Ecology in BREEAM

Ecology is one of a series of key sections included across the BREEAM family of schemes, which relate to master planning, infrastructure and buildings (see Figure 1). The Ecology Section encourages project teams to identify ecologically valuable features and opportunities to protect and enhance habitats, and to mitigate unavoidable impacts. It also seeks to improve long term biodiversity management practices and strategies for assessed sites and associated areas.

Whist the coverage of ecology in BREEAM has evolved since it was added to the scheme in 1993 the aims of the issues and assessment criteria that form the basis of BREEAM’s reward mechanism (awarding credits) have remained broadly consistent since 1998.

Responding to Developments in Ecological Best Practice

All BREEAM schemes are periodically reviewed to ensure they continue to be relevant, applicable and represent best practice, whilst maintaining practicality, cost effectiveness and value. They must continue to challenge masterplanners, designers, constructors, asset owners and managers to raise standards of performance and sustainability.

BRE Global’s BREEAM team recognises that there have been significant developments in best practice for evaluating, protecting and enhancing ecological features over the last decade. These are ongoing, with a number of key policy areas under development, including work on ecosystem services and natural capital.

To ensure a clear understanding of these developments, BRE Global has worked with a wide range of stakeholders, including the UK Green Building Council, professional bodies such as Chartered Institute of Ecology and Environmental Management (CIEEM) and the Landscape Institute, and a range of consultants, developers, designers, constructors, managers and policy makers (for more information see Appendix B). The overall objective was to identify a consistent strategic framework for evaluating ecology related issues across BREEAM.

This stakeholder consultation fed into the development of the SEF, which aims to ensure a fair and balanced framework for evaluating ecological impact, mitigation and enhancement issues across the BREEAM family of schemes, whilst reflecting current best practice and future direction.

Figure 1 The BREEAM family of schemes comprises a number of schemes focused on differing sectors and lifecycle stages.
The BREEAM UK Strategic Ecology Framework

The SEF promotes a wider understanding of the objectives of BREEAM and sets out a common basis on which appropriate ecology related assessment criteria will be developed. It does not set out specific methodologies/assessment criteria, as these must relate to the particular focus of each BREEAM scheme. However the SEF sets the direction for criteria development and must be considered as part of the BREEAM UK scheme update and development process.

The SEF is broken down into six discrete ‘Tasks’ (see Table 1) which complement ecology practices and give clarity to the key objectives of all BREEAM schemes. There will inevitably be some overlap and feedback loops between these tasks when applied to projects.

SEF Aims

The SEF will guide and inform BREEAM criteria development, with the aim of achieving the following:
- Understand the existing ecological value and condition of a site and its associated areas, in order to identify appropriate objectives.
- Identify, protect and enhance key existing ecological features.
- Remove or limit as far as possible, existing features identified as having negative impacts on the ecological value of the site.
- Mitigate unavoidable impacts and compensate against residual impacts.
- Enhance the broader ecological value of the site and its links to associated areas through the creation and/or management of ecological features on or near the site.
- Secure ongoing management and maintenance to ensure intended outcomes are realised over the life of the site.

Integrating with wider sustainability

The SEF aims to promote and maximise opportunities to align or integrate with wider sustainability activities (see Task 2 on page 7) relating to other BREEAM sections. For example, it will highlight the opportunities for ecology to link with related disciplines such as landscape and amenity. This supports the overarching aim of BREEAM to encourage and recognise holistic approaches that maximise value to all stakeholders whilst minimising impact (see Figure 2).

Stakeholder collaboration and knowledge transfer is key to successfully realising this aim. The SEF is centred on a collaborative approach, promoting liaison and communication with a development’s stakeholders where this will result in clear benefits. The stakeholders will vary according to the development and lifecycle stage being assessed, but are likely to include ecological professionals, landscape architects, planners, designers, contractors, facilities managers, bodies such as wildlife trusts and, in some cases, local communities.

The SEF requires consideration of both the range of stakeholders involved and their level of engagement in order to ensure that the aims above are met. This will be reflected in BREEAM credit allocations within specific schemes. This approach supports the development of assessment criteria that recognise meaningful actions taken with levels of expertise appropriate to the project/asset and life cycle stage under assessment. BRE Global will also look to support the timely involvement of relevant stakeholders in order to maximise the benefits of their inputs whilst maintaining practicality and cost effectiveness.

Figure 2  The SEF is centred on the high level principles detailed in this diagram and seeks to encourage opportunities for enhancement wherever possible
The SEF in the Context of UK Policy, Regulatory Framework, Sector Tools and Guidance

BREEAM focusses on recognising and promoting best practice over and above statutory requirements, including environmental protection and planning. This is reflected in parts of the SEF that may appear to have some overlap with regulations or standard industry practices.

Wherever possible BREEAM aims to build on existing processes and procedures rather than creating additional requirements that may cause unnecessary duplication, or burden the project with complexities and costs that could create barriers to adopting more ecologically friendly outcomes. The SEF was developed to align with a range of standard industry guidance and tools such as the Digital Plan of Work and the Royal Institute of British Architects (RIBA) Plan of Work 2013.

BREEAM scheme assessment criteria will take full account of the opportunities for linking with current and future regulatory and policy requirements. The detailed objectives in the SEF may need to evolve further to take account of future developments and harmonisation in areas such as ecosystems services, natural capital and biodiversity offsetting, but the current framework provides a sound basis for this.

The SEF’s Relationship with UK BREEAM Assessment Schemes

The SEF sits above the UK BREEAM schemes, acting as a common reference for the development of ecology and associated criteria (landscape etc.) – see Figure 3.

While not all parts of the SEF are relevant to all schemes, they will all use the framework to help align their ecological criteria – thereby maximising synergies between schemes, and efficiencies in assessment through the transfer of assessment results where appropriate.

SEF implementation will be part of scheme development consultations to ensure that it is applied in a fair and balanced way that reflects the specific needs, limitations and opportunities in each lifecycle stage and sector, whilst avoiding unwarranted burdens and achieving real benefits.
SEF Structure

The SEF is organised into six Tasks, each with distinct objectives and supporting detail to demonstrate how the objectives can be met. The tasks are presented in detail in Table 1, which include the following elements:

**Task**: The tasks are set out in sequential steps from 1-6. However, it is recognised that applying the SEF is not likely to be a linear process. It will be iterative in many aspects and there are likely to be feedback loops between the Tasks (see Figure 4). It is envisaged that all tasks will be relevant to every sector and built environment life cycle stage in some way, although the level of consideration will vary considerably.

**Objectives**: This column in the tables describes the principal goals of the tasks.

**Detail of the objective**: This column provides a breakdown of how the objective should be interpreted and sets out the content to be considered as part of the BREEAM scheme assessment criteria development. Not all elements will be relevant to every sector and built environment life cycle stage.

The terms used in the SEF are defined within Appendix A which can be found on page 10 of this document. Wherever possible these terms align with industry best practice but in some cases have been adapted, in view of feedback from external groups, from existing sector recognised definitions to better align with the BREEAM context.

### The Importance of handover and monitoring and review

A number of factors contribute to successfully meeting the aims and maximising the benefits of the SEF. In particular, the ‘Handover’ and ‘Monitoring and Review’ of activities are vital to achieving the ecological objectives. Feedback from industry indicated that on projects where these activities have not been adequately carried out, they have experienced reduced ecological benefits for the project.

**Handover**

When implementing the ecological aspects of a BREEAM project, there will be various points throughout the project that will require the handover of responsibilities and information. This may occur as part of a normal process within a design and development project, or as a result of changing circumstances in either procurement or management. It is common for time, effort or emphasis to be limited in such instances resulting in poorer outcomes for the site. This can negatively affect the site over the longer term.

The SEF not only recognises the points at which specific emphasis should be placed on Handover between Tasks, but also encourages consideration of Handover and coordination within Tasks.

**Monitoring and review**

Ecological aspects of a project take time to establish and mature. Throughout the design, construction and management of ecological features it is necessary to monitor and review progress against the objectives and targets set. However, this is often not given sufficient prominence in implementation plans and project programmes. As with Handover, this can mean that opportunities are missed and expected benefits are not realised, potentially leading to the failure of the initiative.

The SEF outlines the key points at which specific emphasis should be placed on Monitoring and Review both between and within Tasks.

![Figure 4 Iterative application of the SEF – each task is explained in full from page 6 onwards.](image-url)
## SEF Tasks

The SEF is organised into six Tasks, each with distinct objectives and supporting detail to demonstrate how the objectives can be met, as detailed in Table 1. Please note that there are likely to be feedback loops between the Tasks (see Figure 4).

### Table 1  SEF Tasks

<table>
<thead>
<tr>
<th>Framework Tasks</th>
<th>Objectives</th>
<th>Detail of the objective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Task 1</strong></td>
<td><strong>Assessment and evaluation of existing ecological value and condition</strong></td>
<td>To collate and assess baseline ecological information about the site and associated areas.</td>
</tr>
</tbody>
</table>
|                 | To evaluate and gain an understanding of the existing ecological value (including benefits / risks). | 1) Collate and assess information about the site and associated areas to identify the existing ecological value and condition. This should consider the following:  
   a. Determining the zone of influence for the site  
   b. Current flora, fauna (including permanent and transient species) and habitat characteristics (including but not limited to ecological features in or on built structures)  
   c. Habitat connectivity and fragmentation  
   d. Neighbouring land/habitat  
   e. Recent and historic site condition  
   f. Existing management and maintenance levels/arrangements  
   g. Existing ecological initiatives in the associated area  
   h. Identification of, and consultation with, relevant stakeholders impacted/affected by the site.  
Note: Any statutory protection/requirements particularly protected or designated areas relating to the site, local Biodiversity Action Plans or equivalent and local guidance should be reviewed and considered as part of this Task.  
2) Conduct an evaluation to establish the:  
   a. Value of the site and, where relevant, the associated area in terms of:  
      i. Ecological benefits  
      ii. Biodiversity and ecosystem services benefits  
   b. Direct and indirect risks to ecological value:  
      i. Direct risks include those from, human activity (e.g. construction work), habitat fragmentation, diseased species or those which may be harmful  
      ii. Indirect risks include water, noise, light pollution, etc.  
   c. Qualitative ecological thresholds  
   d. Impact of the proposed design/works/operation on site. |
<table>
<thead>
<tr>
<th>Framework Tasks</th>
<th>Objectives</th>
<th>Detail of the objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 2</td>
<td>To consider a range of potential strategic ecological and, where relevant, wider sustainability outcomes for the site. To understand and align outcomes with aspects of function, amenity and value, relating to the site. To identify and select the optimal strategic outcome for the site.</td>
<td>1) Drawing on the outputs of Task 1, consider a range of realistic, ecology-focused and, where relevant, sustainability strategic outcomes for the site and associated areas – taking into consideration the: a. Ecological value and benefit offered (pre, during and post asset maintenance / project completion) b. Biodiversity and ecosystem services benefits offered pre, during and post asset maintenance / project completion c. Local microclimatic conditions d. Habitat connectivity and fragmentation e. Opportunities to enhance the value of existing habitats and ecosystems f. Opportunities to align and integrate with existing ecological features and initiatives in the associated area. g. Alignment with the aims of the SEF. 2) Liaise with stakeholders to identify opportunities for integrating ecology with wider sustainability activities. This can be achieved through closer alignment or multifunctional approaches with landscape and other site activities to maximise cross benefits and minimise conflicts. Opportunities for integration with the following areas should be considered: a. Landscape: i. Landscape design ii. Heritage and local character iii. Green Infrastructure b. Health and wellbeing: i. Recreational space (including growing space, community agriculture or horticultural and allotment activities) ii. Water quality measures iii. Noise mitigation measures iv. Air quality control measures v. Light pollution control measures c. Resilience: i. Climate change mitigation ii. Management of surface water run off iii. Flood risk management iv. Climate-sensitive urban design (heat island effect, thermal mass, shading, biotic cooling etc.) d. Infrastructure: i. Maximising the benefits of green infrastructure and optimising alignment with existing infrastructure on the site and associated areas. e. Others i. Community and end-user involvement ii. Pest control iii. Life cycle costing and service life planning. 3) Select the desired strategic outcome for the site.</td>
</tr>
</tbody>
</table>

Note: Task content applied as appropriate to the assessment scheme, sector and built environment lifecycle stage)
### Task 3: Option identification and selection.

**Objective:** To identify and appraise options for delivering the selected outcome. To finalise the outcome and options for the site.

1. **Detail of the objective:**
   a. Alignment with the aims of the BREEAM UK SEF.
   b. Ecological, biodiversity and ecosystem services benefits accounting for:
      i. Local priorities.
      ii. Long term viability of the outcome/option.
      iii. Alignment with the sites function, amenity and value.
   c. Practicality, including consideration of:
      i. Timing and duration of implementing and realising the outcome and associated options.
      ii. Outline up-front and ongoing maintenance costs.
      iii. Long term management and maintenance implications.
      iv. Opportunities and barriers arising from management/procurement structures.
      v. Availability of appropriate skills and other resources.

2. **Revisit Task 2 as necessary, to refine the selected strategic outcome in line with needs identified during Task 3 to maximise benefits.**

3. **In line with the strategic outcome selected, liaise with relevant stakeholders as per point 2 in Task 2, to support optimal option identification and selection.**

4. **Select the finalised outcome and options for the site.**

### Task 4: Develop the Action Plan

**Objective:** To set out and agree a detailed Action Plan covering ecology and, where relevant, wider sustainability benefits, based on the strategic outcome and associated options selected.

1. **Detail of the objective:**
   a. Responsibilities, relationships and management required to implement the Action Plan including clear strategic ownership of each task of the Action Plan to fully support implementation.
   b. Timescales for implementing the Action Plan, taking into consideration:
      i. When identified roles and responsibilities apply
      ii. Ecological seasonality
      iii. Alignment with existing/planned activities and processes
      iv. Project phasing.
   c. Collaboration opportunities between relevant stakeholders at appropriate times to support implementation.
   d. Reducing and / or managing potential knock-on impacts (e.g. pollution, disturbance, etc.) of works.
   e. Contractual and other handover points.
   f. Long term management/maintenance requirements and outline costs.

2. **Formal adoption of final Action Plan by the client and all key stakeholders.**

*Note: Any implications related to statutory controls/approvals should be considered in line with the above points.*
| Task 5 | Implement the Action Plan | 1) Implement the Action Plan incorporating:
   a. Allocation of roles and responsibilities to deliver the plan.
   b. Allocation of adequate resources (including financial, time, technical and skills).
   c. Procedures to promote effective implementation, and monitoring and feedback for continual improvement.
   d. Alignment with related activities and processes.
   e. Measures for effective Handover and collaborative activities where responsibility is transferred and / or shared, including transition to long term management and maintenance arrangements. |
| Task 6 | Periodic Monitoring and Review of Action plan implementation | 1) Monitor and review the on-going implementation and effectiveness of the Action Plan. **Note:** this may require reallocating roles and resources and / or updating the content of the Action Plan as appropriate to the current situation (by revisiting tasks 4 and 5).
2) Identify opportunities for ongoing alignment with activities external to the asset / development project which support the aims of the SEF.
3) Identify and trigger appropriate remedial actions to address previously unforeseen impacts.
4) Develop and evolve the Action Plan to help ensure its applicability to the ecological value and condition of the site over the development life. |
## Appendix A
### Terms and definitions

Table 2 below details the definitions of certain terms used in the Strategic Ecology Framework.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated areas</td>
<td>For the purposes of BREEAM, associated areas are considered to be areas of land or water bodies directly impacted by the site undergoing assessment. These areas can be adjacent to the site or can be areas that are dependent on the site but not physically linked. These associated areas can be negatively affected by changes on an assessment site but they also provide further opportunity to maximise enhancement activities as part of a project.</td>
</tr>
<tr>
<td>Biodiversity offsetting</td>
<td>Biodiversity offsetting is an approach to compensate for habitats and species lost to development in one area, with the creation, enhancement or restoration of habitat in another location.</td>
</tr>
<tr>
<td>Compensation</td>
<td>Measures taken to make up for the loss of, or permanent damage to, ecological features despite mitigation e.g. replacement habitat or improvements to existing habitats similar in terms of biological features and ecological functions to that lost or damaged. Compensation can be provided either within or outside the project site, in line with the following hierarchy: within site, adjacent to site and off-site (offsetting) as a last resort.</td>
</tr>
<tr>
<td>Connectivity</td>
<td>The degree to which the landscape facilitates or impedes movement between and across resource patches.</td>
</tr>
<tr>
<td>Ecological thresholds</td>
<td>An ecological threshold is the point at which there is an abrupt change in an ecosystem quality, property or phenomenon, or where small changes in an environmental driver produce large responses in the ecosystem.</td>
</tr>
<tr>
<td>Ecological value</td>
<td>The importance, worth, or usefulness of a species, habitat or ecosystem in terms of its impact on other species and/or habitats, as well as the other environmental, social and economic value that can be delivered from species and habitats and their interactions (ecosystem services) specific to a geographical frame of reference.</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>An ecosystem is a dynamic complex of plant, animal, and micro-organism communities and the non-living environment interacting as a functional unit. Ecosystems vary enormously in size; a temporary pond in a tree hollow and an ocean basin can both be ecosystems.</td>
</tr>
<tr>
<td>Ecosystem services</td>
<td>Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; economic value such as tourism and cultural/social services such as health and wellbeing, recreational, spiritual, religious and other non-material benefits.</td>
</tr>
<tr>
<td>Enhancement</td>
<td>Improved management of ecological features or provision of new ecological features, resulting in a net benefit to biodiversity, which is unrelated to a negative impact or is ‘over and above’ that required to mitigate/compensate for an impact.</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>The breaking up of a habitat, ecosystem or land-use type into smaller parcels with a consequent impairment of ecological function, connectivity and long-term viability.</td>
</tr>
<tr>
<td>Green infrastructure</td>
<td>Multi-functional space, urban and rural, that can form a network or be self-contained, which is capable of delivering a wide range of environmental and quality of life benefits for local communities. It covers both ‘green’ and ‘blue’ (water environment) features of the natural and built environments. Examples include parks, open spaces, playing fields, woodlands, wetlands, grasslands, river and canal corridors, allotments, private gardens and living (green) roofs and facades.</td>
</tr>
<tr>
<td>Habitat</td>
<td>A place in which a particular plant or animal lives. Often used in the wider sense referring to major assemblages of plants and animals found together.</td>
</tr>
<tr>
<td>Handover</td>
<td>For the purposes of the SEF, Handover refers to any point in a sites / developments lifecycle where ecological or landscape related responsibilities, information or documentation, deemed to be crucial to the successful attainment of ecological aims and objectives, is passed from one organisation, group or individual to another. Handover strategies should be designed to support effective communication, monitoring and transition throughout the projects lifecycle. Handover can apply both between and within Tasks in the SEF.</td>
</tr>
<tr>
<td>Landscape</td>
<td>An area, as perceived by people, whose visual features and character is of environmental, social and /or economic value usually as a result of the action and interaction of natural and/or human factors e.g aesthetic, heritage, scenic, cultural and leisure benefits.</td>
</tr>
<tr>
<td>Mitigation</td>
<td>Adverse effects that cannot be avoided should be adequately mitigated. Mitigation measures minimize the negative impact of a plan or project, during or after its completion.</td>
</tr>
<tr>
<td>Site</td>
<td>For the purposes of BREEAM the site is considered to be the land enclosed by the boundary of the BREEAM assessment.</td>
</tr>
<tr>
<td>Zone of influence</td>
<td>The area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated actives both on and off site.</td>
</tr>
</tbody>
</table>
## Appendix B
### Acknowledgements

BRE Global would like to thank the following for their invaluable contributions during the development of the SEF:

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- Jo Ferguson – Bat Conservation Trust
- John Day – RSPB
- Max Wade – AECOM/CIEEM
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