

# Building Futures

## Sustainable Design Toolkit

### Multi-Residential



ENERGY & CLIMATE CHANGE  
DESIGN & SAFETY | WATER  
LANDSCAPE & BIODIVERSITY  
AIR | NOISE | MATERIALS & WASTE

[www.hertslink.org/buildingfutures](http://www.hertslink.org/buildingfutures)

**Building Futures**



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## > Introduction

### The Building Futures Partnership

Building Futures is an initiative run in partnership by Hertfordshire's eleven Local Planning Authorities with support from industry groups and stakeholders. Its purpose is to promote sustainable and high quality development through the planning system in Hertfordshire. It currently does this in three ways:

- Web based guidance for planners, designers, consultants and clients on sustainable design.
- Hertfordshire Building Futures Awards which promotes and rewards high quality and innovative development in the county.
- Hertfordshire Design Review Panel which provides independent and expert design review services for new development in Hertfordshire.

### The Sustainable Design Toolkit

Development at all scales brings change to the environment we interact with and rely upon. This change has the capacity to make a sustainable and positive contribution, both today and over the lifetime of the development.

The Sustainable Design Toolkit has been developed by the Building Futures Partnership to improve the communication and understanding of sustainable design so that new development in Hertfordshire achieves sustainable and positive change.

The Sustainable Design Toolkit achieves this by providing a framework of questions and guidance to provoke thought at the early concept stage of development schemes, can structure design and pre-application discussions between stakeholders, and informs design decisions.

The Sustainable Design Toolkit has been shaped by dialogue with built environment professionals and stakeholders in Hertfordshire and the UK, including:

- Hertfordshire's eleven Local Planning Authorities
- Hertfordshire's Local Authority Building Control Group
- BRE Global
- Town and County Planning Association
- Herts & Beds Constructing Excellence Network
- University of Hertfordshire
- Hertfordshire Design Review Panel

The Sustainable Design Toolkit has also been widely consulted on to gain feedback from statutory consultees, the development industry, industry agencies and organisations, local civic and community groups, and other stakeholders.

Richard Thake, Executive Member Environment and Community Safety:

*"The toolkit is an exciting addition to the Building Futures initiative and offers a simple framework of questions and engaging advice that places sustainable design and construction at the heart of new development in Hertfordshire. I would strongly advise those involved in bringing forward development in the county to use this valuable toolkit."*



## > Introduction

### How to use the Sustainable Design Toolkit

The Sustainable Design Toolkit can be used at all stages of the design and planning process, as explained below. The Sustainable Design Toolkit should always be read and used alongside relevant national and local planning policy, and in conjunction with any relevant provisions, standards, targets or other requirements set out in policy and legislation.

#### Concept and pre-planning application stage:

Considering the whole range of sustainable design issues at the early stages of a development proposal, through an iterative and integrated design process, typically helps you achieve lasting sustainable development at similar cost.

The Sustainable Design Toolkit supports this by providing a simple yet methodical framework, together with objective and up-to-date design guidance that clients, applicants and the Local Planning Authority can refer to and use when preparing and discussing design solutions.

#### Planning application stage:

A clear and consistent method for demonstrating and assessing the sustainable design merits of development proposals is looked-for by both applicants and Local Planning Authorities.

The Sustainable Design Toolkit supports this by providing a simple PDF template that applicants can use to prepare a Sustainable Design Statement that covers all of the necessary design issues in a methodical and integrated fashion. The Sustainable Design Statement can then form part of a planning application (or brief at the early concept/pre-app stage), providing an explanation of the rationale behind the proposed design response.

A Sustainable Design Statement produced using the Sustainable Design Toolkit gives the Local Planning Authority confidence that the applicant has been made



aware of the breadth of sustainable design issues up-front and a level of confidence that relevant sustainable design issues have been considered. The Local Planning Authority can then review the Sustainable Design Statement alongside the guidance contained in the Sustainable Design Toolkit to determine whether those design issues have been adequately addressed, whether the applicant's design rationale is sound, and whether the proposed design solution is appropriate when considered alongside all relevant policies and other material considerations.

#### Construction stage:

The Sustainable Design Toolkit also contains guidance that project managers and contractors can use to ensure detrimental impacts are avoided or mitigated during the construction and post-completion phases of developments, for example on protecting and maintaining important habitats during and after construction.



## > Design Aims & Outcomes





## > Your Development Proposal

### Project details

Please work through and complete all the relevant boxes and questions. Once you have completed all sections and relevant questions, click on the button to the right or the buttons on page 25 to save or print your Sustainable Design Statement for use at pre-application or to submit with your planning application. You can save this PDF at any time and return to it later.

Save Sustainable  
Design Statement



Client name

Project name/reference

Agent name (if applicable)

Name of other agents/consultants (if applicable)

Address of project

Please provide a brief description of the development



## > Your proposal

### Sustainable Design Summary

Briefly summarise how your proposal will achieve the design aims and outcomes on page 4, outlining any key

constraints, and set out any alternative options that were discounted and the reasons why.



## > Your proposal

### Energy & Climate Change

Q1

How will energy demand for heating, lighting and cooling be avoided?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Energy & Climate Change solutions*  
[www.hertslink.org/bfintranet/energy1/solutions](http://www.hertslink.org/bfintranet/energy1/solutions)

*Climate Change Adaptation solutions*  
[www.hertslink.org/bfintranet/climateadapt/18652826](http://www.hertslink.org/bfintranet/climateadapt/18652826)

**CASE STUDIES:**

*Energy & Climate Change case studies*  
[www.hertslink.org/bfintranet/energy1/casestud](http://www.hertslink.org/bfintranet/energy1/casestud)

*Climate Change Adaptation case studies*  
[www.hertslink.org/bfintranet/climateadapt/18652908](http://www.hertslink.org/bfintranet/climateadapt/18652908)

**STANDARDS AND POLICY:**

*The UK Government have published national technical housing standards, and optional building regulations requirements*

[www.gov.uk/government/publications/technical-housing-standards-nationally-described-space-standard](http://www.gov.uk/government/publications/technical-housing-standards-nationally-described-space-standard)

*Building Regulations Part L & F*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

*A Display Energy Certificate (DEC) is a mandatory requirement for all public buildings over 1,000 m<sup>2</sup> and must be displayed in a prominent place.*  
[www.decc.gov.uk](http://www.decc.gov.uk)

*Passivhaus and EnerPHit Standards & Certification Requirements*  
[www.passivhaus.org.uk](http://www.passivhaus.org.uk)

*BREEAM: Construction Technical Standard*  
[www.breeam.com/new-construction/new-construction](http://www.breeam.com/new-construction/new-construction)

**OTHER RESOURCES:**

*Zero Carbon Hub - Fabric Energy Efficiency Standard*  
[www.zerocarbonhub.org](http://www.zerocarbonhub.org)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)





## > Your proposal

### Energy & Climate Change

Q2

What energy efficiency solutions will be used to further reduce energy demand?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

##### MORE ON SOLUTIONS:

*Energy & Climate Change solutions*  
<http://www.hertslink.org/bfintranet/energy1/solutions/>

*Climate Change Adaptation solutions*  
<http://www.hertslink.org/bfintranet/climateadapt/18652826>

##### CASE STUDIES:

*Energy & Climate Change case studies*  
[www.hertslink.org/bfintranet/energy1/casestud](http://www.hertslink.org/bfintranet/energy1/casestud)

*Climate Change Adaptation case studies*  
[www.hertslink.org/bfintranet/climateadapt/18652908](http://www.hertslink.org/bfintranet/climateadapt/18652908)

##### STANDARDS AND POLICY:

*The UK Government have published national technical housing standards, and optional building regulations requirements*

<https://www.gov.uk/government/publications/technical-housing-standards-nationally-described-space-standard>

*Building Regulations Parts J & L*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

*A Display Energy Certificate is a mandatory requirement for all public buildings over 1,000 m<sup>2</sup> and must be displayed in a prominent place.*  
[www.decc.gov.uk](http://www.decc.gov.uk)

##### OTHER RESOURCES:

*Zero Carbon Hub*  
[www.zerocarbonhub.org](http://www.zerocarbonhub.org)

*The Energy Saving Trust Recommended Label*  
[www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Energy & Climate Change

Q3

Where relevant, how will renewable and low carbon energy technologies be integrated into the new development?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Energy & Climate Change solutions*  
<http://www.hertslink.org/bfintranet/energy1/solutions/>

**CASE STUDIES:**

*Energy & Climate Change case studies*  
<http://www.hertslink.org/bfintranet/energy1/casestud/>

**STANDARDS AND POLICY:**

*The UK Government have published national technical housing standards, and optional building regulations requirements*  
[www.gov.uk](http://www.gov.uk)

*Building Regulations Part J*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

*Environmental Programmes including the Domestic Renewable Heat Incentive (RHI) and Feed in Tariff (FIT)*  
[www.ofgem.gov.uk](http://www.ofgem.gov.uk)

*Renewable Heat Premium Payment for RSLs*  
[www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)

*Microgeneration Certification Scheme*  
[www.microgenerationcertification.org](http://www.microgenerationcertification.org)

**OTHER RESOURCES:**

*National Biofuel Supply Database*  
[www.woodfueldirectory.org](http://www.woodfueldirectory.org)

*Compare Renewables*  
[www.local.gov.uk](http://www.local.gov.uk)

*Zero Carbon Hub*  
[www.zerocarbonhub.org](http://www.zerocarbonhub.org)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Energy & Climate Change

Q4

How will the site and building(s) be made resilient to climate change and reduce its contribution to external overheating?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

##### MORE ON SOLUTIONS:

*Climate Change Adaptation solutions:*  
[www.hertslink.org/bfintranet/climateadapt](http://www.hertslink.org/bfintranet/climateadapt)

*Energy & Climate Change solutions:*  
[www.hertslink.org/bfintranet/energy1](http://www.hertslink.org/bfintranet/energy1)

*Materials solutions:*  
[www.hertslink.org/bfintranet/materials1](http://www.hertslink.org/bfintranet/materials1)

##### CASE STUDIES:

*Climate Change Adaptation case studies:*  
[www.hertslink.org/bfintranet/climateadapt/18652908](http://www.hertslink.org/bfintranet/climateadapt/18652908)

*Energy & Climate Change case studies*  
[www.hertslink.org/bfintranet/energy1/casestud](http://www.hertslink.org/bfintranet/energy1/casestud)

##### STANDARDS AND POLICY:

*The UK Government have published national technical housing standards, and optional building regulations requirements*  
<https://www.gov.uk/government/publications/technical-housing-standards-nationally-described-space-standard>

##### OTHER RESOURCES:

*The Green Roof Code*  
[www.greenroofcode.co.uk](http://www.greenroofcode.co.uk)

*Living Roofs*  
[livingroofs.org](http://livingroofs.org)

*UK Rain Gardens Guide*  
[www.raingardens.info](http://www.raingardens.info)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Design & Safety

Q1

#### How will the design promote place making?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Design solutions*  
[www.hertslink.org/bfintranet/designs](http://www.hertslink.org/bfintranet/designs)

**CASE STUDIES:**

*Design case studies*  
[www.hertslink.org/bfintranet/designs/18652972](http://www.hertslink.org/bfintranet/designs/18652972)

**STANDARDS AND POLICY:**

*National Planning Policy Framework*  
[www.communities.gov.uk](http://www.communities.gov.uk)

*Affordable Homes Programme: Funding to increase the supply of new affordable homes.*  
[www.homesandcommunities.co.uk](http://www.homesandcommunities.co.uk)

**OTHER RESOURCES:**

*Improving the design of new housing*  
[www.designcouncil.org.uk](http://www.designcouncil.org.uk)

*Hertfordshire Design Review Panel*  
[www.hertslink.org/buildingfutures/designreview](http://www.hertslink.org/buildingfutures/designreview)

*Housing Design and Sustainability*  
[www.gov.uk](http://www.gov.uk)

*Historic England: Housing*  
[www.historicengland.org.uk](http://www.historicengland.org.uk)

*'Roads in Hertfordshire - Highway Design Guide'*  
[www.hertfordshire.gov.uk/docs/pdf/r/rihertssec5.pdf](http://www.hertfordshire.gov.uk/docs/pdf/r/rihertssec5.pdf)

**GLOSSARY:**

[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Design & Safety

Q2

How will the development meet changing and different needs of occupiers and users during its lifespan?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Design solutions*  
[www.hertslink.org/bfintranet/designs](http://www.hertslink.org/bfintranet/designs)

**CASE STUDIES:**

*Design case studies*  
[www.hertslink.org/bfintranet/designs/18652972](http://www.hertslink.org/bfintranet/designs/18652972)

**STANDARDS AND POLICY:**

*Building Regulations Part M*  
[www.planningportal.gov.uk/buildingregulations/approveddocuments/partm/](http://www.planningportal.gov.uk/buildingregulations/approveddocuments/partm/)

*The Equality Act 2010 widens the test that focuses on whether a physical feature makes it 'impossible or unduly difficult' for a disabled person to use a service*  
[www.legislation.gov.uk/ukpga/2010/15/contents](http://www.legislation.gov.uk/ukpga/2010/15/contents)

**OTHER RESOURCES:**

*Space in new homes: This research summary supports the case for more space in private homes, to ensure that they are functional, flexible and fit for purpose.*  
[www.designcouncil.org.uk](http://www.designcouncil.org.uk)

*HAPPI Design Principles for Extra Care Housing*  
[www.housinglin.org.uk](http://www.housinglin.org.uk)

*Lifetime Homes*  
[www.lifetimehomes.org.uk](http://www.lifetimehomes.org.uk)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Design & Safety

Q3

#### How will the design promote inclusivity, security and safety?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Design solutions*  
[www.hertslink.org/bfintranet/designs](http://www.hertslink.org/bfintranet/designs)

*Safety solutions*  
[www.hertslink.org/bfintranet/safety1](http://www.hertslink.org/bfintranet/safety1)

**CASE STUDIES:**

*Design case studies*  
[www.hertslink.org/bfintranet/designs/18652972](http://www.hertslink.org/bfintranet/designs/18652972)

*Safety case studies*  
<http://www.hertslink.org/bfintranet/safety1/case/>

**STANDARDS AND POLICY:**

*Building Regulations Part Q*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

**OTHER RESOURCES:**

*Secured by Design is a crime prevention initiative from the UK Association of Chief Police Officers (ACPO).*  
[www.securedbydesign.com](http://www.securedbydesign.com)

*'Roads in Hertfordshire - Highway Design Guide'*  
[www.hertfordshire.gov.uk](http://www.hertfordshire.gov.uk)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Water

Q1

#### How will the consumption of water be reduced?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

**Water solutions**  
<http://www.hertslink.org/bfintranet/water1/solutions/>

**Climate Change Adaptation solutions**  
[www.hertslink.org/bfintranet/climateadapt](http://www.hertslink.org/bfintranet/climateadapt)

**CASE STUDIES:**

**Water case studies**  
[www.hertslink.org/bfintranet/water1/casestud](http://www.hertslink.org/bfintranet/water1/casestud)

**Climate Change Adaptation case studies**  
[www.hertslink.org/bfintranet/climateadapt/18652908](http://www.hertslink.org/bfintranet/climateadapt/18652908)

**STANDARDS AND POLICY:**

*The UK Government have published national technical housing standards, and optional building regulations requirements*  
[www.gov.uk](http://www.gov.uk)

*Building Regulations Part G - stipulates a maximum consumption rate of 125 litres per person per day*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

*Water Supply (Water Fittings) Regulations 1999 - minimum levels of water efficiency performance for water-using appliances*  
[www.defra.gov.uk](http://www.defra.gov.uk)

**OTHER RESOURCES:**

*Waterwise focuses on reducing water waste in the UK - tips on water efficiency and water efficient products*  
[www.waterwise.org.uk](http://www.waterwise.org.uk)

*The Water Calculator*  
[www.thewatercalculator.org.uk](http://www.thewatercalculator.org.uk)

*Bathroom Manufacturers Association's Water Efficient Product Labelling Scheme compares products that meet the standards of water efficiency.*  
[www.europeanwaterlabel.eu/](http://www.europeanwaterlabel.eu/)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Water

Q2

#### How will surface water runoff from the site and building(s) be managed sustainably?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

##### MORE ON SOLUTIONS:

###### *Water solutions*

<http://www.hertslink.org/bfintranet/water1/solutions/>

###### *Climate Change Adaptation solutions*

[www.hertslink.org/bfintranet/climateadapt](http://www.hertslink.org/bfintranet/climateadapt)

###### *Landscape & Biodiversity solutions:*

<http://www.hertslink.org/bfintranet/landbio/18653222/>

##### CASE STUDIES:

###### *Water case studies*

<http://www.hertslink.org/bfintranet/water1/casestud/>

###### *Climate Change Adaptation case studies*

[www.hertslink.org/bfintranet/climateadapt/18652908](http://www.hertslink.org/bfintranet/climateadapt/18652908)

##### STANDARDS AND POLICY:

*The lead local flood authority (Hertfordshire County Council) is a statutory consultee in planning for all major development in relation to the management of surface water drainage.*  
[www.hertfordshire.gov.uk](http://www.hertfordshire.gov.uk)

*Flood Risk Assessments (FRA) may be required in accordance with the UK Government's policy on development and flood risk as stated in the National Planning Policy Framework (NPPF)*

*The EU Water Framework Directive (WFD) takes an ecosystems approach to protecting and enhancing the quality of surface freshwater (lakes, rivers and streams), groundwater, coastal waters out to one mile. The Environment Agency is the lead authority for delivering the WFD in England and Wales.*  
[www.gov.uk/government/organisations/environment-agency](http://www.gov.uk/government/organisations/environment-agency)

*The UK Government have published national technical housing standards, and optional building regulations requirements is the national standard for the sustainable design and construction of new homes.*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

##### OTHER RESOURCES:

*CIRIA SuDS Manual and other Susdrain resources*  
[www.susdrain.org](http://www.susdrain.org)

*The Green Roof Code*  
[www.greenroofcode.co.uk](http://www.greenroofcode.co.uk)

*Living Roofs*  
[www.livingroofs.org](http://www.livingroofs.org)

*UK Rain Garden Guide*  
[www.raingardens.info](http://www.raingardens.info)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)





## > Your proposal

### Landscape & Biodiversity

Q1

What measures will be taken to create, protect and enhance existing landscape features and habitats?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Landscape & Biodiversity solutions:*  
[www.hertslink.org/bfintranet/landbio/18653222](http://www.hertslink.org/bfintranet/landbio/18653222)

**STANDARDS AND POLICY:**

*GreenArc Strategic Green Infrastructure Plan*

[www.hertfordshire.gov.uk/docs/pdf/s/SHiP.pdf](http://www.hertfordshire.gov.uk/docs/pdf/s/SHiP.pdf)  
*Conservation of Habitats and Species Regulations 2010*

When dealing with cases where a European Protected Species may be affected, the planning authority has a statutory duty under the Habitats Regulations to have regard to the requirements of the Habitats Directive, and the three tests that it sets out:

- the activity or development must be for imperative reasons of overriding public interest or for public health and safety;
- there must be no satisfactory alternative;
- favourable conservation status of the species must be maintained.

<https://www.gov.uk/government/organisations/natural-england>

*British Standard 5837:2012 Trees in relation to design, demolition and construction*

[shop.bsigroup.com](http://shop.bsigroup.com)

*British Standard 3998: 2010*

*Recommendations for Tree Work – Best practice for arboricultural/tree surgery works.*

[shop.bsigroup.com](http://shop.bsigroup.com)

Trees can be protected by Tree Preservation Orders (TPO), Conservation Areas (CA), Planning Conditions or restrictive covenants.

Where it is proposed to carry out works to trees covered by a TPO or CA notice must be given to the Local Planning Authority.

[www.trees.org.uk/Help-Advice/Public/A-brief-guide-to-legislation-for-trees](http://www.trees.org.uk/Help-Advice/Public/A-brief-guide-to-legislation-for-trees)

**OTHER RESOURCES:**

*Hertfordshire Design Review Panel*

[www.hertslink.org/buildingfutures/designreview](http://www.hertslink.org/buildingfutures/designreview)

*Hertfordshire Landscape Character Area Statements*

[www.hertfordshire.gov.uk/services/leisureculture/heritage1/landscape/hlca/lcacoll/](http://www.hertfordshire.gov.uk/services/leisureculture/heritage1/landscape/hlca/lcacoll/)

*National Character Areas*

[www.naturalengland.org.uk](http://www.naturalengland.org.uk)

*Planning for a healthy environment: good practice for green infrastructure and biodiversity, TCPA*

<http://www.tcpa.org.uk/pages/planning-for-a-healthy-environment-good-practice-for-green-infrastructure-and-biodiversity.html>

*Planning for Biodiversity Toolkit*

<http://biodiversityplanningtoolkit.com>

*Green Roof Code*

[www.greenroofcode.co.uk](http://www.greenroofcode.co.uk)

*CIEEM professional directory of ecological consultants*

[www.cieem.net/members-directory](http://www.cieem.net/members-directory)

*Landscape Institute's database of landscape practices*

<https://members.landscapeinstitute.org/li-registered-practices/>



## > Your proposal

### Landscape & Biodiversity

Q2

#### How will any impacts on landscape and biodiversity be avoided or mitigated?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

##### MORE ON SOLUTIONS:

A standard hierarchy of mitigation consists of the stages below. Not all impacts can be mitigated, and mitigation itself can lead to problems. Monitoring is essential to identify and overcome any unanticipated problems as they arise.

1. Avoidance - achieved through careful site selection, siting and innovative design
2. Reduction - achieved by setting the development into the ground and the implementation of sensitive design
3. Remediation - used where either Avoidance or Reduction cannot be achieved, e.g. replanting and screening
4. Compensation - all developments should seek to achieve net gains for nature, and as a minimum result in a zero net loss of biodiversity

##### *Landscape & Biodiversity solutions*

[www.hertslink.org/bfintranet/landbio](http://www.hertslink.org/bfintranet/landbio)

##### STANDARDS AND POLICY:

###### *GreenArc Strategic Green Infrastructure Plan*

[www.hertfordshire.gov.uk/docs/pdf/s/SHiP.pdf](http://www.hertfordshire.gov.uk/docs/pdf/s/SHiP.pdf)

###### *Conservation of Habitats and Species Regulations 2010*

When dealing with cases where a European Protected Species may be affected, the planning authority has a statutory duty under the Habitats Regulations to have regard to the requirements of the Habitats Directive, and the three tests that it sets out:

- the activity or development must be for imperative reasons of overriding public interest or for public health and safety;
- there must be no satisfactory alternative;
- favourable conservation status of the species must be maintained.

[www.naturalengland.org.uk](http://www.naturalengland.org.uk)

###### *British Standard 5837:2012 Trees in relation to design, demolition and construction*

[shop.bsigroup.com](http://shop.bsigroup.com)

###### *British Standard 3998: 2010 Recommendations for Tree Work – Best practice for arboricultural/tree surgery works.*

[shop.bsigroup.com](http://shop.bsigroup.com)

Trees can be protected by Tree Preservation Orders (TPO), Conservation Areas (CA), Planning Conditions or restrictive covenants. Where it is proposed to carry out works to trees covered by a TPO or CA notice must be given to the Local Planning Authority.

##### OTHER RESOURCES:

###### *Hertfordshire Design Review Panel*

[www.hertslink.org/buildingfutures/designreview](http://www.hertslink.org/buildingfutures/designreview)

###### *Hertfordshire Landscape Character Area Statements*

[www.hertfordshire.gov.uk/services/leisureculture/heritage1/landscape/hlca/lcacoll/](http://www.hertfordshire.gov.uk/services/leisureculture/heritage1/landscape/hlca/lcacoll/)

###### *National Character Areas*

[www.naturalengland.org.uk](http://www.naturalengland.org.uk)

###### *Planning for a healthy environment: good practice for green infrastructure and biodiversity, TCPA*

[www.tcpa.org.uk/data/files/TCPA\\_TWT\\_GI-Biodiversity-Guide.pdf](http://www.tcpa.org.uk/data/files/TCPA_TWT_GI-Biodiversity-Guide.pdf)

###### *Planning for Biodiversity Toolkit*

<http://biodiversityplanningtoolkit.com>

###### *Green Roof Code*

[www.greenroofcode.co.uk](http://www.greenroofcode.co.uk)

###### *Living Roofs*

[www.livingroofs.org](http://www.livingroofs.org)

###### *UK Rain Gardens Guide*

[www.raingardens.info](http://www.raingardens.info)

###### *CIEEM professional directory of ecological consultants*

[www.cieem.net/members-directory](http://www.cieem.net/members-directory)

###### *Landscape Institute's database of landscape practices*

[www.landscapeinstitute.org/registeredpractices/search.php](http://www.landscapeinstitute.org/registeredpractices/search.php)



## > Your proposal

### Landscape & Biodiversity

Q3

How will the risks of ground instability due to climate change be managed?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Landscape & Biodiversity solutions*  
<http://www.hertslink.org/bfintranet/landbio/18653222/>

*Climate Change Adaptation solutions*  
<http://www.hertslink.org/bfintranet/climateadapt/18652826/>

*Water solutions*  
<http://www.hertslink.org/bfintranet/water1/solutions/>

**CASE STUDIES:**

*Climate Change Adaptation case studies*  
[www.hertslink.org/bfintranet/climateadapt/18652908](http://www.hertslink.org/bfintranet/climateadapt/18652908)

*Water case studies*  
[www.hertslink.org/bfintranet/water1/casestud](http://www.hertslink.org/bfintranet/water1/casestud)

**STANDARDS AND POLICY:**

*Building Regulations Part A*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

**OTHER RESOURCES:**

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Air

Q1

**How will air pollutants, dust and other emissions arising from construction be minimised?**

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ [Refer to Advice & Guidance](#)

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Air solutions*  
[www.hertslink.org/bfintranet/air1/solutions](http://www.hertslink.org/bfintranet/air1/solutions)

**CASE STUDIES:**

*Air case studies*  
[www.hertslink.org/bfintranet/air1/casestud](http://www.hertslink.org/bfintranet/air1/casestud)

**STANDARDS AND POLICY:**

*Considerate Constructors Scheme*  
[www.ccscheme.org.uk](http://www.ccscheme.org.uk)

**OTHER RESOURCES:**

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Air

## Q2

### How will good internal air quality be achieved?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

### FURTHER INFORMATION

#### MORE ON SOLUTIONS:

*Air solutions*  
[www.hertslink.org/bfintranet/air1](http://www.hertslink.org/bfintranet/air1)

#### CASE STUDIES:

*Air case studies*  
[www.hertslink.org/bfintranet/air1/casestud](http://www.hertslink.org/bfintranet/air1/casestud)

#### STANDARDS AND POLICY:

*Building Regulations, Part F*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

#### OTHER RESOURCES:

*BRE Green Guide to Specification*  
[www.bre.co.uk/greenguide](http://www.bre.co.uk/greenguide)

*BRE certification of products based on the EU Construction Products Directive (CPD) requirements*  
[www.bre.co.uk](http://www.bre.co.uk)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Noise

Q1

#### How will construction noise be minimised?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Noise solutions*  
[www.hertslink.org/bfintranet/noise1/solutionsland](http://www.hertslink.org/bfintranet/noise1/solutionsland)

**CASE STUDIES:**

*Noise case studies*  
[www.hertslink.org/bfintranet/noise1/cases](http://www.hertslink.org/bfintranet/noise1/cases)

**OTHER RESOURCES:**

*Code of Considerate Practice*  
[www.ccscheme.org.uk](http://www.ccscheme.org.uk)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Noise

Q2

What noise attenuation measures will be incorporated into the design of the new development?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Noise solutions*  
[www.hertslink.org/bfintranet/noise1/cases](http://www.hertslink.org/bfintranet/noise1/cases)

**CASE STUDIES:**

*Noise case studies*  
[www.hertslink.org/bfintranet/noise1/cases](http://www.hertslink.org/bfintranet/noise1/cases)

**STANDARDS AND POLICY:**

*The UK Government have published national technical housing standards, and optional building regulations requirements is the national standard for the sustainable design and construction of new homes*

[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

*Building Regulation Part E*

[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

*Part E Robust Details scheme - an alternative to complying with Building Regulations Part E Requirement E1*

[www.robustdetails.com](http://www.robustdetails.com)

**OTHER RESOURCES:**

*Specialist noise advice from the Association of Noise Consultants*  
[www.association-of-noise-consultants.co.uk](http://www.association-of-noise-consultants.co.uk)

*Roads in Hertfordshire - Highway Design Guide*

[www.hertfordshire.gov.uk](http://www.hertfordshire.gov.uk)

*Green Roof Code*

[www.greenroofcode.co.uk](http://www.greenroofcode.co.uk)

*Living Roofs*

[livingroofs.org](http://livingroofs.org)

*Glossary*

[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Your proposal

### Materials & Waste

Q1

#### What sustainable materials will be used?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

##### MORE ON SOLUTIONS:

*Materials solutions*  
[www.hertslink.org/bfintranet/materials1](http://www.hertslink.org/bfintranet/materials1)

*Waste solutions*  
[www.hertslink.org/bfintranet/waste1/solutionsland](http://www.hertslink.org/bfintranet/waste1/solutionsland)

##### CASE STUDIES:

*Materials case studies*  
[www.hertslink.org/bfintranet/materials1/caseland](http://www.hertslink.org/bfintranet/materials1/caseland)

*Waste case studies*  
[www.hertslink.org/bfintranet/waste1/casestud](http://www.hertslink.org/bfintranet/waste1/casestud)

##### STANDARDS AND POLICY:

*The UK Government have published national technical housing standards, and optional building regulations requirements*  
[www.gov.uk](http://www.gov.uk)

*Whole life costing is a mandatory requirement in publicly procured projects*  
[www.bre.co.uk](http://www.bre.co.uk)

*The Whole Life Performance of a material is the performance of a material (or building) over a defined period of time. Typically building performance is measured over 60 years. Whole life performance takes into account capital costs; maintenance, replacement and repair costs; facilities management costs and disposal costs.*

##### OTHER RESOURCES:

*Methodology to calculate embodied carbon of materials, 1st edition, RICS*  
[www.rics.org/uk/](http://www.rics.org/uk/)

*BRE Green Guide to Specification*  
[www.bre.co.uk/greenguide](http://www.bre.co.uk/greenguide)

*WRAP*  
[www.wrap.org.uk](http://www.wrap.org.uk)

*The Forest Stewardship Council (FSC)*  
[www.fsc-uk.org/](http://www.fsc-uk.org/)

*Programme for the Endorsement of Forest Certification schemes*  
[www.pefc.org](http://www.pefc.org)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)





## > Your proposal

### Materials & Waste

Q2

How will the waste hierarchy be embedded into the development's construction and operation?

Describe your proposed design solution and explain the rationale for it. Please also outline any alternative solutions that have been considered but were discounted and the reasons why.

▶ Refer to Advice & Guidance

#### FURTHER INFORMATION

**MORE ON SOLUTIONS:**

*Materials solutions*  
[www.hertslink.org/bfintranet/materials1/solutions](http://www.hertslink.org/bfintranet/materials1/solutions)

*Waste solutions*  
[www.hertslink.org/bfintranet/waste1/solutionsland](http://www.hertslink.org/bfintranet/waste1/solutionsland)

**CASE STUDIES:**

*Materials case studies*  
[www.hertslink.org/bfintranet/materials1/caseland](http://www.hertslink.org/bfintranet/materials1/caseland)

*Waste case studies*  
[www.hertslink.org/bfintranet/waste1/casestud](http://www.hertslink.org/bfintranet/waste1/casestud)

**STANDARDS AND POLICY:**

*The UK Government have published national technical housing standards, and optional building regulations requirements*  
[www.gov.uk](http://www.gov.uk)

*Building Regulations Part M*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

*Lifetime Homes*  
[www.lifetimehomes.org.uk](http://www.lifetimehomes.org.uk)

*Code of Considerate Practice*  
[www.ccscheme.org.uk](http://www.ccscheme.org.uk)

**OTHER RESOURCES:**

*WRAP*  
[www.wrap.org.uk](http://www.wrap.org.uk)

*Hertfordshire Materials Exchange*  
[www.eastex.org.uk/herts/search\\_w.asp](http://www.eastex.org.uk/herts/search_w.asp)

*Environmental Product Declarations provide a summary of the environmental impact (or lifecycle assessment) of construction materials and products.*  
[www.bre.co.uk/page.jsp?id=1578](http://www.bre.co.uk/page.jsp?id=1578)

*Hertfordshire Waste Aware – household waste recycling and waste collection info*  
[www.wasteaware.org.uk](http://www.wasteaware.org.uk)

*Glossary*  
[www.hertslink.org/bfintranet/gloss](http://www.hertslink.org/bfintranet/gloss)



## > Next Steps

**That's it! All done.**

Thank you for considering and responding to the above questions.

Please use the buttons below to print or save this document.

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## > Examples, Solutions & Advice

### Energy & Climate Change

Q1

How will energy demand for heating, lighting and cooling be avoided?

◀ [View your response to this question](#)

#### Advice and Guidance

- 1 A high level of insulation and thermal mass can help maintain a stable and comfortable internal temperature during periods of very hot and cold weather.
- 2 An air tight building envelope involving careful detailing of the building fabric and junctions between building elements, such as windows and external walls will reduce air leakage and therefore heat loss. Appropriate means of ventilation must be provided.
- 3 Maximise passive solar gain and natural lighting by locating the façade of rooms which require heating and lighting within 30 degrees of South, making use of use atria and glazing, courtyards, skylights, sun catchers and sun pipes, and placing rooms requiring most heating and lighting on the southern façade.
- 4 Balance passive solar gain with appropriate solar shading to avoid summer overheating - deciduous trees and bushes, brise soleil, louvers, overhanging eaves, balconies and canopies can be effective.
- 5 Minimise windows on northern elevations or make them smaller to keep out colder northerly winds and reduce potential heat loss.
- 6 Natural and cross ventilation can be achieved using openable windows, wind catchers and passive stack ventilation. Mechanical ventilation systems should incorporate heat recovery with the heat exchanger generally being fitted in the loft, eaves, ceiling, or utility/plant room.
- 7 Provide training and awareness programmes for facilities staff and occupiers of the building on technologies they will come into contact with. If a technology or system will be complicated or costly to use then it is likely to be inappropriate.
- 8 Information boards and electronic displays will generate interest and incentivise sustainable use of artificial heating and lighting.
- 9 Use double or triple glazed windows - inert gas filled (such as argon), solar control technology, heat reflecting films and other additional options now exist to further improve the efficiency and performance of glazing.



## > Examples, Solutions & Advice

### Energy & Climate Change

Q2

What energy efficiency solutions will be used to further reduce energy demand?

◀ View your response to this question

#### Advice and Guidance

- 1 A building management system can automatically control and optimise lighting, heating and cooling across the building to ensure occupier comfort and efficient use of energy.
- 2 Low energy lighting and automated lighting controls should be used internally and externally.
- 3 Use variable speed fans and pumps to reduce the energy demand of plant and building services.
- 4 Ensure any new white goods being installed are AA or A+++ rated.
- 5 Ensure there is internal space, and external space where feasible, for air drying clothes.
- 6 If using gas boilers to supply heat and hot water to the building or individual units within, ensure they are high efficiency - flue gas heat recovery can also be included to further increase their efficiency.
- 7 Mechanical Ventilation with Heat Recovery ventilation systems should be pursued when passive ventilation is not feasible or appropriate. Other heat recovery technologies can be integrated into services such as air conditioning (if necessary), waste water and refrigeration.

Q3

Where relevant, how will renewable and low carbon energy technologies be integrated into the new development?

◀ View your response to this question

#### Advice and Guidance

- 1 Solar Thermal Panels: Freestanding or integrated, ideally SE to SW facing at 30-45 degrees. Suitable for high usages of hot water, but back-up supply is also needed. Evacuated tube panels are generally more costly but more efficient.
- 2 Solar Photovoltaic Panels: Freestanding or integrated into SE to SW facing roofs 30-45 degrees, converting solar energy into electricity. Types of panel can be designed to match the appearance of conventional slate tiles.
- 3 Ground Source Heat Pump: Thermal ground energy is captured for space heating and hot water. They are best suited to underfloor heating or low temperature systems. They can be used to provide cooling during summer months. Require sites with enough open land.
- 4 Air Source Heat Pump: Converts low grade energy from the air outside the building into higher grade energy to be used for space heating inside.
- 5 Biomass Boilers: Burn wood and other biomass products in the form of logs, pellets or chips. Considered to be carbon neutral. The sourcing of fuel, and the provision of storage space and suitable access, should be considered carefully if the technology is to be appropriate and sustainable. The appliance will need to meet the requirements of any designated smoke control zone.
- 6 Combined Heat and Power: Uses natural gas or biomass to provide heating, hot water or electricity. Space is needed for plant and fuel storage.



## > Examples, Solutions & Advice

### Energy & Climate Change

**Q4**

How will the site and building(s) be made resilient to climate change and reduce its contribution to external overheating?

◀ [View your response to this question](#)

#### Advice and Guidance

- 1 Use robust and water resilient external finishes on façades that can reflect or reduce the absorption of solar energy (e.g. white render and light paint colours).
- 2 Use oversized eaves and shading devices to provide solar shading. Oversized eaves and guttering can also protect windows and façades from heavy precipitation.
- 3 Green roofs or walls work well on flatted developments and can significantly reduce the cooling load of the building.
- 4 Deciduous trees and mature soft landscaping around the building will provide shading for occupiers and building facades during the summer, and shelter from storms during winter.
- 5 Balance areas of hard surfacing with green and blue space and features to provide cooling during the summer as well as habitat for local biodiversity and valued outdoor amenity space for occupiers.



## > Examples, Solutions & Advice

### Design & Safety

**Q1**

How will the design promote place making?

◀ View your response to this question

#### Advice and Guidance

- 1 Undertake a contextual analysis of the site to inform the building's design - its siting and orientation, aspect, form, scale, massing, and interaction with adjacent open space (both public and private) and buildings.
- 2 Choose an appropriate architectural response that relates well to both the character of the surrounding area and the new building's operation and role within the urban context, for example as a landmark building.
- 3 Use high quality durable materials, external finishes, and hard and soft landscaping to create a sense of place and worth.
- 4 Maintain and improve the visual amenity of the public realm within the development and between the site and surrounding area through appropriate siting and treatment of signage, materials choice, street furniture and soft landscaping.
- 5 Create active frontages along the interface between the development site and surrounding area to facilitate a vibrant public realm and passive surveillance of public open space.

**Q2**

How will the development meet changing and different needs of occupiers and users during its lifespan?

◀ View your response to this question

#### Advice and Guidance

- 1 Construction with integral wall lintels allows co-joining of units.
- 2 Open plan or flexible floor plates or lightweight, demountable internal construction allows occupiers and building owners to reconfigure room layouts and the use of space.
- 3 The new building should be robust and durable in its design and construction. Attention needs to be given to the quality of detailing to extend the lifespan of the building, ensuring that future occupiers appreciate the worth of renovating the building for other uses.



## > Examples, Solutions & Advice

### Design & Safety

**Q3**

How will the design promote inclusivity, security and safety?

◀ [View your response to this question](#)

### Advice and Guidance

- 1 Create active frontages with principal entrances fronting onto the street to enable passive surveillance and to contribute toward an active public realm.
- 2 Provide high quality internal private and communal space that feels safe and creates a sense of worth, ownership and belonging for all occupiers.
- 3 Provide adequate, safe and high quality private and communal outdoor space, and facilitate safe linkages to nearby green spaces, to promote good mental and physical health and enable informal social interaction between occupiers.
- 4 A single point of access will provide security advantages, but ensure any single entrance, and any boundary fencing or walls are not intimidating or unwelcoming.
- 5 Screening and privacy for private outdoor spaces, and a clear demarcation between public and private space.
- 6 Screening and secure enclosures for outdoor storage areas.
- 7 Provide lockable gates, physical boundary features and robust lockable doors and windows.
- 8 Provide adequate lighting for entrances, driveways, footpaths and car parks.
- 9 Approaches, doorways, floor levels and circulation spaces should be designed for easy access by all abilities and avoid creating trip hazards and obstacles.
- 10 Provide safe and secure cycle storage and changing facilities.
- 11 Suitably designed and located separate entrances should be created for service, delivery and emergency vehicles.



## > Examples, Solutions & Advice

### Water

Q1

How will the consumption of water be reduced?

◀ View your response to this question

### Advice and Guidance

- 1 Use water-efficient aerated shower heads that can produce water flows that feel far higher than they actually are. Fit low flow taps to sinks and baths and dual / low volume flush toilets.
- 2 Leak detection systems which monitor mains water supply to buildings and sites can drastically reduce wastage of mains water through underground leakages.
- 3 Buildings with extensive roof areas and guttering provide opportunities for green roofs and rainwater harvesting to supply free water for flushing, washing and irrigation.
- 4 Greywater recycling systems which capture and treat waste water from wash basins, dishwashers and other appliances can also be used to provide recycled water for flushing and irrigation, offsetting demand for mains water.
- 5 Design landscaped areas using drought tolerant plants.
- 6 Ensure new white goods are water efficient - washing machines should use less than 55 litres per cycle. Look for appliances with the Water Efficient Product Label - the Waterwise Marque.
- 7 Sub-metering of mains water as well as grey/rainwater systems will allow monitoring of water consumption and further incentivise the efficient use of water.





## > Examples, Solutions & Advice

### Water

#### Q2

How will surface water runoff from the site and building(s) be managed sustainably?

◀ [View your response to this question](#)

### Advice and Guidance

- 1 Rainwater harvesting can reduce the amount of water flowing into drains and offset mains water demand for washing, flushing and irrigation.
- 2 Green roofs and walls will help attenuate storm water run-off in flatted or site constrained developments.
- 3 Surface temporary flood storage and transition measures such as filter strips will attenuate and help manage surface water flooding whilst providing other benefits, such as habitat and amenity space.
- 4 Permeable paving and landscaping (e.g. grass strips, gravel or permeable tarmac instead of concrete driveways) will provide natural drainage and deter soil erosion.
- 5 Appropriate planting will provide natural drainage and deter soil erosion.
- 6 Engineered underground flood attenuation, for example under car parks, may be suitable if surface solutions such as swales and natural filter strips are inappropriate due to site constraints.
- 7 Oil interceptors or separators can be used to capture polluted run off from driveways and the highway before it is conveyed to watercourses.
- 8 Filter strips are gently sloping vegetated areas that treat runoff from adjacent impermeable areas, such as roads and footways.
- 9 Bioretention areas collect and treat water runoff before discharging it downstream or allowing infiltration to the ground below.
- 10 Infiltration basins are shallow depressions in grassy or lightly vegetated areas designed to store runoff temporarily until it infiltrates into the ground below.
- 11 Detention basins are shallow dry depressions that store water runoff for a specific duration. They are typically designed to accept additional water runoff during intense storms and to provide habitat for biodiversity.
- 12 Filter drains are deep narrow channels filled with permeable materials that filter and convey runoff to other parts of a SuDS scheme, and can be designed to allow infiltration into the ground below (infiltration trenches).
- 13 Swales are broad, shallow and grassy channels that convey or store water runoff, or allow water to infiltrate into the ground below.



## > Examples, Solutions & Advice

### Landscape & Biodiversity

Q1

What measures will be taken to create, protect and enhance existing landscape features and habitats?

◀ View your response to this question

#### Advice and Guidance

- 1 During construction, arrange site access to avoid loss or detrimental impact on key landscape features and habitats.
- 2 During construction, provide appropriate screening or temporary landscaping to minimise noise, air and light pollution and physical impacts on the surrounding landscape and habitats.
- 3 If the site is home to protected species, such as Great Crested Newts, then special measures and requirements may need to be fulfilled. Contact your local planning department for advice.
- 4 External lighting within or adjacent to green spaces should be avoided or minimised where there are sensitive species and habitats such as bats.
- 5 Maintain valued public views from, through and to surrounding landscapes, streetscapes and townscape.
- 6 Ecological surveys should be undertaken to inform the design, phasing and construction management of the development. Surveys will identify the ecological characteristics and what mitigation and enhancement solutions will be required to maintain or improve the ecological value of the site and surrounding area. Surveys must be carried out by a qualified professional who is a member of the Institute of Ecology and Environmental Management (IEEM) or have equivalent qualifications.
- 7 Integrate nesting, roosting and hibernating boxes/spaces into the design of the building, as informed by the ecological survey.
- 8 Integrate green roofs planted with native grasses and wildflower species.
- 9 Create areas of new habitat that reflect the surrounding natural environment, such as species-rich grassland, hedgerows and native tree planting, and water features. They should be designed to provide stepping stones to nearby habitats, a mix of open and enclosed spaces and microclimates, and to help the development sit comfortably within its surroundings.
- 10 Provide information to occupiers that describe the makeup of green space and the benefits they provide within the development, a code of conduct for using those spaces (e.g. not to disturb certain sensitive areas or planting), and how and why green spaces are maintained (e.g. segregated areas and mowing regimes).
- 11 Phase and carry out works around seasonal patterns such as nesting, mating, foraging and hibernation which would have been identified via an ecological survey.



## > Examples, Solutions & Advice

### Landscape & Biodiversity

**Q2**

How will any impacts on landscape and biodiversity be avoided or mitigated?

◀ View your response to this question

#### Advice and Guidance

- 1 Small, mixed composition, vertically complex and well sited soft landscaping schemes on smaller tight sites can create valuable habitat and biodiversity gains.
- 2 Ensure on-site identification and appropriate protection of trees and habitats within the site, or temporary relocation of habitats such as wild flower rich grassland, is carried out prior to construction works.
- 3 Retain and store topsoil removed from the site, then reuse where possible to ensure habitat continuity for local species.
- 4 Create new landforms to protect visual amenity and help integrate the development into the wider landscape.
- 5 Incorporate appropriate buffer zones, screening, fencing and boundary treatments that are in keeping with the surrounding area to protect visual amenity, mitigate harmful impacts on adjacent habitats and the wider landscape, and to provide attractive boundaries or 'edges'.
- 6 Retain and protect existing landscape features and habitats, such as individual standard trees, hedgerows and tree belts, and natural water features (e.g. ponds and ditches).

**Q3**

How will the risks of ground instability due to climate change be managed?

◀ View your response to this question

#### Advice and Guidance

- 1 Heavier foundations - foundations should be strong and extend deep enough below the zone in which seasonal variations in moisture content can be withstood.
- 2 Reinforcing slopes or building retaining walls to prevent or reduce landslip.
- 3 Appropriate vegetation can help to prevent soil erosion through their root network, helping to stabilise ground conditions for buildings.



## > Examples, Solutions & Advice

### Air

**Q1**

How will air pollutants, dust and other emissions arising from construction be minimised?

[◀ View your response to this question](#)

### Advice and Guidance

- 1 Wheel washing all vehicles, and dampening and sweeping roadways.
- 2 Covering vehicles and skips when loaded with material.
- 3 Dampening stock piles, and locating them to take account of the prevailing wind and sensitive receptors.
- 4 Sealing and replanting completed earthworks as early as practicable to reduce dust.
- 5 Using low emission vehicles and plant equipment (particularly on site generators).

**Q2**

How will good internal air quality be achieved?

[◀ View your response to this question](#)

### Advice and Guidance

- 1 Use low VOC emitting materials and products, such as water or vegetable oil based paints, linoleum, and carpet made of natural materials (e.g. seagrass or wool).
- 2 Use furnishings made from solid wood instead of pressed or reconstituted wood, which are often bound with chemicals such as formaldehyde.
- 3 An appropriate ventilation strategy, whether passive (e.g. cross or stack ventilation) or mechanical, should take into account neighbouring land uses as sources of potential air and noise pollution, such as industrial parks or busy roads.



## > Examples, Solutions & Advice

### Noise

**Q1**

How will construction noise be minimised?

[◀ View your response to this question](#)

#### Advice and Guidance

- 1 Avoid site drilling wherever possible.
- 2 Keep site grinding, cutting and similar noisy activities to a minimum, and at appropriate times of the day.
- 3 Avoid vibro-compaction of the ground as much as possible.
- 4 Use off-site manufacturing where possible, such as the cutting of non-standard concrete blocks off site under controlled conditions.

**Q2**

What noise attenuation measures will be incorporated into the design of the new development?

[◀ View your response to this question](#)

#### Advice and Guidance

- 1 Use sound resistant flooring and walling systems.
- 2 Thicker, heavier doors and double glazed windows will provide greater noise insulation.
- 3 Separate noise sensitive areas away from external and internal noise sources by the greatest distance possible. Position buildings or rooms which are less sensitive to noise to act as screens or baffles between noise sources and quiet areas.
- 4 Provide sound proofing for noise generating areas, e.g. plant rooms, reception areas or utility rooms to reduce noise disturbance to occupants.
- 5 Position building services away from sensitive properties or opening windows.
- 6 Regular maintenance of plant and equipment will reduce vibration and noise, and optimise energy efficiency.
- 7 Use landscaping and planting to buffer and screen the development from nearby noisy land uses.



## > Examples, Solutions & Advice

### Materials & Waste

**Q1**

What sustainable materials will be used?

[◀ View your response to this question](#)

#### Advice and Guidance

- 1 Consider whole life costing and performance when specifying materials, taking into account capital cost, longevity, operational and maintenance costs, and carbon, water and ecological footprints.
- 2 Design out waste at the initial design stage, by prioritising reuse and recovery of materials, exploring off-site construction methods, materials optimisation, waste efficient procurement and creating a structure which can easily be adapted.
- 3 Use local and traditional materials where possible to reduce 'road miles' and the development's carbon footprint, and to reflect local character and heritage.
- 4 Source timber that is Forest Stewardship Council (FSC) certified, or equivalent.
- 5 Use materials that are 'carbon neutral' (or low embodied carbon) e.g. wood, wool, and straw/reed. Preferably water and vegetable oil based paints should be used due to their low VOC (Volatile Organic Compounds) content.

**Q2**

How will the waste hierarchy be embedded into the development's construction and operation?

[◀ View your response to this question](#)

#### Advice and Guidance

- 1 Establish targets for the reuse and recycling of construction waste, and ensure sorting and disposal of waste. Monitoring should be in place to ensure waste is being properly sorted and disposed and that targets are being achieved on site.
- 2 Reuse structures and buildings where possible, but if demolition is necessary then reuse demolition waste in the construction of the new building or for site levelling and landscaping.
- 3 Pre-fabricated and modular construction components (e.g. pre-cast concrete beams, insulated wall panels, bathroom pods) may be appropriate and can reduce construction time and waste. Their use should be considered alongside other environmental impacts, such as road miles if they are not manufactured locally.
- 4 Design the new building with flexible internal space to allow the home to be adaptable to changing needs without further demolition work.
- 5 Return packaging and unused materials to suppliers.
- 6 Sort construction waste on site for recycling/reuse.