Habitat Directive of value for species, plants and habitats
58 Birds Directive-to protect internationally valuable populations of eligible bird species
59 Ramsar Convention for wetlands of international importance
60 Herts Biodiversity Action Plan (2006), Herts Environmental Forum, http://www.hef.org.uk/nature/biodiversity_vision/

7.11 There is also a Local Nature Partnership (LNP) which coordinates partners in Hertfordshire and has produced a series of principles and guidance.[61]

### 7.2.2 Biodiversity Hierarchy

7.12 When making planning decisions, East Herts Council is required by the NPPF to apply the mitigation hierarchy set out in Figure 10. Development projects should minimise impacts on biodiversity by adhering to the mitigation hierarchy of avoid, mitigate, compensate, with distinctions made between internationally, nationally and locally designated sites.

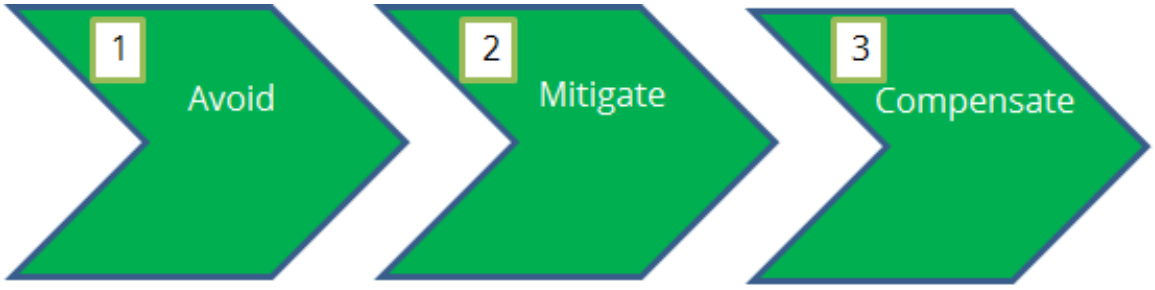



**Figure 10: Mitigation hierarchy**

7.13 Stage 1 'avoid' can be achieved by site selection but also by the siting and layout within a development to retain existing habitats. Early engagement of landscape architects and ecologists is important at this stage. The retention of existing natural features will significantly contribute towards the aim of enhancing biodiversity and protecting the landscape character on the development site. The design work for the development should aim to follow a landscape led approach, using the information gained through the survey work to retain as many of the important natural environment features as possible.

7.14 Where avoidance is not possible, mitigation measures should be applied, such as screening and planting. Buffer zones between sensitive areas and development areas can be used to reduce habitat disturbance. Finally, if this is not possible on-site or off-site compensation measures should be undertaken to help achieve an overall net gain in biodiversity or improvements to the structure and functions of ecological networks. Further clarity about the compensation process will be provided once the Environment Bill and associated government guidance is finalised

### 7.2.3 Designations

7.15 Planning policies contain clear direction that development should not be permitted on designated sites, as appropriate to their level of significance. This includes full protection for internationally and nationally designated sites - including Special Areas of Conservation, Special Protection Areas,

61 LNP (2017) Planning for biodiversity and the natural Environment in Hertfordshire- Guiding Principles



Ramsar Sites and Sites of Special Scientific Interest and effective protection measures for ancient woodland, Local Nature Reserves and Local Wildlife Sites. The range of designated sites within East Herts is set out in Table 9.

| Importance | Statutorily protected designated assets | Non-statutorily protected assets |
|---|---|---|
| International | Special Protection Areas<br><br>Special Areas of Conservation<br><br>Ramsar Site<br><br>Other features protected by the Habitats and Birds Directive | None |
| National | Sites of Special Scientific Interest<br><br>National Nature Reserve<br><br>Other features protected by domestic legislation, i.e. Wildlife and Countryside Act | Ancient Woodlands<br><br>Chalk river habitats<br><br>Species and habitats of principal importance in domestic legislation e.g. The Natural and Environment and Rural Communities Act (NERC) |
| Local | Local Nature Reserves | Local Wildlife Sites |

**Table 9: Assets of international, national and local status and importance in East Herts**

**7.16** The East Herts Biodiversity Questionnaire (see submission requirements) identifies the distance thresholds to designated sites. Applicants within these thresholds will likely have to submit additional information to inform proposals.

**7.17** Applicants must seek advice from Natural England for any proposals that may potentially affect an international or national site. Development likely to affect a European site will need to be accompanied by sufficient information to enable the LPA, as Competent Authority under the provisions of the Conservation of Habitats and Species Regulations 2017 (as amended), to record its decision with regard to likely significant effect and to undertake Appropriate Assessment where necessary.



### 7.2.4 Species and Habitats

7.18 In accordance with District Plan Policy NE3 Species and Habitats, conserving biodiversity and creating opportunities for wildlife is a key to delivering sustainable development. The mitigation hierarchy should be used in all proposals to prevent harm to all priority and non-priority species and habitats. Development adjoining rivers or streams will be required to preserve or enhance the water environment in accordance with Policy WAT3.

7.19 There are a number of species protected by European and national law. These must be considered to ensure that legislative requirements are met and no offences are committed. This applies to all scales of development from loft conversions to large mixed use developments. The main pieces of legislation protecting species are the European Habitats and Bird Directives, the Natural Environment and Rural Communities Act 2006 (Section 41 lists priority species and habitats), the Wildlife and Countryside Act, the Conservation of Habitats and Species Regulations 2010 and the Badgers Act 1992. The Hertfordshire Biodiversity Action Plan identifies 5 Species Action Plans and 8 Habitat Action Plans that guide work on protecting, restoring and re-creating a sustainable level of biodiversity in the county.[62]

7.20 Applicants must complete East Herts Biodiversity Checklist (see submission requirements) to assess the likely presence of a protected habitat or species. Where there is a reasonable likelihood of the presence of European or Nationally Protected Species, surveys must be completed and avoidance/ mitigation/ compensation measures agreed before permission can be granted. Surveys should be undertaken at a time of year appropriate to the relevant species.

7.21 A check should also be made to determine if any of the trees on the site are protected by Tree Preservation Orders (see the Council's online mapping [63]) either individually or as groups protected by virtue of their inclusion within a Conservation Area.

**Further guidance**

7.22 Further guidance on protected species and habitat legislation, including relevant licensing information is available from the following government websites:

https://www.gov.uk/topic/planning-development/protected-sites-species

https://www.gov.uk/topic/environmental-management/wildlife-habitat-conservation

62 Herts Biodiversity Action Plan (2006), Herts Environmental Forum, http://www.hef.org.uk/nature/biodiversity_vision/
63 https://www.eastherts.gov.uk/planning-and-building



7.23 Hertfordshire Ecology provides specialist ecological advice to support the planning process in East Herts. It is recommended that applicants use their pre-application service to consider the most effective approach for protecting habitats and species and delivering a net-gain to biodiversity: https://www.hertfordshire.gov.uk

### 7.2.5 Net Gain

7.24 Biodiversity is not limited to designated sites or priority habitats. Biodiversity is often found on non-priority habitats. As outlined in Policy NEC2 all proposals should seek to secure a net gain for biodiversity and enhance ecological networks across the District. The East Herts Green Infrastructure Plan identifies zones and projects to improve multi-functional networks and Ecological mapping work by the Local Nature Partnership in 2014 identifies habitat networks.

7.25 The approach to securing net gain should be assessed by a trained ecologist, using the Natural England (version 2) biodiversity metric, unless advised otherwise by Hertfordshire Ecology. Using a metric demonstrates compliance with the biodiversity hierarchy and informs compensation of all habitats. The metric is not designed to measure impacts on species. In order to ensure that mitigation measures are successfully delivered and maintained, financial and other provisions may be sought, where appropriate and necessary, via the use of planning conditions, planning obligations and legal agreements. Further detail about the process for securing measurable net gain will become more certain once the Environment Bill (2020) achieves royal ascent and the Government provides additional clarity.

7.26 Major development offers the greatest opportunities for delivering large-scale biodiversity net gain and the integration of opportunities for biodiversity into green and blue infrastructure and ecological networks, both on and off-site. Applicants should use the ecological network data set and the Green Infrastructure plan to inform the masterplanning process.

7.27 However, enhancing biodiversity can be delivered at a variety of different scales, from householder applications right up to large urban extensions, albeit the scale of improvement will differ. The Herts & Middlesex Wildlife Trust publication, How to Build a Living Landscape explains how a habitat network can be ‘built into’ new development at a range of scales, without significantly impacting on the purpose or functionality of that land use.

**Bat and bird bricks on the gable end of new houses in Buckinghamshire Source: Herts and Middlesex Wildlife Trust**

7.28 Whilst options will vary depending on the scale of development, the Council will expect all or some of the following measures to be integrated into development proposals:

- Integration of nest boxes for birds and bats, particularly in locations/ buildings adjoining open space.
- Integration of sustainable drainage systems, with ecology/ biodiversity benefits
- Soft landscaping to promote biodiversity
- Tree planting- consider tree health to future proof biodiversity
- Prioritisation of native species
- Habitat creation- i.e. ponds, wildflower grasslands
- Contribution to wider ecological networks and green and blue infrastructure corridors
- Green and brown roofs

7.29 These proposals will not only enhance biodiversity on development sites, but also benefit the health and well-being people living and working in these places.

**A wildflower meadow integrated into a greenspace within a new development**

**7.30** More information about the different stages to effectively design and implement a scheme is set out in Hertfordshire's Building Futures Biodiversity and Landscape module.

**Further Guidance**

- East Herts Green Infrastructure Plan (2011): https://eastherts.gov.uk/evidencebase
- Hertfordshire Ecological Network Report (2014) and guidance on applying Hertfordshire's ecological networks in the planning system: https://www.hertswildlifetrust.org.uk
- Hertfordshire Environmental Records Centre, for data requests:https://www.hercinfo.org.uk
- How to Build a Living Landscape, Herts and Middlesex Wildlife Trust: https://www.hertswildlifetrust.org.uk



### 7.2.6 Living roofs and walls

**Fact Box: Living roofs and green walls**

**Green roofs**- Created when vegetation is established on a roof structure. There are many variations but typically green roofs are categorised as intensive or extensive.

**Brown roofs**- Also described as a biodiverse roof, is designed to create a habitat from a specific type of flora or fauna. Useful on brownfield sites where soil and rubble should be able to provide a rooftop habitat for the flora and fauna that inhabited the site before the construction of the building. This is particularly important where habitat is often left to colonise naturally

**Green walls**- There are different types of green wall. Using climbing plants is the simplest method but it can also include a form of engineered solution, such as trellises or wires. Living wall systems are constructed with planter boxes or felt and do not require climbing plants.

7.31 Green or brown roofs should be incorporated into development where feasible. Green and brown roofs have many benefits as identified in the air quality and energy and carbon sections of this SPD, but are a useful way of enhancing biodiversity on sites of all scales, especially in urban areas. Intensive green roofs are effectively roof gardens, with a range of plants or shrubs that can be used for recreation purposes and to grow food. Extensive green roofs and brown roofs provide ecological value rather than recreational. Green roofs involve drought tolerant species of plants, such as sedums or wild flowers that require little maintenance.

7.32 Brown roofs are typically left without vegetation, with the growing medium selected to allow indigenous species to colonise an area over time. It is beneficial to use a variety of different local substrates (e.g. gravel in one area, topsoil in another area, crushed concrete in another area, to provide a number of different environments on the roof top, favouring different species.

7.33 Climbers and wall shrubs are the simplest way of adding interest to walls. In green wall systems, a range of herbaceous perennials, grasses, herbs, fruit and vegetables can be planted.

7.34 The potential for green and brown roofs should be considered early in the design process, to inform the scheme design. Feasibility will depend on the local context and the nature of the building, so it is important professional advice is sought. Consideration should also be given to any management and maintenance implications.



## 7.3 Submission Requirements

**7.35** To ensure compliance with the relevant District Plan policies:

- All new residential and non-residential development must submit a completed Sustainability Checklist to demonstrate that relevant criteria below relating to biodiversity have been considered and explained.
- All applicants (except advertisements) should submit a completed Biodiversity Checklist to assess the likely presence of protected habitats or species within or in close proximity to the site.

**7.36** In addition ecological survey(s) will be required, as follows:

- For all major developments;
- If there is a reasonable likelihood of protected species being present and affected by the development;
- If there is a reasonable likelihood of protected habitats being present and affected by the development.

**7.37** Ecological information should be undertaken by a trained ecologist and presented in accordance with the British Standard on Planning and Biodiversity- BS42020 2013 Biodiversity- Code of practice for planning and development. Surveys should be up to date and ideally from the most recent survey season. It should include:

- Analysis of likely impact on protected species, if applicable
- A biodiversity impact assessment calculation using the locally approved biodiversity metric and demonstrate a minimum 10% net gain in ecological units.
- An analysis of the impacts of the development on fauna.
- Definitive avoidance, mitigation or compensation measures sufficient to demonstrate a net gain in biodiversity measures.

**7.38** As mentioned above, data from Hertfordshire Biological Record Centre (HERC)[64] is a useful resource that can help inform surveys. Applicants should also consider sharing survey work with HERC to help expand Hertfordshire's environmental record. For further advice about ecological surveys and biodiversity please contact Herts Ecology at Hertfordshire County Council. Herts Ecology offer a pre-application service to applicants and can provide information about charging procedures.

## 7.4 Checklist

**7.39** Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in table 10 below. If relevant, more detail about the approach should be included in the Ecological survey.

64 http://www.hercinfo.org.uk/



| **Biodiversity** | | |
|---|---|---|
| **Ref** | **Checklist Criteria** | **Summary of approach to address the criteria** |
| Bio.1 | Have you submitted the East Herts biodiversity checklist? | |
| Bio.2 | n accordance with the biodiversity checklist, does the proposal affect a protected species or habitat? | |
| Bio.3 | If a protected species or habitat has been identified, has an ecological survey, with sufficient information been undertaken? | |
| Bio.4 | If a major development, has an ecological survey, with sufficient information been undertaken to assess the likely ecological impact of the development? | |
| Bio.5 | Has the mitigation hierarchy been undertaken, to demonstrate an adverse impact on biodiversity has been avoided? If this is not possible, has the impact been mitigated and then subsequently compensated? | |
| Bio.6 | Has a biodiversity net gain been achieved? Please explain | |



| | | |
|---|---|---|
| Bio.7 | Has a suitable biodiversity management and monitoring strategy for the site been proposed? | |

**Table 10: Biodiversity checklist**

**7.40** The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.






# 8 Sustainable Transport

## 8.1 Policy Context

8.1 The role of sustainable transport provision in the development process has gained increased prominence over recent years. Congested roads and associated increased pollution have led to detrimental effects on air quality and knock-on effects on health, which mean that a new approach to achieving journeys is needed to ensure that this situation is not exacerbated. This policy position is recognised at both the national and local level and this section of the SPD seeks to provide advice on how sustainable transport can be achieved through new development going forward. It should be noted that the Council's approach regarding the air quality implications of pollution is covered in further detail in the Pollution Chapter of this SPD where the impacts of vehicle emissions are cited.

8.2 In considering new development and ensuring that the transport impacts are less damaging and more sympathetic to the environment, greater priority needs to be given now to reducing the overall need to travel and, where journeys are necessary, make certain that suitable hard and soft infrastructure and measures are provided to ensure that they can be undertaken in a more sustainable manner going forward. This section of the SPD discusses various mechanisms to assist in achieving these aims.

8.3 It should be noted that parking standards do not form a part of this SPD as they are incorporated within the Council's separate 'Vehicle Parking Provision at New Developments' SPD.

### National Policy

8.4 The NPPF (2019) sets out the Government's position in respect of its sustainable transport objectives. It states (paragraph 102) that transport should be considered early in development proposals, so that:

- the potential impacts of development on transport networks can be addressed;
- opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;
- opportunities to promote walking, cycling and public transport use are identified and pursued;
- the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate



opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and

- patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.

**8.5** Furthermore, in considering development proposals, it should be ensured that "appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location".[65]

**8.6** National Planning Practice Guidance (NPPG) expands on the objectives included in the NPPF and provides specific guidance around the need for, and use of, transport evidence bases, travel plans, transport assessments and statements to support sustainable transport provision. These strands also need to be taken into account in bringing forward development proposals and can be viewed on the Government's website.[66]

65 Paragraph 108
66 https://www.gov.uk/guidance/transport-evidence-bases-in-plan-making-and-decision-taking https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements



## Local Policy

**District Plan policies**

- Policy TRA1 Sustainable Development
- Policy TRA3 Vehicle Parking Provision
- Policy DES4 Design of Development
- Policy CFLR9 Health and Wellbeing
- Policy DEL2 Planning Obligations

**Local Transport Plan 4, Hertfordshire County Council, May 2018**

- Policy 1: Transport User Hierarchy
- Policy 2: Influencing land use planning
- Policy 3: Travel Plans and Behaviour Change
- Policy 4: Demand Management
- Policy 5: Development Management
- Policy 6: Accessibility
- Policy 7: Active Travel - Walking
- Policy 8. Active Travel - Cycling
- Policy 9: Buses
- Policy 10: Rail
- Policy 19: Emissions reduction
- Policy 20: Air Quality
- Policy 23: Growth and Transport Plans

Roads in Hertfordshire: A Design Guide, Hertfordshire County Council, 3rd Edition, January 2011 (currently under review)

**Scale of Development**

- All new development

**Type of Development**

- Residential and non-residential development

**Submissions Requirements**

- Sustainability Checklist
- Design and Access Statement
- Travel Plans, Transport Assessments and Statements (as appropriate)

**Link to Sustainability checklist**

- T.1, T.2, T.3, T.4, T.5, T.6



8.7 East Herts District Plan **policies TRA1, TRA2, TRA3, DES4, CFLR9 and DEL2** provide the policy context in relation to the delivery of sustainable transport provision in the development process. Alongside national guidance and the Local Transport Plan (LTP4), produced by Hertfordshire County Council, the policies together promote the need to achieve sustainable development and provide the framework to both assist the formation of development proposals and the decision-taking process.

## 8.2 Topic Guidance

### 8.2.1 Sustainable Transport in East Herts

8.8 In seeking to engender modal shift away from private motorised trips to more sustainable means, the Council not only wishes to ensure that these occur in a way that has the least possible impact on the environment, but also to provide the right conditions through development to minimise the amount of journeys that need to be made in the first place. The policies detailed above set the context for achieving these aims.

8.9 In planning for major development, it is important that sustainable movement should be prioritised and proposals should therefore address:

- obviating the need to travel where possible;
- providing walkable neighbourhoods (as part of place-making design);
- delivering cycling, walking and passenger transport networks (facilitating and prioritising non-car borne movement);
- adopting behavioural change initiatives (encouraging modal shift);
- rebalancing car use and parking design (prioritising sustainable modes);
- future-proofing developments (through use of adaptable technology); and,
- facilitating deliveries and servicing (while not disadvantaging non-motorised user groups).

8.10 The following sections discuss how the above aims can be achieved.

8.11 In respect of the procedural aspect of development proposals, it should be noted that, whilst East Herts Council determines most planning applications for development, Hertfordshire County Council (HCC) responds to the transport elements of them in its role as highway authority. While recognising that aspects relating to safe and suitable highway access arrangements and mitigation are key considerations to be taken into account in assessing applications, importantly, HCC also considers the sustainability credentials of development proposals in its responses. LTP4's Transport User Hierarchy, provided at Policy 1, provides the policy context for these considerations and is therefore particularly pertinent for guiding development schemes and informing movement relationships within them.



**HCC Local Transport Plan, 2018**

Policy 1: Transport User Hierarchy

To support the creation of built environments that encourage greater and safer use of sustainable transport modes, the county council will in the design of any scheme and development of any transport strategy consider in the following order:

- Opportunities to reduce travel demand and the need to travel
- Vulnerable road user needs (such as pedestrians and cyclists)
- Passenger transport user needs
- Powered two wheeler (mopeds and motorbikes) user needs
- Other motor vehicle user needs

### 8.2.2 Reducing the overall need to travel, particularly by private car

8.12 In applying LTP Policy 1 and District Plan Policy TRA1 in development proposals, as well as looking at ways in which to mitigate journeys, there are also various measures that can be introduced through development design that can reduce the overall need to travel in the first instance.

8.13 Location is a key determinant in this respect and the District Plan's guiding principles (paragraph 3.3.2) and its Development Strategy hierarchy (outlined in Policy DPS2) therefore seek to direct development to areas that minimise the need to travel, by means such as utilising and supporting existing local facilities and networks that lie in close proximity. Where larger scale allocations and developments are proposed which may be more distanced from existing facilities, measures can be introduced that aim to largely self-contain movement within a site, and these can be supplemented by sustainable travel measures where journeys beyond are required.

8.14 A good way of demonstrating that development is indeed putting sustainable transport at the heart of its design is through the production of a movement framework. This should articulate how different modes, including walking, cycling and passenger transport, are prioritised within and across a development to make it easier to use those modes than the private car, while recognising the need to accommodate necessary movements of private vehicles (including servicing and deliveries) where appropriate. The objective of a movement framework should be to make it more attractive and easier to use sustainable modes than private vehicles through the design of well integrated, safe and connected routes and safe, secure and convenient cycle parking and facilities. In seeking to reduce dependence



on private vehicles and focussing on active travel, it is important that services and facilities are planned to make them accessible to the widest number of people through sustainable transport modes.

**8.15** Therefore, the relationship of the built environment to both new and existing services and facilities, including passenger or community transport services, alongside links to pedestrian and cycle networks, will be a crucial factor in ensuring that well-integrated and well-connected sustainable forms of development are achieved. Design and Access Statements, which are required in support of a planning application, should therefore contain a Movement Framework to demonstrate how these aims will be delivered through proposed development. While not currently HCC formal policy, Active Travel Zone (ATZ) techniques pioneered by TfL may be helpful tools in planning new development, where potential key destinations within and beyond the site are mapped and how movements to these can be facilitated in in a sustainable way.

**8.16** In looking at minimising the need to travel, lessons can be learned from the past, where, prior to mass use of motorised transport, historical development often involved mixed uses in relatively close proximity to each other. Shops and other services were often located within walking distance of much of the population, with movements being largely pedestrian based. Where not unneighbourly, mixed use schemes today can also either negate the need to travel or juxtapose uses within a 'walkable neighbourhood', a modern interpretation of the traditional form.

**8.17** Increasingly, homeworking is becoming more common and, as has been seen during the Covid-19 pandemic, this can have a significant impact in reducing car borne travel. Internal spaces within new homes therefore need to be designed with the increased demand for this use in mind and the delivery of high speed broadband (FTTP) should be guaranteed to all premises from the outset to help facilitate successful home-working arrangements that minimise the need to travel, as well as for day-to-day living requirements.

**8.18** Likewise, initiatives involving working at local office hubs can also help reduce the number of motorised trips made outside of a development and should be considered within larger proposals as part of self-containment mechanisms, as appropriate.





**Launchpad**

East Herts Council operates Launchpad - two thriving co-working, office and meeting space community facilities located in Bishop's Stortford & Ware, where each offer local flexible working environments to fit modern life patterns and reduce the need to travel further afield for standalone office accommodation. Details of the scheme can be found at:

https://www.eastherts.gov.uk/businesses-support/launchpad-business-centres

8.19 Where car journeys are necessary, the introduction of car clubs can help reduce the number of vehicles at a development and, depending on usage, can also prove cost effective when compared to car ownership. Car sharing schemes can also help reduce the number of vehicles on the road, which helps in mitigating congestion and pollution. Likewise, Mobility-as-a-Service (Maas) can help in consolidating modes of travel. This involves a shift from using personally owned transportation, towards mobility being provided as a service. Further details of Maas is available online:

https://maas-alliance.eu/the-alliance/ .

**Car sharing**

Many East Herts and County Council employees are signed up to the Council car sharing schemes

**8.20** In order to avoid unsustainable mode journey patterns through private motorised trips becoming fixed and engendering behavioural change, it is important that green travel patterns become established at the outset of occupation of major developments through the early implementation of sustainable travel infrastructure, measures and initiatives.

**8.21** Personalised travel planning is one strand that can be introduced through development delivery to raise awareness of local sustainable travel opportunities on an individual basis, which can have a positive effect in modal choice and behavioural change. Therefore, in combination, a mixture of both hard and soft measures can be very effective in achieving a good uptake of non-car travel modes.

**8.22** It should be noted that, while the district of East Herts has a dispersed settlement pattern and therefore not all measures will be appropriate for every area, in highly sustainable locations it may be considered suitable to introduce measures which particularly impact on private motorised vehicle journey choices. Measures may include initiatives such as, but not limited to, prioritised junctions and/or carriageway assignment for sustainable modes and reduced parking provision in appropriate locations. For the latter, it should be noted that the Council's approach to parking standards as part of development proposals is covered in the 'Vehicle Parking Provision at New Developments SPD'





### 8.2.3 Pedestrian and cycle route provision- making journeys healthier and sustainable

**8.23** In many developments over previous decades, pedestrians and cyclists have often been treated as subordinate to motorised traffic in the movement hierarchy. Therefore, in embracing LTP4's Policy 1Transport User Hierarchy and seeking to provide sustainable communities with healthy journeys at their heart, it is important that new developments should have their movement networks designed around people, rather than cars, from the outset.

**8.24** In respect of applying the above, where trips are made through cycle journeys it is important that these users are prioritised and their needs well catered for within the overall design of a development and not bolted on as an afterthought. Not only should routes be well connected and attractive, there must also be consideration of suitable parking arrangements (see more below). The Council will also be keen to support imaginative approaches to encouraging cycling, such as cycle hire and electric assisted bike schemes. Suitable shower and changing facilities should also be provided in appropriate locations to further encourage cycle usage.

**8.25** The Government published guidance in its Cycle Infrastructure Design Local Transport Note 1/20, July 2020,[(67)] and states that it "aims to help cycling become a form of mass transit in many more places. Cycling must no longer be treated as marginal, or an afterthought. It must not be seen as mainly part of the leisure industry, but as a means of everyday transport. It must be placed at the heart of the transport network, with the capital spending, road space and traffic planners' attention befitting that role".

**8.26** Similarly, in respect of prioritising walking and cycling, the Government is clear in its July 2020 publication Gear Change[(68)], that it "will ensure that all new housing and business developments are built around making sustainable travel, including cycling and walking, the first choice for journeys".

**8.27** Therefore, planning sufficient and appropriate space to prioritise for cyclists and pedestrians to make their journeys successfully should be an integral part of schemes through the implementation of 'inclusive design' principles, alongside accommodating other modes. Intrinsic to the heart of design, routes for pedestrians and cyclists should be well thought out, making sure that linkages and permeation between existing and new developments can be successfully achieved so that maximum opportunities present themselves to engender green travel behaviours through active travel.

67 https://www.gov.uk/government/publications/cycle-infrastructure-design-ltn-120
68 https://www.gov.uk/government/publications/cycling-and-walking-plan-for-england



8.28 It is also important that the considerations of both pedestrians and cyclists are taken into account when planning footways and cycle paths within developments so as to avoid potential conflict between user groups.

8.29 Therefore, and in line with the Government's key messages in 'Gear Change', the aim should be to provide segregated provision for each user group where possible. The creation of "Mini-Holland's" in three outer London Boroughs was demonstrated to have had a significant effect where, after the installation of segregated lanes on main roads, low-traffic neighbourhoods were put in, and pedestrians were given thousands of metres of extra space. The results of the scheme in the first of the areas showed a single year increase in cycling by 18%, and 13% for walking. While it is recognised that the scale of London Boroughs' built environments differ markedly from many rural locations in East Herts, there are still parallels to be drawn in respect of how prioritising sustainable user groups in street layout can engender modal shift. The goal should therefore be to segregate pedestrian and cycle movement from each other and both should be removed from motorised traffic where at all possible.

8.30 'Gear Change' further recommends a series of key principles when designing for cycling provision:

- 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.

8.31 With specific regard to pedestrians and ensuring that walkable neighbourhoods are achieved and to further support and encourage a culture of active and sustainable travel in bringing forward new development proposals, it is also important that the distances that active people are able or prepared to walk to access services and facilities are factored into design proposals.



8.32 In respect of recommended distances to bus stop locations, HCC seeks for these to be a maximum of 400m away from any property, which should be measured as the actual walking distance, and not through use of radius circles or 'as the crow flies' distances. Where rail stations are available, a maximum walking distance of 800m is sought.

8.33 As discussed in the 'measures to reduce the need to travel' section above, it is important that new developments can facilitate walking and cycling at the forefront of layout and design. Buildings need to be designed with pedestrian and cycle access to and between them as a key requirement.

8.34 Bus stops, transport hubs and other facilities for cyclists and pedestrian user groups should be both accessible and attractive for all users and should offer shelter, as appropriate.

8.35 Both hard and soft measures throughout a development can also serve to raise the profile of pedestrians and cyclists, for example by introducing priority measures for these user groups in certain situations that would traditionally have been dominated by motorised vehicles e.g. raised tables at junctions where, instead of the usual configuration whereby vehicular traffic dominates, motorists are required to give way to pedestrian and cyclist movements. This rebalancing of priorities can help ensure the feeling of safety by vulnerable user groups and is aimed towards increasing the propensity to travel by non-car modes.

8.36 Such initiatives encourage pedestrian and cyclist activity and also improve health outcomes.

**Further Guidance**

8.37 Useful sources of information and examples of healthy place making nationally can be accessed via the Town and Country Planning Association website: https://www.tcpa.org.uk/healthy-placemaking-external-resources.

8.38 Likewise, the Healthy Streets concept identifies key elements necessary for public spaces to improve people's health through 10 Healthy Street Indicators™, which also serve to deliver urban places which are socially and economically vibrant and environmentally sustainable. Further details of this initiative, which has also been used by TfL in its Transport Assessment approach, are available at: https://healthystreets.com/home/about/



**Emerging TCPA Initiative- The 20- minute neighbourhood**

The Town and Country Planning Association (TCPA) is working with Sports England in developing a 20-minute neighbourhood concept as an effective way of creating healthier, active communities. The 20-minute neighbourhood is "all about living locally, giving people the ability to meet most of their daily needs within a 20-minute walk from home, with safe cycling and local transport options".

Details of the emerging scheme can be found on the TCPA website:

https://www.tcpa.org.uk/the-20-minute-neighbourhood

**Fact Box: HCC Guidance**

HCC has published guidance aimed at encouraging active travel and also a strategy for sustainable travel to schools:

https://www.hertfordshire.gov.uk/media-library/documents/about-the-council/data-and-information/active-travel-strategy.pdf

https://www.hertfordshire.gov.uk/media-library/documents/schools-and-education/admissions/transport-policies-and-documents/sustainable-travel-strategy-for-schools.pdf

**8.39** Locally, the HCC 'Roads in Hertfordshire – Highway Design Guide' sets out how improvements to the highway network must be designed to follow a philosophy of sustainability, recommending new ideas about shared use and designs with less domination by motorised traffic and incorporates the policy and legal framework for developments[(69)]

**8.40** A new 'Roads in Hertfordshire Design Guide' is currently under preparation by HCC and is anticipated to be made available by December 2020.

**8.41** The Gilston Area is being planned to deliver around 10,000 new homes as part of the emerging 'Harlow and Gilston Garden Town'. The development of the Garden Town is following important Garden City principles and has developed its own transport strategy, aiming to achieve an ambitious target where 60% of all journeys within the new Garden Town Communities, and 50% of all journeys across Harlow, will be undertaken by sustainable modes. While, due to economies of scale, most developments will be unable to

69 https://www.hertfordshire.gov.uk/media-library/documents/highways/development-management/section-2-highway-layout-and-strategies-highways-design-guide.pdf





achieve these levels of modal share, many of the measures being brought forward could be transferred to a smaller scale. Details of the Harlow and Gilston Garden Town Strategy can be found at:

http://www.harlowandgilstongardentown.co.uk/

### 8.2.4 Transport Statements, Assessments and Travel Plans

8.42 In March 2020, HCC issued its revised guidance on Travel Plans. This document updated advice in line with current Government guidance in the NPPF and also in respect of LTP4. It sets out requirements for applicants in respect of delivering sustainable transport solutions in bringing forward development.

8.43 The guidance makes it clear that to "ensure a Travel Plan meets the county council's requirements and is realistic in its expectations, it should be developed in partnership between the developer (together with their consultants), future occupants and the local authorities. The strategy of the Travel Plan, including its measures and targets should be developed to deliver an agreed set of objectives".

8.44 HCC's suggested objectives include:

- Improve accessibility by non-car modes
- Reduce the need to travel
- Minimise single occupancy car travel
- Support commercial viability of public transport
- Reduce congestion
- Improve the local environment (including air quality and climate change)
- Reduce the cost of travel
- Improve health and wellbeing
- Improve road safety.

8.45 The full document, including such matters as contents, implementation and monitoring procedures, can be found at: https://www.hertfordshire.gov.uk

**Further Guidance**

8.46 Guidance on what is required to be included within Transport Assessments and Transport Statements is available on the Government's website at: https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements

### 8.2.5 Electric vehicle charging provision

8.47 As part of its commitment to cut vehicle emissions, the UK Government gave a commitment, as part of the Zero Emission Vehicle (ZEV) Alliance, at the International Climate Conference in December 2015 that all passenger



vehicle sales by 2050 would be of zero emission vehicles.[70] In 2018, the Government stated that it wished to "ensure the houses we are building over the coming years are EV ready. It is our intention that all new homes should have a chargepoint available".[71]

**Fact Box: Office for Low Emission Vehicles**

The Government has set up the 'Office for Low Emission Vehicles' and is offering advice and assistance to aid the support of low emission vehicles and encourage greener travel. The latest updates can be found at:

https://www.gov.uk/government/organisations/office-for-low-emission-vehicles

**8.48** Paragraph 110 of the NPPF, 2019, further states that applications for development: "should be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations".

**8.49** Therefore, it is important that applications for new developments should recognise that there will be an increasing modal shift towards electric vehicles and that the design of development will need to accommodate them and their charging requirements as a norm. While it is recognised that supplying active electric charging points to every residential or commercial property may not be feasible in the short-term due to current energy network supply availability, the infrastructure to enable future connection should be provided from the outset of development. This would not only allow for the ability to connect in the future without expensive retrofitting, it would also avoid despoiling finished footways and road surfaces, to the detriment of the local environment.

**8.50** Therefore, planning applications should include the delivery of an electric vehicle charging scheme for all developments, where possible. While the Council will seek to maximise provision to encourage the use of lower polluting vehicle technologies (with further details regarding standards provided in the Vehicle Parking Provision at New Developments SPD), it will consider each application on its individual merits, taking into account site specific factors.

**8.51** East Herts Council has itself installed electric vehicle parking charging points in various public car parks across the district and also operates a fleet of electric vehicles through an e car club scheme which is available to employees to use on Council business during office hours and is also available for the general public to hire outside of those times.

70 https://www.gov.uk/government/news/uk-government-pledges-bold-ambition-for-electric-cars
71 HM Government (July 2018). The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy:https://www.gov.uk/government/publications/reducing-emissions-from-road-transport-road-to-zero-strategy

**Electric vehicle car club**

Many East Herts Council employees are signed up to the Council's Electric Car Club scheme, available for public use through a car hire scheme out of office hours:

https://www.eastherts.gov.uk/highways-parking/access-e-cars-east-herts

## 8.2.6 Contributions towards passenger and community transport initiatives

**8.52** In bringing forward proposals, it is accepted practice for contributions to be sought towards measures that are intended to mitigate the transport impacts of development. Current guidance (in the process of being updated) can be found on HCC's website at: https://www.hertfordshire.gov.uk

**8.53** In assessing the level of contributions (and/or provision of services) appropriate for each proposal, the Council will continue to work with HCC to determine the best solutions on a site specific basis, with a focus on obtaining the optimum sustainable measures. Outside of traditional transport provisions, the Council, in conjunction with HCC, is willing to explore innovative sustainable solutions with applicants, such as demand responsive initiatives (e.g. Dial-a-ride, Arriva Click etc.); App based schemes and other emerging technologies; and community transport schemes, etc.

**8.54** As new innovations become more accepted practice and affordable, for example anticipated advances in emerging autonomous vehicle technology, such schemes will also be considerations to be taken into account.

8.55 An example of a successful community led scheme is the SawboBus, which operates through Sawbridgeworth, connecting to local areas throughout the town. The scheme, which was launched by Sawbridgeworth Town Council in 2009, receives grants from East Herts District Council and some local Essex councils, along with commercial sponsors who also help fund the service. The scheme is an excellent example of a community response to the axing of traditional bus provision and provided over 22,000 passenger journeys in 2015. The scheme may also serve as an example model for potential future community based services that may be brought forward through development.


**Sawbobus**

## 8.3 Submission Requirements

8.56 To ensure compliance with the relevant District Plan policies all new residential and non-residential development must submit a completed Sustainability Checklist to demonstrate that relevant criteria below relating to Sustainable transport have been considered and explained.

8.57 Applicants should also submit a Design and Access Statement (to include a movement framework) if development accords with the requirements in the national validation list for Planning and Listed Building Consent Applications:

https://www.eastherts.gov.uk/planning-building

8.58 Provision of electric charging points must comply with the requirements of the Vehicle Parking Provision at New Development SPD. A scheme for Electric Vehicle Charging Point Provision should therefore be submitted as part of the application submission.

8.59 In addition depending on the scale of development, all developments that will generate significant amounts of transport movement are required to submit the following:





- Travel Plan
- Transport Statement
- Travel Assessment

8.60 Further details of submission requirements for applications can be obtained via the Council's website at:

https://www.eastherts.gov.uk/planning-building/make-planning-application.

## 8.4 Checklist

8.61 Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in Table 11 below.

| **Sustainable Transport** | | |
|---|---|---|
| **Ref** | **Checklist Criteria** | **Summary of approach to address the criteria** |
| T.1 | Have you demonstrated that the development includes measures that reduce the overall need to travel, and particularly by private car? | |
| T.2 | Have you demonstrated how, as first principles of design, the scheme's proposals prioritise walking and cycling within the development and link with existing networks beyond the development to deliver healthy and walkable neighbourhoods? | |
| T.3 | Where cycling facilities and any bus stops and/or transport hubs are to be provided, have you demonstrated that they accessible and attractive for all users and offer appropriate shelter? | |



| | | |
|---|---|---|
| T.4 | Have you included measures (traditional and/or innovative) to encourage uptake of more sustainable modes of transport and engender modal shift from the outset of development? | |
| T.5 | Have you developed and submitted to HCC an appropriate Travel Plan, Transport Assessment and/or Statement (as appropriate)? | |
| T.6 | Where car parking is to be provided, have you provided justification for the number of spaces proposed and made provision for electric vehicle charging in accordance with the Vehicle Parking Provision at New Developments SPD? | |

**Table 11: Sustainable Transport Checklist**

**8.62** The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.

# 9 Waste Management

## 9.1 Policy Context

**9.1** There are three main categories of waste in the UK: construction; household; and commercial and industrial. The largest contributor to waste is the construction and demolition industry, which generates a third of all UK waste. Household waste recycling rates in England have risen from around 11% in 2000/1 to about 45%. Recycling rates in construction have also improved over the same period. But since 2013 rates for both have plateaued. The current goal is to ensure 65% of municipal waste is recycled by 2035 and to eliminate food waste from landfill.



9.2 Although waste reduction is not solely a planning issue, planning has an important role to play in ensuring all new development is designed to reduce construction waste and to facilitate future occupiers to reduce and recycle waste.

## National Policy

9.3 A key aim of the Government's 25 year Environment Plan[72] is to eliminate unavoidable waste by 2050. To help deliver this goal, the national Resources and waste strategy[73] was published in 2018, focusing on the concept of the circular economy. The strategy seeks to ensure sustainability is at the core of resource management by keeping resources in use as long as possible and recovering and regenerating materials. It highlights the key role the planning system has in taking forward the circular economy concept both in terms of resource use and the integration of design for sustainable waste management.

9.4 The principles about the circular economy are reiterated in the Environment Bill (2020), which is currently progressing through parliament. The Bill includes a range of waste and resource measures to minimise the amount of waste disposed. To support recycling it will stipulate material that must be collected from all households and businesses, including food waste. It will set requirements about the frequency of collection, which will have implications for the Council's collection service.

9.5 The NPPF (2019) identifies the need to minimise waste through the planning system. The National Planning Policy for Waste (2014) provides more detail. Paragraph 8 states that when determining planning applications for non-waste development, local planning authorities should ensure new development supports the delivery of the waste hierarchy by making sufficient provision for waste management, promoting good design to secure the integration of waste management facilities and by maximising reuse/recovery opportunities for construction and operational waste, which minimise off-site disposal. [74]

72 Greening the Future: A 25 Year Plan to improve the Environment (2018) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

73 Our Waste, Our Resources: A Strategy for England (2018) https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england

74 NPPW (2014) https://www.gov.uk/government/publications/national-planning-policy-for-waste)



## Local Policy

**District Plan policies**

- DES4 Design of Development
- CC2 Climate Change Mitigation

**Waste Local Plan**

- Policy 12: Sustainable Design and Construction

**Type of Development**

- Residential and non-residential development

**Submissions Requirements**

- Sustainability Checklist

**Link to Sustainability checklist**

- W.1, W.2, W.3

9.6 The District Plan outlines that the design and construction of development should help reduce waste. **Policy DES4** Design of Development expects proposals to make provision for the storage of bins and ancillary household equipment. **Policy CC2** Climate Change Mitigation promotes the re-use and recycling of waste and recycling where possible.

9.7 Hertfordshire County Council is the waste planning authority and produces the Waste Local Plan, which forms part of the development plan for East Herts. The Waste Local Plan comprises of the Waste Core Strategy and Development Management Policies and the Site Allocations Document. It is underpinned by the objective to move waste management up the waste hierarchy as follows:

- Reduce the quantity of waste produced.
- Reuse waste materials without further processing
- Recover the value of waste materials through recycling, composting or energy recovery.

9.8 **Policy 12** of the Waste Core Strategy and Development Management Policies Plan relates to the design and construction of new development. It requires proposals to use construction and demolition methods that minimise waste generation and re-use/recycle materials and buildings, as far as practicable on site; minimise the use of primary aggregates and use





materials made from recycled and secondary sources. The policy also requires good and innovative design with layout principles that allow for the effective sorting, recycling and composting of waste where appropriate.

9.9 The County Council is currently in the process of reviewing the Waste Local Plan. An initial consultation took place in 2018 and a draft plan will be published for consultation later in the year. Details are available on their website: www.hertfordshire.gov.uk/planning .

## 9.2 Topic Guidance

### 9.2.1 Waste Management in East Herts

9.10 Hertfordshire County Council's Capacity Gap Report (2018)[(75)] produced to support the Waste Local Plan review, identifies Construction, Demolition and Excavation waste to be the most significant capacity gap for Hertfordshire (when compared to the other capacity gaps for the other waste streams in Hertfordshire) and therefore every effort must be made to reuse and recycle construction waste for any development.

9.11 In terms of waste management in East Herts, waste and recycling collections are predominantly wheeled bin collections for both residential and commercial developments. At residential developments waste storage and collections must comply with the Council's current waste collection service requirements and take account of any agreed future changes.

9.12 At commercial or industrial premises, adequate provision for waste and recycling storage and management is required; however this is assessed on an individual basis and may require collections from a specialist contractor, and the use of specialist infrastructure such as compactors or skips.

9.13 The household recycling rate in East Hertfordshire is currently around 50% and the Council aims to increase the recycling rate over future years, a reduction in residual bin capacity and an increase in recycling bin capacity should therefore be anticipated by developers.

### 9.2.2 Waste Hierarchy

9.14 The principles of the waste hierarchy can be applied throughout the life of a development. There are five basic strategies for dealing with waste: reduce, re-use, recycle, recovery and only as a last resort, dispose. This hierarchy is outlined below in Figure 11.

75 https://www.hertfordshire.gov.uk/services/Recycling-waste-and-environment/Planning-in-Hertfordshire/Minerals-and-waste-planning

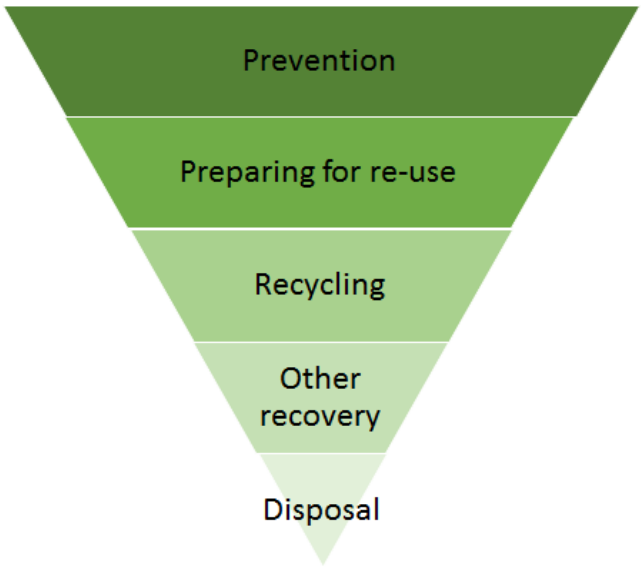



**Figure 11: Waste Hierarchy**

**9.15** Waste prevention sits at the top of the hierarchy, making it the primary objective in any waste strategy. The UK Government has introduced a landfill tax, aggregate levy and other waste management regulations to encourage the diversion of waste from landfill, promote re-use and recycle strategies and emphasise environmental responsibilities. Waste prevention can be built into the design of many developments by using less materials or by using materials with a longer life span, as well as less hazardous materials.

### 9.2.3 Construction Waste

**9.16** In accordance with the Waste Local Plan and District Plan Policy CC2 Climate Change Mitigation, applicants should outline how construction and demolition waste will be reduced and re-use and recycling encouraged.

**9.17** The use of secondary and recycled aggregates will reduce reliance on the extraction of primary resources and reduce the waste sent for final disposal and is in line with the Circular Economy. The circular economy relates to the concept of recycling and re-using materials within the built environment sector and essentially aims to reduce the carbon footprint of a development from start to finish. The concept relates to guidance about of embodied energy in the Carbon and Energy Reduction section of this SPD.

**Reusable construction and demolition materials**

**9.18** There are a range of measures that can applied at all scales of development, to reduce waste during the construction of development. WRAP (Waste and Resources Action Programme) have identified five key principles to reduce waste during the design process:

- Design for re-use and recovery
- Design for off-site construction
- Design for materials optimisation;
- Design for waste efficient procurement; and
- Design for deconstruction and flexibility.

**9.19** Construction standards such as BREEAM or HQM can be used to gain credits under the waste section of the methodology. For larger developments (over 50 homes) conditions may be used to secure submission and implementation of Site Waste Management Plans. Hertfordshire County Council is planning to introduce guidance on these as part of the Local Waste Plan Review.

**9.20** Resource Management Plans (RMPs) (these are similar too SWMPs) can also be encouraged to promote resource efficiency and to prevent illegal waste activities. Resource efficiency includes minimising waste at source and ensuring that clients, designers and principal contractors assess the use, reuse and recycling of materials and products on and off the site. Circular Economy Statements are also encouraged as good practice and something the County Council are planning to implement via their Local Plan Review.

**Further Guidance**

**9.21** For an overview of circular economy statements:

- Mayor of London (2020) Draft Circular Economy Statements:

https://www.london.gov.uk/sites/default/files/ggbd_circular_economy_statement_guidance_2020_web.pdf



### 9.2.4 Designing Provision for Sustainable Waste Management

9.22 The design measures required to facilitate sustainable waste management depend on the scale and type of development.

## Waste and Recycling Capacity - Residential Premises

9.23 Experience shows that residents who are responsible for their own individual waste containers are more likely to recycle and cause less contamination. Wherever possible, therefore, individual containers for each dwelling are preferred.

9.24 The Council acknowledge, however, that communal provision is sometimes necessary and can be more advantageous where space is at a premium. It is vital that adequate space and arrangements for the storage and collection of waste and recycling are considered at the earliest stage. The design must take space requirements and the on-going operational arrangements into account. If communal waste storage is likely to be required please refer to the section on flats below.

**Internal Storage**

9.25 Provision of sustainable waste management solutions requires the provision of internal storage capacity. This in fundamental in ensuring that residential premises have sufficient space to facilitate recycling by the separation of waste streams at the point of production.

9.26 As a minimum an internal capacity of 40 litres should be provided in the kitchen of each dwelling. This capacity should be divided to allow for the segregation of residual waste and recycling. In addition it is also recommended to allow for the separation of food waste to facilitate the governments vision of separate weekly food waste collections.

**External Storage – General**

9.27 As a minimum developers' are required to provide sufficient, off street, external storage space, for the containers required by the waste collection authority. This can be provided in purpose built bin stores. Waste and recycling collections are made utilising multiple receptacles. Details of the current receptacles and capacity requirements can be found on East Hertfordshire Councils' website.

9.28 The following principles should be taken into account:

- For developments with gardens on site composting facilities should be considered, either in the form of ‘home’ composting units or wormeries at houses, or garden composting facilities for grounds maintenance activities as part of the developments ongoing maintenance.

- The design of all waste storage areas should take account of additional fire risks associated with the storage of waste and any additional risks should be mitigated by the design. Where waste stores are integrated into the building sprinkler systems should be considered. Waste storage must not present a risk to any escape route in the event of a fire.
- The location of waste storage should also seek to minimise environmental impact i.e. by preventing the escape of litter or waste water runoff, and seek to prevent nuisance to users or residents. i.e. collection points not under windows, in particular bedroom windows which may be impacted by the noise from early morning collections.
- Storage areas should therefore be appropriately located with easy access for residents. Access to external storage areas should be at a distance of no more than 30m from the private entrance door to the property. Residents should not be required to move their waste receptacles more than 25metres to a collection point, (usually kerbside) in accordance with Building Regulations Approved Document H Guidance.
- The surface from the storage point to the collection point should be uninterrupted, level with no gravel or similar covering, and have a width to enable the easy passage of wheeled bins. For two-wheeled bins this should be 1 metre, with a maximum gradient of 1:12.
- It is not recommended that residents or collection staff are expected to pull bins past parking bays. This often leads to bins being left out on the pavements or grassed areas and interrupts the design of the streetscape

**9.29** For large scale developments innovative waste management solutions should be considered and early consultation with the Council (waste collection authority) is required. For areas with high density housing; solutions such as underground bin systems may provide benefits to the streetscape.

**An example of underground waste storage**

9.30 The design of underground bins varies considerable and in turn so can the collection methodology and impact on the street environment. The designs seen in the UK predominantly fall into three types: those relying on a hydraulic platform to house 'standard' bins, bottom opening crane lifted, and top opening crane lifted.

**Top opening crane lift design at Eddington, Cambridge**

**Hydraulic platform**

9.31 Where solutions are proposed which differ from the standard services being provided by the authority, the developer will be expected to fund any infrastructure required to facilitate collections.

**External Storage – Flats**

9.32 Waste and recycling collections are made utilising multiple receptacles. Details of the current receptacles and capacity requirements can be found on East Hertfordshire Councils' website, however as a guide provision should be made for the following as a minimum:

- Mixed dry recycling: 45 litres per person (fortnightly collection) (Up to 1100L bin size)
- Paper: 10 litres per person. (fortnightly collection) (Up to 360L bin size)
- Residual waste: 50 litres per person (fortnightly collection) (Up to 1100L bin size)





**9.33** Capacity requirements for individual flats should not be considered in isolation but should account for the cumulative total of all capacity requirements for the properties serviced by the bin store.

| Number of bedrooms | Assumed capacity | Capacity Requirements per flat |
|---|---|---|
| 1 | 2 | 90L Mixed dry recycling<br>20L Paper<br>100L Residual Waste |
| 2 | 3 | 135L Mixed dry recycling<br>30L Paper<br>150L Residual Waste |
| 3 | 4 | 180L Mixed dry recycling<br>40L Paper<br>200L Residual Waste |

**Table 12: Recycling capacities required in flats**

**Fact box**

As an example a flat block containing, 8 x 1 bedroom units, 6 x 2 bedroom units and 2 x 3 bedroom units would accumulate totals of: 1,890L mixed dry recycling, 420L paper, 2100L residual waste.

A bin store layout containing 2 x 1100L bins (mixed dry recycling), 2 x 240L bins (paper) and 2 x 1100L bins (residual waste) would therefore be considered appropriate.

**9.34** The following principles should be taken into account:

- Access to external bin stores can be problematic for elderly residents and for those with disabilities. Their design should therefore encompass the needs of all potential residents. Bin stores should either have adequate natural lighting or artificial lighting as necessary to ensure residents can clearly utilise the correct bins and to ensure access does not pose a health and safety risk.



- There is no requirement for separate bin stores for residual and recyclable waste; however sufficient segregation of bins should be possible within the bin store to prevent confusion.
- Bins in communal bin stores should be manoeuvrable to the refuse collection vehicle without the need to move other bins; this should therefore also give sufficient access space for residents in wheelchairs.
- Management arrangements should be put in place to ensure bin stores are regularly maintained, kept clean and tidy and free from pests.
- In bin stores housing multiple bins, drainage should be provided to allow for the washing down of storage areas and preventing run off. Walls and doors should have protection strips to prevent damage and a mechanism for holding doors open should be available. Doors to bin stores should be sufficient in width to allow the movement of bins at their widest and prevent entrapment of limbs. This is likely to be a minimum of 20cm in addition to the widest bin contained in the bin store. Doors should ideally be keypad entry or standard fire brigade keys. We do not support the use of electronic key fobs. Roller shutters on bin stores can be considered to save space however the additional noise impacts should be considered.
- The surface from the storage point to the collection point should be uninterrupted, level with no gravel or similar covering, and have a width to enable the easy passage of wheeled bins. For two-wheeled bins this should be 1 metre, for four-wheeled bins this should be 1.5 metres wide (including doorways), with a maximum gradient of 1:12.

**Further Guidance**

**9.35** Further guidance on storage design can be found in 'Avoiding Rubbish Design – NHBC Foundation':

http://www.designforhomes.org/wp-content/uploads/2020/04/NF60-Avoiding-rubbish-design.pdf

## Waste and Recycling Capacity - Commercial Premises

**9.36** Waste storage capacity in commercial or industrial premises is dependent on the activity taking place at the premises. Alternative treatment, storage and collection methodologies can be considered based on the needs of the business and availability of private contractors to undertake collections.

**9.37** A minimum of one third of waste storage capacity for recyclable waste is required; however it is advised to consider space to allow for half of waste materials to be recycled. Where food is served or sold on the premises then additional separate space for storage or processing of food waste is required.



9.38 In all instances sufficient controls should be put in place to prevent the escape of waste from premises, in particular waste and recycling storage areas. For retail premises, in particular those selling food, sufficient controls should also be in place to prevent the escape of litter created by customers or users of the premises.

**Waste Collection**

9.39 Access for waste collection is required for all developments. It is therefore necessary to ensure that a waste collection vehicle can get access close to any waste collection points. In all instances pull distances from the storage or collection point to the collection vehicle should not exceed 15m for two wheeled bins and 10m for 4 wheeled bins in accordance with BS5906:2005.[(76)] It is expected that where bin stores are proposed in communal flat developments or commercial premises that collection operatives will collect bins from these locations. Bin stores should front onto the highway or vehicle access location where possible.

9.40 Applicants should note that waste and recycling collections from houses occur from the kerbside. Should a developer wish to propose an alternative collection point this should be discussed and agreed in advance of any planning application. It is recommended that the developer consider 'communal' kerbside collection points. This prevents cluttering of footpaths on collection days and ensures sufficient access is available for collection staff.

9.41 Where new access is proposed for waste collection vehicles it is necessary to demonstrate that a 26t mid-steer refuse collection vehicle can access and leave the site in a forward motion, vehicle tracking diagrams must therefore be provided. Access in residential developments is not usually required more than twice a week and therefore consideration could be given to specialist access routes similarly used by emergency vehicles, where the restriction of vehicular access is the preference. This type of access should be in consultation with the waste collection authority in advance of any planning application and all unadopted road surfaces must have sufficient weight baring capacity to ensure vehicles do not cause damage during normal collection activities. No liability will be accepted by the Council for damage on unadopted roads where waste collection is required. Reversing manoeuvres should be avoided, however where these cannot be avoided they should be no more than 12m in accordance with BS5906:2005.

9.42 Dropped kerbs and gradients of no more than 1:12, should be provided to allow for ease of movement of bins to the collection vehicle and the pathway should be 1.5m in width taking the most direct route avoiding passing parked cars.

76 Waste Management in Buildings- Code of Practice: https://www.rbkc.gov.uk/pdf/BS5906-2005.pdf



9.43 Consideration should be given to visibility splays and parking arrangements alongside or opposite the access to individual streets. If car parking is likely in the vicinity of junctions then parking restrictions may be required to ensure access is not inhibited. This may apply to existing parking arrangement not just arrangements associated with the new development.

9.44 Local Authority waste collection will not commence until road surfaces are complete to base layer and access is not unreasonable (refer to Environmental Protection Act S.45) and not hindered by ongoing construction work. Until these criteria are met, and where a development requires a waste collection service, provision will have to be made by the developer at their cost.

**Summary of requirements**

9.45 Table 13 provides a summary of the design considerations that need to be addressed.

| Houses | Flats | Additional requirements for developments requiring vehicle access | Commercial |
|---|---|---|---|
| Full complement of waste and recycling receptacles provided | Full complement of waste and recycling receptacles provided | Vehicle access point is suitable weight baring standard | Reversing manoeuvres are less than 12m in a straight line |
| Off street bin storage area provided | Internal (kitchen) waste and recycling storage provision | Roadway has suitable visibility splays | Bins can be moved independently from the bin storage area without having to move other bins |
| Home composting facilities provided | Off street bin storage area provided | Roadway is drive in and drive out | Bin compounds/stores have keypad entry or fire brigade locks |
| Bin storage location within 30m of the main dwelling entrance/exit | Bin storage location within 30m of the private dwelling entrance/exit | Reversing manoeuvres are less than 12m in a straight line | Bin compounds/stores have protection strips on doors |



| | | | |
|---|---|---|---|
| Bin storage location within 25m of the kerbside or bin collection point | Bin storage location within 10m of the kerbside or bin collection point | Vehicle tracking is provided | Bin compounds/stores have doorways which are wider than 20cm plus the largest bin width |
| Bins are not required to be pulled through the house by residents. | Bin collection point is kerbside | | Pathways are 1.5m wide |
| Bin collection point is kerbside | Bins can be moved independently from the bin storage area without having to move other bins | | Pathways take the most direct route to the kerbside |
| Bins are not required to be pulled by collection crews past parked cars | Bin compounds/stores have keypad entry or fire brigade locks | | Pathways have a gradient of no more than 1:12 |
| | Bin compounds/stores have protection strips on doors | | Pathways are smooth surfaced |
| | Bin compounds/stores have doorways which are wider than 20cm plus the largest bin width | | Bins are not required to be pulled by collection crews past parked cars |
| | Pathways are 1.5m wide | | |
| | Pathways take the most direct route to the kerbside | | |
| | Pathways have a gradient of no more than 1:12 | | |



| | | | |
|---|---|---|---|
| | Pathways are smooth surfaced | | |
| | Bins are not required to be pulled by collection crews past parked cars | | |
| | A dropped kerb gives access to the vehicle access point | | |

**Table 13: Summary of design considerations**

## 9.3 Submission Requirements

**9.46** To ensure compliance with the relevant District Plan policies all new residential and non-residential development must submit a completed Sustainability Checklist to demonstrate that relevant criteria below relating to Sustainable Waste Management have been considered and explained.

**9.47** Applicants should also submit a Design and Access Statement (to include access details) if development accords with the requirements in the national validation list for Planning and Listed Building Consent Applications.

**9.48** In addition the following information is required:

- Site plans indicating waste and recycling storage locations and collection locations.
- Transition pathways and distances from storage locations to collection locations, where these differ.
- Transition pathways and distances from collection locations to collection vehicle access points.
- Vehicle tracking for 26t mid-steer Refuse Collection Vehicles, where access to the development is required.
- Detail and design information for bin storage locations for flats and commercial or industrial businesses.
- Detail of internal waste and recycling storage provision in kitchens of residential premises.
- Detail of proposals for the ongoing management of litter at retail developments.

**9.49** Further details of submission requirements for applications can be obtained via the Council's website at: https://www.eastherts.gov.uk/planning-building.





9.50 Further guidance and pre-application advice is available from the Council as the waste collection authority: WasteandRecycling@north-herts.gov.uk

## 9.4 Checklist

9.51 Reflecting policy requirements and the topic guidance, the following checklist principles need to be addressed as outlined in Table 14 below

| **Waste Management** | | |
|---|---|---|
| **Ref** | **Checklist Criteria** | **Summary of approach to address the criteria** |
| W.1 | Have measures been proposed to reduce, re-use and recycle construction and demolition waste? | |
| W.2 | How has the internal and external design of the development factored in effective sustainable waste management measures? Has sufficient detail been submitted with the application? | |
| W.3 | Have all the relevant criteria identified in Table 13 been addressed? | |

**Table 14: Waste Management Checklist**

9.52 The checklist needs to be submitted with applications for all new development. The level of detail submitted needs to be proportionate to the scale of application. A combined checklist is included in Appendix A. The checklist can also be used as part of the pre-application process.



# 10 Appendix A: Combined Submission Checklist

10.1 The sustainable design and construction submission checklist needs to be submitted with applications for all new development and can also be used as part of the pre-application process.. The level of detail submitted should be proportionate to the scale of application.

| Reference | Checklist Criteria | Summary of approach to address the criteria |
|---|---|---|
| **Energy and Carbon Reduction** | | |
| En.1 | Have carbon reduction calculations been included in the Sustainable construction, Energy and Water Statement? (See Appendix B for a carbon reduction template)? | |
| En.2 | How have the site layout and building orientation and form been designed to minimise energy use? | |
| En.3 | What proportion of the total number of buildings, are orientated to secure optimum solar gain? (East-West axis) | |
| En.4 | How has the energy hierarchy been applied to prioritise reducing the need for energy and implementing the 'fabric first approach'? | |
| En..5 | How will you ensure that where renewable/ low carbon technologies have been included to reduce carbon, that these will be successfully integrated into the design of the development? | |



| | | |
|---|---|---|
| En..6 | How has the energy embodied in construction materials been reduced? (e.g. reuse and recycling/ sustainable materials/ locally sourced) | |
| **Climate Change Adaptation** | | |
| CA.1 | How have the site layout and buildings been designed to mitigate overheating, giving priority to measures in line with the cooling hierarchy? | |
| CA.2 | Has an overheating assessment been undertaken? | |
| CA.3 | What Green Infrastructure is proposed? | |
| CA.4 | How have existing landscape features such as trees/woodlands and hedgerows been protected and incorporated within a Green Infrastructure network? | |
| CA.5 | Have green roofs or walls been included. Please explain your answer? | |
| CA.6 | Have measures been included to address surface water runoff? | |
| CA.7 | If the application is major development, have details of SUDs been submitted? | |
| **Water Efficiency** | | |
| Wa.1 | For new residential proposals, have you demonstrated compliance | |



| | | |
|---|---|---|
| | with the target for mains water consumption to be 110 litres or less per heard per day in the Sustainable construction, Energy and Water Statement? | |
| Wa.2 | For non-residential development, have measures been taken to reduce water consumption in the proposed development? | |
| Wa.3 | Have water recycling systems been considered and incorporated? Please explain your approach | |
| **Pollution: Air Quality** | | |
| AQ.1 | How has the proposal addressed the minimum air quality standards?<br><br>These apply to all new development as set out in section 6.1.2.2 of the SPD. | |
| AQ.2 | How does the proposal show consideration of air quality in the design of new development?<br><br>Design should address the following principles:<br><br>• Building and development layout and design<br>• Emissions from transport<br>• Sustainable energy | |



| | | |
|---|---|---|
| AQ.3 | How has emissions mitigation been incorporated into the proposal? | |
| AQ.4 | How will emissions be minimised through the construction and demolition phase of the development?<br><br>Measures should follow the national guidance set out in section 6.1.2.7 of this SPD. | |
| AQ.5 | Has an Emissions Assessment been carried out as part of the Air Quality Neutral Requirement?<br><br>The assessment should utilise the Damage Cost Approach. | |
| AQ.6 | Has an Air Quality Impact Assessment been submitted?<br><br>This must be submitted if the proposal meets any of the criteria listed in section 6.1.3 of this SPD. | |
| AQ.7 | Has an Air Quality Neutral Assessment been submitted?<br><br>This must be submitted if the proposal meets the criteria listed in section 6.1.3 of this SPD. | |



| | | |
|---|---|---|
| **Pollution: Light Pollution** | | |
| LP.1 | Does the proposal materially alter light levels outside the development and/or have the potential to adversely affect the neighbouring uses or amenity of residents and road users or impact on local ecology? | |
| LP.2 | Is the proposed light design the minimum required for security and operational purposes? | |
| LP.3 | Does the proposal minimise potential glare and spillage?<br><br>Please detail the design measures adopted to ensure this | |
| **Biodiversity** | | |
| Bio.1 | Have you submitted the East Herts biodiversity checklist? | |
| Bio.2 | n accordance with the biodiversity checklist, does the proposal affect a protected species or habitat? | |
| Bio.3 | If a protected species or habitat has been identified, has an ecological survey, with sufficient information been undertaken? | |
| Bio.4 | If a major development, has an ecological survey, with sufficient information | |



| | | |
|---|---|---|
| | been undertaken to assess the likely ecological impact of the development? | |
| Bio.5 | Has the mitigation hierarchy been undertaken, to demonstrate an adverse impact on biodiversity has been avoided? If this is not possible, has the impact been mitigated and then subsequently compensated? | |
| Bio.6 | Has a biodiversity net gain been achieved? Please explain | |
| Bio.7 | Has a suitable biodiversity management and monitoring strategy for the site been proposed? | |
| **Sustainable Transport** | | |
| T.1 | Have you demonstrated that the development includes measures that reduce the overall need to travel, and particularly by private car? | |
| T.2 | Have you demonstrated how, as first principles of design, the scheme's proposals prioritise walking and cycling within the development and link with existing networks beyond the development to deliver healthy and walkable neighbourhoods? | |



| | | |
|---|---|---|
| T.3 | Where cycling facilities and any bus stops and/or transport hubs are to be provided, have you demonstrated that they accessible and attractive for all users and offer appropriate shelter? | |
| T.4 | Have you included measures (traditional and/or innovative) to encourage uptake of more sustainable modes of transport and engender modal shift from the outset of development? | |
| T.5 | Have you developed and submitted to HCC an appropriate Travel Plan, Transport Assessment and/or Statement (as appropriate)? | |
| T.6 | Where car parking is to be provided, have you provided justification for the number of spaces proposed and made provision for electric vehicle charging in accordance with the Vehicle Parking Provision at New Developments SPD? | |
| **Waste Management** | | |
| W.1 | Have measures been proposed to reduce, re-use and recycle construction and demolition waste? | |



| | | |
|---|---|---|
| | Have all the relevant criteria identified in table 13 of the SPD been addressed? | |
| W.2 | How has the internal and external design of the development factored in effective sustainable waste management measures? Has sufficient detail been submitted with the application? | |
| W.3 | Have all the relevant criteria identified in Table 13 of the SPD been addressed? | |





# 11 Appendix B: Carbon Reduction Template

**Notes:**

**11.1** The table should be completed for each unit proposed as part of a development. Where a building contains multiple dwellings, it is acceptable to assess this issue based on the average energy performance of all dwellings within the building (e.g. for apartments or terraced housing). The area weighted average DER and TER must be calculated in accordance with the block averaging methodology defined in clauses 2.7 and 2.16 of Approved Document L1A. For dwellings where area weighting does not apply, the carbon reduction requirement should be achieved for each unit.

**11.2** The Target Emission Rate (TER) and Dwelling Emission Rate (DER) should be derived from the calculations carried out for Building Regulations compliance (Part L).

**11.3** Sample SAP calculations should be appended to the Carbon Reduction Template as evidence of compliance in addition to submission of the table.

**11.4** Alongside the table below, the main body of the Sustainable Construction, Energy and Waste (ScEW) Statement should include a summary of the measures proposed to reduce carbon emissions following the energy hierarchy. Where renewable energy technologies are proposed to meet some of the carbon reduction requirement, the location and layout of those technologies should be shown on relevant drawings (for example, roof plans should show the layout of any proposed photovoltaic panels).

**11.5** Where SAP calculations are yet to be completed, the ScEW Statement should set out the general approach to meeting policy requirements, with an indication of how development performs on relation to building regulations. A planning condition can be used to secure submission of carbon calculations once SAP calculations have been carried out.

| Address/ Unit number | Target Emission Rate (TER) | Dwelling Emission Rate (DER) | % improvement on Part L 2013 |
|---|---|---|---|
| | | | |
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# 12 Appendix C: Air Quality Neutral Benchmarks

12.1 Two good practice Building Emission Benchmarks (BEBs) have been defined for $NO_x$ and for $PM_{10}$ for a series of land-use classes. The benchmarks are expressed in terms of g/m²/annum. The gross floor area (GFA) is used to define the area. For less common types of development it will be for the developer to provide convincing evidence for which BEB should be used.

| **Land Use Class** | **$NO_x$(g/m²)** | **$PM_{10}$ (g/m²)** |
|---|---|---|
| Class A1 | 22.6 | 1.29 |
| Class A3- A5 | 75.2 | 4.32 |
| Class A2 and Class B1 | 30.8 | 1.77 |
| Class B2- B7 | 36.6 | 2.95 |
| Class B8 | 23.6 | 1.90 |
| Class C1 | 70.9 | 4.07 |
| Class C2 | 68.5 | 5.97 |
| Class C3 | 26.2 | 2.28 |
| Class D1 (a) | 43.0 | 2.47 |
| Class D1 (b) | 75.0 | 4.30 |
| Class D1 (c-h) | 31.0 | 1.78 |
| Class D2 (a-d) | 90.3 | 5.18 |
| Class D2 (e) | 28.4 | 16.3 |

| **Landuse** | |
|---|---|
| **$NO_x$ (g/m²/annum)** | |
| Retail | 249 |
| Office | 68.5 |
| **$NO_x$ (g/dwelling/annum)** | |
| Residential | 1553 |
| **$PM_{10}$ (g/m²/annum)** | |
| Retail | 42.9 |





| | |
|---|---|
| Office | 11.8 |
| Residential | 267 |

Source: Sustainable Design and Construction Supplementary Planning Guidance: GLA, April 2014





# 13 Appendix D: Advice note - Gas Fired Combined Heat and Power (CHP)

## Background

13.1 Combined Heat and Power (CHP) is the co-production of electricity and heat and is considered to be a low carbon technology. They recover the heat that is a by-product of electricity generation and distribute it alongside electricity in the form of hot water for space heating. CHP systems are located at the point of consumption meaning there is very little loss of energy through transmission and distribution.

13.2 District Plan policies CC2 and CC3 are committed to minimising carbon dioxide emissions and developing sources of renewable energy. Gas fired CHP is a low carbon technology and may be a viable solution for meeting these policy requirements. However despite these benefits, CHP can lead to a localised worsening of air quality as fuel combustion gives rise to air pollutants if not correctly specified, installed and maintained.

13.3 This appendix adds guidance for applicants including heat and power through on-site low carbon technologies. It is emphasised that the energy hierarchy set out in the Energy and Carbon Reduction chapter of this document encourages developers to optimise options to reduce energy demand and increase energy efficiency in order to reduce carbon dioxide emissions before implementing on-site low carbon technologies.

13.4 As part of the planning process it is important to consider impacts on air quality not only within and near the boundary of the AQMA but also considering the cumulative impacts of development, as set out by Policy EQ4. The emissions from CHP should be considered alongside the wider emissions associated with the development such as plant installation, traffic impacts and where relevant the potential for cumulative impact of multiple CHP plants in a small geographical area, which could lead to localised hotspots of poor air quality.

13.5 This advice note focuses solely on gas fired CHP and therefore assumes that the pollutants of interest are nitrous oxides ($NO^x$). If fuel sources other than gas are being considered installations may fall under other regulatory regimes and other pollutants such as particulate matter (PM) and sulphur dioxide ($SO^2$) may need to be considered.

13.6 The use of biomass CHP should be very carefully considered due to the potential impact on air quality within the local area. The use of biomass combustion is unlikely to be supported within an AQMA or where it may impact on residents unless it can be clearly demonstrated that there will be



no adverse impact on air quality. Consideration will also need to be given to the responsible sourcing of biomass fuel and of the transportation impacts of fuel delivery.

## Minimising Emissions

**13.7** It is important to give thought to the design and specification of the system including potential emissions early in the design phase. This will minimise the conflict that CHP can have with wider air quality issues on the area and help overcome any concerns regarding the health impacts of the proposed development. This advice note has been developed to assist with this process.

**13.8** All CHP installed must meet the following emissions standards:[77]

- Spark ignition engine: less than 250mg$NO_x$/$Nm^3$
- Compression ignition engine: less than 400mg$NO_x$/$Nm^3$
- Gas turbine: less than 50 mg $NO_x$/$Nm^3$

**13.9** Considering the wider environmental impacts of the system early on and ensuring the system is optimised for the proposed use not only helps reduce issues later on, but also helps minimise costs. The retrofitting of abatement equipment at a late stage is likely to be far more costly than giving time and consideration at the planning stage. Once installed it is important that the system is appropriately maintained and serviced throughout its functional life.

**13.10** The impact on air quality will depend on many factors including location, emissions, size and type of plant, flue design and dispersion, what it is replacing, whether it represents intensification of site and whether abatement equipment will be installed. The emissions from CHP should be considered alongside other emissions associated with the development and proposed mitigation.

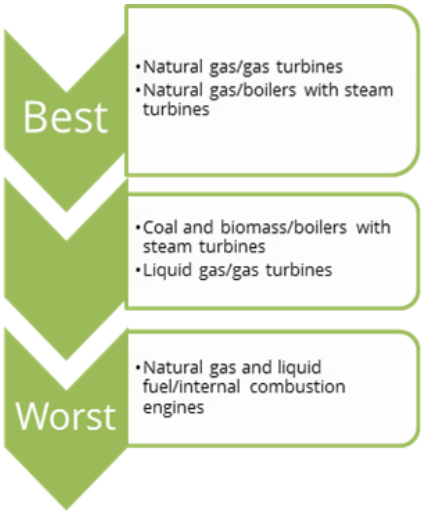
## Type and Design of the Plant

**13.11** The plant consists of the prime mover which provides the power for the system, electrical generator and heat recovery equipment (this captures waste heat from the prime mover most often for use as heating and hot water (HHW). CHP can also include cooling. In this case it is known as combined cooling, heat and power (CCHP) and the design will then include absorption chillers.

**13.12** The type of prime mover has a major impact on the emissions of a system with standards applying to this and not the CHP system as a whole. The two most common prime movers used for gas fired CHP are the internal

77 These standards are set out in the IAQM national air quality guidance available online at: http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf

combustion engine and the gas turbine. Gas turbines produce the lowest emissions and are the most electrically efficient of the two, with modern gas turbines typically incorporating low $NO_x$ burners as standard. They are therefore unlikely to require further abatement features to be in line with emission standards. The combustion engine typically has higher $NO_x$ emissions and should be specified with lean burn technology. Catalytic converters can be installed to reduce $NO_x$ emissions but require further capital outlay. Figure 1 below gives an indicative look at common prime movers and relative NOx emissions.




**Indicative Relative NOx Emissions Performance of Common CHP Prime mover Technology/Fuel Combinations**

13.13 CHP is typically sized to meet base loads; over-specified systems run less efficiently and produce higher emissions. How the system will deal with variable heat loads is also an important part of the design which again will influence emissions. Where peaking plant is installed, emissions should also be considered; and low $NO_x$ boilers should be installed to minimise the emissions of the wider development.

## Dispersion of Emissions

13.14 Consideration should be given at an early stage to the location and the height of the chimney or flue serving the CHP plant. All combustion plant must terminate as a minimum 1 metre above the highest point of the building of which the plant serves, or as agreed with the planning authority. Ideally the chimney should be designed as high as possible to aid dispersion and consideration should be given to the height of surrounding buildings and the impact they may have on dispersion.



13.15 Under the Clean Air Act (CAA) 1993 details of all new 'furnaces' installed should be submitted to the Local Authority. In some cases chimney height approval may need to be sought and along with a chimney height calculation.[78]

13.16 Dispersion modelling will be required as part of an Air Quality Impact Assessment where a CHP system is to be incorporated into a development.

## Conclusion

13.17 It is important to consider the design of the proposed CHP system at an early stage. This should include:

- The type of CHP system proposed, the fuel it will use and system design to minimise emissions;
- Whether further abatement equipment be required to meet emission standards;
- Consideration of the flue design and dispersion of emissions;
- Whether dispersion modelling are required as part of an Air Quality Impact Assessment.

13.18 This information is typically available in the manufacturer's specification and as part of the plant design.

13.19 The recommended emission standards have been established to minimise the impact of wider development on air quality within the local area. These emissions should be considered alongside other emissions from the development and the location of the development. Where a CHP system is proposed, emissions must be evaluated as part of an Air Quality Impact Assessment.

78 DEFRA (2018) Local Air Quality Management Technical Guidance (TG16): https://laqm.defra.gov.uk/documents/LAQM-TG16-February-18-v1.pdf