

# Building Futures

## Sustainable Design Toolkit

### Commercial & Industrial



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



## > Contents

<b>Introduction</b>	<b>2</b>	<b>Air</b>	<b>16</b>
<b>The Building Futures Partnership</b>	<b>2</b>	Q1. How will air pollutants, dust and other emissions arising from construction be minimised?	<b>16</b>
<b>The Sustainable Design Toolkit</b>	<b>2</b>	Q2. How will good internal air quality be achieved?	<b>17</b>
<b>How to use the Sustainable Design Toolkit</b>	<b>3</b>	<b>Noise</b>	<b>18</b>
<b>Design Aims and Outcomes</b>	<b>4</b>	Q1. How will construction noise be minimised?	<b>18</b>
<b>Your proposal</b>	<b>5</b>	Q2. What noise attenuation measures will be incorporated into the design of the site and building(s)?	<b>19</b>
<b>Project details</b>	<b>5</b>	<b>Materials &amp; Waste</b>	<b>20</b>
<b>Sustainable Design Summary</b>	<b>6</b>	Q1. What environmentally friendly materials will be used?	<b>20</b>
<b>Energy &amp; Climate Change</b>	<b>7</b>	Q2. How will the waste hierarchy be embedded into the development's construction and operation?	<b>21</b>
Q1. How will energy demand for heating, lighting and cooling be avoided?	<b>7</b>	<b>Design &amp; Safety</b>	<b>22</b>
Q2. What energy efficiency solutions will be used to further reduce energy demand in the new development?	<b>8</b>	Q1. How will the design of the development contribute to place making?	<b>22</b>
Q3. Where relevant, how will renewable and low carbon energy technologies be integrated into the new development?	<b>9</b>	Q2. How could the site and building be adapted to different uses during its lifetime?	<b>23</b>
Q4. How will the site and building(s) be made resilient to climate change and reduce its contribution to overheating?	<b>10</b>	Q3. How will the design of the new building promote inclusivity, security and safety?	<b>24</b>
<b>Landscape &amp; Biodiversity</b>	<b>11</b>	<b>Next Steps</b>	<b>25</b>
Q1. What measures will be taken to create, protect and enhance existing landscape features and habitats?	<b>11</b>	<b>Examples, Solutions &amp; Advice</b>	<b>26</b>
Q2. How will any impacts on landscape and biodiversity be avoided or mitigated?	<b>12</b>		
Q3. How will the risks of ground instability due to climate change be managed?	<b>13</b>		
<b>Water</b>	<b>14</b>		
Q1. How will the consumption of water be reduced?	<b>14</b>		
Q2. How will surface water runoff from the site and building(s) be managed sustainably?	<b>15</b>		



## > 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 upfront 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:**

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

*Passivhaus and EnerPHit Standard: Certification for refurbished buildings*  
[www.passivhaus.org.uk](http://www.passivhaus.org.uk)

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

*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)

**OTHER RESOURCES:**

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

**GLOSSARY:**

*Building Futures 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 in 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*  
[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:**

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

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

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

*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)

**OTHER RESOURCES:**

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

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

**GLOSSARY:**

*Building Futures 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*  
[www.hertslink.org/bfintranet/energy1/](http://www.hertslink.org/bfintranet/energy1/)

**CASE STUDIES:**

*Energy & Climate Change case studies*  
[www.hertslink.org/bfintranet/climateadapt/18652826](http://www.hertslink.org/bfintranet/climateadapt/18652826)

**STANDARDS AND POLICY:**

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

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

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

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

*Green Deal for Businesses*  
[www.decc.gov.uk](http://www.decc.gov.uk)

**OTHER RESOURCES:**

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

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

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

**GLOSSARY:**

*Building Futures 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 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:**

*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)

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

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

**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:**

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

**OTHER RESOURCES:**

*The 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)

**GLOSSARY:**

*Building Futures 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:**

*Conservation of Habitats and Species Regulations 2010*  
[www.naturalengland.org.uk](http://www.naturalengland.org.uk)

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.

*GreenArc Strategic Green Infrastructure Plan*

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

*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. Failure to protect hedgerows and trees can result in significant fines - up to £20,000 per tree.

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

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

*Green Roof Code*

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



## > 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

*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 and 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

#### MORE ON SOLUTIONS:

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

#### STANDARDS AND POLICY:

*Conservation of Habitats and Species Regulations 2010*  
[www.naturalengland.org.uk](http://www.naturalengland.org.uk)

*GreenArc Strategic Green Infrastructure Plan*  
[www.hertfordshire.gov.uk/docs/pdf/s/SHiP.pdf](http://www.hertfordshire.gov.uk/docs/pdf/s/SHiP.pdf)

*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/)

#### 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/leisculture/heritage1/landscape/hlca/lcacoll](http://www.hertfordshire.gov.uk/services/leisculture/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*  
[www.biodiversityplanningtoolkit.com](http://www.biodiversityplanningtoolkit.com)



## > 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*  
[www.hertslink.org/bfintranet/landbio/18653222](http://www.hertslink.org/bfintranet/landbio/18653222)

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

*Water solutions*  
[www.hertslink.org/bfintranet/water1/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)

**GLOSSARY:**

*Building Futures 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*  
[www.hertslink.org/bfintranet/water1/solutions/](http://www.hertslink.org/bfintranet/water1/solutions/)  
*Climate Change Adaptation solutions*  
[www.hertslink.org/bfintranet/climateadapt/18652826](http://www.hertslink.org/bfintranet/climateadapt/18652826)

**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:**

*BREEAM: Construction Technical Standard*  
[www.breeam.com](http://www.breeam.com)  
*Building Regulations Part G*  
[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*  
[www.waterwise.org.uk](http://www.waterwise.org.uk)  
*The Water Calculator*  
[www.thewatercalculator.org.uk](http://www.thewatercalculator.org.uk)

**GLOSSARY:**

*Building Futures 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**  
[www.hertslink.org/bfintranet/water1/solutions/](http://www.hertslink.org/bfintranet/water1/solutions/)

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

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

##### 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/18652826](http://www.hertslink.org/bfintranet/climateadapt/18652826)

##### STANDARDS AND POLICY:

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

*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)*  
[www.communities.gov.uk](http://www.communities.gov.uk)

*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.environment-agency.gov.uk](http://www.environment-agency.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)



## > 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)

**GLOSSARY:**

*Building Futures 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/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:

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

*Businesses that make emissions to air, land and water are regulated by the Environment Agency, under strict EU and UK Environmental Permitting laws. If a company needs to comply with these laws they will need a permission from the Environment Agency to operate. This permission usually comes in the form of a permit, and usually requires the company to monitor their emissions. MCERTS is the Environment Agency's Monitoring Certification Scheme. It provides the framework for businesses to meet quality requirements.*  
[www.environment-agency.gov.uk](http://www.environment-agency.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:

*Building Futures 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:**

*Building Futures 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 site and building(s)?

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/)

**STANDARDS & POLICY:**

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

[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*

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

**GLOSSARY:**

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



## > Your proposal

### Materials & Waste

Q1

#### What environmentally friendly 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/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:

###### BREEAM: Construction Technical Standard

[www.breeam.com/technical-standards](http://www.breeam.com/technical-standards)

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

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

##### 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/en-uk](http://www.fsc-uk.org/en-uk)

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

##### GLOSSARY:

###### Building Futures 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:**

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

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

*Code of Considerate Practice*  
<https://www.ccscheme.org.uk/ccs-ltd/code-of-considerate-practice-2/>

**OTHER RESOURCES:**

*National Industry Symbiosis Programme*  
[www.nispnetwork.com](http://www.nispnetwork.com)

*Hertfordshire Materials Exchange*  
[www.eastex.org.uk/herts/index.asp](http://www.eastex.org.uk/herts/index.asp)

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

*Site Waste Management Plans*  
[www.wrap.org.uk/content/site-waste-management-plans-1](http://www.wrap.org.uk/content/site-waste-management-plans-1)

*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:**

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



## > Your proposal

### Design & Safety

Q1

How will the design of the development contribute to 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)

*Design and Access Statements requirements.*  
[www.planningportal.gov.uk](http://www.planningportal.gov.uk)

**OTHER RESOURCES:**

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

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

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

**GLOSSARY:**

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



## > Your proposal

### Design & Safety

Q2

How could the site and building be adapted to different uses during its lifetime?

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

*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.*

**OTHER RESOURCES:**

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

**GLOSSARY:**

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



## > Your proposal

### Design & Safety

Q3

How will the design of the new building 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*  
[www.hertslink.org/bfintranet/safety1/case](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:**

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

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

**GLOSSARY:**

*Building Futures 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.

### Save your responses

Click here to save your responses so you can print or continue working later.



### Print your responses

Click here to print only the relevant pages of this document (Pages 6-24).



### Print full document

Click here to print the full document, including Advice & Guidance notes.





## 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 will help maintain a stable internal temperature during periods of very hot or cold weather.
- 2 An air tight building envelope with careful treatment of junctions across the building fabric, such as windows, pipes, ducts and external walls, will reduce air leakage and therefore heat loss. Appropriate means of ventilation must be provided.
- 3 Natural ventilation in stair wells, storage or factory floor areas, office space, central lobbies and circulation areas can be achieved using automated openable windows, wind catchers and wind troughs, and passive stack ventilation taking into account any necessary controls for managing emissions to the outside environment. Alternatively, use Mechanical Ventilation with Heat Recovery.
- 4 For areas not required to be at room temperature, such as goods-in areas, ensure effective partitioning and insulation from heated parts of the building in order to reduce heat loss and draughts.
- 5 Depending on the function of the building, utilise passive solar gain and natural lighting by locating the facade of rooms which require heating and lighting within 30 degrees of South. Suitable options include the use of atria, skylights, sun catchers, sun pipes, and the creation of sunspaces or 'thermal buffers such as lobby areas.
- 6 Balance the use of passive solar gain with appropriate solar shading and cooling to avoid summer overheating – solar control glazing, deciduous trees and bushes, brise soleil, louvers, overhanging eaves, canopies, internal blinds, phase change materials and reverse heat pumps can be effective.
- 7 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.
- 8 Create transition zones and partitions such as automated air curtains, strip curtains, or roller shutters at access areas to reduce treated air and heat escaping. They may also help to maintain required conditions for office spaces and manufacturing processes.
- 9 Provide training and awareness programmes for facilities staff and occupiers of the building on any 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.
- 10 Information boards and electronic displays will generate interest and incentivise sustainable use of artificial heating and lighting.
- 11 Rooms or spaces used less often should face north with minimised glazing to reduce heat loss during winter. Rooms that will naturally have a high heat gains and will require active cooling, such as ICT rooms, can be insulated and sited on elevations with the highest solar gain during summer months.



## > Examples, Solutions & Advice

### Energy & Climate Change

Q2

What energy efficiency solutions will be used to further reduce energy demand in the new development?

◀ View your response to this question

#### Advice and Guidance

- 1 A Building Management System will automatically control lighting, heating and cooling services in the most energy efficient way. It will help occupiers monitor their energy use and highlight energy intensive areas or times of the day, and seasonal variations in energy demand.
- 2 If using gas for space heating and hot water, ensure boilers are high efficiency and have appropriate controls linked to any BMS that is in use.
- 3 Use energy sub-meters for space heating, hot water, mechanical cooling, lighting, and other major energy consuming uses or items.
- 4 Energy efficient internal and external lighting with appropriate controls should be used.
- 5 Ensure white goods are AA or A+++ rated.
- 6 Mechanical Ventilation with Heat Recovery systems should be pursued where passive ventilation is inappropriate. Other heat recovery technologies can be integrated into services such as air conditioning (if necessary), waste water and refrigeration.



## > Examples, Solutions & Advice

### Energy & Climate Change

**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, and 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 use 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. Significant space is needed for plant, and fuel storage if using biomass. They are best suited to community heating systems where they are run at full capacity continuously and heat generated during periods of low demand is exported to other users to avoid 'dumping' it into the external environment and contributing to external overheating.



## > 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 overheating?

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

#### Advice and Guidance

- 1 Use water resilient finishes and robust external finishes on the facade which can reflect or reduce the absorption of solar energy (e.g. white render and light paint colours). Be aware that reflective surfaces, particularly in an office complex may create glare for adjacent buildings.
- 2 Use oversized eaves and shading devices to provide solar shading. Oversized eaves and guttering can also protect windows and facades from heavy precipitation.
- 3 Green roofs or walls can reduce the cooling load of a 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

### 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 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.
- 2 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.
- 3 External lighting within or adjacent to green spaces should be avoided or minimised where there are sensitive species and habitats such as bats.
- 4 Maintain valued public views from, through and to surrounding landscapes, townscapes and streetscapes.
- 5 Integrate nesting, roosting and hibernating boxes/spaces into the design of the building, as informed by the ecological survey.
- 6 Integrate green roofs planted with native grasses and wildflower species.
- 7 Agree Landscape and Habitat Management Plans covering detailed annual management and maintenance roles, responsibilities and actions for open and green spaces.
- 8 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 linking nearby habitats, a mix of open and enclosed spaces and microclimates, and serve as screening to help the development sit better within its surroundings.
- 9 Provide information packs to occupiers and information boards for site users that describe the makeup of green space and the benefits they provide, 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).
- 10 Phase and carry out works around seasonal patterns such as nesting, mating, foraging and hibernation which would have been identified via an ecological survey.
- 11 During construction, arrange site access to avoid loss or detrimental impact on key landscape features and habitats.
- 12 During construction, provide appropriate screening or temporary landscaping to minimise noise, air and light pollution and physical impacts on the surrounding landscape and habitats.



## > 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 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.
- 2 Retain and store topsoil removed from the site, then reuse where possible to ensure habitat continuity for local species.
- 3 Small, mixed composition, vertically complex and well sited soft landscaping schemes on smaller tight sites can create valuable habitat and biodiversity gains.
- 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

### Water

Q1

How will the consumption of water be reduced?

◀ View your response to this question

### Advice and Guidance

- 1 Install flow regulated or auto stop taps, waterless urinals and dual/low volume flush toilets - if using traditional urinals you can incorporate sensors to manage flushing sustainably.
- 2 Use water-efficient shower heads that can produce water flows that feel far higher than they actually are.
- 3 Leak detection systems which monitor mains water supply to buildings and sites can drastically reduce wastage of mains water through underground leakages.
- 4 Extensive roof areas and guttering provide opportunities for green roofs and rainwater harvesting to supply free water for flushing, washing and irrigation.
- 5 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.
- 6 Design landscaped areas using drought tolerant plants.
- 7 Ensure new white goods are water efficient. Look for appliances with the Water Efficient Product Label - the Waterwise Marque.
- 8 Sub-metering of mains water as well as grey/rainwater systems, connected to a Building Management System if possible, 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 Developments with large areas of hard surfacing (yards, storage areas, car parks, etc.) can make use of permeable hard surfacing and soft landscaping (e.g. grass strips, gravel or permeable tarmac). Permeable surfaces will provide natural drainage and deter soil erosion, while also providing additional amenity and aesthetic value to the development.
- 2 Natural temporary flood storage and surface conveyance techniques such as filter strips will attenuate and manage surface water run-off, and filter and treat discharge from car parks and industrial yards (subject to relevant environmental protections and permits) whilst providing other benefits, such as habitat and amenity space for occupants and users.
- 3 Engineered underground flood attenuation, for example beneath car parks, may be suitable if surface solutions such as swales and filter strips are inappropriate due to site constraints.
- 4 Rainwater harvesting can reduce the amount of water flowing into drains and offset mains water demand for washing, flushing and irrigation.
- 5 Green roofs can help attenuate run-off, whilst offering further benefits such as promoting biodiversity, reducing urban heat island effect, and adding architectural interest to commercial and industrial buildings.
- 6 Appropriate planting to provide natural drainage and deter soil erosion.
- 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

### 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 Ventilation of industrial buildings is often necessary to vent and control emissions associated with the manufacturing process. An appropriate ventilation strategy, whether passive (e.g. cross or stack ventilation) or Mechanical Ventilation with Heat Recovery, should be integrated into the design of the building and individual units.
- 3 Use furnishings made from solid wood instead of pressed or reconstituted wood, which is often bound with chemicals such as formaldehyde.



## > 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 site and building(s)?

◀ View your response to this question

#### Advice and Guidance

- 1 Thicker, heavier doors and double glazed windows will provide greater noise insulation.
- 2 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.
- 3 Provide sound proofing for noise generating areas, e.g. plants rooms, reception areas, utility rooms or workshops to reduce noise disturbance to occupants and neighbours.
- 4 Position noise generating activities and areas, for example building services and areas with a lot of vehicular activity, away from sensitive properties and opening windows.
- 5 Regular maintenance of plant and equipment will reduce vibration and noise, and optimise energy efficiency.
- 6 Use landscaping and planting to buffer and screen the development from nearby noise sensitive land uses.
- 7 Use sound resistant flooring and walling systems.



## > Examples, Solutions & Advice

### Materials & Waste

Q1

What environmentally friendly materials will be used?

◀ View your response to this question

#### Advice and Guidance

- 1 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.
- 2 Source materials locally, they have fewer 'road miles' Source local and traditional materials to reduce 'road miles' and the carbon footprint, and to reflect local character and heritage.
- 3 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 content.
- 4 Source timber that is Forest Stewardship Council (FSC) certified, or equivalent.
- 5 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.

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 Offsite manufactured components, such as Structurally Insulated Panels, or modular construction 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 building to be adaptable to changing needs without major demolition and reconstruction work.
- 5 Sort construction waste on-site for recycling/ reuse.
- 6 Return packaging and unused materials to suppliers.



## > Examples, Solutions & Advice

### Design & Safety

Q1

How will the design of the development contribute to place making?

◀ View your response to this question

### Advice and Guidance

- 1 The type and size of a commercial/ industrial development will dictate its best location and in turn an appropriate design response. Small to medium-sized offices may be located near more sensitive land uses, whereas large scale industry and manufacturing will need to be buffered to minimise the physical effects on other land uses, including through vehicular movement.
- 2 Choose an appropriate architectural response that relates well to both the character of the surrounding area and the building's operation and role within the urban context, for example as a landmark building.
- 3 Enhance the public realm and sense of place, for example by creating multi-functional spaces, intuitive layouts and clear signage for principal entrances, and landscaping to create a welcoming, attractive site.
- 4 Use high quality durable materials, external finishes, and hard and soft landscaping to create a sense of place and worth.
- 5 Maintain and improve visual amenity within the space between the site and surrounding area through appropriate siting and treatment of signage, materials choice, street furniture and soft landscaping.
- 6 Ensure appropriate location and design of access points into the site so that it is integrated into the surrounding area and people can move through the site and wider urban area as a whole without difficulty or confusion.
- 7 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.



## > Examples, Solutions & Advice

### Design & Safety

**Q2**

How could the site and building be adapted to different uses during its lifetime?

◀ View your response to this question

#### Advice and Guidance

- 1 Open plan or flexible floor plates.
- 2 Construction with integral wall lintels to allow co-joining of units.
- 3 Internal divisions within rooms should be easy to change or remove to create different space arrangements with minimal disruption.
- 4 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 building, ensuring that future occupiers appreciate the worth of renovating the building for other uses.
- 5 By developing a design brief which includes the range of services to be provided and how they may grow or adapt over time, will ensure the building is for purpose now and in the future.

**Q3**

How will the design of the new building promote inclusivity, security and safety?

◀ View your response to this question

#### Advice and Guidance

- 1 Create active frontages and principal entrances fronting onto the street that enable passive surveillance, provide a welcoming access point, and contribute positively to the streetscene.
- 2 Separate public building entrances from any private service area, storage area or other entrance.
- 3 Screen and secure enclosures for outdoor storage areas.
- 4 Control entry and access via security gates and fencing may be appropriate where hazardous goods or dangerous equipment is envisaged.
- 5 Ensure any security gates are set back sufficiently to allow the largest vehicle manoeuvrable on-site to queue without obstructing the street or footpath.
- 6 Provide adequate lighting at entrances, pathways and car parks.
- 7 Approaches, doorways, floor levels and circulation spaces should be designed for easy access by all abilities and avoid creating trip hazards and obstacles.
- 8 Provide safe and secure cycle storage and changing facilities.