CEEQUAL V6 (UK PROJECTS)
Technical manual – draft for public consultation
SD6051

March 2019
Terms and conditions

Disclaimer

This document is the property of BRE Global Limited ("Global") and is made publicly available for information purposes only.

The document contains draft content for public consultation and should not be used for the purposes of testing, assessment, certification or approval activities. The final published Scheme Document may differ in terms of content and layout as a result of consultation feedback and further development work.

Global accepts no responsibility for any unauthorised use or distribution by others of this document and may take legal action where unauthorised use is discovered.

Copyright

Save where Global has acknowledged third party-owned sources, the copyright in this document is owned by Global.

The document may be downloaded and reproduced only where:

- the reproduction is for academic and other non-commercial purposes;
- the document is reproduced in full; and
- Global’s copyright in the document is acknowledged.

Any other use of the document shall be subject to specific agreements with Global.

Trademarks

“BRE”, “BRE Global”, “BREEAM”, “CEEQUAL”, “SmartWaste” and “the Green Guide” are all trademarks, whether registered or unregistered, and are owned by either BRE or Global, and may not be used without written permission from BRE or BRE Global Limited.
Acknowledgements

This draft technical manual has been made possible through the continued efforts of many dedicated BRE Group staff members, CEEQUAL’s Infrastructure Working Group, the BRE Global Limited Governing Body, Assessors, Verifiers, BREEAM Infrastructure Pilot users, and those who have responded to our requests for feedback in other ways. BRE Global Limited also extends its gratitude to clients who support CEEQUAL by continuing to specify and apply the method and contribute towards our shared mission to building a better world together.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wider social benefits</td>
<td>62</td>
</tr>
<tr>
<td>Wider economic benefits</td>
<td>68</td>
</tr>
<tr>
<td>Land use and ecology</td>
<td>71</td>
</tr>
<tr>
<td>Land use and value</td>
<td>72</td>
</tr>
<tr>
<td>Land contamination and remediation</td>
<td>78</td>
</tr>
<tr>
<td>Protection of biodiversity</td>
<td>85</td>
</tr>
<tr>
<td>Change and enhancement of biodiversity</td>
<td>94</td>
</tr>
<tr>
<td>Long-term management of biodiversity</td>
<td>98</td>
</tr>
<tr>
<td>Landscape and historic environment</td>
<td>100</td>
</tr>
<tr>
<td>Landscape and visual impact</td>
<td>101</td>
</tr>
<tr>
<td>Heritage assets</td>
<td>108</td>
</tr>
<tr>
<td>Pollution</td>
<td>117</td>
</tr>
<tr>
<td>Water pollution</td>
<td>118</td>
</tr>
<tr>
<td>Air, noise, and light pollution</td>
<td>123</td>
</tr>
<tr>
<td>Resources</td>
<td>129</td>
</tr>
<tr>
<td>Strategy for resource efficiency</td>
<td>130</td>
</tr>
<tr>
<td>Reducing whole life carbon emissions</td>
<td>138</td>
</tr>
<tr>
<td>Environmental impact of construction products</td>
<td>140</td>
</tr>
<tr>
<td>Circular use of construction products</td>
<td>147</td>
</tr>
<tr>
<td>Responsible sourcing of construction products</td>
<td>159</td>
</tr>
<tr>
<td>Construction waste management</td>
<td>163</td>
</tr>
<tr>
<td>Energy use</td>
<td>169</td>
</tr>
<tr>
<td>Water use</td>
<td>176</td>
</tr>
<tr>
<td>Transport</td>
<td>182</td>
</tr>
<tr>
<td>Transport networks</td>
<td>183</td>
</tr>
<tr>
<td>Construction logistics</td>
<td>188</td>
</tr>
</tbody>
</table>
About BRE Global Limited

BRE Global Limited (part of the BRE Group) is an independent third-party approvals body offering certification of fire, security, and sustainability products and services to an international market.

BRE Global Limited's mission is to 'Protect People, Property and the Planet'.

We aim to achieve this by:

1. Researching and writing standards.
2. Testing and certification in the areas of fire, electronics, security and sustainability.
3. Developing world-leading sustainability assessment methods.
4. Undertaking research and consultancy for clients and regulators.
5. Promulgating standards and knowledge throughout the industry through publications and events.
6. Developing and delivering training.

BRE Global Limited's product testing and approvals are carried out by recognised experts in our world-renowned testing laboratories.

BRE Global Limited is custodian of a number of world-leading brands including:

- BREEM – the world’s leading environmental assessment method for buildings.
- CEEQUAL – the evidence-based sustainability assessment, rating and certification scheme for civil engineering, infrastructure, landscaping and public realm works.
- Loss Prevention Certification Board (LPCB) – for approval of fire and security products and services.

BRE Global Limited is a trading subsidiary of the BRE Trust, the registered research and education charity which owns the BRE Group.

BRE Global Limited,
Bucknalls Lane,
Watford,
Hertfordshire,
WD25 9XX

T +44 (0)333 321 8811 | F +44 (0)1923 664 910

enquiries@breglobal.com

www.breglobal.com | www.greenbooklive.com
About CEEQUAL

CEEQUAL is the sustainability assessment and rating methodology initiated by the Institution of Civil Engineers (ICE) for the assessment of all types of civil engineering, infrastructure, landscaping and public realm projects and contracts. CEEQUAL was launched publicly in 2003 with Version 2 of the methodology and has been progressively updated and upgraded to broaden and deepen the assessments.

As of 1 November 2015, CEEQUAL Ltd was acquired by BRE Global Limited and CEEQUAL is now part of the BREEAM family of schemes.

The objectives of CEEQUAL are to:

- Create a climate of sustainability awareness – and of continuous improvement – in the profession and industry.
- Promote the importance of setting and delivering a sustainability-driven strategy for the project or contract being assessed.
- Promote improved sustainability performance in project or contract specification, design and construction.
- Recognise and promote the attainment of high economic, environmental and social performance in all forms of civil engineering – infrastructure, landscaping and the public realm works.

The CEEQUAL methodology is available as two schemes:

- CEEQUAL for Projects
- CEEQUAL for Term Contracts

CEEQUAL for Projects is divided into two editions: UK & Ireland and International.

Other BREEAM schemes

BRE Global Limited is the scheme operator of BREEAM, HQM and CEEQUAL in the UK and internationally. We develop and operate schemes designed to assess the sustainability performance of buildings or infrastructure assets at various stages in the life cycle. These include:

- **BREEAM Communities** for the master-planning of a larger community of buildings.
- **CEEQUAL for Projects** for civil engineering, infrastructure, landscaping and public realm works.
- **CEEQUAL for Term Contracts** for maintenance of infrastructure networks and assets.
- **BREEAM New Construction** for new build non-domestic buildings.
- **HQM ONE** for new build domestic buildings.
- **BREEAM In-Use** for existing non-domestic buildings in-use.
- **BREEAM Refurbishment and Fit Out** for domestic and non-domestic building fit outs and refurbishments.
About this document

This document is a draft technical manual for CEEQUAL for projects and has been published for consultation purposes only. It describes a sustainability performance standard against which civil engineering, infrastructure, landscaping and public realm projects in the UK and internationally can be assessed for a CEEQUAL rating.

The final technical manual, to be published following consultation, is intended for use by trained and qualified CEEQUAL Assessors and Verifiers in accordance with the procedural and operational requirements of CEEQUAL.

When published, the final technical manual will replace CEEQUAL for Projects Version 5.2 (issued on 23 December 2015).

Status of CEEQUAL V6

CEEQUAL Version 6 is the first stage of bringing CEEQUAL within the BREEAM family of schemes. Within this version the primary focus has been on integrating CEEQUAL questions from Version 5 into the BREEAM structure. Over the next two years we will continue development and streamlining of criteria as part of the overall BREEAM strategic development process.

As a result, the BRE Global Governing Body has agreed that Version 6 should operate as a beta version. This means that we will operate a feedback process from projects being assessed to ensure that assessors can feedback areas where application of the criteria cannot be applied appropriately to a wide range of infrastructure assets. This learning will feed into both re-issues of the Version 6 manual and directly into the strategic development work that will form the basis of Version 7.
Introduction

This document has three main parts:

- **Scope**: describes the types of infrastructure project that this version of the CEEQUAL scheme can be applied to. The scope section can be used by clients and Assessors to check whether this is the correct scheme to use for their project.
- **Scoring and rating**: describes how the CEEQUAL rating is calculated and includes information on the rating level benchmarks, minimum standards, and category weightings.
- **Categories and assessment issues**: presents the assessment issues in CEEQUAL organised by category, see Table 1 below. Each issue defines a level of performance (the assessment criteria) against which the assessed project demonstrates compliance (using appropriate project information, i.e. evidence) in order to achieve CEEQUAL credits.

Each assessment issue is structured as follows:

- **Aim**: outlines the objective of the issue and the impact it measures or mitigates.
- **Assessment scope**: indicates how to apply the issue for different types of assessment and project-specific circumstances.
- **Scoring**: indicates the number of credits available for each assessment criteria at each assessment stage (strategy, design, construction).
- **Assessment criteria**: the requirements of the issue and the means by which the issue aim is achieved. Where the project complies with all or some of the relevant criteria, as determined by the Assessor, the associated number of credits can be awarded.
- **Guidance**: provides supporting information on the interpretation and application of the assessment criteria. The guidance is informative only and the exact approach taken will depend on the nature, complexity and context of the project.
- **Evidence**: suggests types of project information that could be provided to demonstrate performance against the assessment criteria and justify the credits awarded. This guidance is informative only, given the range of assets that CEEQUAL can be applied, the exact evidence types could be different to those stated.
- **Definitions**: any specific definition of terms used in the assessment issue.
- **Additional information**: sources of additional information that may be of use in addressing the issue.

Table 1: Categories and assessment issues in CEEQUAL

<table>
<thead>
<tr>
<th>Category</th>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>Sustainability leadership</td>
</tr>
<tr>
<td></td>
<td>Environmental management</td>
</tr>
<tr>
<td></td>
<td>Responsible construction management</td>
</tr>
<tr>
<td></td>
<td>Staff and supply chain governance</td>
</tr>
<tr>
<td></td>
<td>Whole life costing</td>
</tr>
<tr>
<td>Resilience</td>
<td>Risk assessment and mitigation</td>
</tr>
<tr>
<td></td>
<td>Flooding and surface water run-off</td>
</tr>
<tr>
<td></td>
<td>Future needs</td>
</tr>
<tr>
<td>Communities and stakeholders</td>
<td>Consultation and engagement</td>
</tr>
<tr>
<td></td>
<td>Wider social benefits</td>
</tr>
<tr>
<td></td>
<td>Wider economic benefits</td>
</tr>
<tr>
<td>Land use and ecology</td>
<td>Land use and value</td>
</tr>
<tr>
<td></td>
<td>Land contamination and remediation</td>
</tr>
<tr>
<td>Protection of biodiversity</td>
<td></td>
</tr>
<tr>
<td>Change and enhancement of biodiversity</td>
<td></td>
</tr>
<tr>
<td>Long-term management of biodiversity</td>
<td></td>
</tr>
<tr>
<td><strong>Landscape and historic environment</strong></td>
<td></td>
</tr>
<tr>
<td>Landscape and visual impact</td>
<td></td>
</tr>
<tr>
<td>Heritage assets</td>
<td></td>
</tr>
<tr>
<td><strong>Pollution</strong></td>
<td></td>
</tr>
<tr>
<td>Water pollution</td>
<td></td>
</tr>
<tr>
<td>Air, noise, and light pollution</td>
<td></td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td></td>
</tr>
<tr>
<td>Strategy for resource efficiency</td>
<td></td>
</tr>
<tr>
<td>Reducing whole life carbon emissions</td>
<td></td>
</tr>
<tr>
<td>Environmental impact of construction products</td>
<td></td>
</tr>
<tr>
<td>Circular use of construction products</td>
<td></td>
</tr>
<tr>
<td>Responsible sourcing of construction products</td>
<td></td>
</tr>
<tr>
<td>Construction waste management</td>
<td></td>
</tr>
<tr>
<td>Energy use</td>
<td></td>
</tr>
<tr>
<td>Water use</td>
<td></td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td></td>
</tr>
<tr>
<td>Transport networks</td>
<td></td>
</tr>
<tr>
<td>Construction logistics</td>
<td></td>
</tr>
</tbody>
</table>
Scope

Project types

CEEQUAL for Projects can be used on any infrastructure project that involves the construction of new assets or refurbishment of existing assets. It does not include assessment of the operation or maintenance of assets. CEEQUAL for Term Contracts should be used to assess the maintenance of assets or the construction of small repetitive works.

CEEQUAL for Projects can be used on any type of civil engineering, infrastructure, landscaping or public realm project. This includes the construction or refurbishment of assets such as roads, railways, wind farms, treatment works as well as specialist projects such as demolition or remediation works.

Where an infrastructure project includes occupied buildings, these buildings should be assessed using an appropriate BREEAM scheme unless the building is deemed to be an ancillary part of an infrastructure project (e.g. a waiting room on a station platform). Structures that cover industrial/process plants are not deemed to be buildings. If in doubt please contact the CEEQUAL team to discuss your project.

Assessment stages

CEEQUAL V6 can be used to assess and rate the sustainability performance of infrastructure projects at the following stages:

- Strategy
- Design, including Interim Design
- Construction

The requirements that are assessed at each stage, and the credits available, are detailed in the ‘Scoring’ tables at the beginning of each assessment issue. The requirements at each stage are broadly intended to align with the project stages shown in Table 2 below.

The exact timing of the assessment, verification, and certification of each stage is not fixed and can be chosen based on the project’s requirements and procurement route. Where there are actions given in the scheme that must be completed within a specific timeframe then these are stated as part of the assessment criteria.

Table 2: Assessment stages and project stages in CEEQUAL

<table>
<thead>
<tr>
<th>Assessment stage</th>
<th>Project stage (DPoW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td>Strategy (Stage 0)</td>
</tr>
<tr>
<td></td>
<td>Brief (Stage 1)</td>
</tr>
<tr>
<td></td>
<td>Concept (Stage 2)</td>
</tr>
<tr>
<td>Design</td>
<td>Definition (Stage 3)</td>
</tr>
<tr>
<td></td>
<td>Design (Stage 4)</td>
</tr>
<tr>
<td>Construction</td>
<td>Build and commission (Stage 5)</td>
</tr>
<tr>
<td></td>
<td>Handover and close out (Stage 6)</td>
</tr>
</tbody>
</table>

Assessment types
There are five different assessment types that can be conducted using CEEQUAL V6. The assessment stages included within the scope of each of the five assessment types is shown in Table 3 below.

**Table 3: Assessment types in CEEQUAL V6**

<table>
<thead>
<tr>
<th>Assessment type</th>
<th>Assessment stages included in scope of assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strategy</td>
</tr>
<tr>
<td>Whole Project</td>
<td>✓</td>
</tr>
<tr>
<td>Strategy &amp; Design</td>
<td>✓</td>
</tr>
<tr>
<td>Design only</td>
<td></td>
</tr>
<tr>
<td>Design &amp; Construction</td>
<td></td>
</tr>
<tr>
<td>Construction only</td>
<td></td>
</tr>
</tbody>
</table>

**Whole project assessment**

The **Whole Project assessment** is applied for jointly by or on behalf of the Client, Designer and Principal Contractor(s). The verification and certification are completed at the end of construction. This assessment type should be used whenever a client specifies that a CEEQUAL assessment be undertaken so that their role in the project can be assessed alongside those of the Designer and Contractor.

**Strategy & design assessment**

The **Strategy & Design assessment** is for a joint application by the client and designer and is available before construction has started. This could be in a situation where approval for the construction stage has not yet been secured or where the contractor does not wish to participate in a Whole Project assessment.

**Design only assessment**

The **Design only assessment** is only for principal designer(s) and enables the designer to secure experience of CEEQUAL without the involvement of the other parties to the project or where the designer wishes to gain recognition for their contribution to a project when the client and contractor do not wish to participate.

**Design & construction assessment**

The **Design & Construction assessment** is for a joint application by the contractor and the project designer(s) and can be used where the designer and contractor wish to gain recognition for their contribution to a project when the client does not wish to participate.

**Construction only assessment**

The **Construction only assessment** is only for principal contractor(s) and enables a contractor to secure experience of CEEQUAL without the involvement of the other parties to the contract or where the contractor wishes to gain recognition for their contribution to a project when the client and designer do not wish to participate.

**Verification and certification points**

As a minimum a project must be verified once at the end of its scope. This mandatory verification will cover all stages within the scope of the assessment. For instance, a Design only assessment will be
verified at end of design and a Whole Project assessment will be verified for all stages at end of construction. All the other verification points are optional. As an example, a Whole Project assessment can be optionally verified at the end of design, with both the strategy and design stages included in the verification, and then complete the mandatory verification at the end of construction (for the construction stage only). Table 4 below shows the different mandatory and optional verification points for each type of assessment in CEEQUAL V6.

Interim Design stage certification is only available as part of a Whole Project assessment. It is designed to be undertaken at the point a client lets a tender for a design and construct contract. With the interim design certification, it is possible defer design credits to the final design stage to cover design activities that will be part of the tendered contract.

<table>
<thead>
<tr>
<th>Assessment type</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Project</td>
<td>O (Interim)</td>
<td>O</td>
<td>M</td>
</tr>
<tr>
<td>Strategy &amp; Design</td>
<td>O</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Design only</td>
<td></td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>Design &amp; Construction</td>
<td></td>
<td>O</td>
<td>M</td>
</tr>
<tr>
<td>Construction only</td>
<td></td>
<td></td>
<td>M</td>
</tr>
</tbody>
</table>

Table 4: Verification points in CEEQUAL V6 (O – optional, M – mandatory)

Subprojects

For many infrastructure projects the criteria in the scheme can be applied to a whole project to give a single overall score and rating. However, for other infrastructure projects, such as some nationally significant infrastructure projects, it may be more appropriate to split the project into a series of subprojects and assess these individually.

When a project uses the latter approach, the strategy criteria should still be assessed for the whole project. The score achieved at the strategy stage is transferred to each subproject and the design and construction criteria assessed at a subproject level. The strategy stage score for the whole project is then added to the scores at the design and construction stages for the subproject resulting in an overall score for the subproject assessment. Whole projects may be split where the sustainability outcomes for different subprojects may be different. For example, where:

1. Different project teams or contractors are developing sections of the project and therefore are approaching design or construction in a different way across the project.
2. The project is assessed across numerous sites (e.g. linear projects) where the impacts of the project will have varying impact on the sustainability issues covered within this scheme.

Where a client wishes to split their project for a reason not listed above, (for example in the case of separately tendered enabling works), BRE Global Limited should be contacted.

Once a project is completed all sub-project scores are amalgamated on the basis of contract values to give a rating for the overall project.

System boundaries

Infrastructure assets exist as part of a complex system-of-systems and this means that the boundary of a CEEQUAL assessment – what is included or excluded – is not always immediately obvious. It is necessary to establish this system boundary for CEEQUAL assessments to provide a fair, accurate, and comparable assessment of the design and construction of new infrastructure assets.

Due to the variety of activities and impacts that are addressed within the scheme, CEEQUAL does not define a single, overall boundary for a project (or subproject). Instead, the necessary boundaries vary
by assessment issue. These are defined within the technical requirements of the scheme by one or more of the following:

- Explicit geographical, temporal, or functional limits
- National or international standards
- National industry or government best practice guidance
- Specific CEEQUAL methodologies
- Specific minimum requirements for content or activities
- Consultation with relevant stakeholders
- Deferral to the judgement of a suitably qualified professional
- The judgement of the CEEQUAL Assessor and project team with verification from the CEEQUAL Verifier.

The adopted boundaries are designed to support the individual issue aims and the overall aims and objectives of this CEEQUAL scheme. In some cases, there is greater flexibility in the definitions so that assessments remain feasible or so that unforeseen scenarios are not inappropriately excluded.

Where judgement is required to establish a boundary, either from a CEEQUAL Assessor or a suitably qualified professional, then the following questions should be considered:

- Does including this within the assessment support the issue aim?
- Will including this provide a more accurate reflection of how the assessment demonstrates achievement of the issue?
- Is the inclusion of this feasible, justifiable, and proportional?

In some cases, it is appropriate to simplify boundaries to ensure that an assessment remains proportional to the scale of a project and its associated impacts. The boundaries as currently defined within CEEQUAL are often scalable in this way, including where the decision has been deferred to the judgement of a suitably qualified professional. In some instances, the method of establishing the boundary can be particularly complex or challenging (e.g. require specialist expertise) and alternative requirements are given for projects where this level of complexity is not appropriate.
Scoring and rating

There are several aspects that determine the rating of an infrastructure project assessed using CEEQUAL. These include:

- Rating level benchmarks
- Minimum standards
- Category weightings
- Assessment issues and credits
- Innovation credits
- Prerequisites

Rating level benchmarks

The CEEQUAL rating benchmarks for projects assessed using Version 6 are given in Table 5 below.

<table>
<thead>
<tr>
<th>CEEQUAL rating</th>
<th>Overall score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>Excellent</td>
<td>≥ 75%</td>
</tr>
<tr>
<td>Very Good</td>
<td>≥ 60%</td>
</tr>
<tr>
<td>Good</td>
<td>≥ 45%</td>
</tr>
<tr>
<td>Pass</td>
<td>≥ 30%</td>
</tr>
<tr>
<td>Unclassified</td>
<td>&lt; 30%</td>
</tr>
</tbody>
</table>

Minimum standards

CEEQUAL sets minimum standards of performance in key areas to ensure fundamental issues are not overlooked in the achievement of specific ratings. The minimum standards are given in Table 6 below. This is the first version of CEEQUAL to include minimum standards and more will be considered in later versions.

<table>
<thead>
<tr>
<th>Rating level</th>
<th>Assessment issue</th>
<th>Assessment criteria</th>
<th>Minimum standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding</td>
<td>Risk assessment and mitigation</td>
<td>2.1.2 Identifying dependencies</td>
<td>92 credits (All credits for 2.1.2 and 2.1.3 achieved)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.1.3 Communicating dependencies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change and enhancement of biodiversity</td>
<td>4.4.1 Change in ecological value</td>
<td>16 credits (No net loss of ecological value)</td>
</tr>
<tr>
<td></td>
<td>Reducing whole life carbon emissions</td>
<td>7.2.1 Reducing whole life carbon emissions</td>
<td>108 credits (Process assessed and verified by an independent third-party to PAS 2080)</td>
</tr>
<tr>
<td></td>
<td>Circular use of construction products</td>
<td>7.4.2 Business models for a circular economy – implemented</td>
<td>2 credits (At least one business model has been implemented)</td>
</tr>
</tbody>
</table>
Category weightings

Weightings are a fundamental part of any sustainability assessment method. They provide a means of defining and ranking the relative impact of different sustainability categories by taking account of the scale of impact and influence that projects under assessment typically have on various sustainability issues. CEEQUAL uses an explicit weighting system to determine the overall CEEQUAL score. The credits given in each of the assessment issues within this document include the weightings shown below in Table 7.

The weightings have been derived from an assessment of both CEEQUAL V5 and BREEAM Infrastructure (Pilot) weightings with adjustments based on how the scope of each section has changed in CEEQUAL V6.

Table 7: Category weightings in CEEQUAL

<table>
<thead>
<tr>
<th>Category</th>
<th>Weighting, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>11</td>
</tr>
<tr>
<td>Resilience</td>
<td>13</td>
</tr>
<tr>
<td>Communities and stakeholders</td>
<td>11</td>
</tr>
<tr>
<td>Land use and ecology</td>
<td>11</td>
</tr>
<tr>
<td>Landscape and historic environment</td>
<td>8</td>
</tr>
<tr>
<td>Pollution</td>
<td>8</td>
</tr>
<tr>
<td>Materials, including waste</td>
<td>15</td>
</tr>
<tr>
<td>Energy and carbon (operational)</td>
<td>5</td>
</tr>
<tr>
<td>Energy and carbon (construction)</td>
<td>6</td>
</tr>
<tr>
<td>Water use</td>
<td>3</td>
</tr>
<tr>
<td>Transport</td>
<td>9</td>
</tr>
</tbody>
</table>

Assessment issues and credits

CEEQUAL consists of 30 assessment issues across eight categories. Each assessment issue addresses a specific sustainability issue.

The number of credits available for each assessment issue varies and this generally reflects the importance of mitigating the impact of the assessment issue relative to the other issues in the category. In most cases, where there are multiple credits available for a particular criterion, the number awarded is based on a sliding scale or benchmark with progressively higher standards of performance rewarded with a higher number of credits.

In addition to the category score, overall score, and CEEQUAL rating, verified performance against individual assessment issues also provides users with a credible set of key performance indicators for a range of impacts across the project lifecycle.

Innovation credits

CEEQUAL seeks to support innovation within the construction industry and its supply chain. One way it does this is through the availability of additional credits to recognise sustainability related benefits or performance levels not currently recognised by standard CEEQUAL assessment issues and criteria. This rewards developments that go beyond best practice in a particular aspect of sustainability.

Awarding credits for innovation enables clients and project teams to add to their CEEQUAL score and helps to support the market for new innovative technologies, design, or construction practices.
Innovation credits can be achieved by the CEEQUAL Assessor applying to BRE Global to have a particular technology, feature, design, construction method, or process recognised as ‘innovative’. If the application is successful, and compliance is subsequently demonstrated, then an ‘innovation credit’ may be awarded.

Each innovation credit achieved adds 1% to an asset’s overall score. The maximum number of innovation credits that can be awarded for any one asset is 10. Therefore, the maximum additional score available from innovation credits is 10%.

Innovation credits can be awarded regardless of the final CEEQUAL rating (i.e. they can be awarded at any CEEQUAL rating level) however the overall rating will be capped at 100%

**Prerequisites**

Prerequisites are identified within some CEEQUAL issues. Where these are present, they must be achieved in order to award any credits within that issue. Prerequisites differ from minimum standards in that they do not directly influence the overall CEEQUAL rating, but they do influence the number of credits that can be achieved within an issue.
Management

Summary

The *Management* category considers how sustainability issues are incorporated into the overall management of the project. It covers the principles of sustainable development and the management of environmental and social performance throughout the planning, design and construction of a project.

**Category summary table**

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability leadership</td>
</tr>
<tr>
<td>Environmental management</td>
</tr>
<tr>
<td>Responsible construction management</td>
</tr>
<tr>
<td>Staff and supply chain social governance</td>
</tr>
<tr>
<td>Whole life costing</td>
</tr>
</tbody>
</table>
Sustainability leadership

Aim

To ensure the adoption of sustainable development principles and the consideration of environmental and social issues throughout project planning, design, and construction.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.3 Selection process for designers and contractors</td>
<td>Scope out for Design Only Assessments where the Designer has no input to the Contractor selection process.</td>
</tr>
<tr>
<td>1.1.6 Environmental targets for key sub-contractors</td>
<td>There may be circumstances where it is appropriate to scope out 1.1.6, for example if there are no sub-contractors involved.</td>
</tr>
<tr>
<td>1.1.7 Sustainability targets for operation</td>
<td>Scope out if the scheme concerned is intrinsically not ‘operable’, such as flood defence banks.</td>
</tr>
<tr>
<td>1.1.8 Workforce consultation on sustainability performance</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project, and on the interests and responsibilities of the parties to the project.</td>
</tr>
<tr>
<td>1.1.9 Communicating best practice</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project, and on the interests and responsibilities of the parties to the project.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1 Principles of sustainable development</td>
<td>19</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>1.1.2 Construction management strategy</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>1.1.3 Selection process for designers and contractors</td>
<td>24 (up to)</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>1.1.4 Environmental and social performance in contracts</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.5 Sustainability targets for construction</td>
<td></td>
<td>12 (up to)</td>
<td></td>
</tr>
<tr>
<td>1.1.6 Environmental targets for key sub-contractors</td>
<td></td>
<td>12 (up to)</td>
<td></td>
</tr>
<tr>
<td>1.1.7 Sustainability targets for operation</td>
<td></td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>1.1.8 Workforce consultation on sustainability performance</td>
<td></td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>1.1.9 Communicating best practice</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Assessment criteria

1.1.1 Principles of sustainable development (2.2.5)

1.1.1.1 The project team has actively considered the principles of sustainable development in the planning, design and construction of the project.

1.1.2 Construction management strategy (1.2.1)

1.1.2.1 The project team has actively adopted a sustainability-driven approach to the development of the construction management plan for the project.
1.1.3 Selection process for designers and contractors (2.3.2)

1.1.3.1 The selection process for (i) the principal Designer, (ii) the principal Contractor, and (iii) the key sub-contractor(s) included past environmental and social performance as one of the evaluation criteria.

<table>
<thead>
<tr>
<th>Assessment stage</th>
<th>Role appointed by selection process</th>
<th>Score (for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy or Design</td>
<td>Principal Designer</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Principal Contractor</td>
<td>12</td>
</tr>
<tr>
<td>Construction</td>
<td>Key sub-contractor(s)</td>
<td>12</td>
</tr>
</tbody>
</table>

1.1.4 Environmental and social performance in contracts (2.3.3)

1.1.4.1 The contract requirements for the Designers and Contractors expressly included:

- achievement of specified environmental and social performance; and
- a requirement to monitor and report on environmental and social performance during the contract.

1.1.5 Sustainability targets for construction (2.4.4 a)

1.1.5.1 During the concept and design process, specific targets have been set for the environmental and social performance of the project during construction.

1.1.5.2 During the construction stage, progress towards the targets has been monitored, reported, and shared with the staff and workforce.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targets set, but no formal monitoring in place.</td>
<td>6</td>
</tr>
<tr>
<td>Targets set and progress monitored, reported, and shared at the construction stage.</td>
<td>12</td>
</tr>
</tbody>
</table>

1.1.6 Environmental targets for key sub-contractors (2.4.4 b)

1.1.6.1 Relevant key environmental objectives and performance targets have been set for key sub-contractors and they have been monitored against performance.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targets set, but no formal monitoring in place.</td>
<td>6</td>
</tr>
<tr>
<td>Targets set and progress monitored, reported, and shared with the staff.</td>
<td>12</td>
</tr>
</tbody>
</table>

1.1.7 Sustainability targets for operation (2.4.5)

1.1.7.1 During the design process, specific targets have been set for the environmental and social performance of the project during operation and there is a monitoring programme in place for the operational phase.

1.1.8 Workforce consultation on sustainability performance (2.5.1)

1.1.8.1 Ongoing engagement or two-way dialogue between project staff and the construction workforce has been undertaken with regards to management of environmental and social issues and the suggestions from these discussions have been considered in the construction stage.
1.1.9 Communicating best practice (2.5.2)

1.1.9.1 At each project stage, the project team has shared any innovation or best practice in sustainability-driven management and practice with other parts of the civil engineering sector or other relevant sectors.

Guidance

1.1.1 Principles of sustainable development

The incorporation of sustainable development principles within a project requires the consideration of a number of different issues. These can include effects of the project on the local environment, impacts on society and the economic impacts of a project on the local community, both during the construction of the project and its subsequent operation and eventual decommissioning. A number of these issues are covered in more detail by other requirements within CEEQUAL, so what this criterion is looking for is whether there is an overarching objective within the project team to consider the broader concepts of sustainable development within the project decision-making.

Further guidance on the principles of sustainable development can be found in the Royal Academy of Engineering’s guide Engineering for Sustainable Development: Guiding principles (2005), which is available online at https://www.raeng.org.uk/publications/reports/engineering-for-sustainable-development.

1.1.2 Construction management strategy

The incorporation of sustainability-driven principles for a construction management strategy requires the consideration of a number of different but inter-related issues. These can include but are not limited to:

- effects of the construction processes on the environment and neighbours;
- materials selection and sourcing;
- transport of people and physical resources;
- wider impacts on the community locally or regionally, depending on the project’s geographic scale and timescale; and
- the economic impacts of a project on the local or regional community.

Development of the strategy should start during the development of the project and be incorporated into the outline Construction Sustainability (or Environmental) Management Plan that should be handed over by the Client and Designer to the chosen Contractor for further development.

A number of these issues are covered in more detail by other criteria in Section 1 and in other sections within CEEQUAL. This criterion is looking for whether there has been an overarching approach within the project team to consider and adopt appropriately the broader concepts of sustainability and sustainable development in planning the execution of the construction stage.

Further guidance on the principles of sustainable development can be found in the Royal Academy of Engineering’s guide Engineering for Sustainable Development: Guiding principles (2005), which is available online at https://www.raeng.org.uk/publications/reports/engineering-for-sustainable-development.

1.1.4 Environmental and social performance in contracts

It is well known that different forms of contract can significantly influence the behaviour of the contracting parties, especially to those issues that are implied as being necessary rather than expressly stated. What is being sought here is that environmental and social performance requirements are expressly stated so that there is no doubt as to those requirements and the Designers and Contractors are properly resourced to deliver them.

Social performance could relate to a wide variety of issues, but some generic examples could include:
levels of engagement with the local community on consultation issues as specified in Section 3;
• engagement with local schools to raise awareness of civil engineering;
• contribution to the local economy, for instance through use of local labour on the project;
• enhancement to community facilities as part of the contract;
• requiring express commitments to minimising nuisance to neighbours within the constraints of the necessary construction processes.

Note that this question requires only evidence that the Client is specifying environmental and social performance issues in contract requirements. Opportunities for the Designer and Contractor to score for their own setting of targets is covered in 1.1.5. Actual monitoring and reporting mechanisms are also covered in 1.1.5. Achievement is covered in other sections of the Assessment.

1.1.5 Sustainability targets for construction

Targets should be quantifiable and where possible refer to timescales (i.e. SMART targets: Specific, Measurable, Achievable, Realistic, Timely).

Best practice suggests that environmental and social performance is highest if the Client is involved in setting the requirements for the contract. However, if the Client does not specify this then there are still opportunities for the Designer to influence what happens during the construction stage.

It should be noted that the Client requirement is covered in 1.1.4. If this has been scored, then this requirement is about evidencing that the contract requirements have been translated into practice on the project and communicated. If 1.1.4 has not been scored, then evidence for this requirement also needs to demonstrate that appropriate targets are being set in relation to the significant aspects identified in 1.1.4.

1.1.7 Sustainability targets for operation

Targets have to be set for operating the completed works and a monitoring programme to be undertaken once construction is complete has to be in place in order to score. Target setting without monitoring progress is considered to be of little or no use.

Operational targets are likely to relate to quantifiable measures, such as waste production, energy consumption, carbon dioxide production, natural resource consumption or pollution prevention. For example, an operational target might state that 50% of waste produced in tonnes during the first year of operation is to be recovered through either re-use, recycling or composting. Targets may also cover maintenance issues such as paints to be used or how to deal with waste arising from maintenance. Note that compliance with legislation cannot be regarded as an appropriate operational target.

Common minimal levels include targets for waste management and energy/CO₂ reduction in design and/ or in use. Targets need to be ‘measurable’ so that they can be monitored and measured against. Evidence needs to demonstrate that these have been ‘signed up to’ by those responsible for the project during operation. This could be completed during a formal meeting or similar, which could be evidenced by meeting minutes.

1.1.8 Workforce consultation on sustainability performance

Experience so far on CEEQUAL-assessed Projects indicates that the CEEQUAL process often triggers improvements to practice during both design and construction. This question focuses on steps at the construction stage within the project team for dialogue between project staff and the construction workforce that is aimed at identifying and communicating the lessons learnt and at seeking out further improvements that can be made.

1.1.9 Communicating best practice

Like 1.1.8, this is not aimed at trying to persuade project team members to disclose commercially competitive information freely. Rather, it is aimed at rewarding those project team members for preparing papers in professional journals, including reporting of innovation in case studies prepared...
for CEEQUAL and other websites that promote innovation in construction, so that at least the principles of the best practice or innovation are made more widely known and therefore potentially exploitable by other project teams.

So, the aim is to encourage and reward CEEQUAL users that:

- report and demonstrate a practice that has gone beyond current engineering practice; and
- is widely distributed and can be picked up by other parties and applied.

For innovation, the project team needs to demonstrate that a practice is being done for the first time compared to ‘best practice’ that is a further application of actions that have been carried out once.

For the points to be scored, it is not necessary to demonstrate that the method reported is being used by other parties, but that effective dissemination has been achieved.

### Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction management strategy</td>
<td>Evidence is likely to be the whole construction plan or specific parts of it, in meeting records, and/or a sustainability assessment or appraisal report on the construction stage.</td>
</tr>
<tr>
<td>Principles of sustainable development</td>
<td>Evidence could be a sustainable development policy that cascades into a project sustainability framework for the project. Further evidence that this has received active consideration could include design team meeting records, or a sustainability assessment or appraisal report.</td>
</tr>
<tr>
<td>Selection process for designers &amp; contractors</td>
<td>Evidence could include supplier appraisals, quality submissions information on environmental and social issues during tender stage.</td>
</tr>
<tr>
<td>Environmental and social performance in contracts</td>
<td>Evidence could include output from any contract strategy meetings or reports that show consideration of environmental and social issues as a factor in the choice of procurement method. Evidence could also include key environmental and social performance targets within contract and monitoring/reporting requirements. Simply specifying that a project has applied for a CEEQUAL assessment, or that a specific rating is achieved, is not considered appropriate evidence.</td>
</tr>
<tr>
<td>Sustainability targets for construction</td>
<td>Evidence could include the setting of targets for achieving or exceeding target levels (such as water quality targets) and/or specifying targets for completion of work elements to avoid ‘closed’ seasons (such as nesting birds). Whatever targets are set, evidence must also be provided to demonstrate that they were regularly monitored for the points to be gained. Evidence for the construction stage could include inspection of sub-contractors and continued good performance, toolbox talks or actual measures such as waste produced or number of environmental incidents.</td>
</tr>
<tr>
<td>Sustainability targets for operation</td>
<td>Evidence needs to demonstrate that such targets have been positively adopted by the design team, for example through project team meeting minutes or equivalent. Although any ES may include targets or equivalent statements on a wide range of issues such as operational noise or air pollution control, the presence of the ES is not considered sufficient evidence here. Evidence could include targets that set numerical figures to manage and reduce carbon and energy emissions during the lifetime of the project, commit to an effective lifecycle waste management, and manage and reduce water use. Other targets could be set for increased areas for biodiversity or commitment to improved social transport links</td>
</tr>
<tr>
<td>Workforce consultation on sustainability performance</td>
<td>Evidence could include records of meetings, toolbox talks, site posters or case studies.</td>
</tr>
<tr>
<td>Communicating best practice</td>
<td>Evidence could include briefing sheet(s) published either internally or in industry publications, or presentations to other companies or professional bodies, or involvement with universities and students in related disciplines. All parties can get full points if the project team has created a single joint case study that meets the criteria.</td>
</tr>
</tbody>
</table>
Environmental management

Aim

To ensure social and environmental risks or opportunities are identified and appropriately managed throughout planning, design, and construction.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.2 Implementing environmental enhancements</td>
<td>It is unlikely that 1.2.2 and 1.2.3 will ever be scoped out but it is possible that an Environmental Statement may not contain any promises of enhancements and produce no matters that need including in contract documentation.</td>
</tr>
<tr>
<td>1.2.3 Supporting benefits in contracts</td>
<td></td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1 Environmental impacts and benefits assessment</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2.2 Implementing environmental enhancements</td>
<td>24 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2.3 Supporting environmental benefits in contracts</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2.4 Environmental impacts during construction</td>
<td></td>
<td>25 (up to)</td>
<td></td>
</tr>
<tr>
<td>1.2.5 Environmental and social aspects assessment</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1.2.6 Co-ordination of environmental and social aspects</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1.2.7 Identification and prioritisation of impacts</td>
<td>13 (up to)</td>
<td>13 (up to)</td>
<td>13 (up to)</td>
</tr>
<tr>
<td>1.2.8 Sustainability management mechanisms</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1.2.9 Implementation of mechanisms</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1.2.10 Success of mechanisms</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>1.2.11 Sustainability training</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>1.2.12 Project team communications</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Assessment criteria

1.2.1 Environmental impacts and benefits assessment \(^{1.1.4 \text{ a}}\)

1.2.1.1 The Client and/or the Designers have undertaken an environmental impacts and benefits assessment of the project on a wider scope than just the project owners’ interests and appropriate to the nature, scale, design life and location of the project, including assessments of possible enhancements to the local environment.

1.2.2 Implementing environmental enhancements \(^{1.1.4 \text{ b}}\)

1.2.2.1 The promises of enhancements given in the Environmental Statement or other output from the environmental impact assessment have been delivered in the design alongside those for environmental mitigation and compensation.

<table>
<thead>
<tr>
<th>Percentage of promises delivered</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or more</td>
<td>6</td>
</tr>
</tbody>
</table>
### 1.2.3 Supporting environmental benefits in contracts (1.1.4 c)

Where appropriate, actions to support the results of the environmental impacts and benefits assessments have been included within relevant contract documentation.

### 1.2.4 Environmental impacts during construction (1.2.4 a, b)

The Construction Team have undertaken an environmental impacts assessment of the construction stage of the project and used the results in the development and implementation of the construction management plan.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results from an environmental impacts and benefits assessment have been used in the development of the construction management plan.</td>
<td>9</td>
</tr>
<tr>
<td>Environmental aspects of the developed construction management plan have been implemented.</td>
<td>16</td>
</tr>
</tbody>
</table>

### 1.2.5 Environmental and social aspects assessment (2.1.1)

There was a documented commitment to consider and assess the environmental and social aspects of the project.

### 1.2.6 Co-ordination of environment and social aspects (2.1.2)

There is clear evidence that a member of the project team was appointed as responsible for co-ordinating the management of the environmental and social aspects of the project and was aware of the duties and responsibilities involved.

### 1.2.7 Identification and prioritisation of impacts (2.1.3)

The environmental risks, impacts, and opportunities for environmental enhancements, and the associated social issues, have been (i) identified and clearly recorded for each stage and (ii) prioritised according to significance.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Identified and clearly recorded for each stage</td>
<td>8</td>
</tr>
<tr>
<td>(ii) Prioritised according to significance</td>
<td>13</td>
</tr>
</tbody>
</table>

### 1.2.8 Sustainability management mechanisms (2.2.1)

Appropriate mechanisms have been put in place to manage the project's environmental and social risks, impacts and opportunities.

### 1.2.9 Implementation of mechanisms (2.2.2)

Regular checks have been made to ensure that the sustainability management mechanisms have been implemented.

### 1.2.10 Success of the mechanisms (2.2.3)

The results (success or otherwise) of the implementation of the sustainability management mechanisms have been assessed.
1.2.11 Sustainability training (2.2.4)
1.2.11.1 At each project stage, there has been a programme of training on environmental and social issues relevant to the project delivered at an appropriate level for those engaged in the project.

1.2.12 Project team communications (2.3.1)
1.2.12.1 At each project stage, all those directly engaged in the project have been informed of the significant environmental impacts and opportunities, and associated social issues, of their part and/or stage of the project.

Guidance

1.2.1, 1.2.2, 1.2.3 Environmental impacts and benefits assessment

Many project teams in the UK and Ireland are required to undertake formal Environmental Impact Assessments (EIAs) as part of the consents process. However, many projects are not, and the distances beyond the boundaries of the project site within which impacts are assessed can vary widely from one EIA to another.

It is vital to securing the best sustainability-driven project decisions that EIAs, whether statutorily required or not, are undertaken within the most appropriate time and geographical boundaries. This is to minimise the chances of significant adverse impacts that occur remotely from the project being ignored, and to maximise the chances of environmental enhancements associated with the project being realisable.

For the UK transport sector, the Department of Transport has extensive guidance on the conduct of transport studies, whether economic, social or environmental – see https://www.gov.uk/transport-analysis-guidance-webtag. Separate guidance is available in Scotland – see http://www.transportscotland.gov.uk/stag.

1.2.4 Environmental impacts during construction

This criterion is seeking for the Contractor to have actively assessed in advance the environmental aspects and impacts of the works, including those generated by their supply chain, and planned the works accordingly. Issues that need to be addressed in such an assessment include but are not necessarily limited to:

- impacts of the production of materials used in the works;
- minimising the use of any hazardous materials to be used in the construction stage;
- minimising water use during construction (consistent with other requirements such as dust control);
- energy consumption and carbon emissions during the construction stage;
- pollution prevention, especially of any water bodies near or under the site;
- impacts on flora and fauna;
- dealing with any contaminated soils and/or other materials and components on the site;
- dealing with excavation arisings and wastes from the works.

Guidance on these issues is available in the appropriate parts of Sections 2 to 8 of this Manual.

1.2.5 Environmental and social aspects assessment

It is considered vital for the successful management of the environmental and social aspects of a project for the commitment to their consideration, assessment and delivery to not only be made by the senior management of each major party to the project but also written down so that it can be readily communicated to project team members and stakeholders.

1.2.6 Co-ordination of environmental and social aspects

Every project, irrespective of size, should have someone designated as being responsible for its environmental and social aspects. On smaller projects, a member of the project team may be
responsible for this along with their other duties. On larger-scale projects, it is likely to be a dedicated Sustainability or Environmental Manager or Coordinator. On partnership projects, it may be the same person at each stage.

For the score to be awarded detailed duties and responsibilities in relation to the project must have been set out on appointment

1.2.7 Identification and prioritisation of impacts

All adverse environmental risks and impacts of the project – and the associated social issues – should be identified, as well as positive impacts and opportunities for environmental and social improvements resulting from the project.

The significance of adverse impacts is usually assessed by a combination of the potential severity and the likelihood of the impact occurring if no action is taken to avoid it. The result of this assessment then enables prioritisation of risks and impacts according to significance, which assists in setting the priorities for mitigation measures.

The significance of positive impacts and opportunities is similarly assessed according to the expected environmental benefit and the likelihood of their occurring or being able to be carried out as part of the project. This will then guide decisions on which of the opportunities the project team should concentrate

1.2.8 Sustainability management mechanisms

At design stage, ‘appropriate mechanisms’ could be in the form of a Project Environmental Management Plan (PEMP) or Action Plan with active monitoring of progress against that Plan. However, the fact that an EIA was undertaken for the project is not regarded as evidence that mechanisms for the management of issues identified in such a study are being operated effectively and appropriately.

At construction stage, ‘appropriate mechanisms’ could be in the form of a Site Environmental Management Plan (SEMP) or an Integrated Site Management Plan that includes coverage and management of environmental and social issues again with active monitoring of progress against that Plan. Such a plan would cover the management of all significant environmental and social aspects of the construction process and would be drawn up specifically for the relevant site and project. It should address issues such as minimising nuisance to neighbours, the management of sub-contractors’ and suppliers’ environmental performance, and training requirements. It should also include procedures for monitoring its implementation, emergency response plans, and operational control procedures (for example, for waste disposal and spill prevention).

It is very important that Designers positively seek information on, and get copies of, agreements, commitments and undertakings made during the consents process and integrate their contents into the design process. Equally, Contractors need to secure and act on similar information from the consents and design processes that relate to the construction stage to ensure that commitments made earlier in the project are adhered to and that inappropriate actions are avoided.

1.2.9 Implementation of mechanisms

Interpretation of ‘regular’ depends on the size of the project and, in particular, the length of time it is predicted to take. On the majority of projects, a review on a three-monthly basis would be acceptable, but this should be more frequent on projects or project phases of 6 months or less. If the review period is longer, and this is still considered acceptable, then it should be justified. In any case, it is essential that the extent of the reviews should be appropriate to the environmental risks and scale of the project.

On longer-duration or larger projects these checks are likely to include formal internal environmental audits. However, these may not be appropriate on smaller or shorter duration projects.
The important thing to demonstrate for this criterion is that some form of checking has taken place to ensure the mechanisms referred to in 1.2.8 have been implemented and are effective. On smaller projects, this could, for instance, simply be records of reviews in weekly meeting minutes.

1.2.10 Success of the mechanisms

As opposed to the regular checks of implementation referred to in 1.2.9, this criterion asks about the review of the results of implementation, which implies a further step and a more-proactive review, looking at the outcome of the implemented mechanisms, not just whether they have been undertaken.

1.2.11 Sustainability training

Project-specific environmental training should at a minimum cover the significant environmental impacts and opportunities identified (as covered by 1.2.7, 1.3), as well as instructions on how to deal with them. It can also include the issues of Site Waste Management Plans (SWMP), waste reduction, material resource efficiency, energy performance over the whole life of the completed works, and water consumption minimisation. These issues can be dealt with in a wide range of training sessions, including formal courses for project team members, sessions within project team meetings, or via site inductions and toolbox talks. Resources such as the CIRIA’s Environmental good practice on site guide (C741, 2015) and its associated pocket book (C762, 2016) provide useful information to support site environmental management. Records of these should be available.

1.2.12 Project team communications

Assessment of impacts and opportunities (see 1.2.7) would have to have been carried out to be able to score on this question.

This would cover the outcome of any EIA or any similar assessment undertaken and can be relayed via contract documents and invitations to bid, project environmental management plans, method statements, start-up and progress meetings, or work instructions.

‘All those directly engaged in the project’ includes project management, design team, Contractors and sub-contractors, and anyone else actively engaged, but not extractive and/or factory or office sites of suppliers of materials or services.

**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1, 1.2.2, 1.2.3 Environmental impacts and benefits assessment</td>
<td>Evidence of the analysis is likely to be in the form of an Environmental Statement (ES) or Environmental Commentary prepared during development of the project, and then submitted for the planning and consents processes. To gain full points for part a) it will be necessary to demonstrate that the scoping and boundary setting for the assessments were carefully set to maximise the chances of significant adverse impacts that occur remotely from the project being included. Evidence for part b) is likely to be in the form of design drawings and design details but will also need to be linked to the ES or commentary, and demonstrate that the design incorporates the promises included there.</td>
</tr>
<tr>
<td>1.2.4 Environmental impacts during construction</td>
<td>Evidence will be in the reports of the assessments and in the CMP or equivalent.</td>
</tr>
<tr>
<td>1.2.5 Environmental &amp; social aspects assessment</td>
<td>Evidence could include a written commitment from the Project’s Directors, a Project Environmental Policy Statement, a Project Sustainability Statement, and/or objectives &amp; targets. However, a general Company Environmental Policy Statement is not sufficient, unless it includes a specific commitment to consider and assess</td>
</tr>
</tbody>
</table>
environmental and social aspects for every project. Additionally, specifying that a project has applied for a CEEQUAL assessment is not considered appropriate evidence.

<table>
<thead>
<tr>
<th>1.2.6 Co-ordination of environment &amp; social aspects</th>
<th>Evidence could be: a formal note of the appointment; records of meetings where the role is clearly set out; reports from the identified person to the project team; or an organogram or similar identifying roles and responsibilities within the project team and/or project management structure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.7 Identification and prioritisation of impacts</td>
<td>Evidence could be a report on the impact and opportunity assessments, minutes of project team meetings at which the process was undertaken, or the charts prepared after such discussions. Evidence for the score in the Strategy and Design columns in a Whole Project Assessment or Strategy &amp; Design Assessment must demonstrate that this work has been undertaken or specified by the Client and the outcomes accepted by them.</td>
</tr>
<tr>
<td>1.2.8 Sustainability management mechanisms</td>
<td>Evidence could be procedures, flowcharts, checklists and/or documented control measures, and would form part of an EMS if there were one in place. However, an EMS is not a prerequisite and, in smaller companies or projects, evidence could be minutes of meetings at which these issues, and the mechanisms to be used, are discussed and agreed. Appropriate mechanisms could have been put in place without the existence of a full EMS. However, they do need to be documented in some form and should clearly state the steps to be taken and any roles and responsibilities to be assumed. They also need to match the level of complexity of environmental issues relevant to the project. The output from an environmental impact assessment that included discussion of how the project's environmental issues, impacts and opportunities are to be managed would not be sufficient evidence to gain the points for this requirement. Evidence is required that such EIA outputs have been translated into action.</td>
</tr>
<tr>
<td>1.2.9 Implementation of mechanisms</td>
<td>Evidence could be site review meeting minutes, site inspections, checklists, or audit reports.</td>
</tr>
<tr>
<td>1.2.10 Success of the mechanisms</td>
<td>Evidence could include actions shown as closed off in minutes, close-out of audit non-conformance reports, or other evidence demonstrating completion of actions arising from site inspections as well as evidence that a review that took place routinely as opposed to being only as a result of a check that has taken place in 1.2.9. For instance, a standing item in project progress meetings or reports, which routinely review environmental and social performance and the success of control mechanisms established, would be acceptable. Evidence could also include the achievement of appropriate project targets set for environmental and social performance.</td>
</tr>
<tr>
<td>1.2.11 Sustainability training</td>
<td>Evidence could include records of site inductions or toolbox talks, more-formal training workshops for the project, briefings or other training on specific issues for the project (such as on otter holt construction or use of new equipment), plus workshops with the Client, Designer and project team members to review and establish environmental risk.</td>
</tr>
<tr>
<td>1.2.12 Project team communications</td>
<td>Evidence for the Client could include communication of environmental and social impacts and opportunities within tender documents or specifications. For the Designer, this could include how they have briefed their team on the environmental and social issues that require consideration and/or provision of information in the design drawings, risk register. For the Contractor, it could include the incorporation of environmental mitigation actions in method statements, toolbox talks or other site briefings or inductions communicating the requirements of...</td>
</tr>
</tbody>
</table>
the SEMP, information posted via site information boards or similar. For any stage, it could also include more project workshops, such as on value management and value engineering, that includes consideration of the environmental and social impacts and opportunities on the project.
Responsible construction management

Aim
To avoid adverse effects on neighbours and local communities during construction.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.2 Independent assessment of considerate behaviour</td>
<td>It may be appropriate in limited circumstances to scope out 1.3.2, for example on very short duration projects.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.1 Considerate behaviour</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3.2 Independent assessment of considerate behaviour</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>1.3.3 Visual impact during construction</td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Assessment criteria

1.3.1 Considerate behaviour (3.1.1 a, b, c)
1.3.2.1 The project has a policy or code of practice regarding considerate behaviour by construction companies and the policy has been:
   a. Communicated to all appropriate people working on the project.
   b. Embedded in the project’s management system.

1.3.2 Independent assessment of considerate behaviour (3.1.1 d)
1.3.3.1 The implementation of the project’s policy or code of practice regarding considerate behaviour has been independently assessed and judged to be at least satisfactory.

1.3.3 Visual impact during construction (3.4.7)
1.3.4.1 Measures have been taken to minimise the adverse visual impact of the site during the construction stage.

Guidance

1.3.1, 1.3.2 Considerate behaviour
In the UK, the Considerate Constructors Scheme (https://www.ccscheme.org.uk/) may be an appropriate mechanism for addressing 1.3.1 and 1.3.2.

If the Contractor has their own policy or Code of Practice, then it needs to cover, at a minimum:

- relations with neighbours;
- communications to neighbours;
- good housekeeping;
- presentation of the site;
- relations with other stakeholders;
• complaints procedures;
• auditing process; and
• commitment to thorough and systematic implementation of the policy.

There is little value in having a policy if it is not then communicated, implemented and monitored. Communication should be both within the project team and externally to interested stakeholders.

1.3.4 Visual impact during construction

A common complaint about construction sites is that they look a mess. Materials are too often scattered all over the place along with various items of litter. Proper storage of materials can result not only in a tidier site that is visually less unpleasant but also in a safer site and can also significantly reduce wastage. Regular clearance of litter makes the site look tidier and enhances a culture of environmental care amongst staff.

Example measures include appropriate site screening, allocation of stacking areas, tidy storage of materials, a regular site inspection, litter-pick and site tidy-up, and inspection and cleaning of site hoardings.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3.1 Considerate behaviour</td>
<td>Evidence could be a Code of Practice or Policy statement, registration with the Considerate Constructors Scheme or similar, plus assessment results.</td>
</tr>
<tr>
<td>1.3.2 Independent assessment of considerate behaviour</td>
<td></td>
</tr>
<tr>
<td>1.3.3 Visual impact during construction</td>
<td>These measures could be laid out as part of a SEMP or equivalent. In the absence of such a plan, other evidence is required to identify the measures taken and verify their implementation, for example, site records, photographic evidence</td>
</tr>
</tbody>
</table>
Staff and supply chain social governance

Aim
To promote ethical employment procedures and processes within organisations across the supply chain.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4.1 Plans and policies for ethical labour practices</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1.4.2 Responsible individual for implementing plans and policies for ethical labour practices</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>1.4.3 Commitment to ongoing improvement in ethical labour practices</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>1.4.4 Independent verification or certification of ethical labour plans and policies</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Assessment criteria

1.4.1 Plans and policies for ethical labour practices *(New)*

1.4.1.1 The organisation has plans and policies regarding ethical labour practices that align with the Ethical Trading Initiative (ETI) Base Code and include additional commitments not covered by the ETI Base Code regarding:

a. Avoidance of bribery and corruption
b. Promotion and support for learning and development
c. Flexible working practices to encourage and allow a healthy and practical life balance

1.4.1.2 The plans and policies have been signed-off by the company directors (or equivalent) and are publicly available.

1.4.1.3 The plans and policies are applied to:

a. Employees within the organisation.
b. Employees within the organisation’s supply chains, as far as reasonably practicable.

1.4.2 Responsible individual for implementing plans and policies for ethical labour practices *(New)*

1.4.2.1 The plans and policies regarding ethical labour practices are implemented and managed by a nominated responsible individual(s) with the authority to carry out regular checks of the entire organisation and its supply chain, as far as reasonably practicable (see 1.4.1.3.b), and take actions to eliminate non-compliances.
1.4.3 Commitment to ongoing improvement in ethical labour practices (New)

1.4.3.1 The organisation has made specific commitments within the plans and policies to improve ethical labour practices year on year, demonstrated through past, current and future objectives or areas of improvement.

1.4.3.2 Progress against these commitments is reported and made publicly available.

1.4.4 Independent verification or certification of ethical labour plans and policies (New)

1.4.4.1 A suitably experienced independent third party has verified or certified that the organisation’s plans and policies regarding ethical labour practices meet the requirements of the ETI Base Code and the additional items listed in 1.4.1.1.

1.4.4.2 A summary of the verification or certification report by the independent third party is publicly available.

Guidance

1.4.1 Plans and policies for ethical labour practices

The Ethical Trading Initiative (ETI) Base Code is founded on the conventions of the International Labour Organisation (ILO) and is an internationally recognised code of good labour practice. The ETI Base Code includes the following items, which should be reflected in the organisation’s plans, policies, or procedures regarding labour practices:

1. Employment is freely chosen
2. Freedom of association and the right to collective bargaining are respected
3. Working conditions are safe and hygienic
4. Child labour shall not be used
5. Living wages are paid
6. Working hours are not excessive
7. No discrimination is practiced
8. Regular employment is provided
9. No harsh or inhumane treatment is allowed

For more information visit https://www.ethicaltrade.org/eti-base-code.

Parts of the supply chain where it is not reasonably practical to apply these requirements shall be highlighted in the plans and policies along with appropriate explanation why, details on risk assessments undertaken and on mitigating measures the organisation is taking to influence more ethical labour practices.

1.4.2 Responsible individual for ethical labour practices

The individual(s) carrying out checks and allocating actions to rectify non-compliance will meet with the project team and their supply chain organisations to discuss how the procedures will be applied throughout the project. They will have authority to visit, monitor and require action(s) to be taken to address shortcomings in compliance across the entire organisation and its supply chain, as far as reasonably practical (see 1.4.1.3.b). The monitoring will take place with sufficient frequency to ensure that risks of non-compliance are minimised e.g. visits (or communications) occur at key stages of the project such as:

- The beginning of the project.
- When reviewing tenders, awarding contracts and employing staff.
- Where actions are required to rectify non-compliance.
1.4.4 Independent verification or certification of ethical labour plans and policies

The Ethical Labour Sourcing Standard (ELS) is a mechanism for demonstrating, via a third party, that the requirements of the Ethical Trading Initiative Base Code have been met. For more information visit https://www.bregroup.com/services/standards/ethical-labour-sourcing-standard/.

Evidence

<table>
<thead>
<tr>
<th>Assessment requirements</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4.1 Plans and policies for ethical labour practices</td>
<td>SA8000 registration, membership to the ETI (with additional evidence for the items listed in 1.4.1.1), or Self-Assessment registration number to the ELS (or equivalent). Evidence should demonstrate any additional requirements given in the criteria.</td>
</tr>
<tr>
<td>1.4.2 Responsible individual for ethical labour practices</td>
<td></td>
</tr>
<tr>
<td>1.4.3 Commitment to ongoing improvement in ethical labour practices</td>
<td>Mechanisms to measure improvement. Evidence should demonstrate any additional requirements given in the criteria.</td>
</tr>
<tr>
<td>1.4.4 Independent verification or certification of ethical labour plans and policies</td>
<td>ETI principles of implementation report. Full verification to the ELS. Evidence should demonstrate any additional requirements given in the criteria.</td>
</tr>
</tbody>
</table>
Whole life costing

Aim
To deliver whole life value by ensuring consideration of whole life costing principles throughout planning, design, and construction.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.1 Whole life costing</td>
<td>8</td>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

Assessment criteria

1.5.1 Whole life costing (2,4.1)

1.5.1.1 The Client and the design team have completed a whole life cost assessment for the project in line with PD 156865:2008.

1.5.1.2 The whole life cost assessment has influenced the design of the project.

Guidance

1.5.1 Whole life costing
The principles of life-cycle costing for construction are set out in the International Standard BS ISO 15686-5 Buildings and constructed assets. Service life planning. Life-cycle costing. The UK supplement to this standard is PD 156865:2008 Standardized method for life-cycle costing for construction procurement: A supplement to BS ISO 15686-5, which is available from the British Standards Institution (BSI) and the Royal Institution of Chartered Surveyors' (RICS) Building Cost Information Service. It provides comprehensive advice on how to undertake life-cycle costing for the UK construction industry.

Having carried out a study, additional points may follow from appropriate design to allow for efficient or reduced levels of maintenance, and for ease of deconstruction and recycling at the end of life. These aspects are assessed in Resources.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5.1 Whole life costing</td>
<td>Evidence will need to be in the form of a report from the process.</td>
</tr>
</tbody>
</table>
Resilience

Summary

The Resilience category encourages proactive hazard identification, risk evaluation and risk management for the asset and the infrastructure system within which it sits. Issues include assessing and mitigating risks from natural hazards, intentional threats, and climate change plus designing for future needs. The section considers the risks to the asset and its dependencies and consequently the required asset resilience. Specific environmental risks resulting from the asset’s construction and operation are covered separately in Pollution.

Category summary table

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk assessment and mitigation</td>
</tr>
<tr>
<td>Flooding and surface water run-off</td>
</tr>
<tr>
<td>Future needs</td>
</tr>
</tbody>
</table>
Risk assessment and mitigation

Aim
To assess and mitigate the risks and negative impacts associated with natural hazards, intentional threats and climate change over the design life of the asset.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1 Identifying resilience requirements</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.2 Identifying dependencies</td>
<td>23</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>2.1.3 Communicating dependencies</td>
<td>23</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>2.1.4 Identifying and assessing risks</td>
<td>45 (up to)</td>
<td>21 (up to)</td>
<td>14 (up to)</td>
</tr>
<tr>
<td>2.1.5 Communicating risks</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2.1.6 Resilience plan</td>
<td></td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

Assessment criteria

2.1.1 Identifying resilience requirements *(New)*
2.1.1.1 Before the end of the strategy stage, the relevant resilience requirements for the project have been identified based on a current risk assessment for the project (see 2.1.4, ‘Identifying and assessing risks’) and consultation with relevant experts.

2.1.2 Identifying dependencies *(New)*
2.1.2.1 At strategy and design stages, relevant stakeholders have identified (or reviewed):
   a. Dependencies associated with the asset and its function(s)
   b. The criticality of the asset and its components

2.1.3 Communicating dependencies *(New)*
2.1.3.1 At each applicable project stage, the identified dependencies and the criticality of the asset have been appropriately communicated to relevant project team members.

2.1.4 Identifying and assessing risks *(New)*
2.1.4.1 At each project stage, using current project information, risks and impacts have been identified and assessed (or reviewed and updated) for one or more resilience topics in accordance with the guidance.

<table>
<thead>
<tr>
<th>Resilience topic</th>
<th>Score available at each assessment stage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strategy</td>
</tr>
<tr>
<td>Natural hazards</td>
<td>15</td>
</tr>
<tr>
<td>Climate change</td>
<td>15</td>
</tr>
</tbody>
</table>
2.1.5 Communicating risks (New)

2.1.5.1 At each project stage, the risks and impacts identified in the current risk assessment have been appropriately communicated to relevant project team members.

2.1.6 Resilience plan (New)

2.1.6.1 During design and construction, using current project information, a resilience plan has been developed (or updated) based on a current risk assessment(s) and an appraisal of potential solutions to enhance resilience and meet the resilience requirements for the project.

2.1.6.2 The resilience plan has been:
   a. Distributed to all relevant stakeholders
   b. Updated, if needed (for example due to changes in the design or construction process)
   c. Implemented during design and construction

2.1.6.3 Any deviation from the risk assessment or resilience plan has been supported by written justification.

2.1.6.4 Where necessary, any realised risk event has been reported with appropriate and proportional weight or focus to relevant national, local, or project specific authorities.

Guidance

2.1.1 Identifying resilience requirements

Resilience requirements for the project could include:

- Minimum regulatory requirements relating to resilience
- Corporate requirements relating to resilience
- Business dependencies that influence the project development process
- Recommendations made by relevant experts

This cannot be scored if no score has been achieved at the strategy stage for 2.1.4.

2.1.2 Identifying dependencies

Dependencies must be identified using an industry recognised approach (methodology, tool, or model), where available and suitable. Methodologies must involve relevant stakeholders (for example, through structured workshops); tools and models must be independent or peer reviewed. If no suitable approach exists then a bespoke methodology, tool, or model for the project must be devised and justified by relevant stakeholders. As a minimum, the approach must:

- Consider direct 'one tier up or down' dependencies (i.e. parts of the system that, if impacted, would have a direct effect on the asset such as the energy supply or communication system).
- Be current and up-to-date.

The criticality of the asset and its components (for example, national, regional, or local) should be identified by the project team, including the owner or operator. The criticality of assets will vary by national infrastructure sector and not every asset within a given sector will be judged to be 'critical'. Critical National Infrastructure is defined in the Definitions section.

In the UK, information and advice on the security of national infrastructure is provided by the Centre for the Protection of National Infrastructure (CPNI). For more information visit https://www.cpni.gov.uk/.
2.1.3 Communicating dependencies

As a minimum, relevant information regarding the identified dependencies and criticality of the asset must be communicated to the:

- design team during concept design
- construction team before the start of construction

2.1.4 Identifying and assessing risks

The risk assessment process must align with ISO 31000 and should:

1. Formulate a series of disruptive events to determine risks associated with the asset during its whole life (i.e. construction, operation, and end of life).
2. Assess and grade the likelihood and severity of risks.
3. Establish the maximum tolerable levels of risk for the project.
4. Identify how risks can be reduced through planning, design, construction, and operation to an agreed tolerable level or as low as reasonably practicable (ALARP).
5. Identify how any residual risks can be managed.

Scope (of risk assessments)

Risk assessments must include the scale and duration of the risk associated with:

- Health and safety of operators, users, or others.
- Commercial or economic losses (for example, failure to meet contractual obligations, physical damage, destruction).
- Reputational damage (for example, negative media coverage, loss of trust).
- Business disruption (for example, loss of essential services).
- Regulatory action (for example, from loss of life, serious injury, or environmental damage).
- The environment (for example, damage to the natural environment).

Disruptive events (for risk assessments)

All disruptive events (see Definition) must:

- Be informed by consultation and advice from:
  a. Relevant experts (see ‘Definitions’)
  b. Relevant stakeholders (see ‘Definitions’)
- Address high probability low impact events and low probability high impact events
- Consider events over the whole life of the asset.

Data sources (for risk assessments)

As a minimum, the data sources used must:

- Be independent and have been subject to peer review
- Include the national risk register, if available
- Include sector specific resilience plans


Additional guidance on data sources for specific risk assessments is provided in the table below.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Guidance on data sources for specific risk assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural hazards</td>
<td>Data sources for natural hazards could include strategic level risk assessments.</td>
</tr>
<tr>
<td>Climate change</td>
<td>Data sources for climate change could include national or international projections for climate change.</td>
</tr>
</tbody>
</table>
In the UK, the current national projections are the UK Climate Projections 2018 (UKCP18). These build on the previous projections in 2009 (UKCP09) and provide plausible future projections of climate change for different time periods and greenhouse gas emission scenarios. For more information visit https://www.metoffice.gov.uk/research/collaboration/ukcp

Where major investment in long term infrastructure is being considered, results from international climate modelling centres should be referred to. Results from the Intergovernmental Panel on Climate Change models can be viewed using the IPCC Data Distribution Centre visualisation tools (http://apps.ipcc-data.org/maps/).

<table>
<thead>
<tr>
<th>Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data sources for security and intentional threats could include local police statistics, national crime statistics, insurance claim data, corporate expenditure on maintenance and repair.</td>
</tr>
</tbody>
</table>

2.1.5 Communicating risks

As a minimum, relevant information regarding the identified risks must be communicated to the:

- Design team during concept design (for example, through a project brief or equivalent)
- Construction team before the start of construction (for example, through the project documents)
- Owner/operator before the end of handover (for example, in formal operation and maintenance documentation)

2.1.6 Resilience plan

The resilience plan must outline:

- How the design and construction teams address the identified risks
- The role of people and procedures in addressing the identified risks
- The performance requirements of proposed resilience measures
- Management measures required to mitigate the impact of potential hazards

When appraising options to enhance resilience, the following could be considered:

- Effectiveness in reducing risks
- Proportionality given the risks
- Whole life costs and the service life of the asset including maintenance, replacement, upgrades and operational costs
- Impacts on dependencies
- The balance between investment in the infrastructure and investment in emergency response and recovery capabilities
- Uncertainties over the life of the asset

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1 Identifying resilience requirements</td>
<td>Project brief, specification.</td>
</tr>
<tr>
<td>2.1.2 Identifying dependencies</td>
<td>Meeting records, risk assessment information.</td>
</tr>
<tr>
<td>2.1.3 Communicating dependencies</td>
<td>Project brief, specification. Design documentation. Operation and maintenance documentation.</td>
</tr>
</tbody>
</table>
2.1.4 Identifying and assessing risks
Risk assessment documentation, meeting records, list of consultees.

2.1.5 Communicating risks
Project brief, specification, risk assessment. Design drawings, risk assessment. As built drawings, handover documentation, contingency plans, operation and maintenance manuals, commissioning testing reports.

2.1.6 Resilience plan
Resilience plan

Definitions

Critical National Infrastructure
In the UK, Critical National Infrastructure (CNI) is defined as:

“Those critical elements of infrastructure (namely assets, facilities, systems, networks or processes and the essential workers that operate and facilitate them), the loss or compromise of which could result in:

a. Major detrimental impact on the availability, integrity or delivery of essential services – including those services whose integrity, if compromised, could result in significant loss of life or casualties – taking into account significant economic or social impacts; and/or
b. Significant impact on national security, national defence, or the functioning of the state.”


Dependencies
A dependency is a relationship between two products or services in which one product or service is required for generating the other product or service (or both are interdependent on each other). In the context of infrastructure projects, dependencies can be defined as other assets, the community, or the environment that would be impacted if the asset was to fail or not function as intended.

A dependency may be:

- **Digital**: A cyber connection between infrastructure assets or a shared dependency by two or more elements on the transfer of information from a third party.
- **Geographical**: The proximity of infrastructure assets, systems or networks makes them susceptible to the same incident.
- **Organisational**: Shared ownership, governance, financing mechanisms 'soft' infrastructure.
- **Physical**: A physical connection between different infrastructure assets, systems, or networks (for example, one asset uses fuel supplied by another).

A dependency may fall upstream or downstream of the asset location:

- **Downstream**: Where the infrastructure asset provides a product or service to another infrastructure asset which is dependent on that service.
- **Upstream**: Where the infrastructure asset is dependent on a product or service provided by other infrastructure

When considering infrastructure assets, interdependencies should also be considered. Interdependency is a mutual reliance among infrastructure owners and operators on products or services from other suppliers.

Disruptive events
Events established to predict risks over the life of the asset.
In this issue, there are two types of disruptive event:

- **Design Basis Events**: A series of disruptive events based on natural hazards (including the effects of climate change).
- **Design Basis Threats**: A series of disruptive events based on intentional threats.

**Intentional threats**

Man-made threats including fire and crime (theft, arson, vandalism, terrorist attacks, cybersecurity etc.). These are not usefully informed by historical data due to their nature and are best assessed using a series of credible threat events to allow risk analysis and assessment of asset vulnerability.

**Natural hazards**

A natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Natural hazards include:

- Flooding
- Hazards of geological origin (such as volcanic eruptions, earthquakes and landslides)
- Hazards of climatic or meteorological origin (such as droughts, avalanches, wave surges including tsunamis and tidal waves, and wind storms including cyclones, hurricanes, tornadoes, tropical storms and typhoons)
- Wildfires

The relevance of different natural hazards will be dependent on local geography, geology, hydrology and climate factors. The assessment of natural hazards tends to be based on historical data but should also consider climate scenarios and potential future risk.

**Relevant experts**

- For natural hazards, relevant experts have technical and professional experience in determining:
  o the possible natural hazards in the region,
  o the likely impacts on the project, and
  o appropriate mitigation measures for the project.
- For climate change, relevant experts have technical and professional experience in predicting and understanding the impacts of climate change on the built environment and advising on mitigation measures.
- For security (or intentional threats), relevant experts have technical and professional experience in designing appropriate security measures and hold a relevant professional qualification.

**Relevant stakeholders**

For the purposes of this issue, relevant stakeholders include as a minimum:

- The owner/operator
- Representatives from local public services, including the emergency services, local authorities, health services and environmental agencies.
- Stakeholders upstream and downstream of the project reasonably considered to be at risk of (i) impacts arising from the project or (ii) having an impact on the project.

Additional relevant stakeholders for specific resilience topics are given below.

- When considering natural hazards or climate change, additional relevant stakeholders could include:
  o Recognised leaders in the resilience sector
  o Climate change experts
Owners or operators of other similar infrastructure assets
- Customers
- Members of the public, where affected
- Local interest groups

- When considering security or intentional threats, additional relevant stakeholders could include:
  - Corporate ICT and cybersecurity specialists
  - National security organisations
  - Police forces
  - Security specialists

**Resilience**

The ability of assets, networks and systems to anticipate, absorb, adapt or rapidly recover from a disruptive event.

Resilience can be considered in a range of ways including:

- **Resistance**: Designing the asset to withstand predicted impacts, e.g. barriers to prevent water entering the asset or walls with the strength to withstand the impact of flood water.
- **Reliability**: The asset or systems required to operate under a range of set conditions for a specified period, this might include raising critical components above the design flood level, or using specifications that address identified risks, e.g. burglar alarms or anti-graffiti coatings. It can also include non-technical items such as flood warning schemes, staff training and good practice guidance to ensure that staff can respond to events to ensure continuity of service in a safe manner.
- **Redundancy**: The availability of backup installations or spare capacity within a system to enable operations to be switched or diverted to alternative parts of the system in the event of disruption to ensure continuity of service. The resilience of networks reduces when running at or near capacity, although in some sectors or organisations it is recognised that it may not always be feasible to operate with significant spare capacity within the network.
- **Recovery**: Preparations for fast and effective response and recovery from disruptive events and will include processes for dealing with an event if it occurs to ensure that the asset can continue to operate.

In the context of flood risk, resistance and resilience are often used as follows:

- **Resistance**: where measures prevent water from being in contact with the asset.
- **Resilience**: where the asset is designed to withstand contact with the water.

**Resilience topics**

The table below defines the scope of the three resilience topics within the context of this issue.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Guidance on scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural hazards</td>
<td>Any natural hazard that could damage or compromise the asset or its critical functions. See the definition of natural hazards.</td>
</tr>
<tr>
<td>Climate change</td>
<td>Climate change events that could damage or compromise the asset or its critical functions (for example, flooding, surface water runoff, temperature fluctuations, weather volatility, water resource strain, ground condition changes).</td>
</tr>
<tr>
<td>Security</td>
<td>Any threats that could damage or compromise the asset or its critical functions (for example, physical, cyber, personnel).</td>
</tr>
</tbody>
</table>

**Additional information**

© BRE GLOBAL LTD 2019
Confidentiality or national security

The information assessed as part of this assessment issue may have specific requirements related to confidentiality or national security. Where relevant, please contact us for more information on conducting the assessment and demonstrating compliance.
Flooding and surface water run-off

Aim
To minimise the negative effects of flooding.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.2 Flood-risk-based enhancements</td>
<td>Scope out if an appropriate flood risk assessment has been carried out and did not require any measures to be taken. This cannot be scoped out if 2.2.1 has failed to score.</td>
</tr>
<tr>
<td>2.2.3 Sustainable drainage systems</td>
<td>Scope out only for marine and offshore projects, where there is clearly no prospect of SuDS being applicable, and on refurbishment projects where drainage is not part of the scope of works.</td>
</tr>
<tr>
<td>2.2.4 Long term flood resilience &amp; adaption</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>2.2.5 Implementation of flood-risk-based enhancements</td>
<td>Scope out if an appropriate assessment has been carried out to satisfy 2.2.2 and this did not require any measures to be taken.</td>
</tr>
<tr>
<td>2.2.6 Implementation of sustainable drainage systems</td>
<td>Scope out only if points have been scored on 2.2.3 and SuDS have been deemed inappropriate for the project (for example, on a river wall strengthening project).</td>
</tr>
<tr>
<td>2.2.7 Managing run-off at source</td>
<td>Scope out only for marine and offshore projects or if infiltration has been deemed inappropriate by the assessment carried in 2.2.3 (for example, due to poor infiltration potential or ground contamination risks).</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.1 Flood risk assessment</td>
<td></td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>2.2.2 Flood-risk-based enhancements</td>
<td></td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>2.2.3 Sustainable drainage systems</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>2.2.4 Long term flood resilience &amp; adaption</td>
<td></td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>2.2.5 Implementation of flood-risk-based enhancements</td>
<td></td>
<td>62 (up to)</td>
<td></td>
</tr>
<tr>
<td>2.2.6 Implementation of sustainable drainage systems</td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2.2.7 Managing run-off at source</td>
<td></td>
<td>24 (up to)</td>
<td></td>
</tr>
</tbody>
</table>

Assessment criteria

2.2.1 Flood risk assessment (4.3.1)
2.2.1.1 The run-off, flood risk, and potential increased flood risk elsewhere as a result of the completed works have all been assessed over their expected working life, and appropriate flood management measures included in the design.
2.2.2 Flood-risk-based enhancements (4.3.2)
2.2.2.1 The design team has actively considered opportunities for providing enhancements as part of the flood risk management measures and/or the merits of designing for a larger event or for greater flood resilience than required by planning regulations or guidance.

2.2.3 Sustainable drainage systems (7.3.3 a)
2.2.3.1 The use of SuDS has been considered for incorporation into the design.

2.2.4 Long term flood resilience & adaption (4.3.4)
2.2.4.1 The project team has designed for long-term flood resilience and adaptation.

2.2.5 Implementation of flood-risk-based enhancements (4.3.3)
2.2.5.1 The proposals recommended in 2.2.2 have been included in the design and incorporated in the project.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposals included in the design</td>
<td>31</td>
</tr>
<tr>
<td>Proposals incorporated in the project</td>
<td>31</td>
</tr>
</tbody>
</table>

2.2.6 Implementation of sustainable drainage systems (7.3.3 b)
2.2.6.1 SuDS have been incorporated into the project where appropriate.

2.2.7 Managing run-off at source (7.3.4)
2.2.7.1 A percentage of total surface water run-off from the completed project has been managed at source through infiltration.

<table>
<thead>
<tr>
<th>Percentage of total surface water run-off managed at source</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 30%</td>
<td>6</td>
</tr>
<tr>
<td>Up to 60%</td>
<td>12</td>
</tr>
<tr>
<td>Up to 90%</td>
<td>18</td>
</tr>
<tr>
<td>Above 90%</td>
<td>24</td>
</tr>
</tbody>
</table>

Guidance

2.2.1 Flood risk assessment
Any assessment has to be in line with the requirements of planning policy guidance or its equivalent.

Any development, whether or not situated in a floodplain, can contribute to increased flood risk. Creating additional sealed surfaces on previously open ground will increase run-off, which, if fed into existing rivers or sewerage systems, adds to the existing load. Climate change has been predicted to lead to increased rainfall, increased intensities and increased numbers of incidences of extremely heavy rains, the type of events that cause flooding as a result of sewerage systems and rivers not being able to cope with the sudden volume of water run-off.

The National Planning Policy Framework (NPPF) in England, Technical Advice Note (TAN) 15 in Wales, and PPS 15 in Northern Ireland, and related equivalents, currently require assessment and appropriate control of run-off. For new developments, run-off should be controlled such that it is no larger than would be the case from a Greenfield site of the same size. Increased flood risk elsewhere as a result of the development should be minimised, and appropriate flood management measures should be included in the design.
Note also that even refurbishment projects may create additional sealed surfaces and a run-off assessment should be carried out in any case, to ensure that run-off does not exceed the capacity of existing systems.

Appropriate flood risk management measures could materially affect the overall design of the project, for example raising the level of a road so that flood risk is reduced, with culverts incorporated to allow water to flow under it.

The following CIRIA guidance may be relevant to addressing this issue:

- Communication and engagement in local flood risk management (C751, 2015)
- Communication and engagement techniques in local flood risk management, companion guide (C752, 2015)

### 2.2.2 Flood-risk-based enhancements

Opportunities for improving existing or future flood risk conditions can be explored for any project that has a flood-risk impact. What CEEQUAL defines here as enhancements in a flood-risk context could be achieved through reducing surface water run-off to rates below those currently experienced or designing for a greater increase in rainfall intensity due to climate change effects than the minimum required by regulatory bodies. Designing for larger events or for greater flood resilience may be appropriate for particular sites that are very sensitive to intense rainfall, or run-off from nearby sites, or greater resilience may be appropriate for regional or national strategic assets such as power stations or grid facilities, water treatment works or wastewater treatment works.

By reducing surface water run-off beyond current conditions (or beyond the minimum required by the regulatory bodies), downstream flood risks and flood risks associated with smaller flood events could be improved. Similarly, designing for a greater increase in rainfall intensity could improve the whole-life performance of the system and provide more on-site attenuation to cater for extreme events.

### 2.2.3 Sustainable drainage systems

For example, rainwater retention, balancing ponds, reedbed systems, and/or grass roofs.

For the policy context, see Flood and Water Management Act 2010 and the NPPF for England and equivalents elsewhere. For guidance on SuDS refer to CIRIA Publications:

- Site handbook for the construction of SuDS (C698, 2007).
- Retrofitting to manage surface water (C713, 2012).
- Managing urban flooding from heavy rainfall – encouraging the uptake of designing for exceedance (C738, 2014).

The Flood and Water Management Act 2010 promotes the use of SuDS and requires that proposed drainage systems meet new national standards for sustainable drainage. The incorporation of SuDS must be actively considered. If the project generates no additional run-off, or (if consultation with the local authority) SuDS are found not to be beneficial or to be inappropriate in a particular case, this should be a conscious and informed decision, and the next question can be scoped out on that basis.

### 2.2.4 Long term flood resilience & adaption

Even when flood risks are taken into consideration during the design of a new development, some residual flood risk will still exist. This could be a result of an extreme storm event beyond that considered in 2.2.1, breach in flood defences or from overland flow caused by blockages in the surface water management systems. The potential effects of climate change could also increase storm intensity to beyond that currently experienced and for which existing drainage systems are designed.
Management of these residual risks can be achieved in a number of ways. For example, new developments can be built using materials that are suited to inundation, or that can be easily repaired after a flood event. Electrical installations can be positioned above the line of the predicted flood level.

Guidance is available in documents such as “Improving the flood performance of new buildings” Department for Communities and Local Government (DCLG) (2007), Environment Agency Standing Advice and NPPF Technical Guidance in England, TAN15 in Wales, PPS15 in NI and Scottish Planning Policy (SPP) and Planning Advice Note (PAN) 61 in Scotland.

2.2.5 Implementation flood-risk-based enhancements

See guidance for 2.2.2.

2.2.6 Implementation of sustainable drainage systems

The score is shown across the Design and Construction columns, which means that the Designer not only has to have incorporated SuDS into the design but for the score to be gained in a Whole Project Award the SuDS need to have actually been constructed (not just designed).

2.2.7 Managing run-off at source

Calculations to be based on the 1 in 30 annual probability event (the probability commonly used to size below-ground drainage systems because it is what is required for Sewers for Adoption).

The use of SuDS can provide numerous benefits to flood risk, water quality and water resource availability. Many SuDS will attenuate flow and provide water treatment through entrapment or settlement and the use of these systems are addressed in 2.2.3 and 2.2.6. This question specifically relates to managing surface water run-off through infiltration. Infiltration of surface water run-off can provide betterment in terms of flood risk from the receiving watercourse and can aid with aquifer recharge.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.1 Flood risk assessment</td>
<td>Evidence is likely to need to include a review of existing flood risk from all sources that have the potential to affect the project and a summary of proposed flood management measures, if deemed required. On certain types of projects, especially small ones – for example small bridges over a river or canal or strengthening of a river or canal bank – a qualitative assessment may be sufficient evidence. For example, the assessment may have been made at and recorded in minutes of a design meeting. For risks associated with surface water run-off, evidence would include assessment or calculations of run-off or, for larger projects, consultants’ reports and/or evidence of consultations with appropriate regulators.</td>
</tr>
<tr>
<td>2.2.2 Flood-risk-based enhancements</td>
<td>Evidence should show what measures (such as the ones mentioned above) have been incorporated into the design. This could be in the form of drawings, specifications or other design output documents.</td>
</tr>
<tr>
<td>2.2.3 Sustainable drainage systems</td>
<td>Evidence should be provided to demonstrate that SuDS have been considered. This could be notes from a design meeting or part of the Client’s brief.</td>
</tr>
<tr>
<td>2.2.4 Long term flood resilience &amp; adaption</td>
<td>Evidence could be provided in the form of a technical note or drawings that demonstrate incorporation of measures.</td>
</tr>
<tr>
<td>2.2.5 Implementation of flood-risk-based enhancements</td>
<td>Evidence should show that the measures identified for 2.2.2 have been incorporated into the final works. This could be in the form of drawings, specifications or other design output documents, and construction records or photographs to demonstrate their construction.</td>
</tr>
<tr>
<td>2.2.6 Implementation of sustainable drainage systems</td>
<td>Evidence should be provided to demonstrate that SuDS have been implemented where appropriate. Evidence may include drawings or specifications showing the incorporation of SuDS.</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2.2.7 Managing run-off at source</td>
<td>Evidence would include calculations demonstrating management of surface water run-off and plans illustrating the areas of the site that drain to infiltration systems.</td>
</tr>
</tbody>
</table>
Future needs

Aim
To encourage appropriate adaptability for future needs in a way that avoids unnecessary disruption, inconvenience, and cost.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Assessment criteria

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3.1 Identifying future needs (New)</td>
<td>20</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2.3.2 Opportunities to address future needs (New)</td>
<td>27</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>2.3.3 Designing for future needs (New)</td>
<td></td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

2.3.1 Identifying future needs (New)
2.3.1.1 During strategy and design, the expected future needs of the asset have been identified (or reviewed and updated) by:
   a. Assessing predicted changes that are expected to be critical to the sector or asset
   b. Using robust data to support predictions
   c. Consulting relevant stakeholders
2.3.1.2 Before the start of design, the expected future needs of the asset have been communicated to the design team.

2.3.2 Opportunities to address future needs (New)
2.3.2.1 During strategy and design, the project team have identified (or reviewed and updated) opportunities to adapt the design to address or more easily accommodate the expected future needs of the asset.
2.3.2.2 A qualitative assessment of the predicted costs and benefits of adapting the design to address the expected future needs of the asset has been completed (or reviewed and updated).
2.3.2.3 Before the start of design, the client has communicated to the design team through a project brief (or equivalent):
   a. Any identified opportunities to address or accommodate future needs
   b. Any requirements to address or accommodate future needs

2.3.3 Designing for future needs (New)
2.3.3.1 The design has incorporated opportunities to address or more easily accommodate the expected future needs of the asset in one or more areas identified as most critical for the sector or asset.
2.3.3.2 The design allows the expected future needs to be accommodated without destruction of the asset and with minimal disruption.

Guidance
2.3.1 Identifying future needs

When assessing predicted changes, the project team should consider:

- Population growth
- Changing demographic
- Customer expectations
- Integrated systems
- Resource availability
- New and existing technology
- Flexibility of the asset
- Industry changes

Potential considerations for each of these topics are given in the table below.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population growth</td>
<td>Predicted future demand and capacity including potential future expansion and upgrades, whether further assets will be required to meet predicted needs, how future growth or adaptation can be safeguarded or incorporated into the current design to allow future needs to be more easily met, how innovation could be used to meet the demands of a growing population. Potential future functional changes. Potential future access requirements.</td>
</tr>
<tr>
<td>Customer expectations</td>
<td>How customers will interact with the asset in the next 5, 10, 20(+) years. Improved cost efficiency over the life of the asset. Meeting increasing customer expectations for reliability, comfort, safety, security and information (where relevant). Accessibility of services for future upgrades.</td>
</tr>
<tr>
<td>Integrated systems</td>
<td>The asset as part of the system within which it operates now and over its life. How technical aspects of the asset interact with (potentially changing) operational aspects over the life of the asset (for example, telecommunications, energy sectors). Opportunities for current or future interconnections to other assets of the same sector or different sector (for example, water/water, energy/water). Potential shared facilities, energy and infrastructure (for example, sustainable drainage systems, amenity spaces and cables). Working with other organisations, through multi-agency communication and coordination. Future dependencies (upstream and downstream) and also interdependencies through use of tools, models, and consultation with (upstream and downstream) stakeholders. Being aware and planning for potential dependency is crucial to designing for future needs; if these dependencies are not taken into account, the measures taken to design for future needs will be at best limited and at worst totally ineffective.</td>
</tr>
<tr>
<td>Resource availability</td>
<td>Future demand of resources needed by the asset over its life and delivered by the project over its life including: materials requirements over the life of the asset in terms of robustness and predicted or possible changes in material supply; energy and water requirements over the life of the asset and predicted or possible changes in supply, demand, and type.</td>
</tr>
</tbody>
</table>
New and existing technology

Smart technology for operation and maintenance purposes (for example, intelligent distribution networks that automatically reroute when equipment fails and smart metering to allow customers to make informed decisions about when to use their power). Techniques and technologies that could be implemented to meet predicted future needs (for example, dual use for an asset such as a road tunnel that can act as storm water storage at times of high rainfall).

Flexibility of the asset

Flexibility of the asset or system (for example, through identifying a diverse set of solutions to meet customer and operator needs). Layered fall-back arrangements to mitigate unavailability. Implementing ideas which will allow projects to be self-sufficient (for example, generate more of their own energy or have dual functionality). How to ensure the functionality of the asset is not compromised based on future predictions. Whether the asset can be designed to be part of a flexible system now and in the future (possibly more relevant for energy and communications sectors).

Industry changes

How legislation is likely to change and what effect this will have on the service provided by the asset. Predicted changes to the infrastructure industry and how might this affect the service provision of the asset.

2.3.2 Opportunities to address future needs

This can only be scored if a score has been achieved for 2.3.1 at the current or previous assessment stage.

2.3.3 Designing for future needs

This can only be scored if scores have been achieved for both 2.3.1 and 2.3.2 at the current or previous assessment stage.

An acceptable level of minimal disruption cannot be absolutely defined and will vary by project. There must be evidence that disruption to the asset and future users has been appropriately considered within the design and mitigated where possible.

**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3.1 Identifying future needs</td>
<td>Assessment of future needs, meeting records, list of consultees, data sources.</td>
</tr>
<tr>
<td>2.3.2 Opportunities to address future needs</td>
<td>Meeting records, results of qualitative assessment, design drawings, specification. Project brief.</td>
</tr>
<tr>
<td>2.3.3 Designing for future needs</td>
<td>Design drawings, as built drawings, meeting notes, list of recommendations, handover documentation.</td>
</tr>
</tbody>
</table>

**Definitions**

**Relevant stakeholders (future needs)**

For the purpose of this issue, relevant stakeholders are knowledgeable and representative and include as a minimum:

- The owner/operator, where known
- Individuals with:
  - Experience in operating similar assets
  - Specialist knowledge and experience of the sector
  - An understanding of how the sector is likely to evolve in the future
  - An understanding of new and relevant technologies
  - An understanding of sector specific dependencies, e.g. energy, communications
- An understanding of the asset's resource requirements and availability, e.g. energy and water.
Communities and stakeholders

Summary

This category addresses issues regarding the wider social and economic effects of a project on local communities and other relevant stakeholders who might be impacted directly or indirectly by a project’s delivery and/or operation. It covers initial and subsequent engagement and consultation on the proposed project through inception, design and construction – and how it might impact on wider community issues – to maximise the wider social and economic benefits that a project can achieve.

Category summary table

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation and engagement</td>
</tr>
<tr>
<td>Wider social benefits</td>
</tr>
<tr>
<td>Wider economic benefits</td>
</tr>
</tbody>
</table>
Consultation and engagement

Aim

To establish effective engagement with communities and stakeholders throughout planning, design, and construction to identify and monitor stakeholder concerns and opportunities, so promoting ‘ownership’ and project buy-in across the affected communities.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.2 Further community consultation</td>
<td>If the initial consultation established that there are no interested parties, then this can be scoped out for design and construction.</td>
</tr>
<tr>
<td>3.1.4 Assessing community demographics</td>
<td>The decision to scope out depends on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>3.1.6 Community engagement programme</td>
<td>It will be very unusual for this requirement to be scoped out. There may be very rare circumstances where no interested parties have been identified during the initial consultation and therefore a continuing community engagement programme might be considered unnecessary. However, it can be argued there is always opportunity and potential benefit for a project team to engage with local communities or other stakeholders (see Guidance).</td>
</tr>
<tr>
<td>3.1.7 Recording community comments</td>
<td>The decision to scope out depends on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>3.1.8 Assessing community comments during design</td>
<td>The decision to scope out depends on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>3.1.9 Assessing community comments during construction</td>
<td>Scope out if the community engagement programme was organised and managed by others and the Contractor was not involved separately from other members of the team in considering the responses from the programme. This requirement can also be scoped out where the community engagement programme is the sole responsibility of the Client.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.1 Initial community consultation</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1.2 Further community consultation</td>
<td></td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>3.1.3 Stakeholder consultation on effects during construction and operation</td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>3.1.4 Assessing community demographics</td>
<td></td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>3.1.5 Responsibility for ongoing community consultation</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3.1.6 Community engagement</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>3.1.7 Recording community comments</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3.1.8 Assessing community comments during design</td>
<td></td>
<td></td>
<td>48 (up to)</td>
</tr>
<tr>
<td>3.1.9 Assessing community comments during construction</td>
<td></td>
<td></td>
<td>48 (up to)</td>
</tr>
</tbody>
</table>
Assessment criteria

3.1.1 Initial community consultation (3.2.1.a)

3.1.1.1 A community consultation exercise has been carried out by the Client and the results have been passed to appropriate members of the project team and, as and where appropriate, the results fed back to consultees.

3.1.2 Further community consultation (3.2.1.b)

3.1.2.1 A community consultation exercise has been carried out at the design and construction stages of the project and the results have been passed to appropriate members of the project team and, as and where appropriate, the results fed back to consultees.

3.1.3 Stakeholder consultation on effects during construction and operation (3.2.2)

3.1.3.1 All relevant stakeholders have been consulted regarding the effects on neighbours that are expected to occur during both the construction stage and operation of the completed works.

3.1.4 Assessing community demographics (3.5.3)

3.1.4.1 Community demographics have been assessed to ensure that communications are appropriately targeted during community consultation exercises or any ongoing community engagement.

3.1.5 Responsibility for ongoing community consultation (3.5.1)

3.1.5.1 A member of the project team has been made responsible for ongoing community consultation.

3.1.6 Community engagement (3.5.2)

3.1.6.1 There has been a continuing community engagement programme covering all relevant project stages.

3.1.7 Recording community comments (3.6.1)

3.1.7.1 There has been a mechanism to ensure that all comments from the local community were recorded.

3.1.8 Assessing community comments during design (3.6.2)

3.1.8.1 The Client and design team have assessed all the responses from the community engagement programme and taken appropriate action within the project decision making and design.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses assessed by the Client and design team</td>
<td>10</td>
</tr>
<tr>
<td>Appropriate action taken within the project decision making and design</td>
<td>24</td>
</tr>
<tr>
<td>Feedback provided to relevant stakeholders</td>
<td>38</td>
</tr>
<tr>
<td>Stakeholders satisfied with feedback</td>
<td>48</td>
</tr>
</tbody>
</table>

3.1.9 Assessing community comments during construction (3.6.3)

3.1.9.1 The construction team has assessed the responses from the community engagement programme and taken appropriate action within the construction stage.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses assessed by the construction team</td>
<td>10</td>
</tr>
</tbody>
</table>
Guidance

3.1.1 Initial community consultation

Ideally, consultation should be carried out early for each stage of the overall process (for example, at planning proposal stage, during design and before construction starts). Consultation exercises can take the form of a simple public meeting or a full action-planning event, depending on the scale and profile of the project. Other methods can be door-to-door surveys, leaflet drops and newsletters, though the latter should mainly be a way of following up consultation that has already taken place. Increasingly, such exercises are regarded as the start of an ‘Engagement Strategy’ with the local community rather than a community consultation.

It is important to bear in mind that simply providing information does not constitute consultation. True consultation will offer other stakeholders the opportunity to become involved – at least to a certain extent – in decision-making. Any kind of consultation exercise must therefore include a ‘feedback loop’ allowing the community to respond and their comments to be taken into account as and where appropriate.

This requirement cannot be scoped out because even for a remote location with no immediate neighbourhood there may be other stakeholder groups that ought to be consulted. This could include local or regional authorities, local or national interest organisations, or national environment agencies.

3.1.3 Stakeholder consultation on effects during construction and operation

Relevant stakeholders could include:

- Local community (including residents, business owners, or schools)
- Local authorities
- Local interest groups or organisations
- National authorities or agencies

In the UK, consultation with the local authority may include the completion of a Section 61 application (or Northern Ireland equivalent) or include appropriate action being drawn up in liaison with an Environmental Health Officer.

This must be scored before 6.2.3 and 6.2.5 can be scored because the designed mitigation should be discussed with relevant stakeholders.

3.1.4 Assessing community demographics

In a community where the majority of residents are pensioners, a website and emails may not be the most effective form of communication. Equally, holding public meetings and open days during working hours is likely to exclude a certain demographic of the community. It is important to arrange project communications to reflect the demographics to maximise its reach and benefit.

3.1.5 Responsibility for ongoing community consultation

For each project there should be someone nominated to be responsible for ongoing community consultation, even if it is merely to handle enquiries from interested parties.

3.1.6 Community engagement

Whereas a community consultation exercise is a specific milestone event – which may be carried out at more than one stage of a project – a community engagement programme is an ongoing effort to maintain a dialogue with all community stakeholders throughout the planning, design and construction
processes. It should not be just a mechanism for handling complaints; it should be a two-way engagement with the community.

A thorough and effective community engagement programme should consider environmental, social and economic effects including, for example, the following elements:

- the significant environmental impacts of the final constructed asset
- the significant environmental impacts of the construction stage
- transportation impacts
- livelihood impacts of the construction process
- timing and programme of the works for design and construction stages
- employment and skill development opportunities during the works and resulting from the final project

These effects may have been identified as part of an Environmental Impact Assessment (EIA) or Transport Impact Assessment (TIA).

An effective community engagement programme should also manage the expectations of the consultees. In other words, consultation should not lead to unrealistic expectations of the project.

If no interested parties have been identified during the initial consultation (and therefore a continuing community engagement programme might be regarded as unnecessary) it is important to recognise four main issues that may arise:

- The initial consultation may not have reached a representative sample of the community.
- Sensitivities are not always flushed out at the start – it can take a very long time for all interested parties to catch on to the proposal for or existence of a project.
- However remote the site, change to it could affect neighbours in ways not obvious to the project team.
- Even if the community is generally supportive, sensitivities and opportunities may only become apparent further into the project lifespan.

Metric guidance

Assessment of this issue can be assisted by carrying out demographic surveys or desk studies of the affected community, ideally in the very early stages of the project, to identify the community demographic distributions and groups. Examples of these different groups include black ethnic and minority ethnic groups (BAME), gender, local business owners and employees, different age groups, senior citizens, disabled people, religion groups and social-economic groups.

The effectiveness of the community engagement program and consultation exercises may be measured and reported through a metric such as:

\[
\frac{\text{Number of participants from a given identified demographic group (e.g. BAME)}}{\text{Total population of the same identified demographic group within affected community}} \times 100
\]

3.1.8 Assessing community comments during design

There is no intent with this criterion for the Client and design team to always accede to actions requested in the responses, only to have a process for incorporating them into project decision-making and the design team, and for feeding outcomes back to relevant stakeholder(s).
3.1.9 Assessing community comments during construction

There is no intent with this criterion for changes that the project team judge are needless or pointless to be made just to score the CEEQUAL points.

**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.1 Initial community consultation</td>
<td>Evidence could be reports or minutes of meetings with appropriate groups that are carried out at appropriate stages of the project.</td>
</tr>
<tr>
<td>3.1.2 Further community consultation</td>
<td>Evidence should also be provided to show how information from these exercises is then communicated to the project team.</td>
</tr>
<tr>
<td>3.1.3 Stakeholder consultation on effects during construction and operation</td>
<td>Evidence could be reports or minutes of meetings with appropriate groups that are carried out at appropriate stages of the project.</td>
</tr>
<tr>
<td>3.1.4 Assessing community demographics</td>
<td>Evidence could include a communication strategy that identified the demographics of the local community and how communications should be targeted accordingly. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>3.1.5 Responsibility for ongoing community consultation</td>
<td>Evidence could be in the form of a letter appointing someone to be responsible or it could be included in a Project Management Plan. In either case, responsibilities need to be defined.</td>
</tr>
<tr>
<td>3.1.6 Community engagement</td>
<td>Evidence needs to show a programme of community engagement activities carried out. These could include leaflet drops, press releases, websites, documentation of open evenings, minutes from regular liaison group meetings. However the programme is constructed it must include two-way dialogue. Evidence needs to show these activities taking place and the relevant groups having been invited or taking part. This could be in the form of meeting minutes, correspondence, or attendance lists.</td>
</tr>
<tr>
<td>3.1.7 Recording community comments</td>
<td>Evidence could be in the form of meeting minutes with liaison groups. A complaints procedure may also provide evidence, but the definition of a complaint may restrict what is recorded.</td>
</tr>
<tr>
<td>3.1.8 Assessing community comments during design</td>
<td>Appropriate evidence could show how comments from the community have been assessed and taken into account in the decision-making process or design, such as a Consultation Report or Statement of Community Involvement. Feedback and evidence of stakeholders’ satisfaction may be through feedback questionnaires and surveys.</td>
</tr>
<tr>
<td>3.1.9 Assessing community comments during construction</td>
<td>Evidence could be any amendments to proposals or designs as a result of comments from consultation with the community. There should be a record of any consultation that has taken place and changes or arrangements as a result of this (for example, changing the alignment of an access road), as well as the record of complaints or comments and what action was taken as a result.</td>
</tr>
</tbody>
</table>
Wider social benefits

Aim
To identify and implement actions that minimise negative social impacts and increase wider social benefits during the project’s construction and operation.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.3 Supporting social benefits in contracts</td>
<td>Scope out only if there are genuinely no issues to be addressed from 3.2.1.</td>
</tr>
<tr>
<td>3.2.10 Implementing partnership links during construction</td>
<td>Only scope out on Design &amp; Construction or Construction Only assessments where it can be demonstrated that the responsibility for implementing partnership links are controlled by the client and the contractor is not permitted to establish alternative partnership links.</td>
</tr>
<tr>
<td>3.2.4 Wider social benefits</td>
<td>It is unlikely that 3.2.4 will be scoped out often and is likely to be justified only on very small projects, but it is possible, particularly on small projects, that the social impacts will be judged to be not significant enough to warrant a formal social impacts assessment. Therefore, the decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>3.2.6 Community diversity</td>
<td>Can be scoped out on projects where there are no identifiable occupiers or users.</td>
</tr>
<tr>
<td>3.2.7 Enhancement beyond functional requirements</td>
<td>This can only be scoped out if 3.2.4 has been scoped out.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.1 Social impacts and benefits assessment</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.2 Significant social benefits</td>
<td>28 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.3 Supporting social benefits in contracts</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.4 Wider social benefits</td>
<td>18</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>3.2.5 Health and wellbeing of future users or neighbours</td>
<td>14</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>3.2.6 Community diversity</td>
<td>19</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>3.2.7 Enhancement beyond functional requirements</td>
<td>10</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>3.2.8 Partnership links</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2.9 Social impacts and benefits during construction</td>
<td></td>
<td>24 (up to)</td>
<td></td>
</tr>
<tr>
<td>3.2.10 Implementing partnership links during construction</td>
<td></td>
<td>29 (up to)</td>
<td></td>
</tr>
</tbody>
</table>

Assessment criteria

3.2.1 Social impacts and benefits assessment (1.1.3.a)
3.2.1.1 The Client and/or the Designers have undertaken a social impacts and benefits assessment of the project on a wider scope than just the project owners’ interests.
3.2.2 Significant social benefits *(1.1.3.b)*

3.2.2.1 The assessment demonstrates significant social benefits of the project to wider society on the following or similar issues that are relevant to the project:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewal and revitalisation of the social fabric of the community in which the project is placed</td>
<td>7 for each feature (up to a maximum of 4 features)</td>
</tr>
<tr>
<td>Enhancement of community quality of life</td>
<td></td>
</tr>
<tr>
<td>Developing local skills and capabilities</td>
<td></td>
</tr>
<tr>
<td>Provision of amenity features or community resources</td>
<td></td>
</tr>
<tr>
<td>Reduction of flood risk</td>
<td></td>
</tr>
<tr>
<td>Improving local air quality</td>
<td></td>
</tr>
<tr>
<td>Reducing crime risks</td>
<td></td>
</tr>
<tr>
<td>If fewer than four features apply to the project being assessed and significant social benefits of the project to wider society are demonstrated on all of them</td>
<td>28</td>
</tr>
</tbody>
</table>

3.2.3 Supporting social benefits in contracts *(1.1.3.c)*

3.2.3.1 Where appropriate, actions to support the results of the social impacts and benefits assessments have been included within relevant contract documentation.

3.2.4 Wider social benefits *(3.7.1)*

3.2.4.1 Due consideration has been given, during the project’s feasibility stage and during design, to wider social benefits of the project during construction and operation, and to the effects of the completed project on the human environment.

3.2.5 Health and wellbeing of future users or neighbours *(3.7.2)*

3.2.5.1 Potential impacts of the project on the health and wellbeing of any future occupants, users, neighbours or operational staff have been considered, and the design modified as a result.

3.2.6 Community diversity *(3.7.5)*

3.2.6.1 The diversity of the local community has been considered and respected in the design solution to promote equal access for all (for example, disabled, elderly people, and different cultures and religions) and the specification achieved in the completed project.

3.2.7 Enhancement beyond functional requirements *(3.7.4)*

3.2.7.1 Consideration has been given to enhancing the project design features, user enjoyment and additional facilities for the benefit of users beyond functional requirements of the facility and this has been fully achieved in the construction stage.

3.2.8 Partnership links *(3.5.4.a)*

3.2.8.1 Partnership links have been actively pursued through the design process and promoted for the construction stage.

3.2.9 Social impacts and benefits during construction *(1.2.3.a)*

3.2.9.1 The Construction Team has undertaken a social impacts and benefits assessment of the construction stage of the project and used the results in the development and implementation of the construction management plan.
Results from a social impacts and benefits assessment have been used in the development of the construction management plan. 8

Social aspects of the developed construction management plan have been implemented. 24

3.2.10 Implementing partnership links during construction (3.5.4.b)

3.2.10.1 The Contractor has implemented partnership links identified by the Client, or significant links that the Client has not identified.

<table>
<thead>
<tr>
<th>Percentage of Client-identified partnership links implemented</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>6</td>
</tr>
<tr>
<td>50%</td>
<td>12</td>
</tr>
<tr>
<td>75%</td>
<td>18</td>
</tr>
<tr>
<td>100%</td>
<td>24</td>
</tr>
<tr>
<td>Alternative partnership links have been established that the Client did not identify</td>
<td>Additional 5</td>
</tr>
</tbody>
</table>

Guidance

3.2.1 Social impacts and benefits assessment

The analysis of direct benefits to the Client arising from their project is not a matter assessed by CEEQUAL. However, the non-economic aspects of the project justification, and therefore decision-making about whether to proceed with a project have a wider context.

There is an increasing view that project teams should seek to deliver genuine benefits to a wider group than just the Client’s narrow interests, socially as well as economically and environmentally. A social impacts and benefits analysis and assessment of the project on a wider scope than just the project owners’ interests is likely to lead to identification of opportunities to deliver enhanced social benefits to the community in which the project is constructed and will operate.

Issues that such an analysis is likely to have to cover to be of significance to the project and community are listed in 3.2.2 but need not be limited to the aspects listed. The aim should be for the study to be in scale with the nature, location, context and size of the project and seek the greatest social good for the investment involved, without detracting from – and more likely enhancing – the Client’s case to the planning authority. Equality impact assessments should be included.

The Welsh Government has a ‘Community Benefits Tool’ to assist in putting a value on social benefits – see http://prp.wales.gov.uk/planners/general/strategy/procstrat/communitybenefits/.


For the transport sector in the UK, the Department of Transport has extensive guidance on the conduct of transport studies, whether economic, social or environmental – see https://www.gov.uk/transport-analysis-guidance-webtag.

3.2.2 Significant social benefits

The issues addressed should match the project being assessed. For example, a chemical works or power station will never of itself reduce flood risk directly.

3.2.4 Wider social benefits

There are three main issues to be considered for this criterion and 3.2.5:
• social impacts during construction on the workforce and on the local community, for example facilities for the workforce, increased traffic, congestion, influx of the workforce into the local community, and potential severance through the location of and arrangement for site access;

• social impacts on the local community as a result of the existence of the finished project, for example, severing communities (by a road scheme), linking communities (bridge), increased traffic, greater mobility, improved services, and/or increased employment; and

• social impacts on users and/or occupiers of the completed project, which are influenced by its design.

3.2.5 Health and wellbeing of future users or neighbours

These measures must be beyond the legislation requirements of health and safety regulations such as Construction (Design and Management) (CDM) Regulations. These recommendations may come from a Health Impact Assessment (HIA).

Whilst Health & Safety Plans do require consideration of the health of operators, this requirement is looking for the less tangible health issues that do not come under the legal requirements of CDM. Examples include the provision of natural light within buildings (such as covered wastewater treatment works), provision of planters for growing fruit and vegetables, or facilities for sports and outdoor games which will indirectly improve the wellbeing of operators. If the recommendations of a HIA for the project have been incorporated into the design, points can be awarded.

3.2.6 Community diversity

In terms of the needs of disabled people and the elderly, consideration needs to be given to the needs of people with non-physical impairments such as sensory impairments. The detailed execution at the construction stage is key to the usability of a project by people with disabilities – such as if health and safety requirements result in a toilet door being hung the opposite way it may result in the toilet being unusable by a wheelchair user. With regards to different cultures, consideration should be given to using clear visual messages and using different languages in signage.

3.2.7 Enhancement beyond functional requirements

Example measures could include providing viewing points, picnic areas and lay-bys with toilets on road projects and bridges, viewing points and picnic/leisure areas on dams and reservoirs, footpath access to river frontages after new flood defence schemes are built, or providing additional moorings on a waterway embankment protection project. For the construction stage, measures could include high quality screening.

A key aspect that can affect what is often termed ‘joy in use’ is the detailed execution at the construction stage. Poor detailing can negate the best design by either adding a point of visual dysfunction or result in the project being less user-friendly. Examples can be the late addition of ventilation units to a structure due to poor specification or inappropriate design changes, or pathways that make sudden turns to avoid other infrastructure. Alternatively, positive changes during the construction stage can improve ‘joy in use’.

3.2.8 Partnership links

For every project, at the design and construction stage, even in remote locations or on small projects, there is likely to be potential to establish links with local schools, residents or community groups, or other organisations that could benefit from an exchange of skills or donation of material or knowledge. Examples of links could include donation of surplus materials to community organisations (such as local construction colleges, or voluntary groups), physical improvement of community infrastructure (such as repairs to village halls, community centres or parks) or links with schools to raise awareness of the role of civil engineering in society and the career paths it has to offer.
### 3.2.9 Social impacts and benefits during construction

This is seeking for the Contractor to have actively assessed in advance all of the effects of the works on neighbours and the local community and compared them to the background conditions. The assessments need to include those generated by their supply chain, and the works planned accordingly. Issues that need to be addressed in such an assessment include but are not necessarily limited to:

- Nuisances such as noise, dust, vibration, odour, light pollution and blown waste.
- Impacts on traffic and available road space from delivery of materials and components, collection of wastes, and staff travel.
- Visual impact of the site and its boundary fencing.
- Vibration effects on neighbouring buildings.
- Effects on nearby historic assets.
- The potential increase in flood risk to others arising from the construction stage, especially of temporary works.
- Respect shown to neighbours and passers-by by the staff and workforce.
- Opportunities for work on the project by local people.
- Management of access to or viability of local businesses or community facilities.

Guidance on these issues is available in the appropriate sections of this manual.

### 3.2.10 Implementing partnership links during construction

For Design & Construction Assessments or Construction Only Assessments where the Client has not identified any partnership links, the Designer or Contractor may identify partnership links in place of the Client.

### Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.1 Social impacts and benefits assessment</td>
<td>Evidence could be a document entitled ‘Social Impacts and Benefits Analysis’ or similar with the attributes indicated in 3.2.2 and the guidance. Alternatively, it could be a series of less-broad analyses that, taken together, provide the high-level, strategic overview that can provide significant input to the project concept and design. Note that evidence for 3.3.1, 3.3.2 and 3.3.3 could be found in the results of a combined economic and social impacts and benefits study.</td>
</tr>
<tr>
<td>3.2.2 Significant social benefits</td>
<td></td>
</tr>
<tr>
<td>3.2.3 Supporting social benefits in contracts</td>
<td></td>
</tr>
<tr>
<td>3.2.4 Wider social benefits</td>
<td>Evidence could be in the form of meeting minutes with liaison groups. A complaints procedure may also provide evidence, but the definition of a complaint may restrict what is recorded.</td>
</tr>
<tr>
<td>3.2.5 Health and welfare issues</td>
<td>Evidence could include the design brief, meeting minutes, and reports from assessments and/or consultation. A Health &amp; Safety Plan, Construction Phase Plan and/or Health &amp; Safety Records File prepared under the CDM Regulations that does not expressly also include future users and occupants of the completed project is not sufficient.</td>
</tr>
<tr>
<td>3.2.6 Community diversity</td>
<td>Evidence would be in the design brief, design team meeting minutes, civic awards, code of construction practice, and/or a Disability Discrimination Act audit.</td>
</tr>
<tr>
<td>3.2.7 Enhancement beyond functional requirements</td>
<td>Evidence can be in the form of briefs, specifications and other documents that demonstrate inclusion of features that give benefit to occupiers and/or users. At design stage, design records or drawings could show incorporation of these features. At the construction stage, photographs or ‘as complete’ drawings which demonstrate how the design concept has been met or exceeded.</td>
</tr>
<tr>
<td>3.2.8 Partnership links</td>
<td>Evidence of partnership links that have been identified and promoted, for example in reports or records of meetings.</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3.2.9 Social impacts and benefits during construction</td>
<td>Evidence will be in the reports of the assessments and in the CMP or equivalent.</td>
</tr>
<tr>
<td>3.2.10 Implementing partnership links during construction</td>
<td>Appropriate evidence needs to be provided to show the relationships formed and how extensive they are in relation to the scale of the project.</td>
</tr>
</tbody>
</table>
Wider economic benefits

Aim

To identify and implement actions that minimise negative economic impacts and increase wider economic benefits during the project’s construction and operation.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3.3 Economic impacts and benefits assessment</td>
<td>This can be scoped out only if there are genuinely no issues to be addressed from 3.3.2.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3.1 Economic impacts and benefits assessment</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.2 Significant economic benefits</td>
<td>28 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.3 Supporting economic benefits in contracts</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3.4 Involvement of local firms</td>
<td>17</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

Assessment criteria

3.3.1 Economic impacts and benefits assessment (1.1.2 a)

3.3.1.1 The Client and/or Designers have undertaken an economic impacts and benefits assessment of the project on a wider scope than just the project owners’ interests.

3.3.2 Significant economic benefits (1.1.2 b)

3.3.2.1 The assessment demonstrates significant economic benefits of the project to wider society on the following or similar issues that are relevant to the project:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Promoting other beneficial development</td>
<td>7 for each feature (up to a maximum of 4 features)</td>
</tr>
<tr>
<td>(ii) Economic renewal and revitalisation of the community in which the project is placed</td>
<td></td>
</tr>
<tr>
<td>(iii) Creation of new construction jobs, skills, apprenticeships or work experience opportunities</td>
<td></td>
</tr>
<tr>
<td>(iv) Creation of long-term, post-construction jobs and/or skills enhancements</td>
<td></td>
</tr>
<tr>
<td>(v) Reduction of travel times</td>
<td></td>
</tr>
<tr>
<td>(vi) Increased export opportunities</td>
<td></td>
</tr>
<tr>
<td>(vii) Efficiency improvements that have wide application</td>
<td></td>
</tr>
</tbody>
</table>

If fewer than four features apply to the project being assessed and significant economic benefits of the project to wider society are demonstrated on all of them 28
3.3.3 Supporting economic benefits in contracts

3.3.3.1 Where appropriate, actions to support the results of these economic impacts and benefits assessments have been included within relevant contract documentation.

3.3.4 Involvement of local firms

3.3.4.1 The Client has set specific targets to actively encourage local firms to quote for work, competitively or otherwise. These targets have been achieved during construction. Or evidence is provided showing why local firms are not appropriate.

Guidance

3.3.1 Economic impacts and benefits assessment

CEEQUAL leaves to the Client their own economic analysis, justification and decision-making about whether to proceed with a project – it is the Client’s business and CEEQUAL does not seek to make judgements about that aspect of project development. However, there is an increasing view that project teams should seek to deliver genuine benefits to a wider group than just the Client’s narrow interests. An economic benefits assessment of the project on a wider scope than just the project owners’ interests is likely to lead to identification of opportunities to deliver enhanced value to the community in which the project is constructed and will operate.

Issues that such an analysis is likely to have to cover to be of significance to the project and community are listed in 3.3.2 but need not be limited to the aspects listed. The aim should be for the study to be in scale with the nature, location, context and size of the project and seek the greatest social and environmental good for the investment involved, without detracting from the Client’s economic case and benefits.

For the transport sector in the UK, the Department of Transport has extensive guidance on the conduct of transport studies, whether economic, social or environmental – see https://www.gov.uk/transport-analysis-guidance-webtag.

3.3.2 Significant economic benefits

The issues addressed should match the project being assessed. For example, a water treatment works will never reduce journey times.

3.3.4 Involvement of local firms

Targets set by the Client may be a proportion of materials and services sourced from within a certain radius of the projects (such as 40 km) or a defined geographical area, (such as local authority boundary). The benefits of setting aspirational targets to source materials and services locally include community engagement and ‘ownership’ of the scheme, providing jobs to the local community, reducing transportation costs and use of fossil fuel.

For supply of specialist items or services to UK projects, local may mean Europe, as opposed to Asia or South America. Competition rules may prevent actual selection on grounds of location or proximity, but do not prevent encouraging local firms to bid for work on the same terms as any other bidder.

Metric guidance

Targets for showing active encouragement does not mean asking specific companies to bid based on their locality. It simply means giving every company an opportunity. Making sure the opportunity is advertised in the right places (e.g. local papers as well as the European Union (EU) Journal) is an example of showing active encouragement.

Encouraging local companies to work on the project is part of thinking more broadly about how the project can provide additional value to the local community, from a combined economic, social and environmental perspective. Following on from a review of the economic, social and environmental
impacts, the use of local skills and labour can have additional benefits in community pride and perceived ownership.

In Scotland, the Government is committed to ensuring that small and medium sized enterprises (SMEs) have fair access to public sector contracts – see: [http://www.gov.scot/Topics/Government/Procurement/buyer-information/SMEs](http://www.gov.scot/Topics/Government/Procurement/buyer-information/SMEs).

The aspirational targets set and measures of how the targets have been met will require a justifiable geographic definition of the chosen local boundaries of the project. An example of a measure for reporting achievement may be:

Proportion of local firms or suppliers that have quoted for appropriate work packages, calculated using a formula such as:

\[
\frac{\text{Applications/quotations received from local firms or suppliers}}{\text{Total number of identified viable local firms or suppliers}} \times 100
\]

### Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3.1 Economic impacts and benefits assessment</td>
<td>Evidence could be a document entitled ‘Economic Benefits Analysis’ or similar, with the attributes indicated in 3.3.2 and the guidance. Alternatively, it could be a series of less-broad analyses that, taken together, provide the high-level, strategic overview that can provide significant input to the project concept and design. Note that evidence for this criterion and 3.2.1, 3.2.2, 3.2.3 could be found in the results of a combined economic and social impacts and benefits study.</td>
</tr>
<tr>
<td>3.3.2 Significant economic benefits</td>
<td></td>
</tr>
<tr>
<td>3.3.3 Supporting economic benefits in contracts</td>
<td>Evidence could be a copy of the Client’s requirements stating specific targets, and a summary of materials and/or services to procure in line with these Client requirements. The mere fact that one or two suppliers happened to have been local cannot be considered as sufficient evidence. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
</tbody>
</table>
Land use and ecology

Category summary

This category aims to enhance land and ecological value. It encourages sustainable land use, the protection and creation of habitats, and the improvement of long-term biodiversity. Issues covered include the efficient use of land, sustainable remediation of contaminated land, plus protection, enhancement, and long-term management of biodiversity.

Category summary table

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land use and value</td>
</tr>
<tr>
<td>Land contamination and remediation</td>
</tr>
<tr>
<td>Protection of biodiversity</td>
</tr>
<tr>
<td>Change and enhancement of biodiversity</td>
</tr>
<tr>
<td>Long-term management of biodiversity</td>
</tr>
</tbody>
</table>
Land use and value

Aim

To encourage the efficient use of land, minimise the use of undeveloped land, and enhance land value on and around the project site.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.1 Project resources strategy</td>
<td>This can be scoped out if there are genuinely no new uses of land associated with the project (for example the creation of an offshore wind farm that uses only existing on-land facilities).</td>
</tr>
<tr>
<td>4.1.2 Project location analysis</td>
<td>This can only be scoped out in situations where the Client can demonstrate that they had absolutely no choice about the project’s location, for projects that involve structures that are necessary for health &amp; safety (for example, navigation equipment along coastlines or in the sea, or improvements to waste-water treatment plants) or to enable access to a site for public education or enjoyment.</td>
</tr>
<tr>
<td>4.1.3 Justification of site suitability</td>
<td>This can only be scoped out on projects that can demonstrate site suitability is not relevant, such as land remediation works.</td>
</tr>
<tr>
<td>4.1.4 Land use efficiency</td>
<td>Scope out for refurbishment projects that do not involve any change to the land take or seabed use of the facilities to be refurbished, and for projects where the project team genuinely has no ability to consider land take.</td>
</tr>
<tr>
<td>4.1.5 Temporary land use</td>
<td>Scope out only if the project team can demonstrate that no land is used for temporary facilities. An example could be an offshore wind farm where all land-based activities use existing facilities such as factories, roads and ports.</td>
</tr>
<tr>
<td>4.1.6 Previous use of the site</td>
<td>Scope out only for marine and offshore projects where there is no use of land on shore.</td>
</tr>
<tr>
<td>4.1.7 Conservation of soils &amp; other on-site resources</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.4 Project resources strategy</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.2.a Project location alternatives</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.2.b Project location alternatives</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.3.a Justification of site suitability</td>
<td>22 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.3.b Justification of site suitability</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.4 Land use efficiency</td>
<td>2</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>4.1.5.a Temporary land use</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4.1.5.b Temporary land use</td>
<td>2</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>4.1.6 Previous use of the site</td>
<td>16 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1.7 Conservation of soils and other on-site resources</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assessment criteria

4.1.1 Project resources strategy (1.1.6.a)
4.1.1.1 The project brief includes instructions to consider how to balance land use efficiency with other priorities.

4.1.2.a Project location alternatives (4.1.1.a)
4.1.2.a The Client has collected sufficient, relevant information to be able to make appropriate and positive decisions on the project’s location.

4.1.2.b Project location alternatives (4.1.1.b)
4.1.1.b There was a demonstrable process for considering the relative merits of the options.

4.1.3.a Justification of site suitability (4.1.2.a)
4.1.3.a Desk and site studies have been undertaken that assisted the Client in confirming that their chosen site was suitable.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive desk study</td>
<td>16</td>
</tr>
<tr>
<td>Comprehensive information thorough desk study and site walkover,</td>
<td>22</td>
</tr>
</tbody>
</table>

4.1.3.b Justification of site suitability (4.1.2.b)
4.1.3.b There was a clear process for the evaluation of the key risks and opportunities of the site.

4.1.4 Land use efficiency (4.1.3)
4.1.4.1 The land-take of different scheme designs, process designs and layouts of the planned works has been calculated, and these calculations have influenced the design process and the land-use efficiency of the final design.

4.1.5.a Temporary land use (4.1.4 a)
4.1.5.a A formal process for selecting temporary land for construction has been employed.

4.1.5.a Temporary land use (4.1.4 b)
4.1.5.b The construction team has made effective use of land resources made available to them and minimised the long-term adverse impacts of the temporary greenfield land take during construction.

4.1.6 Previous use of the site (4.1.5)
4.1.6.1 The site has been previously used for built development.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or more previously developed</td>
<td>4</td>
</tr>
<tr>
<td>50% or more previously developed</td>
<td>10</td>
</tr>
<tr>
<td>75% or more previously developed</td>
<td>16</td>
</tr>
<tr>
<td>Refurbishment project</td>
<td>16</td>
</tr>
</tbody>
</table>
4.1.7 Conservation of soils and other on-site resources (4.1.6)

4.1.7.1 Apart from the actual land take, the site selection and design of the project also took into consideration the conservation of topsoils, subsoil, seabed surface geology, and conservation or use of on-site mineral resources.

Guidance

4.1.2 Project location alternatives

In civil engineering, there is often little or no choice of project location – for example a remodelling of a motorway or railway junction. However, there are projects where there are opportunities for an active choice of site location to be made on a range of grounds – for example lighthouses, canal-side or riverside marinas, water treatment works or a new reservoir – so this question is challenging Clients to actively consider issues of site characteristics, environmental issues and flood risk in their selection of the most appropriate location for their project.

4.1.3 Justification of site suitability

In addition to site visits, information on past land or seabed uses may have been collected through research of historic maps and charts. Site condition reports such as ‘Envirocheck’ can summarise a range of previously collected data. Useful sources of background information on site sensitivities and land condition include:

- Defra’s Multi-Agency Geographic Information for the Countryside (MAGIC) website in England (http://magic.defra.gov.uk/),
- Natural Resources Wales (http://naturalresourceswales.gov.uk),
- SNH in Scotland (www.snh.gov.uk) as well as the
- Environment Agency (www.gov.uk/government/organisations/environment-agency) and
- SEPA’s (www.sepa.org.uk)
- MMO (www.gov.uk/government/organisationsmarine-management-organisation) may need to be consulted for marine and offshore works.

To score fully, the collected information must be systematically analysed to establish the key risks and opportunities of the site. This may or may not have included attributing scores or weight to different areas, but understanding the character of the site is key to designing an appropriate development.

Such a study may result in a different site selection, i.e. the current site may be different from the original site proposed as a result of this process. To score 35, studies should also include consideration of current planning policies or resource development policies.

4.1.4 Land use efficiency

Although it is always important to use land efficiently, it is increasingly clear that in certain circumstances minimising the use of land increases adverse impacts in other areas of environmental and social concern. For example, in Ireland, there is increasing use of constructed wetlands for wastewater treatment works. These ‘consume’ land for the constructed beds, but are created in such a way that the paths around them can be used for recreation, and the energy consumption of the ‘works’ is as low as 6kW total installed capacity, which runs a few hours each day. This solution ‘trades’ the use of land for reduced energy consumption and is regarded as a more-sustainable solution that conventional works when the land and topography suits the need.

4.1.5 Temporary land use

Contractors are sometimes left with the responsibility of obtaining additional land for construction compounds; spoil storage sites and stocking yards. Primarily this will relate to temporary land use, in
particular whether selection and use of site compounds and material storage areas have considered the environment, and to any efforts made to minimise land take for temporary compounds and works.

**Metric guidance**

This question may be assessed by calculation of the land take of temporary works, in relation to total land take of both permanent and temporary works, through a metric such as:

Percentage of temporary (construction works) land take to total temporary and permanent land take of all civil engineering works, using a formula such as:

\[
\frac{\text{Total land take of works} - \text{Land take of completed permanent works}}{\text{Total land take of project for all construction and operation of completed works}} \times 100
\]

The resultant value of this measure should be as small as possible and evidence of measures taken to reduce it should be provided. This calculation can also be complemented by classification of the previous use of the land taken for temporary works. Like permanent land take, temporary land take should not use land with high biodiversity nor should it obstruct or consume public pathways or active social spaces.

### 4.1.6 Previous use of the site

Construction of civil engineering projects on previously developed sites assists with regeneration, potentially revitalising local communities and conserving un-developed land (called ‘Greenfield land’ or ‘Greenfield sites’ by many references). Land re-use is in line with government policy, current thinking on planning, and compatible with the principles of sustainable development.

However, such previously developed sites (called ‘Brownfield’ or ‘derelict’ land or sites by many references), particularly in industrial or urban areas, may also have special ecological and/or historical interest. They may provide temporary open space that is especially valued in a neighbourhood and may need to be replaced with permanent open space rather than be developed. To take account of this, for the purposes of this document, the definitions of the terms ‘Greenfield’ and ‘Brownfield’ have been adapted accordingly, and are given in the guidance below:

* **Terminology:**
  - **‘Greenfield’ or un-developed** sites are defined as those that are *essentially covered in vegetation* whether natural or cultivated, with no evidence of substantive recent built development remaining (although they could encompass sites of archaeological importance), or where uses have been essentially restricted to agriculture, gardens, parkland or playing fields.
  - **Previously-developed or ‘Brownfield’** land or sites are those that have been used for built development, and this use is still evident in the form of buildings or structures or their remains, a significant cover of made ground, or soil or groundwater pollution from activities conducted on the site. They may or may not be contaminated. Brownfield sites are sites which, according to the Concerted Action on Brownfield and Economic Regeneration Network (CABERNET) (2007):
    - have been affected by former uses of the site or surrounding land;
    - are derelict or under-used;
    - are mainly in fully or partly developed urban areas;
• may have real or perceived contamination problems; and/or
• require intervention to bring them back to beneficial use.

In respect of development on previously used land, a useful definition is:

“Previously-developed land is that which is or was occupied by a permanent structure, including the curtilage of the developed land and any associated fixed surface infrastructure.”

Definitions and exclusions will vary from place to place but some exclusions to ‘previously developed land’ to consider are listed below:

• Land that is or has been occupied by agricultural or forestry buildings.
• Land that has been developed for minerals extraction or waste disposal by landfill purposes where provision for restoration has been made through development control procedures.
• Land in built-up areas such as parks, recreation grounds and allotments, which, although it may feature paths, pavilions and other buildings, has not been previously developed.
• Land that was previously developed but where the remains of the permanent structure or fixed surface structure have blended into the landscape in the process of time (to the extent that it can reasonably be considered as part of the natural surroundings).

Hence, if a previously developed (Brownfield) site is being developed that falls under the above exclusions, then it should be treated as an un-developed (Greenfield) site and awarded 0 points.

4.1.7 Conservation of soils & other on-site resources

The emphasis of this question is on the avoidance of the highest value and/or most productive soils. Soils can be of high value because of the habitats they support, the role they play in wider environmental quality, the carbon they contain or simply highly valued in their own right. Lack of use of soils and minerals due to poor quality of these materials can still score points, but evidence of this must be presented – ‘best use’ can be the non-use of soils and minerals, which also minimises the environmental impacts of excavation, transport and/or disposal of the excavated material. Documents available include:

• Construction Code of Practice for the Sustainable Use of Soils on Construction Sites;
• Toolbox Talks on a variety of soil related topics;
• Safeguarding our Soils: A Strategy for England; and
• Details of Marine Protection Areas and Marine Conservation Zones.

The Code of Practice for the Sustainable Use of Soils on Construction Sites in particular provides guidance on the production of a Soils Resource Plan for the conservation and management (including re-use) of soil resources.

Note: Further scores are available in Section 7.4 for the preparation and implementation of a soil management plan and for the re-use of subsoil and topsoil.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.1 Project resources</td>
<td>Evidence could be a document entitled ‘Project Resources Strategy’ with the</td>
</tr>
<tr>
<td>strategy</td>
<td>attributes indicated in the guidance or could be a series of less-broad analyses</td>
</tr>
<tr>
<td></td>
<td>that, taken together, provide the high-level,</td>
</tr>
</tbody>
</table>
strategic overview that can provide significant input to the project concept and design. The evidence must be in scale to the nature, location, context and size of the project. A two-page summary report would be insufficient for a multi-million pound project, yet a 100-page detailed analysis is very unlikely to be appropriate for projects in the region of £1M.

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.1.2 Project location alternatives</strong></td>
<td>Evidence must be provided to demonstrate that genuine consideration of options has been undertaken.</td>
</tr>
<tr>
<td><strong>4.1.3 Justification of site suitability</strong></td>
<td>Evidence would ideally be in the form a single comprehensive desk study. It may be that the information is a collation of existing site assessment, investigation and evaluation reports, such as archaeological, geotechnical reports and data searches. The desk study will contain information that is relevant to other sections of the CEEQUAL Assessment. Alternatively, desk studies could identify issues from previously completed investigations. It is possible that the EIA could provide some of the information. Note that to score as ‘comprehensive’ the reports should include not just geo-environmental information but a general assessment of the site with regard to engineering, environmental and planning policies. The report should identify shortfalls in available information.</td>
</tr>
<tr>
<td><strong>4.1.4 Land use efficiency</strong></td>
<td>Evidence must be provided to demonstrate that specific attention, above normal practice, has been given to the scheme design with the express intention of enhancing land-take efficiency.</td>
</tr>
<tr>
<td><strong>4.1.5 Temporary land use</strong></td>
<td>Evidence could be found in evaluation of options: calculations derived from alternative site layouts, including identified environmental constraints; comparisons between land made available to the construction team and land actually used; plans; site guidelines; a method statement for set-up of the compound; and photographs. Evidence could also cover the areas of temporary land take that have been avoided to prevent disturbance, such as cordonning off woodlands or grass verges from the site. Photographs may also provide evidence of land use. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td><strong>4.1.6 Previous use of the site</strong></td>
<td>Evidence could include calculations derived from site layouts or information contained in the EIA, historic photos and maps. Photographs may also provide evidence of existing land use.</td>
</tr>
<tr>
<td><strong>4.1.7 Conservation of soils and other on-site resources</strong></td>
<td>Evidence could be in the form of a Soils Resource Plan, documented statements in appropriate reports or meeting notes about the optimal use of soils.</td>
</tr>
</tbody>
</table>
Land contamination and remediation

Aim
To encourage the appropriate use of land affected by contamination and to promote sustainable land and ground water remediation.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1.b contamination risk assessment</td>
<td>This can be scoped out only if the formal study in 4.2.1.a (normally a Phase 1 Desk Study in the UK) indicated that these additional studies would be unnecessary or inappropriate.</td>
</tr>
<tr>
<td>4.2.2 Contaminated land specialists</td>
<td>If no study(ies) has taken place as part of 4.2.1.a, then it is unlikely that this can be scoped out. The decision to scope out this question will depend on the outcome of the formal study in 4.2.1.a or on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.2.3 Land contamination management procedures</td>
<td>If no study(ies) has taken place as part of 4.2.1.a, then it is unlikely that this question can be scoped out. The decision to scope out will depend on the outcome of the formal study in 4.2.1.a or on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.2.4 Evaluation of remediation options</td>
<td>Scope out if remediation was not part of the scope of work being assessed. If no study(ies) has taken place as part of 4.2.1.a, then it is unlikely that this can be scoped out. The decision to scope out will depend on the outcome of the formal study in 4.2.1.a or on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.2.5 Ground generated gases</td>
<td>Scope out if the studies answering 4.2.1.a show that no ground-generated gases were present. If no study(ies) has taken place as part of 4.2.1.a, then it is unlikely that this can be scoped out. The decision to scope out will depend on the outcome of the formal study in 4.2.1.a or on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.2.6 Implementation of remedial solution</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.2.7 Long-term effectiveness of remedial solution</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.2.8 Prevention of future contamination</td>
<td>This can be scoped out if no on-site contamination had been identified and therefore no remediation was necessary and there is no new or existing use on or near the site involving any potential contaminants.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1.a Contamination risk assessment</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.1.b Contamination risk assessment</td>
<td>12 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.2 Contaminated land specialists</td>
<td>23 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.3 Land contamination management procedures</td>
<td>12 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.4 Evaluation of remediation options</td>
<td>32 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2.5 Ground generated gases</td>
<td>22 (up to)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.2.6 Implementation of remedial solution

4.2.7 Long-term effectiveness of remedial solution

4.2.8 Prevention of future contamination

Assessment criteria

4.2.1.a Contamination risk assessment (4.2.1 a)

4.2.1.a The desk study covered by 4.1.3 was a formal study assessing risk and implications that may be associated with the land or seabed. It includes issues related to soil, groundwater, gas, residual man-made structures and surrounding land uses, or it has been extended into such a suitably formal and detailed study. The study required for this may not be the same one used in 4.1.3.

4.2.1.b Contamination risk assessment (4.2.1 b)

4.2.1.b The study goes beyond the above scoring to provide additional input to project decision-making:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive information through desk study, site walkover or subsea survey, and adequacy of information assessed against risk.</td>
<td>5</td>
</tr>
<tr>
<td>The desk study additionally includes visual and descriptive illustrations of the links between contaminant source, pollution pathways and receptors on site.</td>
<td>12</td>
</tr>
</tbody>
</table>

4.2.2 Contaminated land specialists (4.2.2)

4.2.2.1 If the studies mentioned in 4.2.1 have suggested that contamination may be present on site, a suitably experienced chartered contaminated land specialist or even a specialist in land condition has been consulted.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chartered specialist with significant relevant experience</td>
<td>14</td>
</tr>
<tr>
<td>Specialist in land condition</td>
<td>23</td>
</tr>
</tbody>
</table>

4.2.3 Land contamination management procedures (4.2.3)

4.2.3.1 If contamination was present on site, the site was assessed in line with appropriate local procedures for the management of land contamination or, where not available, in accordance with other internationally recognised best practice.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A report defining risk assessment</td>
<td>8</td>
</tr>
<tr>
<td>A report evaluating feasible remediation options and determining the most appropriate remediation strategy for the site</td>
<td>12</td>
</tr>
</tbody>
</table>

4.2.4 Evaluation of remediation options (4.2.4)

4.2.4.1 If the site had been contaminated, and remediation was part of the scope of work being assessed, is there evidence that:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasible remediation options were evaluated and the most appropriate remediation strategy determined for the site as agreed by an appropriate expert.</td>
<td>16</td>
</tr>
</tbody>
</table>
The remedial solution removed or eliminated the need to landfill and material removed in the remediation was utilised in other construction projects (other than landfill construction or cover).

If the remediation options were evaluated and agreed by an appropriate expert, the selected remedial solution was above the minimum requirements of the regulatory authority and either used innovative technology or innovative application of existing technology or increased the potential utility of the project site beyond the immediate project.

<table>
<thead>
<tr>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes, and design and implementation was not reliant on management and intervention that was ‘fit and forget’.</td>
</tr>
</tbody>
</table>

4.2.5 Ground-generated gases (4.2.5)

If ground-generated gases were present, there is evidence of risk reduction and management in place and fully implemented.*

<table>
<thead>
<tr>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes, and design and implementation was not reliant on management and intervention that was ‘fit and forget’.</td>
</tr>
</tbody>
</table>

4.2.6 Implementation of remedial solution (4.2.6)

4.2.6.1 The impacts of the implementation of the remedial solution have been assessed and appropriate control measures been put in place.

4.2.7 Long-term effectiveness of remedial solution (4.2.7)

4.2.7.1 The effectiveness and durability of the remedial solution, and maintenance and monitoring, have been considered over the lifetime of the project and beyond, and operational information conveyed to the operator.

<table>
<thead>
<tr>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some evidence</td>
</tr>
<tr>
<td>Evidence is captured in a Validation Report and Operations Manuals</td>
</tr>
<tr>
<td>If warranties and insurance are in place in addition to having a Validation Report and Operations Manuals</td>
</tr>
</tbody>
</table>

4.2.8 Prevention of future contamination (4.2.8)

4.2.8.1 Pollution control measures are in place to prevent any future contamination occurring in relation to the site.

Guidance

4.2.1 Contamination risk assessment

This is addressed once a site has been chosen for the project. A Phase 1 Desk Study has to be carried out in order to establish whether there is a potential for a site to be contaminated. The information identified in the study covered by 4.1.3 will be drawn on but the adequacy of the information may be insufficient to allow confidence in the risk assessment and more work may need to be undertaken.

Physical inspection of the site in a form of a walkover is important in understanding the dynamics of the site. The walkover and investigation has to be carried out before the design process commences so that the design can take the results into account.
Note that in some cases, 4.1.3 and 4.2.1 may be answered by the same study – it will depend upon how the project development has been organised and upon the site options available to the Client.

4.2.2 Contaminated land specialists

A specialist in land condition and/or contamination should be a suitably recognised professional, such as CEng, IEng CGeoI, CSci or CEnv and have appropriate relevant professional land condition experience. SILCs* have to submit for review their relevant experience and are subject to examination and a review process.

* Specialist in Land Condition (SiLC) - see www.silc.org.uk for details.

4.2.3 Land contamination management procedures

Model Procedures for the Management of Land Contamination, the UK Environment Agency’s Contaminated Land Report (CLR) 11 (CLR11) states:

“The technical approach presented in the Model Procedures is designed to be applicable to a range of non-regulatory and regulatory contexts. These include:

(i) development or redevelopment of land under the planning regime;
(ii) regulatory intervention under Part IIA of the EPA 1990 or Part III of the Waste & Contaminated Land (Northern Ireland) Order 1997;
(iii) voluntary investigation and remediation; and
(iv) managing potential liabilities of those responsible for individual sites or a portfolio of sites.”

The following CIRIA guidance may be relevant to addressing this issue:

- Guidance on the management of landfill sites and land contamination on eroding or low-lying coastlines (C718, 2013)
- The VOC Handbook. Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination (C682, 2009),
- Guidance on the use of plastic membranes as VOC vapour barriers (C748, 2014)
- Remediating and mitigating risks from volatile organic compound (VOC) vapours from land affected by contamination (C716, 2012).

4.2.4 Evaluation of remediation options

Use of soil (bio) treatment centres is welcomed but the product must be put back into the chain of utility and not simply used to provide cover or construction materials for landfill projects.

An innovative technology or innovative application is one where, for example:

- it can be defined as a new application in the UK; and
- it will be assessed as part of a Contaminated Land: Applications in Real Environments (CL:AIRE) demonstration project; or
- there is other substantial information such as reported research to demonstrate innovation.

Which technology is most appropriate will depend on the site conditions, the type and extent of contamination and the intended use. ‘Dig and encapsulate on site’ includes cover layers and vertical barriers such as slurry walls, which can contain, but do not destroy, contaminants. Cement-based technologies (stabilisation or solidification) can immobilise contaminants for several decades or longer. Incineration can destroy organic contaminants, but can result in air emissions and ash residues that need to be landfilled. Vitrification destroys some contaminants and immobilises others.
Physical remedial processes can result in concentrated residues or transfer of contaminants to an alternative media (for example, soil washing, and soil vapour extraction).

Some technologies have substantial energy and/or material requirements (such as vitrification), or may in themselves result in environmental impact or nuisance.

The most sustainable technology from this perspective is probably natural attenuation, but this requires management of environmental risk over substantial time periods. In each case, the most sustainable solution should be identified through an appraisal of options.

It should be noted that the remediation of contaminated soils on site might require either an Environmental Permit or an exemption from the Environmental Permitting (England and Wales) Regulations (EPR) 2010 (or the equivalent license or exemption depending on the geographical location in the UK). Some remediation activities might also require planning permission. Therefore, evidence will be required to demonstrate compliance.

The management of waste and re-use of materials is covered in Section 8: Physical Resources – Use and Management, but these activities should also be recorded in the SWMP. In addition activities may be carried out under the CL:AIRE Definition of Waste: Development Industry Code of Practice Version 2. This Code of Practice, which is applicable to England and Wales, was initiated to provide a clear and concise process to determine whether excavated materials on a development site constitute waste in the first instance, and to identify the point when treated waste can no longer be considered as waste.

4.2.5 Ground-generated gases
* This includes protective measures in the ground and/or in buildings and structures.

Protection from hazardous gases can be achieved through creating barriers to prevent migration into buildings or between sites, or to create preferential pathways through which gases can be safely vented.

Verification may be required through long-term monitoring of potential pathways or accepted compliance points to ensure no further increase in the levels of contamination (for example from ‘bounce-back’ from some remediation processes) and/or confirm reducing pollutant values, which is a particular requirement for monitored natural attenuation.

Externally verified validation of remediation is often not conducted, and there is still little information on the long-term performance of many remediation technologies.

Relevant guidance in this area includes:

- CIRIA: *Assessing risks posed by hazardous ground gases to buildings* (C665 2007).


4.2.6 Implementation of remedial solution

All appropriate control measures should have been in place for noise, dust and pollution control during the remediation phase. For example, for transport of contaminated soil off-site, this would include wheel washing, sheeting and the provision of relevant documentation. On-site measures may include fencing off and signposting the contamination, as well as ensuring that no migration of the contamination is taking place. No significant negative impacts should result from the remediation process.

Storage of material on site prior to disposal may fall under the relevant waste management controls and therefore the appropriate permits, licenses or exemptions will be required. The management of waste is covered in Section 7: Resources, but activities involving the storage and collection of waste should also be recorded in the Site Waste Management Plan.
4.2.7 Long-term effectiveness of remedial solution

Evidence should be available regarding the longevity of the remedial solution and normal maintenance requirements. The projected lifetime of the development must not be greater than the lifetime of the remedial solution. Long-term monitoring is required to ensure the continued effectiveness of some solutions, including natural attenuation, permeable reactive barriers, slurry walls, ongoing process-based treatments for groundwater.

Monitoring arrangements will depend on the type of remediation method chosen and its projected lifetime. Where monitoring is necessary, there should also be contingency plans in case monitoring data should demonstrate any fault or deterioration in the remedial solution.

4.2.8 Prevention of future contamination

This applies to any possible contamination resulting from the new use of the site or any other potentially contaminating use adjacent to the site. How likely this is, how severe any potential contamination would be, and what kind of preventative measures should have been taken, depends on the nature of the project and should be assessed accordingly.

For example, in the design of new facilities such as offshore pipelines and oil & gas production facilities, fuel tanks, waste storage areas, chemical stores or processes that include chemical use, new infrastructure should be built to current standards to prevent future contamination of ground and groundwater. Where the subject site has been cleaned up, but the neighbouring site is potentially contaminated and there is a risk of migration onto the site resulting in recontamination, evidence should be available to demonstrate that measures have been taken to control the risk.

A further example is the potential risks from rock salt spreading on roads that go around or through Sites of Special Scientific Interest (SSSIs)/Area of Special Scientific Interest (ASSIs in Northern Ireland). If a project were to impact the SSSI, consultations with NE would be required to determine whether there is a need for a management agreement between NE and the ‘developer’ and if a ‘Section 28’ consent is required from NE for the proposed activities. The outcomes could result in the requirement of a mitigation plan depending on the sensitivity of SSSI/ASSI qualifying species/habitats to saline influence. In a few cases this may require separation of any run-off from watercourses/ground water in the vicinity of the SSSI/ASSI.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1 Contamination risk assessment</td>
<td>Evidence should include an outline study including a risk assessment of contamination affecting current and future receptors including consideration of how the outline proposals will affect any source-pathway-receptor linkages. This is best represented in an outline conceptual site model.</td>
</tr>
<tr>
<td>4.2.2 Contaminated risk specialists</td>
<td>Evidence could include further reports or notes of discussions with a specialist or even a specialist in land condition verifying the initial findings and where appropriate identifying strategies to deal with contamination.</td>
</tr>
<tr>
<td>4.2.3 Land contamination management procedures</td>
<td>Evidence could be in the form of a remediation strategy outlining the methods and values to be achieved.</td>
</tr>
<tr>
<td>4.2.4 Evaluation of remediation options</td>
<td>Evidence could again be in the form of a remediation strategy and action plan, which has been approved by the Environment Agency, SEPA, NIEA, NRW or equivalent. Evidence is also required of the relevant permits, licenses or exemptions. To score the maximum points the innovative technology must fit the criteria specified above.</td>
</tr>
<tr>
<td>4.2.5 Ground-generated gases</td>
<td>Evidence will be likely to include design details and a monitoring plan.</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>4.2.6 Implementation of remedial solution</td>
<td>Control measures, monitoring data, regulatory visits and actions and waste disposal activities should all be documented, and this documentation should be available to demonstrate that this was the case, for example a SWMP, other site records (photographic or otherwise), delivery, transfer or consignment notes, or invoices.</td>
</tr>
<tr>
<td>4.2.7 Long-term effectiveness of remedial solution</td>
<td>Evidence should demonstrate that the remedial solution appropriately meets the requirements outlined in the guidance above.</td>
</tr>
<tr>
<td>4.2.8 Prevention of future contamination</td>
<td>Evidence could show the implementation of recommendations from any remediation strategy, including provision of appropriate monitoring facilities. Evidence could be drawings or photographs showing the installed features.</td>
</tr>
</tbody>
</table>
Protection of biodiversity

Aim

To avoid biodiversity loss wherever possible and limit negative impacts on biodiversity arising as a result of the project where these are unavoidable.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3.1 Prerequisite: Surveys for protected species</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.3.2 Prerequisite: Injurious or invasive species</td>
<td>If no surveys have taken place to identify injurious or invasive species, then it is unlikely that this can be scoped out. The decision to scope out will depend on the outcome of the surveys or on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.3.3 Survey and evaluation</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.3.5 Further consultation with nature conservation organisations</td>
<td>If the initial consultation in 4.3.4 has established that there are no nature conservation matters to consider, then 4.3.5 may be scoped out for design and construction.</td>
</tr>
<tr>
<td>4.3.6 Land of high ecological value</td>
<td>This can only bescoped out if the project involves structures that are necessary for health &amp; safety (for example, navigation equipment along coastlines), to enable access to a site for public education or enjoyment, or for refurbishment projects that happen to be in areas of high ecological value. In addition, for a Design Only Assessment or for town/city centre works in public spaces schemes, this can be scoped out in situations where the Designer had no influence over the choice of location. Evidence for this would be in the brief.</td>
</tr>
<tr>
<td>4.3.8 Managing negative impacts on existing ecological value</td>
<td>This can only be scoped out if surveys have shown there are no existing ecological features on site.</td>
</tr>
<tr>
<td>4.3.9 Monitoring protection, mitigation, and compensation measures</td>
<td>This can only be scoped out if surveys have shown there are no existing ecological features on site.</td>
</tr>
<tr>
<td>4.3.10 Success of protection, mitigation, and compensation measures</td>
<td>Scope out if timescale of the assessment does not allow for gathering of conclusive monitoring data.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3.1 Prerequisite: Surveys for protected species</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.2 Prerequisite: Injurious or invasive species</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4.3.3 Survey and evaluation</td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>4.3.4 Initial consultation with nature conservation organisations</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3.5 Further consultation with nature conservation organisations</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
4.3.6 Land of high ecological value

4.3.7 Ecological works plan

4.3.8 Managing negative impacts on existing ecological value

4.3.9 Monitoring protection, mitigation, and compensation measures

4.3.10 Success of protection, mitigation, and compensation measures

Assessment criteria

4.3.1 Prerequisite: Surveys for protected species (6.2.1 a, b, c)

4.3.1.1 Appropriate surveys for protected plant and animal species have been specified by the Client and the resources provided to undertake them effectively.

4.3.1.2 Appropriate surveys for protected plant and animal species have been undertaken at each stage of the project.

4.3.1.3 If protected plant and animal species have been found on the project site or temporary working areas, plans for protecting these have been:
   a. Drawn up and approved
   b. Monitored and achieved throughout all site investigation, preparation and construction works

4.3.2 Prerequisite: Injurious or invasive species (6.2.2)

4.3.2.1 If invasive animal or plant species or injurious weeds have been found on site, a method statement (or equivalent) for their control and management has been:
   a. Drawn up and approved before the start of construction
   b. Monitored and achieved during construction

4.3.3 Survey and evaluation (New)

4.3.3.1 A suitably qualified ecologist has been appointed at a project stage that ensures involvement with decisions relating to general and detailed site configuration and, where necessary to ensure that protection and enhancement opportunities can be realised, influence on strategic planning decisions.

4.3.3.2 Before the completion of the Preparation and Brief project stage, a suitably qualified ecologist has carried out an appropriate level of survey and evaluation for the site and its zone of influence to determine the ecological baseline including:
   a. Current and potential ecological value and condition of the site and related areas within the zone of influence
   b. Direct and indirect risks to current ecological value
   c. Capacity and feasibility to enhance the ecological value of the site and, where relevant, areas within the zone of influence.

4.3.3.3 The information and data has been collated and shared with the project team to inform the site preparation, design, and construction works.

4.3.4 Initial consultation with nature conservation organisations (6.1.2 a)

4.3.4.1 The Client has consulted with relevant nature conservation organisations on the ecological impact of the proposals and communicated the results to project team members.
4.3.5 Further consultation with nature conservation organisations (6.1.2 b)

4.3.5.1 Consultation with relevant nature conservation organisations on the ecological impact of the proposals has been undertaken and communicated to all relevant project team members at both design and construction stages of the project.

4.3.6 Land of high ecological value (6.1.1)

4.3.6.1 The project, including land used for temporary works, has not been placed on or used land or seabed that has been identified as of high ecological value or as having species of high value.

4.3.7 Ecological works plan (6.1.3)

4.3.7.1 An ecological works plan or an ecological section in the integrated project management plan or site environmental management plan has been drawn up, and then implemented during construction.

4.3.8 Managing negative impacts on existing ecological value (New)

4.3.8.1 Negative impacts on existing ecological value from site preparation and construction works have been managed according to the mitigation hierarchy and an outcome listed in the table below has been achieved.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No overall loss of ecological value has occurred</td>
<td>14</td>
</tr>
<tr>
<td>The loss of ecological value has been limited as far as possible</td>
<td>7</td>
</tr>
</tbody>
</table>

4.3.9 Monitoring protection, mitigation, and compensation measures (6.3.2)

4.3.9.1 The implementation of recommendations for existing ecological features has been monitored throughout the course of the contract.

4.3.10 Success of protection, mitigation, and compensation measures (6.3.3)

4.3.10.1 Monitoring data shows that implementation of the recommendations for existing ecological features has been successful.

Guidance

4.3.1 Prerequisite: Surveys for protected species

Plans are likely to include guidance on appropriate times for carrying out work – for example, clearing vegetation outside the nesting season or avoiding works during spawning – together with method statements and instructions for relocation of species. Plans should be approved by all relevant parties such as the Client, Contractor and Ecologist. Under certain circumstances, especially when dealing with protected species, licences may have to be acquired and associated plans and method statements may need approval by a statutory agency such as NE, NRW, SNH, NIEA, MMO or their equivalent.

Note that ‘achievement’ must be assessed appropriately up to the point of assessment, not against a prediction of what is anticipated to be achieved in the long term.

4.3.2 Prerequisite: Injurious or invasive species

In a UK context, invasive animal or plants species or injurious weeds are defined in legislation (such as Schedule 9 of the WCA 1981 or in the Wildlife (Northern Ireland) Order 1985). In respect of Schedule 9 plants, it may not be possible to be sure that any measures to eradicate the plants have been wholly successful, at least not for some time after the project is completed. Therefore the evidence to look for is whether or not all the actions that were set out in the method statement have
been carried out. If they have, the control of the plants should also have been achieved. So ‘achievement’ must be assessed appropriately up to the point of assessment, not against a prediction of what is anticipated to be achieved in the long-term. Constraints maps as a record of areas treated can also be a useful tool to judge whether the objectives of invasive species control has been or is being achieved.

Some other species of plants including those covered by the Weeds Act may be considered invasive and/or injurious if they cause problems to third parties. For example, common ragwort Senecio jacobaea is a native plant that is poisonous to grazing animals, but which is of value in terms of biodiversity, not least because it is a host plant for the larvae of a UK BAP species the cinnabar moth. Such species should only be considered under this section if identified as a specific problem in regard to the site in question and its neighbours.

Many introduced animal species can also be classified as invasive because of reproductive or competitive advantage. Method statements are required to prevent the spread of these species to areas where they are not already present. Note also that some species of animal are also called pest species, for example brown rat and feral pigeon. However, the occurrence of these species is not usually increased by civil engineering projects, and they are more a health & safety hazard for the workers than of strictly environmental concern. Their control is more closely related to good housekeeping and hence they are not dealt with here.

Guidance on the management of invasive species is available in CIRIA’s Invasive species management for infrastructure managers and the construction industry (C679, 2008) and the GB non-native species secretariat website (www.nonnativespecies.org/home/index.cfm).

Note that ‘achievement’ must be assessed appropriately up to the point of assessment, not against a prediction of what is anticipated to be achieved in the long term.

4.3.3 Survey and evaluation

Where appropriate, the survey(s) must include:

1. Determining the zone of influence for the site including neighbouring land and habitats
2. Current flora, fauna (including permanent and transient species) and habitat characteristics (including but not limited to ecological features in or on built structures)
3. Habitat extent, quality, connectivity and fragmentation
4. Recent and historic site condition
5. Existing management and maintenance levels and arrangements
6. Existing ecological initiatives within the zone of influence
7. Identification of, and consultation with, relevant stakeholders impacted or affected by the site.
8. Local knowledge or sources of information.

Where appropriate, the evaluation must include:

1. Current value and condition of the site and, where relevant, the zone of influence in terms of:
   a. Features including habitats, species, food sources and connectivity
   b. Broader biodiversity and ecosystem services benefits or opportunities
2. Direct and indirect risks to current ecological value:
   a. Sensitive areas and features on or near the site
   b. Direct risks including those from human activity (such as construction work), habitat fragmentation, and potentially harmful species
   c. Indirect risks including water, noise, vibration, or light pollution
3. Capacity and feasibility to enhance the ecological value
4. Habitat restoration and creation potential
5. Impact of the proposed design, construction works and operations on site.

There may be some projects where not all items listed above will be applicable or appropriate to the site. In these cases, the ecologist should clearly state their professional view that the items are considered not applicable.
4.3.4 Initial consultation with nature conservation organisations

Appropriate nature conservation organisations could include national, regional or local statutory bodies, plus international bodies (such as the UN or EU) and a range of non-governmental or voluntary organisations. Organisations consulted should be appropriate to represent the scope of biodiversity and ecosystems present on site and in the wider zone of influence.

In the UK, relevant nature conservation organisations could include Natural England, Natural Resources Wales, Scottish Natural Heritage, Northern Ireland Environment Agency, Environment Agency, Scottish Environment Protection Agency, the Marine Management Organisation (MMO), the local authority ecologist, local biodiversity records centre, or the local Wildlife Trust or equivalent.

This initial consultation cannot be scoped out as, even for a remote location with no apparent nature conservation interests, there may be organisations and groups that ought to be consulted.

4.3.5 Further consultation with nature conservation organisations

See guidance for 4.3.4.

4.3.6 Land of high ecological value

Land or marine areas that are of ‘high ecological value’ are:

a. those which are designated for their nature conservation value (or importance as a green corridor) by an official conservation body or local statutory body (e.g. environmental or development control authority).

b. those which have been identified as being of ecological importance by an ecological assessment of the site carried out prior to any site clearance or other activity. For example, a Phase 1 Habitat Survey following Joint Nature Conservation Committee (JNCC) guidance and subsequent more-detailed surveys where necessary. Any ecological assessment should have been carried out by, or carefully supervised by, a suitably qualified ecologist.

In the UK, areas designated for high ecological value include SSSI or ASSI, MCZ, National Nature Reserves (NNR), statutory Local Nature Reserves (LNR) or SINC or equivalent.

In the UK, conservation bodies include Natural England, Natural Resources Wales, Scottish Natural Heritage, Northern Ireland Environment Agency, the Marine Management Organisation (MMO), Local Wildlife Trusts, and specialist charitable organisations (for example the Bat Conservation Trust, Buglife, or RSPB).

A site may be considered to be of ecological importance if it comprises UK or Local BAP habitats or hosts high value species. Species are deemed to be of high value if they are:

- protected by international, national, or regional law
- a UK or LBAP priority species
- a Species or Habitat of Principal Importance for Biodiversity (in the UK, these are listed in the Natural Environment and Rural Communities Act (NERC) 2006)
- Birds of Conservation Concern
- an International Union for Conservation of Nature (IUCN) Red List species

Note that this guidance refers to any part of a site that may be of high ecological value. It may be that there are parts of a site that are of low ecological value that can be developed without any significant impact on biodiversity, even though the site itself includes land of high ecological value.

Note also that ‘hosting of high value species’ also includes occupation or use of air space over a site. For example, if a regular flight-path or foraging route for a protected species such as birds or bats passes through a site, then that site should be deemed to host a high value species.

As long as damage to the areas of high ecological value is avoided, the points can be awarded.
Note that for land-based projects, designation of land as of high landscape value and high ecological value are not necessarily coincident – land can be one but not necessarily the other. Hence this requirement appears here as well as near-equivalent requirements in Landscape and historic environment.

Note also that points cannot be scored here unless surveys or desk studies are carried out to identify the ecological value of the site.

### 4.3.7 Ecological works plan

Such a plan should be of appropriate quality and should include issues such as appropriate seasons for carrying out works in order to minimise adverse impacts on wildlife, the methods to be used if this proves impossible, responding to unexpectedly finding wildlife on site, control of noxious plants, methods to prevent colonisation of the site during the project (if inappropriate), communication about these issues with project staff, and procedures for regular monitoring and reviewing.

If a plan has not been prepared by the Client and/or Designer and thus 0 credits have been scored in the Strategy or Design columns, the Contractor can still score 7 credits if they prepare and implement their own plan at the construction stage.

An Ecological Works Plan or an ecological section in the Site Environmental or Integrated Project Management Plan is designed to be implemented at the construction stage of the project. A site ecologist may need to be appointed to assist with implementation. Depending on the size of the project and the ecological issues involved, this can be full-time, part-time or on a Watching Brief basis as appropriate for the scale, nature and location of the project.

A form of plan or statement for considering ecological aspects of the project should be drawn up by the Client, and a preliminary version of the plan should be drawn up at the design stage. CEEQUAL is not prescriptive on the form that these plans take, and they may be included in broader planning documents as long as they are clearly identifiable and monitored. The points for these roles are scored for drawing up the preliminary plans at the relevant stage in the project. The full score for Construction can be awarded only if there is evidence for correct implementation of the plan.

### 4.3.8 Managing negative impacts on existing ecological value

The following hierarchy must be followed when managing negative impacts of the site preparation and construction works:

1. **Avoid** negative impacts on habitats and features of ecological value on the site. If it is not possible to avoid negative impacts, then:
2. **Protect** habitats and features of ecological value from damage in accordance with best practice guidelines during development works. If it is not possible to avoid all negative impacts or to protect habitats and features of ecological value, then:
3. **Reduce, limit or control** negative impacts as far as possible. Where it is not possible to avoid, protect, limit or control the negative impacts on features of ecological value on site, then:
4. **Compensate** to ensure the existing ecological value is maintained during and after the project. Compensation should be of benefit to the local ecosystems affected by the project works wherever possible.

### 4.3.9 Monitoring protection, mitigation, and compensation measures

No specific guidance provided.

### 4.3.10 Success of protection, mitigation, and compensation measures

The Assessor should judge these factors against recommendations and observations contained in any ecological assessment of the site. Note that ‘success’ must be assessed appropriately up to the point of assessment, not against a prediction of what is anticipated to be achieved in the long term.
Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3.1 Prerequisite: Surveys for protected species</td>
<td>Some evidence of steps taken to safeguard protected species may be gained from documentation such as a SEMP, but a site visit or detailed records including photographs may be required to see or demonstrate examples of practical measures that have been implemented. It may also be necessary to talk to relevant staff.</td>
</tr>
<tr>
<td>4.3.2 Prerequisite: Injurious or invasive species</td>
<td>Evidence should be in the form of method statements or other appropriate management control. Monitoring and achievement should be evidenced by documentation that demonstrates that the method statements have been adhered to.</td>
</tr>
<tr>
<td>4.3.3 Survey and evaluation</td>
<td>In the UK, a Phase 1 habitat assessment or other equivalent type of assessment can act as acceptable evidence as long as it can be shown that the content of the criteria has been covered.</td>
</tr>
<tr>
<td>4.3.4 Initial consultation with nature conservation organisations</td>
<td>Evidence would be demonstration of the consultation in the form of a report, minutes or correspondence. Evidence of communication would be through team meeting minutes or other briefing note.</td>
</tr>
<tr>
<td>4.3.5 Further consultation with nature conservation organisations</td>
<td></td>
</tr>
<tr>
<td>4.3.6 Land of high ecological value</td>
<td>Evidence would be in the EIA, ecological assessment or some other environmental assessment as defined in the footnote on the previous page.</td>
</tr>
<tr>
<td>4.3.7 Ecological works plan</td>
<td>Evidence needs to identify that ecological considerations (such as nesting seasons, spawning grounds, and/or protected areas of the site) have been built into the project planning. At the Client &amp; Design stage, this may be incorporation of requirements into project briefs, and/or tender documents and specifications. At Construction stage, it may be a stand-alone plan or part of other, more-generic, project planning documentation. Evidence of implementation should be shown through routine project progress monitoring and reporting.</td>
</tr>
<tr>
<td>4.3.8 Managing negative impacts on existing ecological value</td>
<td>Evidence will identify how the mitigation hierarchy has been followed and the actions taken to avoid, protect, limit, or compensate for negative impacts on existing ecological value. The outcome achieved may be demonstrated through the professional judgement of a suitably qualified ecologist.</td>
</tr>
<tr>
<td>4.3.9 Monitoring protection, mitigation, and compensation measures</td>
<td>Evidence could include site records that contain data and appropriate reporting/communication that shows that monitoring has taken place or is taking place.</td>
</tr>
<tr>
<td>4.3.10 Success of protection, mitigation, and compensation measures</td>
<td>Evidence could include site records that contain monitoring data and appropriate reporting/communication that shows measures have been successful.</td>
</tr>
</tbody>
</table>

Definitions

Biodiversity

The variety of plant and animal life in the world or in a particular habitat at the following levels of organisation: landscape, ecosystem, habitat, community, species, population, individual, and the structural and functional relationships within and between these.
Compensation

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.

Connectivity

The degree to which the configuration of habitat facilitates movement between and across resource patches.

Ecological baseline

The ecological baseline is the ecological value of the site before construction. The ecological baseline is used to compare performance after construction to determine if it is the same or significantly changed.

Ecological value

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, cultural and economic value that can be delivered from species and habitats and their interactions (ecosystem services), specific to a geographical frame of reference.

Ecosystem

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.

Ecosystem services

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 or social services such as health and wellbeing, recreational, spiritual, religious and other non-material benefits.

Fragmentation

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.

Habitat

A place in which a particular plant or animal lives. It is often used in the wider sense referring to major assemblages (a group of species found in the same location) of plants and animals found together.

No overall loss

There has been no overall loss of ecological value on the site as a result of activities to avoid, protect, reduce, limit, control or compensate for impacts in line with the hierarchy set out in the assessment criteria in this issue. Where statutory designated sites, irreplaceable habitats or legally protected species have been impacted, all statutory requirements are met and are agreed with the relevant statutory bodies as necessary.
Suitably Qualified Ecologist (SQE)

An individual achieving all the following items can be considered 'suitably qualified' for the purposes of compliance with CEEQUAL:

1. Holds a degree or equivalent qualification (such as N/SVQ level 5) in ecology or a related subject.
2. Is a practising ecologist with a minimum of three years of relevant experience (within the last five years). Such experience must clearly demonstrate a practical understanding of factors affecting ecology in relation to construction and the built environment including acting in an advisory capacity to provide recommendations for ecological protection, enhancement, and mitigation measures. Examples of relevant experience include: ecological impact assessments, Preliminary Ecological Appraisals (PEA), Phase 2 habitat and fauna surveys, and habitat creation.
3. Is covered by a professional code of conduct and subject to peer review. Full members of the following organisations, who meet the above criteria, are deemed Suitably Qualified Ecologists for the purposes of CEEQUAL:
   a. Chartered Institute of Ecology and Environmental Management (CIEEM).
   b. Chartered Institution of Water and Environmental Management (CIWEM).
   c. Institute of Environmental Management and Assessment (IEMA).
   d. Landscape Institute (LI).
   e. The Institution of Environmental Sciences (IES).

Zone of influence

Areas of land or water bodies 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, including areas downstream from a site. Areas within the zone of influence can be negatively affected by changes on an assessment site, but they also provide further opportunity to maximise enhancement activities.
Change and enhancement of biodiversity

Aim
To enhance ecological value wherever possible on and off site as a result of the project through creation, and management of habitats and ecological features.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.1 Change in ecological value</td>
<td>This can only be scoped out if surveys have shown no direct or indirect risks to current ecological value and no capacity to enhance the ecological value of the site or areas within the zone of influence.</td>
</tr>
<tr>
<td>4.4.2 Enhancing existing ecological features</td>
<td>This can only be scoped out if surveys have shown there are no existing ecological features on site.</td>
</tr>
<tr>
<td>4.4.3 New wildlife habitats</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>4.4.4 Special structures or facilities for wildlife</td>
<td>Scope out only if there are genuinely no opportunities for installing such structures or if doing so is regarded as actively unhelpful, for example in reducing amenity use of the project.</td>
</tr>
<tr>
<td>4.4.5 Improving the water environment</td>
<td>Scope out only where there are no water bodies local to the project.</td>
</tr>
<tr>
<td>4.4.6 Improving the water environment – implementation</td>
<td>Scoped out if the consideration for 4.4.5 concludes that no opportunities were appropriate.</td>
</tr>
<tr>
<td>4.4.7 Incorporating existing water features</td>
<td>This can be scoped out for marine and offshore projects or if there are no existing water features present on or near the site.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.1 Change in ecological value</td>
<td>32 (up to)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4.4.2 Enhancing existing ecological features</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.3 New wildlife habitats</td>
<td>4 (up to)</td>
<td>8 (up to)</td>
<td></td>
</tr>
<tr>
<td>4.4.4 Special structures or facilities for wildlife</td>
<td>4</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>4.4.5 Improving the water environment</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4.6 Improving the water environment – implementation</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4.4.7 Incorporating existing water features</td>
<td></td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

Assessment criteria

4.4.1 Change in ecological value (New)
4.4.1.1 The change in ecological value occurring as a result of the project has been calculated in accordance with the methodology described in GN36 BREEAM, CEEQUAL, and HQM Ecology Calculation Methodology – Route 2 (or an agreed equivalent) and the project has achieved one of the levels given in the table below.
### Outcome

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimising loss of ecological value (75-94%)</td>
<td>8</td>
</tr>
<tr>
<td>No net loss of ecological value (95-104%)</td>
<td>16</td>
</tr>
<tr>
<td>Net gain of ecological value (105-109%)</td>
<td>24</td>
</tr>
<tr>
<td>Significant net gain of ecological value (110% or more)</td>
<td>32</td>
</tr>
</tbody>
</table>

#### 4.4.2 Enhancing existing ecological features (6.3.1 c)

4.4.2.1 Recommendations for enhancing the existing ecological features of the site (in addition to any conservation, mitigation, or compensation of existing features) have been identified by a relevant specialist and incorporated in the project.

#### 4.4.3 New wildlife habitats (6.4.1)

4.4.3.1 Recommendations or opportunities for creating new wildlife habitats have been identified by a relevant specialist and incorporated in the project.

<table>
<thead>
<tr>
<th>Assessment stage</th>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Plans for creating new habitats have been drawn up</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Plans include highly significant habitats or species</td>
<td>2</td>
</tr>
<tr>
<td>Construction</td>
<td>New habitats have been incorporated in the project</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Highly significant habitats or species have been incorporated in the project</td>
<td>4</td>
</tr>
</tbody>
</table>

#### 4.4.4 Special structures or facilities for wildlife (6.4.2)

4.4.4.1 Recommendations or opportunities for installing special structures or facilities for encouraging or accommodating appropriate wildlife (especially BAP species) have been identified and incorporated in the project.

<table>
<thead>
<tr>
<th>Assessment stage</th>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Plans for installing special structures of facilities have been drawn up</td>
<td>4</td>
</tr>
<tr>
<td>Construction</td>
<td>Special structures or facilities have been incorporated in the project</td>
<td>7</td>
</tr>
</tbody>
</table>

#### 4.4.5 Improving the water environment (7.4.1 a)

4.4.5.1 Opportunities to improve the local water environment have been considered and identified, and, where appropriate, included in the design.

#### 4.4.6 Improving the water environment – implementation (7.4.1 b)

4.4.6.1 The designed features have been implemented.

#### 4.4.7 Incorporating existing water features (7.4.2)

4.4.7.1 Existing water features have been incorporated in the design of the project.

### Guidance

#### 4.4.1 Change in ecological value

The calculation methodology set out in *GN36 BREEAM, CEEQUAL, and HQM Ecology Calculation Methodology – Route 2* builds on the ‘Defra biodiversity metric’. The methodology quantifies the
impact of a development in terms of ‘biodiversity units’ based on habitat types and their (a) distinctiveness, (b) condition and (c) area or length throughout the assessed project life cycle.

The calculation methodology has two routes depending on (i) the project's scale and size and (ii) the distinctiveness of the habitats on the site:

1. **Full methodology**: pre-development habitats are above the set size threshold of 0.05 hectares (in total) or are of high distinctiveness.
2. **Simplified methodology**: pre-development habitats are below the set size threshold and are of low or medium distinctiveness.

For both approaches, linear and area-based habitats must be accounted for separately. For full details of the methodology and calculation procedure see *GN36 BREEAM, CEEQUAL, and HQM Ecology Calculation Methodology – Route 2*.

An alternative methodology for calculating the change in ecological value may be agreed with BRE Global.

### 4.4.3 New wildlife habitats

In the UK and Ireland, ‘highly significant habitats or species’ are normally classified as BAP habitats or species because the process of creating BAPs includes a significance judgement.

Habitat in this context refers to an area of unified vegetation or ecosystem, such as ponds, reed beds or other wetland features, species-rich hedgerow, broadleaved woodland, and/or grassland. Artificial features such as bird boxes, bat boxes, badger setts, or otter holts, which are covered in 4.4.4 do not constitute habitats in this context although they may contribute to the creation of one. New habitats are those that currently do not exist on the site but may otherwise be appropriate as they support the wider ecosystem and local biodiversity in the area. Habitat creation proposals may be on-site or off-site. Examples of the latter would include landscape scale conservation and green infrastructure where benefits can be significant if strategically planned and implemented. A specialist in habitat creation or in a particular group of animals should be consulted in drawing up these proposals.

### 4.4.4 Special structures or facilities for wildlife

Structures or facilities that support local wildlife but do not in themselves create a self-supporting habitat. They will typically reinforce existing facilities in and around the site or provide a means of controlling and protecting wildlife to facilitate safe and secure passage, nesting, roosting or feeding.

Such structures or facilities may include artificial bat roosting boxes, bird nesting opportunities, artificial badger setts or otter holts, green bridges, green roofs and walls or tunnels under roads or railways. The provision of such measures should be appropriate to the scale and nature of the project. For example, one bat box on a large project would be insufficient. The advice of an ecologist or relevant wildlife organisation should be sought as to what would be considered appropriate.

As with newly created habitats, any structures or facilities should have been recommended, designed and sited by, or in consultation with, a suitably qualified ecologist or relevant wildlife specialist.

### 4.4.5 Improving the water environment

Examples of opportunities to improve the local water environment (whether fresh or marine) include cleaning up existing degraded or silted-up ponds or waterways, introducing aquatic plants that help cleanse the water in existing surface waters, and the removal of invasive and damaging aquatic plants and sources of water pollution.

Capturing rain and surface water for beneficial use, including the adoption of various SuDS techniques, can provide new water features or aquatic habitat to enhance biodiversity. Retained water could also offer other benefits such as an alternate water resource or local heat sink or amenity feature.
The Water Framework Directive (WFD) is striving to restore, improve and enhance the quality of European water resources, as well as prevent further deterioration. Contribution to achieving WFD targets should be therefore explored and incorporated were possible in new developments.

4.4.7 Incorporating existing water features

Incorporation of water features can provide amenity benefit (or other benefits, including site drainage), but water features that are incorporated into the project must form an integral part of the design and not reduce the ecological or environmental quality of the water feature.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4.1 Change in ecological value</td>
<td>Completed copy of the BREEAM Change in Ecological Value Calculator or a report showing the methodology followed to calculate the change in ecological value. Evidence will show the pre- and post-development biodiversity units. It should include the areas and lengths of different habitat types and the values used for distinctiveness, condition, and habitat creation risk factors (spatial risk, delivery risk, temporal risk).</td>
</tr>
<tr>
<td>4.4.3 New wildlife habitats</td>
<td>Evidence could be drawings and photographs of what has been included. To score for BAP habitats, it would be necessary to refer back to relevant authority plans or an ecological assessment of the project. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>4.4.4 Special structures or facilities for wildlife</td>
<td>Evidence could be in the form of photographs or drawings that show incorporation of special facilities. Reference also needs to be made to the ecological assessment to ensure that these facilities are not being provided merely as mitigation.</td>
</tr>
<tr>
<td>4.4.5 Improving the water environment</td>
<td>Evidence needs to demonstrate that features (such as the examples above) have been included in the works. This needs to demonstrate both design stage consideration (such as through drawings or specifications) and construction stage implementation (such as through photographs).</td>
</tr>
<tr>
<td>4.4.7 Incorporating existing water features</td>
<td>Evidence needs to be appropriate to the type of scheme and could include drawings or photographs showing how existing features have been incorporated.</td>
</tr>
</tbody>
</table>

Definitions

Refer to definitions given in *Protection of biodiversity*.

Enhancement

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 or compensate for an impact.

Green infrastructure

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 façades.
Long-term management of biodiversity

Aim

To secure ongoing monitoring, management, and maintenance of habitats and ecological features to ensure intended long-term outcomes are realised.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5.1 Ongoing ecological management</td>
<td>Scope out only if the nature and scope of the project mean that there is no need for ongoing ecological management of habitats and species conservation measures.</td>
</tr>
<tr>
<td>4.5.2 Programme for monitoring</td>
<td>The decision to scope out will depend on the nature, scale, location, duration and context of the project.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5.1 Ongoing ecological management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5.2 Programme for monitoring</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assessment criteria

4.5.1 Ongoing ecological management

4.5.2.1 A landscape and ecology management plan, or equivalent, has been developed in accordance with BS 42020:2013 Section 11.11 covering as a minimum the first five years after project completion and includes:

- a. Actions and responsibilities, prior to handover, to give to relevant individuals.
- b. The ecological value and condition of the site over the development life.
- c. Identification of opportunities for ongoing alignment with activities external to the project which support the aims of the BREEAM UK Strategic Ecology Framework.
- d. Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts.
- e. Clearly defined and allocated roles and responsibilities.

x.x.x.x The landscape and management plan or similar has been updated as appropriate to support maintenance of the ecological value of the site.

4.5.2 Programme for monitoring

4.5.2.1 There is a programme in place (for the years after project completion) for monitoring the success or otherwise of any management, habitat creation, or translocation and species conservation measures undertaken.

Guidance

4.5.1 Ongoing ecological management

An appropriate landscape and ecology management plan for the aftercare of ecology is essential to ensure benefits are realised from the actions undertaken to protect or enhance biodiversity. The plan should consider actions on and near site and, where relevant, within the wider zone of influence.

4.5.2 Programme for monitoring

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. The ongoing programme for monitoring is often not given enough prominence in implementation plans and project programmes. This can mean that opportunities are missed and expected benefits are not realised, potentially leading to the failure of the initiative.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5.1 Ongoing ecological management</td>
<td>Evidence could be a LMP with specific reference to requirements of ecological habitat management or species conservation measures.</td>
</tr>
<tr>
<td>4.5.2 Programme for monitoring</td>
<td>Evidence could be a specific monitoring plan or part of a more-generic maintenance plan that demonstrates that monitoring is in place.</td>
</tr>
</tbody>
</table>

Definitions

Refer to definitions given in Protection of biodiversity.
Landscape and historic environment

Category summary

This category encourages project teams to consider the landscape and heritage within and surrounding a project site. It aims to protect and enhance both landscape character and heritage assets. Issues cover the aesthetic value and visual impact of a project, plus actions to protect and enhance the historic environment for the benefit of present and future generations.

Category summary table

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape and visual impact</td>
</tr>
<tr>
<td>Heritage assets</td>
</tr>
</tbody>
</table>
Landscape and visual impact

Aim

To ensure the character of the landscape is respected and, where possible, enhanced through the design approach and careful location of features in a manner that is appropriate to the local environment and community needs and wishes.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1 Landscape and visual factors</td>
<td>Scope out for marine and offshore projects only if the permanent works involved are out of sight of land, and there is no use of land, and therefore effects on the landscape, for temporary works.</td>
</tr>
<tr>
<td>5.1.2 Impact on landscape character</td>
<td>This can only be scoped out where the project under assessment is not located in an area of acknowledged or protected high amenity value for its landscape or townscape character.</td>
</tr>
<tr>
<td>5.1.3 Landscape development policies</td>
<td>Scope out on projects where there are no landscape works required by planning conditions or other commitments. Care must be taken here to ensure that landscape works are not excluded from a contract merely for convenience.</td>
</tr>
<tr>
<td>5.1.4 Local landscape character</td>
<td>Scope out for marine and offshore projects only if the permanent works involved are out of sight of land, and there is no use of land, and therefore effects on the landscape, for temporary works.</td>
</tr>
<tr>
<td>5.1.5 Advance landscape works</td>
<td>Scope out for marine and offshore projects only if the permanent works involve no use of land, and therefore no opportunities for landscape works, even for temporary works; or on Construction Only Assessments where the Contractor genuinely had no opportunity to influence any advance works.</td>
</tr>
<tr>
<td>5.1.6 Appropriateness of species selected</td>
<td>Scope out only on projects where no planting works are possible or on Construction Only Assessments where the Contractor genuinely had no opportunity to influence the landscaping design.</td>
</tr>
<tr>
<td>5.1.7 Assessment of existing vegetation</td>
<td>Scope out only if no substantial vegetation is present on site (including temporary areas such as construction compounds).</td>
</tr>
<tr>
<td>5.1.8 Retention of existing vegetation</td>
<td></td>
</tr>
<tr>
<td>5.1.9 Non-vegetation features</td>
<td>Scope out on marine projects where there are no landscape features or views to be lost.</td>
</tr>
<tr>
<td>5.1.10 Landscape design proposals</td>
<td>Scope out for marine and offshore projects only if the permanent works involve no use of land, and therefore no opportunities for landscape works, even for temporary works.</td>
</tr>
<tr>
<td>5.1.11 Existing vegetation</td>
<td>Scope out only if no substantial vegetation is present on site (including temporary areas such as construction compounds).</td>
</tr>
<tr>
<td>5.1.12 Long-term management plan</td>
<td>Scope out only on projects where there was no opportunity or scope for planting works (such as marine and offshore projects with no land connection).</td>
</tr>
<tr>
<td>5.1.13 Responsibility for long-term management</td>
<td></td>
</tr>
</tbody>
</table>

Scoring
Assessment criteria

5.1.1 Landscape and visual factors (4.4.1)

5.1.1.1 Landscape and visual factors have been considered by a suitably qualified landscape professional at each stage of the project, including the evaluation of scheme options.

5.1.2 Impact on landscape character (4.5.1)

5.1.2.1 If the project is located within or near an area of acknowledged or protected high amenity value for its landscape, coastal or townscape character, the impact of the development on the character of the area has been assessed as neutral or positive.

<table>
<thead>
<tr>
<th>Impact on landscape character</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>10</td>
</tr>
<tr>
<td>Positive</td>
<td>24</td>
</tr>
</tbody>
</table>

5.1.3 Landscape development policies (4.5.2)

5.1.3.1 The landscape proposals go beyond the aims of applicable landscape development or enhancement policies published by the relevant local, regional, or national authority.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies have been met</td>
<td>3</td>
</tr>
<tr>
<td>Policies have been exceeded</td>
<td>8</td>
</tr>
</tbody>
</table>

5.1.4 Local landscape character (4.4.2)

5.1.4.1 The project design fits the local landscape character in terms of the items listed in the table below.

<table>
<thead>
<tr>
<th>Aspect of landscape character</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landform or levels</td>
<td>3 for each</td>
</tr>
</tbody>
</table>
5.1.5 Advance landscape works (4.6.2)

5.1.5.1 Opportunities for advance landscape works have been considered, such as planting prior to construction.

5.1.6 Appropriateness of species selected (4.6.3)

5.1.6.1 Planting design has taken the appropriateness of species selection into account to include factors such as climate adaptation, local provenance and soil stability.

5.1.7 Assessment of existing vegetation (4.5.3 a)

5.1.7.1 The condition of existing vegetation has been assessed and the retention of vegetation with high or moderate value has influenced design proposals.

5.1.8 Retention of existing vegetation (4.5.3 b)

5.1.8.1 Based on the assessment of the condition of existing vegetation, a percentage of vegetation of high or moderate quality has been retained as part of the design.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or more</td>
<td>1</td>
</tr>
<tr>
<td>50% or more</td>
<td>2</td>
</tr>
<tr>
<td>75% or more</td>
<td>3</td>
</tr>
<tr>
<td>90% or more</td>
<td>4</td>
</tr>
</tbody>
</table>

5.1.9 Non-vegetation features (4.5.4)

5.1.9.1 The landscape and amenity value of other features (not vegetation) has been assessed and the retention of valuable, distinctive or historic features has influenced design proposals.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, but negative impact</td>
<td>7</td>
</tr>
<tr>
<td>Yes, neutral impact or avoided</td>
<td>10</td>
</tr>
<tr>
<td>Yes, enhanced setting</td>
<td>16</td>
</tr>
</tbody>
</table>

5.1.10 Landscape design proposals (4.6.1)

5.1.10.1 A system or plan has been implemented during the construction period to ensure that:

a. planning and third-party commitments were implemented;

b. best practice was applied for planting or habitat areas to avoid damage to landscape features; and

c. soil conditions met the requirements for successful establishment of the landscape design.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan prepared</td>
<td>13</td>
</tr>
</tbody>
</table>
Plan them implemented 16

5.1.11 Protection of existing vegetation during construction (4.5.3 c)

5.1.11.1 Vegetation (including root protection areas) that is being retained as part of the design has been adequately protected during construction.

5.1.12 Long-term management plan (4.7.1 a)

5.1.12.1 A management plan has been developed that:

   a. defines long-term landscape objectives,
   b. establishes recommendations for work required to ensure that objectives are achieved, and
   c. sets a programme for ongoing monitoring and review to assess the effectiveness of maintenance operations

5.1.13 Responsibility for long-term management (4.7.1 b)

5.1.13.1 Responsibility for the implementation of the management plan has been allocated to an appropriate individual or organisation.

5.1.13.2 The appropriate skills and resources (including financial) have been committed.

5.1.13.3 A programme of monitoring is in place beyond the normal planting establishment period

Guidance

5.1.1 Landscape and visual factors

A suitably qualified landscape professional would normally be a Landscape Architect, but could include a Landscape Manager, Garden Designer, Arboriculturalist or other landscape professional depending on the nature of the project.

Strategy stage scores are awarded where the brief actively encourages consideration of landscape and visual factors at each stage. At design stage, considerations could include siting, massing, colour, texture, materials, earthworks, lighting, street furniture, planting and relationship with buildings or structures.

Note that temporary construction impacts are assessed in 1.3.4.

5.1.2 Local landscape character

In the UK, an area of acknowledged or protected high amenity value for its landscape or townscape character could be an AONB, National Park, Strategic View, Conservation Area (built environment), Heritage Coast, Registered Park, or landscape identified as being high quality in County Landscape Character Studies or similar.

5.1.3 Landscape development policies

Compliance with relevant landscape policies is considered a basic requirement of all schemes; however, there may be scope for going beyond these basic requirements to provide further benefit or enhancement.

5.1.4 Local landscape character

Ideally, any new land-based project should respond to its surroundings and blend in with, or enhance, the local character. This does not imply that it has to look vernacular. A structure can be contemporary, yet still reflect local relationships, design elements, colour and material combinations. The way in which a scheme is set into the landform or townscape surroundings can have a major influence on its acceptability; appropriate choice is needed of levels, gradients, profiles, soil
stabilisation, and retention. Detailing of walls (for example, regional styles in dry stone walls), facings, fences, posts, hard surfaces and lighting can respond to area-specific factors.

The mere planting of ‘indigenous’ species or ‘same as next door’ is not sufficient in this context. Planting should represent or complement the truly local character of the area in terms of vegetation type and structure (for example, woodland pattern and structure, the form of a windbreak or shelterbelt, hedgerow character, coppice, designed landscape elements, meadows, heathland, wetland, urban squares and parks) as well as choice of species and the matching of species to soil type.

5.1.5 Advance landscape works

Advance landscape works would normally consist of planting to provide structure to a development, screening of views or early impact, but may equally include construction of earthworks or other landscape features to fulfil a landscape function such as screening.

5.1.6 Appropriateness of species selected

Species selection is an important consideration for planting works. The appropriateness of certain species will depend on the nature of the development. Ornamental and architectural planting schemes may be appropriate for urban or commercial developments, but are unlikely to be appropriate for rural schemes. Local provenance is often regarded as important for native planting schemes but may not be appropriate for climate change adaptation. The landscape design should be supported by evidence that factors determining species selection have been considered and that the most relevant factors have been used to develop the criteria for planting design.

5.1.7, 5.1.8 Assessment of existing vegetation

In a UK context, ‘vegetation’ includes trees, shrubs, hedgerows, meadows and scrub land including special grasses, and reedbeds.

Vegetation, and in the UK and Ireland especially trees, forms an important part of the landscape. The landscape value of existing vegetation should be considered in the context of the development. Some guidance on the value of trees is included in BS 5837:2012 *Trees in Relation to Construction*.

Significant vegetation, and trees protected by a Tree Preservation Order (TPO), would normally be considered valuable landscape features. However, it is important to consider that size and protection are not the only factors to determine landscape value, for example small windswept trees may form interesting features in exposed coastal locations and groups of small trees may provide an important screening function. Therefore, evidence must demonstrate that a strategy for retention of trees has been developed based on their value in the context of the development. Vintage trees and ancient woodland even if not formally recognised in any local plan must be considered as significant.

5.1.9 Non-vegetation features

Retention of trees is considered in 4.3.2. Other landscape features include topography, rocks, boulders, ponds, brooks, swamps, wetland areas, parks, plazas, squares, views and vistas. The last five items are of particular importance in urban areas.

5.1.10 Landscape design proposals

Civil engineering work can cause damage to landscape features. A system or plan should be in place to ensure that such effects are avoided or mitigated. It should allocate responsibility for control measures and establish procedures for monitoring and reviewing the effectiveness of the system or plan. Mechanisms for ensuring that commitments made during the planning process, to statutory bodies or third parties are implemented, should also be included in the system or plan.

The plan must be in place early enough to permit implementation from the start of work on site and should be reviewed on a regular basis throughout the implementation of the project.
CIRIA Publication *The benefits of large species trees in urban landscapes: a costing, design and management guide* (C712, 2012) provides guidance in this area, and for 5.1.6.

5.1.11 Protection of existing vegetation during construction

BS 5837:2012 provides guidance on protection of trees during construction.

5.1.12, 5.1.13 Long-term management plan

The Management Plan can either have been prepared as part of the LMS or LWP or can be a separate document (for example a Landscape Management Plan).

The programme or plan should include detailed descriptions of any maintenance tasks that have to be carried out on a regular basis (for example, grass to be cut to a particular height, grass cuttings left or collected, selective tree-felling or pruning, further planting) including an indication of frequency (for example once a fortnight, once a year, every six years) and, where applicable, time (for example, for meadows the right timing of cuts is crucial). Hard landscape maintenance tasks should be included where appropriate (for example, graffiti and chewing gum to be removed from hard surfaces).

Note that the review programme or plan needs to go significantly beyond the normal maintenance carried out during a planting establishment period (often three to five years).

**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1 Landscape and visual factors</td>
<td>Evidence could include the project brief, a landscape or townscape assessment report, and comparison of alternatives.</td>
</tr>
<tr>
<td>5.1.2 Impact on landscape character</td>
<td>Evidence needs to show that local or other statutory authority plans have been viewed to establish land status. This could be included within the EIA or otherwise shown by a record on the project file. Evidence for scoping-out should demonstrate that the project is not within a protected area.</td>
</tr>
<tr>
<td>5.1.3 Landscape development policies</td>
<td>Evidence of compliance with authority plans and policies could be in the form of a planning approval. If planning approval is not needed, then evidence of consultation with relevant authorities would be needed. It will be up to the Assessor and Verifier to agree how exceedance of requirements is demonstrated.</td>
</tr>
<tr>
<td>5.1.4 Local landscape character</td>
<td>Evidence could be in the form of relevant instructions in the brief, or evidence of research into and understanding of local character all related to the design and completed scheme.</td>
</tr>
<tr>
<td>5.1.5 Advance landscape works</td>
<td>Evidence should include documented evidence that advance landscape works have been considered, even if the possibility of implementation has been ruled out.</td>
</tr>
<tr>
<td>5.1.6 Appropriateness of species selected</td>
<td>Evidence could include a review of the criteria used to determine plant selection.</td>
</tr>
<tr>
<td>5.1.7 Assessment of existing vegetation</td>
<td>Evidence could include arboricultural reports, survey data, tree constraints plan, tree retention strategy, photographs, or a site visit to the completed scheme.</td>
</tr>
<tr>
<td>5.1.8 Retention of existing vegetation</td>
<td>Evidence could be in the form of a landscape constraints plan, comparison of drawings or photomontages showing change of land use and new landscape features. What is seen as enhancement may be a matter of judgement and agreement between Assessor and Verifier.</td>
</tr>
<tr>
<td>5.1.10 Landscape design proposals</td>
<td>Evidence could include a LMS, LWP or equivalent section in a SEMP. Evidence of consultation with relevant statutory bodies and other relevant third parties should be included in the plan.</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5.1.11 Protection of existing vegetation</td>
<td>Evidence could include method statements, photographs, records of site visit(s) during construction, monitoring of protection measures, or a site visit to the completed scheme.</td>
</tr>
<tr>
<td>5.1.12 Long-term management plan</td>
<td>Evidence should be in the form of a plan covering landscape management objectives and measures, together with evidence that the responsibility for long-term maintenance has been allocated and resourced appropriately.</td>
</tr>
<tr>
<td>5.1.13 Responsibility for long-term management</td>
<td></td>
</tr>
</tbody>
</table>
Heritage assets

Aim
To ensure the protection of heritage through known physical and other assets on or near the project site that have value because of their contribution to society, knowledge and/or culture over and above local and international requirements. Also to identify and exploit opportunities to enhance knowledge, understanding, and appreciation of the historic, social and cultural environment.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.3 Consultation</td>
<td>Scope out on projects where it can be demonstrated that there were no significant changes to the historic environment.</td>
</tr>
<tr>
<td>5.2.4 Reporting baseline studies and surveys</td>
<td>This can only be scoped out where there has been no archaeology or historic buildings work undertaken for the project, including any formal output from 5.2.1 and 5.2.2.</td>
</tr>
<tr>
<td>5.2.5 Integration of listed or registered heritage assets</td>
<td>Scope out only if statutory listed or registered heritage assets have not been identified within the development area in 5.2.1 and 5.2.2.</td>
</tr>
<tr>
<td>5.2.6 Integration of non-registered heritage assets</td>
<td>Scope out only if non-registered heritage assets have not been identified within the development area in 5.2.1 and 5.2.2.</td>
</tr>
<tr>
<td>5.2.7 to 5.2.13</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>5.2.14 Appropriate materials and specialist skills</td>
<td>Scope out if the evidence demonstrates that there has been no restoration or enhancement works to heritage assets.</td>
</tr>
<tr>
<td>5.2.15 Appropriate materials and specialist skills</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>5.2.16 Reporting mitigation works</td>
<td>Scope out if the project does not require a formal post-excavation phase or require the completion of building recording reports.</td>
</tr>
<tr>
<td>5.2.17 Public learning</td>
<td>This may not be scoped out where any scores have been made in this Section.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1 Baseline studies and surveys</td>
<td>9 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.2 Use of suitable professionals and standards</td>
<td>12 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.3 Consultation</td>
<td>11 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.4 Reporting baseline studies and surveys</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2.5 Integration of listed or registered heritage assets</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>5.2.6 Integration of non-registered heritage assets</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>5.2.7 Setting for listed or registered heritage assets</td>
<td></td>
<td></td>
<td>12 (up to)</td>
</tr>
<tr>
<td>5.2.8 Surveys for archaeological remains</td>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>
5.2 Mitigation strategy for archaeological investigation

5.2.1 Mitigation design for loss of heritage assets (10 (up to))

5.2.2 Mitigation of impacts on archaeological remains (12)

5.2.3 In-situ protection of heritage assets (12 (up to))

5.2.4 Monitoring mitigation works (12)

5.2.5 Use of appropriate materials (3)

5.2.6 Use of specialist skills (5)

5.2.7 Monitoring mitigation works (16 (up to))

5.2.8 Public learning (14 (up to))

Assessment criteria

5.2.1 Baseline studies and surveys (5.1.1 a)

5.2.1.1 A baseline historic environment study or survey has been carried out at the project planning stage and has considered the full range of registered and non-registered historic environment assets.

<table>
<thead>
<tr>
<th>Aspects covered by baseline studies and surveys</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Historic built heritages</td>
<td>1 for each</td>
</tr>
<tr>
<td>(ii) Historic landscape/townscape/seascape</td>
<td></td>
</tr>
<tr>
<td>(iii) Below-ground and/or underwater archaeological remains (on or off shore)</td>
<td></td>
</tr>
<tr>
<td>(iv) Non-registered or non-designated assets</td>
<td>3 for each</td>
</tr>
<tr>
<td>(v) Reference to existing characterisation studies or regional research agendas</td>
<td></td>
</tr>
</tbody>
</table>

5.2.2 Use of suitable professionals and standards (5.1.1 b)

5.2.2.1 The baseline study or survey has been prepared by a suitably qualified historic environment professional and has been prepared to a recognised standard appropriate to the scope and location of the project.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Prepared or authorised by a suitably qualified historic environment professional.</td>
<td>6</td>
</tr>
<tr>
<td>(ii) Prepared to a recognised standard appropriate to the scope and location of the project.</td>
<td>14</td>
</tr>
</tbody>
</table>

5.2.3 Consultation (5.2.2)

5.2.3.1 Consultations have been carried out with all relevant stakeholders.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultations have been conducted with all relevant stakeholders</td>
<td>5</td>
</tr>
<tr>
<td>Consultations were conducted with all relevant stakeholders prior to planning application submission or approval.</td>
<td>12</td>
</tr>
</tbody>
</table>

5.2.4 Reporting baseline studies and surveys (5.4.1 a)

5.2.4.1 The reports and archives from the baseline studies stage have been prepared and submitted before the end of construction.
5.2.5 Integration of listed or registered heritage assets (5.3.1 a)

5.2.5.1 If statutory listed or registered heritage assets have been identified within the development area, the project design has enabled their retention, restoration, and successful re-use or integration into the development.

5.2.5.2 A future management strategy has been agreed for any statutory listed or registered heritage assets that have been integrated into the development.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) The project design has enabled their retention, restoration and successful re-use or integration into the development.</td>
<td>6</td>
</tr>
<tr>
<td>(ii) A future management strategy has been agreed.</td>
<td>6</td>
</tr>
</tbody>
</table>

5.2.6 Integration of non-registered heritage assets (5.3.1 b)

5.2.6.1 The project design has enabled the retention, restoration, and successful re-use or integration of non-registered assets into the development.

5.2.7 Setting for listed or registered heritage assets (5.3.2)

5.2.7.1 The design has successfully addressed any setting issues and provided a neutral or enhanced setting for listed buildings, scheduled monuments or historic landscape areas.

<table>
<thead>
<tr>
<th>Impact on the setting of listed or registered heritage assets</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>8</td>
</tr>
<tr>
<td>Enhanced</td>
<td>12</td>
</tr>
</tbody>
</table>

5.2.8 Surveys for archaeological remains (5.3.3 a)

5.2.8.1 If the potential for significant below-ground archaeological remains has been identified, the appropriate staged surveys have been undertaken to establish the extent and condition of these prior to the design being finalised and in time to influence designs.

5.2.9 Mitigation strategy for archaeological investigation (5.3.3 b)

5.2.9.1 If the surveys identified in 5.2.8 above have revealed the presence of significant archaeological remains, a mitigation strategy document has been prepared for archaeological investigation and agreed with the relevant development control archaeologist.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td>If it contains an element of preservation in-situ of archaeological remains</td>
<td>Further 5</td>
</tr>
</tbody>
</table>

5.2.10 Mitigation design for loss of heritage assets (5.3.3 c)

5.2.10.1 If registered or non-registered historic environment assets have been demolished or removed, an appropriate mitigation design has been developed and agreed with the relevant conservation or heritage agency. (This may include proposals for relocation, restoration or replacement, or in-situ building recording.)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Building recording has taken place</td>
<td>3</td>
</tr>
<tr>
<td>(ii) Historic materials have been salvaged for re-use in another historic context</td>
<td>5</td>
</tr>
<tr>
<td>(iii) An asset has been relocated off site to an appropriate place</td>
<td>7</td>
</tr>
</tbody>
</table>
(iv) An asset has been re-sited within the site 12
If a mixture of (iv) plus (ii) or (iii). 9

5.2.11 Mitigation of impacts on archaeological remains (5.3.4 a)
5.2.11.1 The mitigation designs referred to in 5.2.9 and 5.2.10 have been implemented, managed and monitored in accordance with a SEMP or other site management framework.

5.2.12 In-situ protection of heritage assets (5.3.4 b)
5.2.12.1 Sensitive assets to be retained have been cordoned off or other protection measures have been put in place to avoid accidental damage and site staff have received appropriate instruction (such as via toolbox talks).

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective measures have been put in place</td>
<td>7</td>
</tr>
<tr>
<td>Appropriate instructions have also taken place</td>
<td>Further 5</td>
</tr>
</tbody>
</table>

5.2.13 Monitoring mitigation works (5.3.4 c)
5.2.13.1 An appropriate historic environment professional (archaeologist, conservation architect or historic buildings specialist) has been appointed to manage and monitor the mitigation works.

5.2.14 Use of appropriate materials (5.3.5 a)
5.2.14.1 If restoration or enhancement works to heritage assets have been completed, there is evidence that current best practice has been applied and historically appropriate materials used.

5.2.15 Use of specialist skills (5.3.5 b)
5.2.15.1 The project has been able to contribute to maintaining key specialist conservation skills and creating sustainable heritage employment.

5.2.16 Reporting mitigation works (5.4.1 b)
5.2.16.1 The final output from the mitigation works (such as archaeological excavation or building recording works) have been prepared and archives submitted.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>In preparation by end of construction stage</td>
<td>5</td>
</tr>
<tr>
<td>Completed by end of construction stage</td>
<td>16</td>
</tr>
</tbody>
</table>

5.2.17 Public learning (5.4.2)
5.2.17.1 There has been public opportunity provided to learn about, observe or take part in activities to understand or promote the historic environment local to the project.

<table>
<thead>
<tr>
<th>Opportunities provided for public learning</th>
<th>Score (each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information board on site only</td>
<td>2</td>
</tr>
<tr>
<td>Leaflets printed or other active publicity such as web-based information or media interest.</td>
<td>2</td>
</tr>
<tr>
<td>Educational activities carried out with the local community, or local voluntary organisations invited to participate in assessment or mitigation works.</td>
<td>4</td>
</tr>
<tr>
<td>Access to sites to view finds or other activity to participate in offsite events.</td>
<td>6</td>
</tr>
</tbody>
</table>
Guidance

5.2.1 Baseline studies and surveys

It is important that historic environment interests are identified at a pre-design stage and those significant related issues are incorporated into the design and planning of the project. Best practice (and the NPPF in England) requires that sufficient surveys (desk study and site-based investigations as appropriate) are carried out before design works are substantially complete, in order to determine the extent, nature and significance of any archaeological resource and/or historic structures, and to consider the significance of any impact. The results of these surveys should (where significant) be shown to have influenced the design as submitted for planning and have led to options for alterations at the detailed design stage to be set out.

The basic principles are as follows:

- **Initial appraisal**: Undertake sufficient preliminary desk studies to identify all significant historic environment constraints and opportunities associated with the project.

- **Assessment and reconnaissance**: Assess the likely impact of development options on identified or potential assets through for example application of reconnaissance surveys, detailed desk-based assessment, and/or historic buildings assessment. This information should be used to focus the design options early on to minimise harm to the historic environment and create opportunities for positive enhancement. Field surveys and the techniques used should be recorded.

- **Site evaluation**: Depending on the level of archaeological or historical significance identified, this stage may include site specific targeted surveys to evaluate the extent and significance of buried archaeological remains or undertake intrusive investigation on standing structures to determine suitability for conversion, alteration or protection measures.

The baseline should also identify what outline mitigation proposals should be developed and implemented, and adequate time and resources needs to have been allocated in the project design.

In the UK, further guidance on appropriate levels of investigation can be found in planning policy guidance, Highways England Design Manual for Roads and Bridges (Volumes 10 and 11), and in CIRIA's *Archaeology and Development – a good practice guide to managing risk and maximising benefit* (C672, 2008).

5.2.2 Use of suitable professionals and standards

Suitably qualified may be indicated by being a member of a professional heritage body such as the IHBC or CIfA. Additionally, it is expected that the qualified person will hold a relevant historic, conservation or archaeology degree level qualification. Note that a general environmental management qualification is not considered sufficient.

A recognised standard may be those published by the national heritage agencies or other bodies specific to the work being undertaken. CIfA have a range of standards and guidance suitable for different situations, including CIfA *Standard and Guidance for Desk-based Assessment* 2014, which can be found online - see [https://www.archaeologists.net/](https://www.archaeologists.net/).

5.2.3 Consultation

Relevant stakeholders could include:

- Local government departments of officers
- National government departments or agencies
- Local interest organisations
- National interest organisations
- Any statutory consultees (for example, in the UK, Statutory Amenity Societies)
Statutory Amenity Societies include members of the Joint Committee of the National Amenity Societies in England and Wales (the Council for British Archaeology, the Ancient Monuments Society, the Civic Trust, the Garden History Society, the Georgian Group, the Society for the Protection of Ancient Buildings, the Victorian Society, and the 20th Century Society) and the Scottish Civic Trust and Scottish Architectural Heritage Society in Scotland.

These bodies should be consulted on applications that affect listed buildings, Registered Parks and Gardens or (currently) Scheduled Monuments. The UK Government directed in the 1968 Town and Country Planning Act that all applications for consent to demolish listed buildings in whole or in part in England and Wales should be notified to a number of named societies, giving the societies the opportunity to offer comments on the proposals. The Garden History Society comments on proposals affecting Registered Parks and Gardens.

Voluntary consultation with other local and amateur organisations demonstrates a commitment to public engagement and identifying additional local knowledge, concerns and possible positive enhancements to the historic environment. Consultation should be done as early as practicable so that guidance or advice can be properly taken into account in the design. It is also likely to continue into construction on some larger schemes.

5.2.4 Reporting baseline studies and surveys

Where original baseline historic environment study or survey documents have been prepared but no work has progressed from then, the points can be scored for submitting the information gained from the studies (such as desk-based assessments) to the relevant local government historic environment record (HER).

5.2.5 Integration of listed or registered heritage assets

In the UK, listed or registered heritage assets include: Listed Buildings, Scheduled Monuments, Registered Parks and Gardens, and Registered Battlefields.

5.2.6 Integration of non-registered heritage assets

Non-registered assets may be equally significant. Retention, reuse and enhancement of non-registered assets should also be considered.

5.2.7 Setting for listed or registered heritage assets

The design must demonstrate that specific measures have been agreed with the relevant development control conservation team or national heritage body to integrate the design successfully with the existing character of the place.

5.2.8 Surveys for archaeological remains

Significant archaeological remains are those that are assessed to be of more than local importance in the evidence set out in 5.2.1 and/or those that are of exceptional importance locally and may be identified as such in local planning policy and regional and national research agendas.

The surveys may include both non-intrusive and intrusive methods as identified in CIRIA Archaeology and Development – a good practice guide to managing risk and maximising benefit (C672, 2008).

Note that implementation is covered in 5.2.11, 5.2.12 and 5.2.13.

5.2.14 Use of appropriate materials

It is acknowledged that the most appropriate material for an historic structure may not necessarily be the best material from an environmental point of view. For instance, the material may have to be transported a long distance even though a more-local, but less historically appropriate, material might be available. A balance has to be struck between historically appropriate refurbishment and environmental considerations, and the decision will depend on the emphasis given to the project by
the stakeholders and the importance of the historical feature. However, an informed decision can only be made if an assessment of this issue has been carried out by the project.

5.2.15 Use of specialist skills

It is important that where historic materials or methods are utilised the project team considers how it can ensure that the industry is able to maintain the necessary skill-sets within the industry to ensure the future maintenance of historic assets.

5.2.16 Reporting mitigation works

Final outputs may comprise historic building recording records, archaeological fieldwork reports, or laboratory-based analytical reports, texts and figures for publication.

Where post-excavation analysis or building recording reporting has been carried out, then full points can only be scored if they are completed by the time construction of the project is complete. If the post-excavation analysis or building recording reporting has commenced and is in preparation but is not complete at the end of the construction stage, then score as indicated in the scoring scale.

5.2.17 Public learning

A project may involve an extensive and visible archaeological excavation, and/or the dismantling, refurbishment or restoration of an historic feature. There is often a high level of public interest in these issues and value may be generated by the project through public access to the site or by publicity materials such as providing site visits and information boards. It may also be generated through involving amateur and local interest groups in surveys, publications, or in producing other media such as leaflets (or web-based material).

The project may also be able to contribute to local education objectives through providing site visits, talks (to schools and local groups) and materials for curriculum activities. Communication with the public may also be achieved by liaison with the media and museum exhibitions.

The possibility of allowing members of the public, via their local historical or archaeological societies, access to view the site or to contribute to desk based or field-based activities should be considered. This will help to maintain relations with the local community provide positive public relations and held historic environment objective to communicate new knowledge about the past. The access can be at a specified time outside operating hours, although a member of the site management team will have to be present. Alternatively, it can be in an area partitioned off from the rest of the site, or visits can be arranged in guided groups.

**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1 Baseline studies and surveys</td>
<td>Evidence may be in the form of stand-alone desk-based assessments and other survey reports, and/or a chapter in an Environmental Statement or other supporting documents or correspondence with local development control office for archaeology and conservation. Note that this section of CEEQUAL covers both below-ground and above-ground historic assets, so any evidence must include a summary of the baseline for all types of potential constraints and opportunities that may be significant. Typical headings may comprise archaeological remains, built heritage assets setting and townscape, historic landscape and seascape (if applicable). Evidence needs to show that a specialist has been consulted during the design option phase to ensure the proposed designs have taken account of historic environment constraints and opportunities. This could be a formal report from the specialist or notes of a meeting with them. Also note that the following are not considered appropriate evidence: a 'nil return' from a regional Historic Environment Record National Monuments Register database, and/or a generic</td>
</tr>
<tr>
<td>5.2.2 Use of suitable professionals and standards</td>
<td></td>
</tr>
</tbody>
</table>

---

© BRE GLOBAL LTD 2019 PAGE 114 OF 193
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.3 Consultation</td>
<td>Evidence may be summarised in a section of the documents reviewed at 5.2.1 or be contained in correspondence and/or meeting notes with the relevant consultees.</td>
</tr>
<tr>
<td>5.2.4 Reporting baseline studies and surveys</td>
<td>Evidence will include details of archives, desk-based studies, or reports that have been prepared and submitted. This could include submissions to the local historic environment record (HER).</td>
</tr>
<tr>
<td>5.2.5 Integration of listed or registered heritage assets</td>
<td>Evidence should show that the issues have been recognised and design solutions been found, and that specific specialist studies to address urban design and setting issues and/or historic views have been conducted if necessary. Evidence could also include agreements with the development control conservation team and or national heritage body in the form of correspondence and/or meeting notes.</td>
</tr>
<tr>
<td>5.2.6 Integration of non-registered heritage assets</td>
<td>Evidence should show that the issues have been recognised and design solutions been found, and that specific specialist studies to address urban design and setting issues and/or historic views have been conducted if necessary. Evidence could also include agreements with the development control conservation team and or national heritage agency in the form of correspondence and/or meeting notes.</td>
</tr>
<tr>
<td>5.2.7 Setting for listed and registered assets</td>
<td>Evidence should show that the issues have been recognised and design solutions been found, and that specific specialist studies to address urban design and setting issues and/or historic views have been conducted if necessary. Evidence could also include agreements with the development control conservation team and/or national heritage body in the form of correspondence and/or meeting notes.</td>
</tr>
<tr>
<td>5.2.8 Surveys for archaeological remains</td>
<td>Evidence should establish how the project has positively protected any historic environment assets, how good design has enhanced and valued the historic environment, how any innovative methods or collaborations have enabled the conservation of historic environment assets, and how any archaeological investigation or building recording have contributed to local and national research agendas. Evidence may include conservation management plans, mitigation design reports, evidence of partnership with owners and/or regulators, correspondence, meetings notes, use of research agendas and, for larger projects, preparation of specific research strategies or frameworks. Evidence for 5.2.8 must demonstrate that the staged surveys were commissioned by the Client or Designer and their reports delivered prior to the finalisation of the design.</td>
</tr>
<tr>
<td>5.2.9 Mitigation strategy for archaeological investigation</td>
<td>Evidence could be in the form of registers for site briefings and associated attendance sheets, signed site instructions, Permits to Dig with note of required archaeological or building recording works prior to demolition and completion certificates, photographic evidence or drawings showing protection measures. Evidence needs to be appropriate to the level of points being sought. Evidence should be provided that mitigation works have been managed and monitored by a qualified person.</td>
</tr>
<tr>
<td>5.2.11 Mitigation of impacts on archaeological remains</td>
<td>Evidence could be in the form of a design report or notes assessing the different material options (including those that are historically appropriate). If the use of appropriate materials were considered feasible then evidence of details being incorporated into the specifications would be appropriate. Evidence is likely to include documentation of consultation with relevant expert organisations, and/or receipts of material purchase. If the materials have actually been used, then photographs could also be used as evidence. Maintaining specific heritage conservation skills is an important aspect of restoration and enhancement works evidence could include specifications, training records, and meeting minutes.</td>
</tr>
<tr>
<td>5.2.16 Reporting mitigation works</td>
<td>Evidence will include a project design for post excavation assessment and analysis, details of proposed or completed publications (journal articles, books and monographs), details of archives prepared and</td>
</tr>
</tbody>
</table>
Evidence needs to be provided to support the level of points being scored. There should be evidence that the project design has been reviewed and accepted by the relevant heritage agency and/or funding body.

| 5.2.17 Public learning | Evidence must be provided to demonstrate the level of public access that was achieved. This could be in the form of visitors’ books, press advertisements of access and/or tour times on site, or photographs of public events or information boards provided off site. |

**Additional information**

**National heritage agencies**

In the UK, further information and advice on the historic environment is available from:

- Historic England ([https://historicengland.org.uk/](https://historicengland.org.uk/))
- Historic Environment Division, Department for Communities ([https://www.communities-ni.gov.uk/topics/historic-environment](https://www.communities-ni.gov.uk/topics/historic-environment))
- Historic Environment Scotland ([https://www.historicenvironment.scot/](https://www.historicenvironment.scot/))
Pollution

Summary

This category encourages project teams to address and minimise pollution resulting from the construction and operation of the asset. Issues in this section focus on carrying out risk assessments, developing and implementing appropriate mitigation strategies and monitoring the effectiveness of the mitigation measures.

Category summary table

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pollution</td>
</tr>
<tr>
<td>Air, noise, and light pollution</td>
</tr>
</tbody>
</table>
Water pollution

Aim

To protect the local water environment from pollution and damage arising as a result of the delivery and/or operation of an asset.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.3. Preventing pollution in operation</td>
<td>This may be scoped out if no significant or sensitive ground and surface waters or features are within or near the site and if the project has no connection to the sea.</td>
</tr>
<tr>
<td>6.1.5 Long term monitoring of impacts on the water environment</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>6.1.7 Preventing pollution during construction</td>
<td>This may be scoped out if no significant or sensitive ground and surface waters or features are within or near the site and if the project has no connection to the sea.</td>
</tr>
<tr>
<td>6.1.8 Protecting existing water features during construction</td>
<td>This may be scoped out if no significant or sensitive ground and surface waters or features are within or near the site and if the project has no connection to the sea.</td>
</tr>
<tr>
<td>6.1.9 Monitoring water quality during construction</td>
<td>This may be scoped out for marine and offshore projects or if no significant or sensitive body of ground or surface water is within or near the site.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.2 Consultation with regulatory authorities</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>6.1.3 Preventing pollution in operation</td>
<td></td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>6.1.4 Control of impacts on the water environment from the completed project</td>
<td></td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>6.1.5 Long term monitoring of impacts on the water environment</td>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>6.1.6 Control of impacts on the water environment during construction</td>
<td></td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>6.1.7 Preventing pollution during construction</td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>6.1.8 Protecting existing water features during construction</td>
<td></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>6.1.9 Monitoring water quality during construction</td>
<td></td>
<td></td>
<td>20 (up to)</td>
</tr>
</tbody>
</table>

Assessment criteria

6.1.2 Consultation with regulatory authorities (7.2.1)

6.1.2.1 Consultation has been undertaken with regulatory authorities about water issues related to the project, including the need for any consents, and the outcome has been communicated to project team members at each stage of the project.
6.1.3 Preventing pollution in operation (7.3.1)
6.1.3.1 Specific measures have been incorporated in the design to prevent pollution of groundwater, existing freshwater features or the sea (as appropriate) during operation and maintenance.

6.1.4 Control of impacts on the water environment from the completed project (7.1.1)
6.1.4.1 A plan to control the impacts of the completed project on the water environment (fresh and/or marine as appropriate) has been produced and necessary elements of the plan have been incorporated in the design.
6.1.4.2 The plan to control the impacts of the completed project on the water environment has been implemented as far as practicable up to the end of construction.

6.1.5 Long-term monitoring of impacts on the water environment (7.3.2)
6.1.5.1 Measures (or equipment) have been incorporated in the project that will allow long-term monitoring of the project’s impact on the freshwater and/or marine environments as appropriate.

6.1.6 Control of impacts on the water environment during construction (7.1.1.c)
6.1.6.1 A plan to control the impacts of the project on the water environment (fresh and/or marine as appropriate) during construction has been produced and this plan has been implemented.

6.1.7 Preventing pollution during construction (7.3.1.b)
6.1.7.1 Specific measures have been taken to prevent pollution of groundwater, existing freshwater features or the sea (as appropriate) during construction.

6.1.8 Protecting existing water features during construction (7.3.1.c)
6.1.8.1 Existing water features have been protected from degradation or physical damage by construction plant and processes.

6.1.9 Monitoring water quality during construction (7.3.5)
6.1.9.1 If the works could affect a body of ground or surface waters, the water quality of that water body has been monitored before construction and then regularly during construction in accordance with the regime identified as appropriate in the risk assessment.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring system established in accordance with the results of the risk assessment.</td>
<td>10</td>
</tr>
<tr>
<td>Monitoring shows adverse effect, but effective mitigation measures can be demonstrated.</td>
<td>13</td>
</tr>
<tr>
<td>Monitoring shows no adverse effect.</td>
<td>20</td>
</tr>
</tbody>
</table>

**Guidance**

6.1.2 Consultation with regulatory authorities
It is advisable to consult the relevant regulatory authorities on any potential impacts a civil engineering project may have on the freshwater and marine environments. Consultation will promote discussion on how the project’s environmental performance could be improved and whether discharge or other consents are required. This includes projects where effects on water are not immediately obvious as, for example, hydro-geological issues, which are not instantly visible, may apply to the site.
6.1.3 Preventing pollution in operation

For preventing pollution in operation, the actions called for include the location of storage for fuels, chemicals or other potentially-polluting substances away from sensitive areas, restriction on the use of chemical weedkillers near a watercourse or the sea, separating foul and surface water, and inclusion of interceptors and drainage channels.

6.1.4 Control of impacts on the water environment from the completed project

This requirement cannot be scoped out as it is very important that all project teams should consider the potential impacts of their project on the freshwater environment and, where appropriate, the marine environment in order to minimise potential impacts at the operational stage (i.e. through design) and at the construction stage.

The plan can be part of a PEMP, SEMP or equivalent, or can be a separate document. It should assess questions such as:

- Is the project likely to affect adversely the local surface water and groundwater including groundwater flows?
- Is the project likely to affect the fresh or marine environment including from run-off or discharges from the completed works and during construction?
- Do the above include consideration of the potential effects of climate change and the potential for more-intense rainfall events to wash pollutants into the water environment?
- Could measures be implemented to reduce the project’s impact on water quality and could these protect or enhance the water environment?

The need for abstraction, land drainage or discharge consents and/or land drainage appraisals has to be considered as part of such a plan, as well as possible designs for drainage systems. As with all plans of this type, it needs to include procedures for regular monitoring and reviewing.

Bearing in mind that a CEEQUAL Whole Project Assessment is completed at or towards the end of construction, ‘implementation’ can only be assessed at the completion of the assessment and the extent of implementation of the plan that could have been expected by that time.

6.1.5 Long-term monitoring of impacts

Examples include measuring run-off quantities, establishing adequacy of compensation water from a dam project, monitoring hydrological impacts of projects that involve changes to existing watercourses, groundwater quality monitoring, use of flow recorders or level monitors, and monitoring discharges to the sea from coastal or offshore facilities.

6.1.6 Control of impacts on the water environment during construction

See guidance for 6.1.4. For further guidance regarding construction impacts see the CIRIA publications:

- Environmental good practice on site (fourth edition) (C741, 2015)
- Control of water pollution from linear construction projects – Technical guidance (C648, 2006)
- Control of water from linear construction projects – Site guide (C649, 2006)
- Control of water pollution from construction sites – guidance for consultants and contractors, (C532, 2001).
6.1.7 Preventing pollution during construction

For preventing pollution during construction, actions could include measures to prevent leakage of pollutants into a watercourse or the sea, such as bunding, appropriate storage, spill kits, and/or emergency response plans. Other issues must also be considered, such as run-off containing high volumes of silt and poor site management. Procedures for managing these risks must also be implemented.

In relation to water features, a distinction must be made between pollution-related issues (6.1.3) and physical damage to the water feature (6.1.8).

Early consideration should be given to construction risks at the design stage to enable appropriate systems of work or appropriate site layouts to be prepared, as well as to ensure that risks identified during an earlier environmental assessment are incorporated into the construction plan.

6.1.8 Protecting existing water features during construction

Examples include protection of banks of ponds, lakes, streams, rivers, canals, the seashore or seabed against damage by construction plant or processes.

6.1.9 Monitoring water quality during construction

Visual inspection of watercourses is considered to be standard industry practice on sites with ground and surface waters or features on or near them, due to the ease with which silt, in particular, can enter and be detected. Risk assessment of the water quality impacts on the environment should be undertaken to establish appropriate level of on-site monitoring and chemical analysis. The outcome of the risk assessment may require additional monitoring and analysis above the standard industry practice.

Monitoring may be carried out in liaison with the Environment Agency, SEPA, NIEA, NRW or their equivalents elsewhere. However, it is considered good practice for Contractors to be proactive in establishing a monitoring regime – and it is in their own interest to do so.

In this section, emphasis is placed on monitoring, both short-term and long-term. Evaluation of the long-term impact of materials may be difficult if materials have been used that have not had long-term research carried out on them. For example, these may have delayed pollution characteristics, which would be costly and possibly difficult to rectify.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.2 Consultation with regulatory authorities</td>
<td>Evidence could be in the form of meeting notes or letters regarding obtaining consents or licences. At construction stage, it could be actual applications and granting of licences. Evidence also needs to be shown for appropriate communication of the outcomes of the consultations or applications. These could be circulation of design notes, team briefings or incorporation of licence and/or consent conditions into method statements.</td>
</tr>
<tr>
<td>6.1.3 Preventing pollution in operation</td>
<td>Evidence could be drafts of operation and maintenance manuals, minutes of meetings and other documentation. Evidence of positive measures should be documented at design stage.</td>
</tr>
<tr>
<td>6.1.4 Control of impacts on the water environment from the completed project</td>
<td>Evidence could include assessment of run-off, hydrological impacts, surface and groundwater quality impacts, and/or risk assessments, and subsequent incorporation into the design.</td>
</tr>
<tr>
<td>6.1.5 Long-term monitoring of impacts</td>
<td>Evidence will vary greatly depending on the type of project being assessed. Appropriateness of measures will have to be judged and...</td>
</tr>
</tbody>
</table>
agreed by the Assessor and Verifier. However, the guidance above gives examples of the sorts of measures that could be considered.

<table>
<thead>
<tr>
<th>6.1.6 Control of impacts on the water environment during construction</th>
<th>Evidence could include assessment of run-off, hydrological impacts, surface and groundwater quality impacts, and/or risk assessments, and subsequent incorporation into construction plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1.7 Preventing pollution during construction</td>
<td>Evidence during construction could be in the form of photographs and other documentation or could be gained from a site visit. To score points during construction stage, evidence must be robust to ensure that all risks to the freshwater and marine environments have been considered and mitigated. Note that company-wide key performance indicators are insufficient as evidence.</td>
</tr>
<tr>
<td>6.1.8 Protecting existing water features during construction</td>
<td>Evidence can be in the form of monitoring data and other documentation showing the methods of monitoring used.</td>
</tr>
<tr>
<td>6.1.9 Monitoring water quality during construction</td>
<td>Evidence can be in the form of monitoring data and other documentation showing the methods of monitoring used.</td>
</tr>
</tbody>
</table>
Air, noise, and light pollution

Aim
To minimise, mitigate, and manage the negative effects of air, noise, and light pollution arising as a result of the delivery and ongoing operation of the asset.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.1 Identification of potential effects on neighbours during construction</td>
<td>To scope out there must be evidence that there were genuinely no nuisance (noise, vibration, dust, odour, air quality or lighting) effects of any kind that needed consideration on the project or no neighbours, sensitive wildlife habitats (not just protected species) or public recreation areas that might be affected by the works.</td>
</tr>
<tr>
<td>6.2.2 Identification of potential effects on neighbours in operation</td>
<td></td>
</tr>
<tr>
<td>6.2.3 Mitigating effects on neighbours in operation</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project. For projects that have strict planning agreements, this can only be scoped out where evidence can demonstrate that appropriate mitigation measures have been included in the design and innovative solutions are not appropriate.</td>
</tr>
<tr>
<td>6.2.4 Innovative solutions for nuisance mitigation</td>
<td></td>
</tr>
<tr>
<td>6.2.5 Mitigating effects on neighbours during construction</td>
<td>To scope out there must be evidence that there were genuinely no nuisance (noise, vibration, dust, odour, air quality or lighting) effects of any kind that needed consideration on the project or no neighbours, sensitive wildlife habitats (not just protected species) or public recreation areas that might be affected by the works.</td>
</tr>
<tr>
<td>6.2.7 Implementation of mitigation measures during construction</td>
<td>Only scope out if 6.2.6 above shows that there are genuinely no construction related nuisance issues of any kind.</td>
</tr>
<tr>
<td>6.2.8 Innovative solutions to minimise nuisance during construction</td>
<td></td>
</tr>
<tr>
<td>6.2.9 Monitoring of effects on neighbours</td>
<td>Only scope out if 6.2.1 shows that there are genuinely no construction related nuisance issues of any kind.</td>
</tr>
<tr>
<td>6.2.10 Achievement of effective mitigation during construction</td>
<td>It is not possible to scope this out if 6.2.9 has failed to score. The decision to scope out will depend on the nature, scale, location and context of the project (for example, only very short duration projects).</td>
</tr>
<tr>
<td>6.2.11 Physical damage by vibration</td>
<td>Only scope out if there was genuinely no vibration caused by the project during construction.</td>
</tr>
<tr>
<td>6.2.12 Mitigation of operation effects</td>
<td>Scope out if 6.2.3 has been scoped out. If 6.2.3 is not scoped out, then this can only be scoped out in the unlikely event that all of the intended mitigation implementation is to be done separately after the construction stage of the project is completed.</td>
</tr>
</tbody>
</table>

Scoring

| Assessment criteria | Strategy | Design | Construction |
|---------------------|----------|--------|--------------|--------------|
6.2.1 Identification of potential effects on neighbours during construction

6.2.2 Identification of potential effects on neighbours in operation

6.2.3 Mitigating effects on neighbours in operation

6.2.4 Innovative solutions for nuisance mitigation in operation

6.2.5 Mitigating effects on neighbours during construction

6.2.6 Construction effects on neighbours

6.2.7 Implementation of mitigation measures during construction

6.2.8 Innovative solutions to minimise nuisance during construction

6.2.9 Monitoring of effects on neighbours

6.2.10 Achievement of effective mitigation during construction

6.2.11 Physical damage by vibration

6.2.12 Mitigation of operation effects

Assessment criteria

6.2.1 Identification of potential effects on neighbours during construction

6.2.1.1 Baseline studies and predictions for all potential effects on neighbours have been carried out for the project and proposals have been put forward for mitigating effects potentially occurring during construction.

6.2.2 Identification of potential effects on neighbours in operation

6.2.2.1 Baseline studies and predictions for all potential effects on neighbours have been carried out for the project and proposals have been put forward for mitigating effects potentially occurring during operation.

6.2.3 Mitigating effects on neighbours in operation

6.2.3.1 Appropriate proposals to mitigate effects on neighbours during operation have been incorporated into the design(s) (as consulted with stakeholders).

6.2.4 Innovative solutions for nuisance mitigation in operation

6.2.4.1 There are innovative technical solutions included in the design of the project that go beyond those agreed at an earlier planning permission or consenting stage that are intended to mitigate any nuisance caused by the operation of the scheme once constructed.

6.2.5 Mitigating effects on neighbours during construction

6.2.5.1 Appropriate proposals to mitigate effects on neighbours during construction have been incorporated into the design(s) or construction methodology (as consulted with stakeholders).

6.2.6 Construction effects on neighbours

6.2.6.1 A SEMP or equivalent section in a PEMP has considered the effects of the construction process on neighbours.
6.2.7 Implementation of mitigation measures during construction \(^{(3.4.2\ a)}\)
6.2.7.1 The proposals to mitigate for all potential effects on neighbours during the construction period have been implemented.

6.2.8 Innovative solutions to minimise nuisance during construction \(^{(3.4.2\ b)}\)
6.2.8.1 The Contractor has applied innovative solutions within the construction methodology designed to remove or minimise any nuisance during the construction phase.

6.2.9 Monitoring of effects on neighbours \(^{(3.4.3)}\)
6.2.9.1 All aspects that could have had potential effects on neighbours (identified in 6.2.1) were monitored at appropriate intervals throughout the construction stage.

6.2.10 Achievement of effective mitigation during construction \(^{(3.4.4)}\)
6.2.10.1 The monitoring of aspects assessed in 6.2.9 demonstrated that acceptable levels of emissions from all aspects (leading to potential effects) were achieved throughout the construction stage.

6.2.11 Physical damage by vibration \(^{(3.4.6)}\)
6.2.11.1 On completion of the contract, no physical damage has been caused to buildings and structures by vibration from construction processes.

6.2.12 Mitigation of operation effects \(^{(3.4.8)}\)
6.2.12.1 The proposals for mitigation of all potential effects for the operational stage have been implemented in full as far as can be expected at the end of construction.

**Guidance**

6.2.1 Identification of potential effect on neighbours

Although noise and vibration effects are the first to come to mind as effects on those close to new schemes, consideration must be given to all forms of potential pollution emissions and nuisance that could affect neighbours (including wildlife and certain plant life) in the proximity of the scheme during both the construction (6.2.1) and operational stages (6.2.2). Baseline studies required will be dependent upon each individual project location and operations, though these should be predictable, assessable and documented.

6.2.3 Mitigating effects on neighbours in operation

This can only be scored if a score has been achieved for 3.1.3 (because the designed mitigation should be discussed with appropriate stakeholders).
Examples of possible mitigation measures for effects on neighbours in operation include:

**Local air quality:** Appropriate measures may include low-emission boilers for water and wastewater treatment plants, fitment of covers to tanks at such works, and spray facilities at solid-waste treatment facilities.

### 6.2.4 Innovative solutions for nuisance mitigation in operation

Innovative solutions can be new or advanced methods, products or ideas. Note, however, that some measures may need regulatory approval.

### 6.2.5 Mitigating effects on neighbours during construction

This can only be scored if a score has been achieved for 3.1.3 (because the designed mitigation should be discussed with appropriate stakeholders).

Examples of possible mitigation measures during construction include:

**Noise:** Example measures could include the early development of bunds that help screen construction noise and later become part of the overall landscaping of a project, or Designer input in the phasing of the development or the timing of noisy works.

Possible measures to limit disruption include time restrictions to limit noisy operations to certain hours of the day (or to limit very noisy operations to short, intermittent spells), using mufflers or silencers on equipment, reducing drop heights into lorries or skips, or erecting noise screens around the site.

**Vibration:** For example, use of hydraulic shears instead of hydraulic impact breakers; jacking of steel sheet piles instead of hammer-driven piling; use of chemical splitters or falling weight breakers instead of pneumatic breakers and drills.

**Emissions (including dust and odour):** Example measures include damping down haul roads and siting of dust-producing operations away from neighbours, or appropriate selection of construction plant and its regular maintenance to ensure emissions are kept within strict limits.

**Light:** All lighting for the final project, as well as all compound and site lighting, should be designed to prevent spillage of light into neighbouring buildings or areas. Construction lighting is often extremely powerful to allow work to continue safely outside daylight hours. Apart from causing considerable nuisance and disrupting the sleep of site neighbours, it can also cause disruption to wildlife.

### 6.2.6 Construction effects on neighbours

Credits can only be scored for ii) and iii) if the plan is comprehensive. Included in this plan or section of a plan should be:

- guidance or method statements on how to avoid unnecessary noise and ground-borne noise;
- measures to reduce disruption caused by site traffic;
- measures to minimise dust and odour emissions; and
- measures to avoid light pollution.

Note that the plan needs to cover all four issues to score these credits.

Some examples of such measures are listed in the relevant sub-sections in this chapter. For further guidance see CIRIA *Environmental good practice on site guide (fourth edition)* (C741, 2015).

Corrective actions are steps that are taken to eliminate the causes of existing nonconformities in order to prevent recurrence. The corrective action process tries to make sure that existing nonconformities and potentially undesirable situations don’t happen again.

### 6.2.7 Implementation of mitigation measures

No specific guidance provided.
6.2.8 Innovative solutions to minimise nuisance during construction

Examples of innovative solutions provided by submitted CEEQUAL assessments for 6.2.8 include: Hydrogen fuel cell lighting rigs, high strength polystyrene blocks to reduce noise from falling demolition, sound jackets on jack hammers, king sheet piles, electronic ticketing systems for vehicle deliveries, Building Information Modelling (BIM) for concrete supply calculations, geotextiles/soil stabilisation for access roads & crane hardstanding, foldable and moveable noise barriers, water and mist diffuser, ‘Right of Way’ for local residents affected by site location, and sound-silencer for cutting stone.

6.2.9 Monitoring of effects on neighbours

It is acknowledged that it is very easy to accidentally exceed emission restrictions for short periods. What is assessed here is whether monitoring has taken place and has effectively assisted in alerting site staff to breaches in limits so that appropriate control measures could be taken.

6.2.10 Achievement of effective mitigation during construction

No specific guidance provided.

6.2.11 Physical damage by vibration

This question focuses on vibration, rather than on physical damage that may have other causes (such as trucks damaging verges). It is one of CEEQUAL’s questions that cannot be proved by positive evidence – hence the requirement for a signed statement from the Project Director.

6.2.12 Mitigation of operation effects

The proposals being assessed for implementation in this question are the proposals assessed in 6.2.3.

Note that ‘implemented’ must be assessed appropriately up to the point of the assessment being done. If all mitigation measures are included in the scope of the project being assessed, then points can be scored only if they have been implemented in full. However, if the measures need to be implemented during the early stages of operation after the completion of the construction stage, then the assessments must be against what can reasonably be achieved by the end of construction, not against a prediction of what is anticipated to be implemented in the long term.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.1 Identification of potential effects on neighbours during construction</td>
<td>Evidence could be a written report on the results of the baseline studies appropriate to the scale of the project. Evidence may also be found in the ES if one was completed.</td>
</tr>
<tr>
<td>6.2.2 Identification of potential effects on neighbours during operation</td>
<td></td>
</tr>
<tr>
<td>6.2.3 Mitigating effects on neighbours in operation</td>
<td>Evidence would include two-way correspondence with relevant stakeholders with regard to predicted impacts and proposed mitigation measures, particularly including the local authority on noise and air quality related matters.</td>
</tr>
<tr>
<td>6.2.4 Innovative solutions for nuisance mitigation</td>
<td>Evidence needs to be provided to show design changes made subsequent to planning approval that were not also planning conditions. Further Contractor evidence may be in the form of As Built Drawings. The ability of these changes to mitigate nuisance needs to be mutually agreed between Assessor and Verifier.</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>6.2.5 Mitigating effects on neighbours during construction</td>
<td>Evidence would include two-way correspondence with relevant stakeholders with regard to predicted impacts and proposed mitigation measures, particularly including the local authority on noise and air quality related matters and Section 61 (or Northern Ireland equivalent) consent (if granted).</td>
</tr>
<tr>
<td>6.2.6 Construction effects on neighbours</td>
<td>Evidence can be in the form of a SEMP or appropriate section of a PEMP supported by consultation documents such as letters or emails, project newsletters and public event notices.</td>
</tr>
<tr>
<td>6.2.7 Implementation of mitigation measures</td>
<td>Evidence can be included in the relevant sections of the SEMP or in drawings and specifications, minutes of site meetings or photographic evidence for physical measures.</td>
</tr>
<tr>
<td>6.2.8 Innovative solutions to minimise nuisance during construction</td>
<td>Evidence would include Pollution Prevention and Control plans and Action Plans to prevent excessive emissions. These should include appropriate emission monitoring records and methods statements if these were considered needed. Any monitoring of noise should be appropriate to the frequencies likely to be encountered.</td>
</tr>
<tr>
<td>6.2.9 Monitoring of effects on neighbours</td>
<td>Evidence would need to show that any exceedances have been acted upon promptly and effectively. Such evidence may be found within a complaints procedure and associated remediation action plans and/or follow-up procedures and records. For full marks, a full set of monitoring data for the full length of the construction works must be provided. This must demonstrate that there were no exceedances, or that any exceedances due to unpredictable circumstances were managed, remedied within an acceptable timeframe with “lessons learned”, and communicated.</td>
</tr>
<tr>
<td>6.2.10 Achievement of effective mitigation during construction</td>
<td>Evidence needs to show that all proposals for mitigation have been implemented or installed during construction. This could be in the form of construction records or a written report by the Designer or equivalent person closely involved in the development of the mitigation proposals. If it is not possible to show full implementation at the end of construction then the evidence should demonstrate that the implementation is ‘on track’ for achieving the aimed-for final condition.</td>
</tr>
<tr>
<td>6.2.11 Physical damage by vibration</td>
<td>Evidence could be a signed statement from the Project Director that the project caused no vibration damage during construction.</td>
</tr>
<tr>
<td>6.2.12 Mitigation of operation effects</td>
<td>Evidence needs to show that all proposals for mitigation have been implemented or installed during construction. This could be in the form of construction records or a written report by the Designer or equivalent person closely involved in the development of the mitigation proposals. If it is not possible to show full implementation at the end of construction then the evidence should demonstrate that the implementation is ‘on track’ for achieving the aimed-for final condition.</td>
</tr>
</tbody>
</table>
Resources

Summary

The Resources category considers the prudent and responsible use of all physical resources including materials, energy and water. To reduce whole life impacts from resource use the category requires users to consider the environmental impacts of design, construction and operations for the life of an asset. The category encourages users to evaluate resource use within the context of a circular economy and reduce waste in accordance with the waste hierarchy.

Category summary table

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy for resource efficiency</td>
</tr>
<tr>
<td>Reducing whole life carbon emissions</td>
</tr>
<tr>
<td>Environmental impact of construction products</td>
</tr>
<tr>
<td>Circular use of construction products</td>
</tr>
<tr>
<td>Responsible sourcing of construction products</td>
</tr>
<tr>
<td>Construction waste management</td>
</tr>
<tr>
<td>Energy use</td>
</tr>
<tr>
<td>Water use</td>
</tr>
</tbody>
</table>
Strategy for resource efficiency

Aim
To embed consideration of the efficient use of energy, water, and materials throughout the project’s planning, design, and delivery.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1.3 Policies &amp; Targets for Resource Efficiency</td>
<td>This can only be scoped out on projects that can demonstrate operation of the works is not relevant, such as land remediation works or flood defence banks.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1.1 Project resource strategy</td>
<td>10 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1.2 Supporting resource efficiency objectives in contracts</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>7.1.3 Policies and targets for resource efficiency in operation</td>
<td>5 (up to)</td>
<td>5 (up to)</td>
<td></td>
</tr>
<tr>
<td>7.1.4 Policies and targets for resource efficiency during construction</td>
<td></td>
<td>5 (up to)</td>
<td>5 (up to)</td>
</tr>
<tr>
<td>7.1.5 Implementing policies and targets for resource efficiency</td>
<td></td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>7.1.6 Implementing the project resource strategy</td>
<td></td>
<td>10 (up to)</td>
<td></td>
</tr>
<tr>
<td>7.1.7 Material resource efficiency plan</td>
<td></td>
<td>10 (up to)</td>
<td></td>
</tr>
<tr>
<td>7.1.8 Construction resource strategy</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>7.1.9 Implementing the construction resource strategy</td>
<td></td>
<td></td>
<td>12 (up to)</td>
</tr>
<tr>
<td>7.1.10 Implementing the material resource efficiency plan</td>
<td></td>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

Assessment criteria

7.1.1 Project resources strategy *(1.1.6 a)*

7.1.1.1 The Client and/or the Designers have prepared a project resources strategy in line with the guidance and covering the aspects below.

<table>
<thead>
<tr>
<th>Aspect covered</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Energy</td>
<td>2 for each</td>
</tr>
<tr>
<td>(ii) Water</td>
<td></td>
</tr>
<tr>
<td>(iii) Materials sourcing</td>
<td></td>
</tr>
<tr>
<td>(iv) Reuse &amp; recycling</td>
<td></td>
</tr>
<tr>
<td>(v) Wastes management</td>
<td></td>
</tr>
</tbody>
</table>
7.1.2 Supporting resource efficiency objectives in contracts

7.1.2.1 Resource efficiency objectives and (where appropriate) benchmarks and/or targets have been included within relevant contract documentation.

7.1.3 Policies and targets for resource efficiency in operation

7.1.3.1 All those directly engaged in the project have formal corporate-level policies and targets for ensuring physical resources can be used in the most efficient way in the operation of the works.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using materials more efficiently</td>
<td>1 for each (at each stage)</td>
</tr>
<tr>
<td>Reducing waste</td>
<td></td>
</tr>
<tr>
<td>Using water more efficiently</td>
<td></td>
</tr>
<tr>
<td>Using energy efficiently</td>
<td></td>
</tr>
<tr>
<td>Reducing carbon emissions.</td>
<td></td>
</tr>
</tbody>
</table>

7.1.4 Policies and targets for resource efficiency during construction

7.1.4.1 All those directly engaged in the project have formal corporate-level policies and targets for ensuring physical resources are used in the most efficient way in the design and construction process.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using materials more efficiently</td>
<td>1 for each (at each stage)</td>
</tr>
<tr>
<td>Reducing waste</td>
<td></td>
</tr>
<tr>
<td>Using water more efficiently</td>
<td></td>
</tr>
<tr>
<td>Using energy efficiently</td>
<td></td>
</tr>
<tr>
<td>Reducing carbon emissions.</td>
<td></td>
</tr>
</tbody>
</table>

7.1.5 Implementing policies and targets for resource efficiency

7.1.5.1 The policies and targets described in 7.1.3 and 7.1.4 have been implemented and monitored on the project.

7.1.6 Implementing the project resources strategy

7.1.6.1 The resources strategy for the project (7.1.1) has been implemented in and significantly influenced the design and covers the aspects below.

<table>
<thead>
<tr>
<th>Aspect implemented</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Energy</td>
<td>2 for each</td>
</tr>
<tr>
<td>(ii) Water</td>
<td></td>
</tr>
<tr>
<td>(iii) Materials sourcing</td>
<td></td>
</tr>
<tr>
<td>(iv) Reuse &amp; recycling</td>
<td></td>
</tr>
<tr>
<td>(v) Wastes management</td>
<td></td>
</tr>
</tbody>
</table>

7.1.7 Material resource efficiency plan

7.1.7.1 A plan that identifies opportunities for improving material resource efficiency and reducing waste using the five key principles has been prepared.
<table>
<thead>
<tr>
<th>Key principle</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reuse and recovery</td>
<td>2 for each</td>
</tr>
<tr>
<td>Off-site construction</td>
<td></td>
</tr>
<tr>
<td>Materials optimisation</td>
<td></td>
</tr>
<tr>
<td>Waste efficient procurement</td>
<td></td>
</tr>
<tr>
<td>Deconstruction and flexibility</td>
<td></td>
</tr>
</tbody>
</table>

7.1.8 Construction resources strategy (1.2.2 a)

7.1.8.1 The construction team has developed their own resources strategy for the construction stage of the project or reviewed and refined the strategy developed by the Client and Designers. The strategy covers the following:

- the key materials and components to be incorporated in the project
- the remote impacts of winning those materials from the planet
- the sourcing of energy supplies for the construction stage
- the use and management of other resources

7.1.9 Implementing the construction resources strategy (1.2.2 b)

7.1.9.1 The actions (by number) identified in the construction stage resources strategy (7.1.8) have been implemented.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or more</td>
<td>3</td>
</tr>
<tr>
<td>50% or more</td>
<td>6</td>
</tr>
<tr>
<td>75% or more</td>
<td>9</td>
</tr>
<tr>
<td>90% or more</td>
<td>12</td>
</tr>
</tbody>
</table>

7.1.10 Implementing the material resource efficiency plan (8.3.2)

7.1.10.1 The material resource efficiency plan (7.1.7) has been implemented and monitored.

Guidance

7.1.1 Project resources strategy

A ‘Project Resources Strategy’ is important to enable delivery of the performance-orientated questions. The materials element of such a strategy would be expected to be based on a life-cycle analysis and the cradle-to-cradle principle but does not have to be generated that way. It would be expected to cover but not be limited to:

- the key materials and components to be incorporated in the project (by volume, value and/or propensity to be wasted);
- the remote impacts of extracting those materials from the planet and then processing them for use or into components;
- opportunities to improve the resource efficiency of the project;
- the sourcing of energy supplies for operation of the works if relevant;
- the use and management of other resources to be used for operation of the completed works; and
- sustainability considerations at the end of the useful life – for example design for re-use and recycling at end of life.
Examples of the remote impacts could be from mining of bulk materials or ores. Examples of the resources used in operation of the completed works could include process chemicals in water and wastewater treatment plants, salt and other chemicals for road or airport de-icing; and feedstock fuels for power stations.

The EU Resource Efficiency Roadmap is part of the Resource Efficiency Flagship of the Europe 2020 Strategy. The Europe 2020 Strategy is the European Union's growth strategy for the present decade and is aimed at establishing a smart, sustainable and inclusive economy with high levels of employment, productivity and social cohesion. The Roadmap can be helpful in developing the materials elements of a resource strategy - see http://ec.europa.eu/environment/resource_efficiency/index_en.htm.

Such a strategy is only of value if it is actively implemented in the design and construction so 7.1.6 seeks evidence that that the strategy has been implemented at the design stage, while 7.1.2 seeks evidence that the requirements of the strategy at have been cascaded into the contract documentation for implementation during the construction stage.

7.1.3, 7.1.4, 7.1.5 Policies and targets for resource efficiency

This question focuses on integrating material, waste and water-specific objectives throughout the project cycle to demonstrate that good practice has been adopted from the earliest possible stage.

All organisations directly appointed to the project should have corporate environmental policies that set out at a high level their commitments to managing the environmental impacts of their operations and activities. However, for the purpose of this requirement an environmental policy is not considered sufficient in isolation. To score, organisations should be able to demonstrate that they have adopted specific policies, which have then been translated into specific actions and targets on the project.

Key issues for Clients to consider include setting corporate objectives and targets for material use, waste and water use in their operations and, ensuring these are transferred to the project team in project procurement (appointing Designers and Contractors, tender and contract documentation) and engaging with the supply chain.

For Designers, this means demonstrating that they are actively working with Clients and Contractors to identify opportunities and create design solutions that minimise waste and use materials, energy and water more efficiently, both in operation of the completed project and in the construction process.

Similarly, Contractors need to demonstrate that corporate policies are being implemented within the project, including setting requirements for and engaging with their sub-contractors and suppliers. In common with Clients, Contractors would be expected to have in place measurement, monitoring and reporting procedures to capture achievements.

For all organisations, corporate reporting is also an important aspect to demonstrate that the improvements as a result of policies and commitments are being measured and monitored. For Designers, this means measuring the potential improvement at project level and reporting this at a corporate level to demonstrate how proactively they consider the issues in their work.

There is increasing focus on the broader impacts of resources and the need to move to a more circular economy where waste is designed out and there is a stronger emphasis on the life cycle value of the product or asset. Organisations in the construction industry are increasingly demonstrating their commitment to a more resource efficient industry.

The Built Environment Commitment (http://www.greenconstructionboard.org/index.php/built-environment-commitment) provides an easy and practical framework for action by businesses and sector bodies throughout all parts of the built environment to lower carbon and improve resource efficiency in their everyday activities.

The Commitment is led by a simple statement of intent to which all Signatories sign up to and publicly support:
“We commit to take action that contributes to a lower carbon, resource efficient built environment.”

Signatories then individually establish what they specifically want to achieve in support of the statement of intent, and how they want to get there – they therefore each take an individual journey in lowering carbon and improving resource efficiency. This enables each Signatory to reflect on, for example, their current performance, corporate priorities, and aspects they can influence and take action on.

### 7.1.7 Material resource efficiency plan

This question embodies the five key principles that can be adopted to improve material resource efficiency and reduce waste through design. The principles should be applied as early as possible in the design life cycle to give the maximum scope for achieving efficiencies. They also need to be applied throughout the project life cycle to ensure that the potential improvements identified are achieved during construction. Therefore, the maximum score for this question can only be achieved when the incorporation of all five principles are clearly demonstrated. It is acknowledged that not all of these principles are applicable to all projects, for example, where off-site construction is just not possible. However, a score can still be achieved where it is shown that the principle has been considered even if it was then discounted.

**Metric guidance**

Material resource efficiency plans may include targets that have been set for each of the five key principles. The following metrics are examples that could be used. Others may be used if they are felt to be more suitable:

**Design targets for reuse and recovery**, reported through metrics such as:

\[
\text{Percentage by volume of predicted suitable/usable material from demolition or deconstruction that should be incorporated into the project, using a formula such as:}
\]

\[
\frac{\text{Expected total volume of usable materials from demolition or deconstruction used}}{\text{Total volume of all materials in permanent works}} \times 100
\]

**Design targets for off-site construction**, reported through a metric such as:

\[
\text{Percentage by volume of components constructed off-site (components capable of being constructed off-site), using a formula such as:}
\]

\[
\frac{\text{Expected total volume of components constructed offsite}}{\text{Total volume of all components cabable of being constructed off – site}} \times 100
\]

**Design targets for materials optimisation**, reported through a metric such as:

\[
\text{Predicted wastage rate per £100k project construction value, using a formula such as:}
\]

\[
\frac{\text{Total quantity (tonnes or kg) of materials unused or identified as waste}}{\text{Total project construction value £}}
\]

### 7.1.8 Construction resources strategy

This question is seeking for the Contractor to have a strategy in place, including for their supply chain.
Guidance on improving the resource efficiency of construction and on using procurement to set requirements for Constructor is available from CIRIA.

The CIRIA guidance sets the requirement for the supply chain to set corporate level commitments to improving resource efficiency. This commitment is then embedded into contract or sub-contract documentation and construction processes in line with the sustainability-driven strategy for the project. All actions, targets or benchmarks, and actual performance should be captured within a RMP and Record (or similar) for the project.

Other approaches to meeting these requirements would include the use of specific resource efficiency metrics (such as materials use, wastage or embodied carbon) together with an action plan that sets out clear responsibilities for specific parties in improving resource efficiency. There should be a contractual requirement to develop and/or implement such an action plan.

Finally, it should be noted that, since sustainability is about balancing the environmental, social and economic aspects of a project, this means that the best (sustainability-driven) option for a project does not necessarily mean it will be the best environmental option.

### 7.1.10 Implementing the material efficiency plan

Implementation needs to demonstrate that practices have been implemented that clearly demonstrate material resource efficiencies and/or waste reductions.

**Metric guidance**

Implementation of the resource efficiency plan may be reported by providing evidence of measuring and monitoring against the targets set in 7.1.7, by calculation of:

Percentage by volume of suitable/usable material from demolition or de-construction on site that has been incorporated into the project, using a formula such as:

\[
\frac{\text{Total volume of usable materials from onsite demolition or deconstruction used}}{\text{Total volume of all materials in permanent works}} \times 100
\]

Percentage by volume of excavated material that has been beneficially reused on site, using a formula such as:

\[
\frac{\text{Total volume of excavated material beneficially reused on site}}{\text{Volume of all materials incorporated in permanent works}} \times 100
\]

Achieved for off-site construction:

Percentage by volume of components actually constructed off-site, using a formula such as:

\[
\frac{\text{Total volume of material constructed off site}}{\text{Total volume of all materials incorporated in permanent works}} \times 100
\]

Achieved material optimisation:

Wastage rate per £100k project construction value, using a formula such as:

\[
\frac{\text{Total volume of materials unused or identified as waste}}{\text{Total volume project construction value £}} \times 100,000
\]

Percentage reduction of total material consumed, per £100k project construction value, based on a measure of:

\[
\frac{\text{Total volume of materials consumed (tonnes or kg)}}{\text{Total project project construction value £}} \times 100,000
\]
The total volume of materials should be a sum of all materials ordered and delivered to site or derived from site, for use or to aid the construction of the finished works.

**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>7.1.1 Project resources strategy</strong></td>
<td>Evidence could be a document entitled ‘Project Resources Strategy’ with the attributes indicated in the guidance, or could be a series of less-broad analyses that, taken together, provide the high-level, strategic overview that can provide significant input to the project concept and design. The evidence must be in scale to the nature, location, context and size of the project. A two-page summary report would be insufficient for a multi-million pound project, yet a 100-page detailed analysis is very unlikely to be appropriate for projects in the region of £1M.</td>
</tr>
<tr>
<td><strong>7.1.3, 7.1.4, 7.1.5 Policies &amp; targets for resource efficiency</strong></td>
<td>Evidence could be a copy of specific, formally adopted policies and targets. For 7.1.5 evidence could include action plans that demonstrate implementation of the policies or copies of annual reports (such as an Environmental or Corporate Social Responsibility (CSR) report) demonstrating the measurement of performance against targets. Evidence could also outline the policies and targets that have been set and any monitoring metrics or measures set to be used throughout the project to monitor their achievement. Additional evidence would be copies of the procurement documentation and contracts showing these requirements have been cascaded throughout the supply chain and adopted in the project. Evidence of having signed up to the Halving Waste to Landfill Commitment (or any other voluntary agreement that might arise, including an Action Plan and evidence of annual reporting to WRAP would also be appropriate.</td>
</tr>
<tr>
<td><strong>7.1.7 Material resource efficiency – planning</strong></td>
<td>Evidence could be a specific materials plan or a specific consideration recorded within design meeting records. It could also include the reports from a Designing out Waste workshop. Implementation of the recommendations could be demonstrated by incorporation into specifications and drawings, or through physical evidence such as photographs. Evidence could also include data quantifying material savings or waste reductions, which could include decisions and information recorded in the SWMP. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td><strong>7.1.8, 7.1.9 Construction resources strategy</strong></td>
<td>Evidence will be in the reports of the assessments and in the CMP or equivalent. Evidence should involve demonstration of how the Client’s commitment and resources strategy (assessed under 7.1.1 has been addressed in the planning and preparation for the construction stage – for example, evidence of a RMP, a resources section of a Construction Management Plan, or similar. Such documents should be detailing both predicted and actual performance against benchmarks for metrics such as energy consumption, water use, materials consumption, and waste minimisation. Simply specifying that a practitioner is committed but without any further evidence is insufficient for achieving the credits.</td>
</tr>
<tr>
<td><strong>7.1.10 Material resource efficiency – implementation</strong></td>
<td>Implementation of the plan could be demonstrated by incorporation into specifications, drawings and materials orders, or through construction records and physical evidence such as photographs. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
</tbody>
</table>
Reducing whole life carbon emissions

Aim
To drive the assessment, reporting, and reduction of whole-life carbon emissions throughout the project’s planning, design, delivery and future management.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2.1 Whole life carbon emissions</td>
<td>The decision on whether to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>X.X.X Whole life carbon emissions</td>
<td>36 (up to)</td>
<td>36 (up to)</td>
<td>36 (up to)</td>
</tr>
</tbody>
</table>

Assessment criteria

7.2.1 Whole life carbon emissions (New)

7.2.1.1 The Client, design team, and principal contractor have adopted an approach in line with PAS 2080 for quantifying and reducing whole-life carbon emissions during the planning, design, and construction of the project. The approach covers:

   a. Quantification of carbon emissions
   b. Setting of baselines and targets
   c. Monitoring and reporting

7.2.1.2 The approach has been either self-assessed or independently assured and verified to PAS 2080.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-assessed to PAS 2080</td>
<td>17</td>
</tr>
<tr>
<td>Assessed and verified by an independent third-party to PAS 2080</td>
<td>36</td>
</tr>
</tbody>
</table>

Guidance

7.2.1 Whole life carbon emissions

The Infrastructure Carbon Review showed that infrastructure is associated with over half of UK Greenhouse Gas (GHG) emissions:

   • 30% of which are directly attributed to the construction, operation and maintenance of infrastructure assets (emissions that infrastructure directly controls); and
   • 70% of which are attributed to the users of infrastructure (emissions over which infrastructure has influence)

In response to these significant impacts industry guidance was commissioned by the Green Construction Board (GCB). Its development was facilitated by BSI Standards Limited.

PAS 2080 is applicable to anyone involved in the delivery of infrastructure, including asset owners/managers, designers, constructors and product/material suppliers.
Complying with the requirements of PAS 2080 will help all value chain members understand and manage carbon associated with the development of infrastructure from its inception to the end of its life and is equally applicable to individual assets or to programmes.

Further details of this guidance can be found at: https://shop.bsigroup.com/ProductDetail/?pid=000000000030323493

### Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
</table>
| 7.2.1 Whole life carbon emissions | Evidence can be in the form of a report. The report should detail the carbon management process for the project based on the following components:  
- setting appropriate carbon reduction targets;  
- determining baselines against which to assess carbon reduction performance;  
- establishing metrics (e.g. Key Performance Indicators) for credible carbon emissions quantification and reporting;  
- selecting carbon emissions quantification methodologies (to include defining boundaries and cut off rules);  
- reporting at appropriate stages in the infrastructure work stages to enable visibility of performance; and  
- continual improvement of carbon management and performance. |

As PAS2080 is a comparatively new voluntary standard where third party assurance and verification is being followed, the third party should clearly demonstrate relevant expertise in carbon management experience on infrastructure projects and to be able confirm there are no conflicts of interest with the design and implementation of the project.
Environmental impact of construction products

Aim
To reduce the burden on the environment from construction products through the use of Life-cycle Assessment and the adoption of best practice in selection of products with a low environmental impact (including embodied carbon) over the life cycle of the asset.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.3.3 Avoiding Hazardous Substances: Hazardous Materials</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>7.3.4 Avoiding Hazardous Substances: Low-VOC and/or Biodegradable Coatings</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>7.3.5 Avoiding Hazardous Substances: Application of Coatings</td>
<td>Scope out if no coatings or treatments used, or if factory application is impossible or impractical – for example if coatings to in-situ concrete are the only coatings used.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.3.1 Life cycle assessment</td>
<td>100 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.3.2 Environmental Product Declarations</td>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>7.3.3 Avoiding Hazardous Substances: Hazardous Materials</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>7.3.4 Avoiding Hazardous Substances: Low-VOC and/or Biodegradable Coatings</td>
<td></td>
<td>6 (up to)</td>
<td>6 (up to)</td>
</tr>
<tr>
<td>7.3.5 Avoiding Hazardous Substances: Application of Coatings</td>
<td></td>
<td></td>
<td>11</td>
</tr>
</tbody>
</table>

Assessment criteria

7.3.1 Life cycle assessment *(8.2.1, 8.2.2 – updated)*

7.3.1.1 A life cycle assessment (LCA) has been undertaken and used to reduce the environmental impact of the project.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening carbon footprint</td>
<td>25</td>
</tr>
<tr>
<td>Screening life cycle assessment</td>
<td>50</td>
</tr>
<tr>
<td>Product life cycle assessments</td>
<td>15</td>
</tr>
<tr>
<td>Complete carbon footprint</td>
<td>50</td>
</tr>
<tr>
<td>Simplified life cycle assessment</td>
<td>75</td>
</tr>
<tr>
<td>Complete life cycle assessment</td>
<td>100</td>
</tr>
</tbody>
</table>
7.3.2 Environmental Product Declarations (EPDs) *(New)*

7.3.2.1 The suitably qualified carbon or LCA practitioner identifies ten key products within the assessed asset. Five of these products are specified within the final asset based on the analysis of product specific, independently verified, third party Environmental Product Declarations.

7.3.2.2 The EPDs must inform specification recommendations made by the suitably qualified carbon or LCA practitioner and the EPDs relating to the products used in the final asset must be requested and documented.

7.3.3 Avoiding hazardous substances: Hazardous materials *(8.8.1)*

7.3.3.1 An assessment has been made at the design stage to substitute hazardous materials with less hazardous materials wherever possible.

7.3.4 Avoiding hazardous substances: Low-VOC and/or biodegradable coatings *(8.8.3)*

7.3.4.1 A percentage of all coatings and other treatments (for temporary and permanent works) have been specified as low-VOC and/or biodegradable and subsequently used as specified.

(i) Specified:

<table>
<thead>
<tr>
<th>Percentage specified</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% or more</td>
<td>2</td>
</tr>
<tr>
<td>40% or more</td>
<td>4</td>
</tr>
<tr>
<td>80% or more</td>
<td>6</td>
</tr>
</tbody>
</table>

(ii) Used:

<table>
<thead>
<tr>
<th>Percentage used</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% or more</td>
<td>2</td>
</tr>
<tr>
<td>40% or more</td>
<td>4</td>
</tr>
<tr>
<td>80% or more</td>
<td>6</td>
</tr>
</tbody>
</table>

7.3.5 Avoiding Hazardous Substances: Application of coatings *(8.8.2)*

7.3.5.1 All appropriate coatings and treatments for permanent work materials have been factory-applied (except for cut ends).

**Guidance**

7.3.1 Life-cycle assessment

**Screening carbon footprint**

1. A screening carbon footprint is completed before finalising the concept design by a suitably experienced carbon practitioner to establish the total carbon equivalent impact associated with the asset over its complete life cycle (modules A-C).
2. The screening identifies the significant sources of emissions over the expected lifetime of the asset.
3. Total carbon emissions or Global Warming Potential (kgCO2e) are reported.
4. Recommendations are made to the project team to inform future design decisions and include the goal and scope of any further assessment.
5. The suitably experienced carbon practitioner uses appropriate standards and sources of data and documents the assessment process with all decisions justified.
6. Total carbon equivalent emissions of the asset are reported within the CEEQUAL online tool.
Screening life cycle assessment

1. A screening LCA is completed before finalising the concept design by a suitably experienced LCA practitioner to establish the environmental impact associated with the asset over its complete life cycle (modules A-C) in line with the principles set out in EN 15978 and the EeB Guidance document.
2. The screening identifies significant sources of the following indicators over the expected lifetime of the asset:
   a. Total carbon equivalent emissions or Global Warming Potential (kgCO₂e)
   b. Net use of freshwater (m³)
   c. Hazardous waste disposed (kg)
   d. Non-hazardous waste disposed (kg)
3. Recommendations are made to the project team to inform future design decisions and include the goal and scope of any further assessment.
4. The suitably experienced LCA practitioner sources data in line with the principles set out in EN 15978 and the EeB Guide and documents the assessment process with all decisions justified.
5. The results of the screening LCA are reported in the CEEQUAL online tool for the four indicators listed above.

Product life cycle assessments

1. A suitably experienced carbon, or life cycle assessment (LCA), practitioner carries out product life cycle assessments for ten key products within the assessed asset using existing product specific Environmental Product Declarations (EPDs) or generic LCA data.
2. The suitably experienced practitioner considers a minimum of three functionally appropriate options for each key product and makes recommendations to the project team to reduce the environmental impact of each product. As a minimum, total carbon equivalent emissions should be considered over the expected lifetime over the asset.
3. The project team demonstrate how the recommendations have been taken forward for the fully constructed asset and report the LCA data for each product in the CEEQUAL online tool.

Complete carbon footprint

1. A complete carbon footprint is undertaken to establish the carbon footprint associated with all life cycle stages of the asset.
2. Total carbon emissions or Global Warming Potential (kgCO₂e) is evaluated and reported in line with the principles set out in EN 15978 and the EeB Guidance document for modules A-C and D (where appropriate):
3. The suitably experienced carbon practitioner considers a range of functionally appropriate options and identifies impacts over the expected lifetime of the asset. Recommendations are provided to minimise the carbon footprint, prioritising those that result in the biggest reduction in impact.
4. The project team demonstrate how the recommendations resulted in changes in the design and an overall reduction in impact.
5. Total carbon emissions or Global Warming Potential (kgCO₂e) is reported in the CEEQUAL online tool, including the total carbon equivalent reported in reference to the asset's capacity.

Simplified life cycle assessment

1. A simplified LCA is undertaken to establish the environmental impact associated with all life cycle stages of the asset.
2. The following indicators are evaluated and reported in line with the principles set out in EN 15978 and the EeB Guidance document for modules A-C and D (where appropriate):
   - Total carbon equivalent or Global Warming Potential
   - Net use of freshwater
   - Hazardous waste disposed
   - Non-hazardous waste disposed.
3. The suitably experienced LCA practitioner considers a range of functionally appropriate options and identifies impacts over the expected lifetime of the asset. Recommendations are provided to minimise the environmental impact, prioritising those that result in the biggest reduction in impact.

4. The project team demonstrate how the recommendations resulted in changes in the design and an overall reduction in impact.

5. All LCA indicators investigated are reported in the CEEQUAL online tool, including the total carbon equivalent reported in reference to the asset's capacity.

**Complete life cycle assessment**

1. A complete LCA is undertaken to establish the environmental impact associated with all life cycle stages of the asset.

2. The following indicators are evaluated and reported in line with the principles set out in EN 15978 and the EeB Guidance document for modules A-C and D (where appropriate):

   - Total carbon equivalent or Global Warming Potential
   - Net use of freshwater
   - Hazardous waste disposed
   - Non-hazardous waste disposed.
   - Radioactive waste disposed
   - Ozone Depletion Potential
   - Acidification Potential for Soil and Water
   - Eutrophication Potential
   - Photochemical Ozone Creation
   - Abiotic Depletion Potential – Elements
   - Abiotic Depletion Potential – Fossil Fuels'

3. The suitably experienced LCA practitioner considers a range of functionally appropriate options and identifies impacts over the expected lifetime of the asset. Recommendations are provided to minimise the environmental impact, prioritising those that result in the biggest reduction in impact.

4. The project team demonstrate how the recommendations resulted in changes in the design and an overall reduction in impact.

5. All LCA indicators investigated are reported in the CEEQUAL online tool, including the total carbon equivalent reported in reference to the asset's capacity.

**7.3.2 Environmental Product Declarations (EPDs)**

In order to determine the ten key products to assess, the suitably qualified carbon or LCA practitioner must consider as a minimum the key elements of the infrastructure asset and their component materials. A justification should be provided as to how the key products were selected in order to make recommendations that will have the largest positive impact.

**7.3.3 Avoiding hazardous substances: Hazardous materials**

Clearly, the most environmentally beneficial approach is to avoid the use of hazardous substances altogether and then to use products of a less hazardous nature where complete substitution is not possible. Increasingly, manufacturers and suppliers are bringing to market products with lower levels of hazardous substances or which contain substances of a less hazardous nature. These include, for example, low-VOC coatings and treatments.

**7.3.4 Avoiding hazardous substances: Low-VOC and/or biodegradable coatings**

It should be noted that low-VOC coatings and treatments are not always practical or appropriate for certain applications. In cases such as these, this requirement should be scoped out. See British Coatings Federation’s publication, The VOC Handbook, available to download from www.coatings.org.uk, for advice and guidance.
### 7.3.5 Avoiding hazardous substances: Application of coatings

Note that this criteria applies to all coatings for the permanent works, not just to timber coatings

#### Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
</table>
| **7.3.1 Life-cycle assessment** | To encourage users to fully consider impacts of carbon over the lifetime of the asset CEEQUAL permits evaluation to be undertaken in variety of ways with scores being granted on the basis comprehensiveness and robustness. This flexible approach is permitted in order to recognise that projects with differing scale and type will have differing levels of impact and access to expertise to assess the impacts and opportunities. In all cases evidence requirements of the assessments should demonstrate they have been prepared having fully engaged key representatives of the project delivery team include:  
1. Suitably qualified carbon practitioner  
2. Contractor  
3. Designer  
4. Owner/operator.  
A screening study should focus on the main contributors to the system under assessment, including (but not limited to) the input materials, water and energy use, and the transport of users (if relevant). In carrying out the screening carbon footprint or LCA care is needed to ensure that omitted products are not significant for the chosen environmental indicators.  
To undertake the LCA or carbon footprint it is not necessary to use a specific tool, however reputable sources of data should be used as detailed in EN 15978 (Section 10 - particularly 10.3 and 10.4) and the EeB Guide.  
When undertaking a complete LCA it is necessary to establish the environmental impact associated with all life cycle stages of the asset in line with the principles set out in EN 15978 and the EeB Guidance document for modules A-C and D (where appropriate): |
| **7.3.2 Environmental Product Declarations (EPDs)** | The independently verified third party EPDs can cover:  
1. Partial life cycle (cradle to gate or cradle to gate with options*)  
2. Whole life cycle (cradle to grave)  
Partial life cycle EPD can cover:  
The product stage only: such an EPD covers raw material supply, transport, manufacturing and associated processes; this EPD is said to be "cradle -to gate";  
The product stage and selected further life cycle stages: such an EPD is said to be "cradle to gate with options".  
In both cases, the EPD must be produced in accordance with the requirements within EN 15804 or the ISO 14020 series, particularly ISO 14025 and ISO 14040 and 14044 (life cycle assessment). |
| **7.3.3 Avoiding hazardous substances: Hazardous materials** | Evidence could be a record that these issues have been considered and decisions acted upon. Meeting notes or material specifications showing the decisions made would be acceptable. It would also be acceptable to demonstrate that such requirements were included in contract documents. |
| **7.3.4 Avoiding hazardous substances: Low-VOC and/or biodegradable coatings** | Evidence could be in the form of specification or sub-contract records. Any evidence needs to substantiate the percentage being claimed. |
7.3.5 Avoiding hazardous substances: Application of coatings

Evidence could be in the form of specification or sub-contract requirements, plus inspection reports or equivalent.

Definitions

Environmental Product Declarations (EPDs)

BS EN ISO 14025:2010 defines an environmental label or environmental declaration as a claim which indicates the environmental aspects of a product or service. BS EN ISO 14020:2012 goes on to state that environmental labels and declarations provide information about a product or service concerning its overall environmental character, a specific environmental aspect, or any number of aspects. BRE are an example of an EPD provider via the BRE Environmental Profiles Scheme which is being replaced by the new EN 15804 compliant BRE EPD Verification scheme.

Suitably experienced carbon practitioner

An individual who can meet the following requirements can be deemed 'suitably experienced' for the purpose of a CEEQUAL assessment:

1. Can demonstrate that they do not have a vested interest in the outcome of the infrastructure project and are not professionally connected with any energy company, low or zero carbon technology or construction product manufacturer.
2. Has a minimum of three years relevant experience (within the last five years) demonstrating a theoretical and practical understanding of carbon footprinting or LCA of construction projects. This shall include having significant technical roles in producing carbon footprinting studies, or multi environmental indicator LCA studies, of buildings/assets. These studies shall be to ISO 14040 and ISO 14044 (or other relevant national, ISO or EN standards that are based on ISO 14040 and ISO 14044) and the scope shall include carbon emissions from the construction product, use and end of life stages.

Suitably experienced LCA practitioner

An individual who can meet the following requirements can be deemed 'suitably experienced' for the purpose of a CEEQUAL assessment:

1. Can demonstrate that they do not have a vested interest in the outcome of the infrastructure project and are not professionally connected with any energy company, low or zero carbon technology or construction product manufacturer.
2. Has a minimum of three years relevant experience (within the last five years) demonstrating a theoretical and practical understanding of LCA of construction projects. This shall include having significant technical roles in producing multi environmental indicator LCA studies of buildings/assets. These studies shall be to ISO 14040 and ISO 14044 (or other relevant national, ISO or EN standards that are based on ISO 14040 and ISO 14044) and the scope shall include emissions from the construction product, use and end of life stages.

Independently verified third party Environmental Product Declarations (EPDs)

For this BREEAM issue, the independently verified third party EPDs can cover:

- Partial life cycle (cradle-to-gate or cradle-to-gate with options*) OR
- Whole life cycle (cradle-to-grave)

Partial life cycle EPD can cover:

- The product stage only: such an EPD covers raw material supply, transport, manufacturing and associated processes; this EPD is said to be "cradle to gate"
- The product stage and selected further life cycle stages: such an EPD is said to be "cradle-to-gate with options"
In both cases, the EPD must be produced in accordance with the requirements within EN 15804 or the ISO 14020 series, particularly ISO 14025 and ISO 14040 and 14044 (life cycle assessment).
Circular use of construction products

Aim
To maximise the ongoing value of construction and other resources through the careful design and specification of materials. This aims to ensure that resource remain in use for as long as possible, extract maximum value whilst in use, and be recovered and regenerated at the end of each service life as products and materials that maintain rather than degrade resource value.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.4.1, 7.4.2 Business models for a circular economy</td>
<td>There is no one-size-fits-all approach for an organization to deliver its defined circular economy objectives. The decision by the Assessor and Verifier on applicability to will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>7.4.3 Regenerative design: Durability and Low Maintenance</td>
<td>Scope out only if there are no structures or major components in the project.</td>
</tr>
<tr>
<td>7.4.5 Regenerative design: Future Disassembly / De-Construction</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>7.4.7 Reducing resources: Retention of Existing Structures &amp; Materials</td>
<td>Scope out if no existing structures on site.</td>
</tr>
<tr>
<td>7.4.8 Reducing resources: On-Site Use of Demolition Arisings</td>
<td>Scope out only if there was no demolition or deconstruction as part of the assessed works or if the nature of the works meant there was genuinely no opportunity for re-use of the materials within the project.</td>
</tr>
<tr>
<td>7.4.9 Reducing resources: Cut and Fill Optimisation</td>
<td>Scope out only on projects where there is no excavation or in situations where, for example, a structure such as a tank is completely underground and there are no options on size (for example storm tanks).</td>
</tr>
<tr>
<td>7.4.10 Reducing resources: Soil Management</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>7.4.11 Reducing resources: Beneficial Re-Use of Topsoil</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>7.4.13 Reducing resources: Reclaimed or Recycled Bulk Fill and Sub-Base</td>
<td>Scope out if the project used no bulk fill or sub-base.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.4.1 Business models for a circular economy – considered</td>
<td>6 (up to)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.4.2 Business models for a circular economy - implemented

7.4.3 Regenerative design: Durability and Low Maintenance

7.4.4 Regenerative design: Long Term Planned Maintenance

7.4.5 Regenerative design: Future Disassembly / De-Construction

7.4.6 Regenerative design: Materials Register

7.4.7 Reducing resources: Retention of Existing Structures & Materials

7.4.8 Reducing resources: On-Site Use of Demolition Arisings

7.4.9 Reducing resources: Cut and Fill Optimisation

7.4.10 Reducing resources: Soil Management

7.4.11 Reducing resources: Beneficial Re-Use of Topsoil

7.4.12 Reducing resources: Reclaimed or Recycled Materials

7.4.13 Reducing resources: Reclaimed or Recycled Bulk Fill and Sub-Base

8.7.14 Reducing resources: Beneficial Re-Use of Excavated Material

8.7.15 Reducing resources: Surplus Materials

8.7.16 Reducing resources: Materials Storage

8.7.17 Reducing resources: Beneficial Re-Use of Surplus Materials

Assessment criteria

7.4.1 Business models for a circular economy – considered (New)

7.4.1.1 The principles of a circular economy are considered via appropriate business models in line with BS 8001:2017. One or more of the following procurement models can be demonstrated.

<table>
<thead>
<tr>
<th>Procurement models considered</th>
<th>Score (for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-demand</td>
<td>1</td>
</tr>
<tr>
<td>Dematerialization</td>
<td></td>
</tr>
<tr>
<td>Product life cycle extension/reuse</td>
<td></td>
</tr>
<tr>
<td>Recovery of secondary raw materials/by-products</td>
<td></td>
</tr>
<tr>
<td>Product as a service/product–service system (PSS)</td>
<td></td>
</tr>
<tr>
<td>Sharing economy and collaborative consumption.</td>
<td></td>
</tr>
</tbody>
</table>
7.4.2 Business models for a circular economy – implemented (New)

7.4.2.1 The principles of a circular economy are implemented via appropriate business models in line with BS 8001:2017. One or more of the following procurement models can be demonstrated.

<table>
<thead>
<tr>
<th>Procurement models implemented</th>
<th>Score (for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-demand</td>
<td>2</td>
</tr>
<tr>
<td>Dematerialization</td>
<td></td>
</tr>
<tr>
<td>Product life cycle extension/reuse</td>
<td></td>
</tr>
<tr>
<td>Recovery of secondary raw materials/by-products</td>
<td></td>
</tr>
<tr>
<td>Product as a service/product–service system (PSS)</td>
<td></td>
</tr>
<tr>
<td>Sharing economy and collaborative consumption.</td>
<td></td>
</tr>
</tbody>
</table>

7.4.3 Regenerative design: Durability and low maintenance (8.3.4)

7.4.3.1 Durability and low maintenance of structures and components have been actively considered in design and specification.

7.4.4 Regenerative design: Long-term planned maintenance (8.3.5)

7.4.4.1 Long-term planned maintenance has been considered properly in the design process.

7.4.5 Regenerative design: Future disassembly / de-construction (8.3.8)

7.4.5.1 A percentage (by volume) of components or pre-fabricated units used can be easily separated on disassembly/de-construction into material types suitable for recycling.

<table>
<thead>
<tr>
<th>Percentage of components that can be easily separated on disassembly</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>15% or more</td>
<td>2</td>
</tr>
<tr>
<td>30% or more</td>
<td>4</td>
</tr>
<tr>
<td>45% or more</td>
<td>6</td>
</tr>
<tr>
<td>60% or more</td>
<td>8</td>
</tr>
<tr>
<td>75% or more</td>
<td>10</td>
</tr>
<tr>
<td>90% or more</td>
<td>12</td>
</tr>
</tbody>
</table>

7.4.6 Regenerative design: Materials register (8.3.9)

7.4.6.1 A materials register been provided to the Client or future managing agent at hand-over that identifies main material types to facilitate recycling during disassembly or de-construction.

7.4.7 Reducing resources: Retention of existing structures & materials (8.7.4)

7.4.7.1 A percentage (by volume) of any existing structures and materials, such as roads, tanks and pipework, have been retained and used within the project as opposed to being demolished and crushed or disposed of.

<table>
<thead>
<tr>
<th>Percentage of existing structures and materials retained</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or more</td>
<td>5</td>
</tr>
<tr>
<td>50% or more</td>
<td>10</td>
</tr>
<tr>
<td>75% or more</td>
<td>15</td>
</tr>
</tbody>
</table>
7.4.8 Reducing resources: On-site use of demolition arisings (8.10.2)

7.4.8.1 A percentage (by volume) of suitable/useable material from demolition or de-construction on site has been incorporated into the project.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or more</td>
<td>6</td>
</tr>
<tr>
<td>50% or more</td>
<td>12</td>
</tr>
<tr>
<td>75% or more</td>
<td>18</td>
</tr>
<tr>
<td>90% or more</td>
<td>32</td>
</tr>
</tbody>
</table>

7.4.9 Reducing resources: Cut and fill optimisation (8.3.3)

7.4.9.1 An assessment has been made at design stage to ensure optimisation of cut and fill to reduce the quantity of excavated material to be taken off site.

7.4.10 Reducing resources: Soil management (8.3.6)

7.4.10.1 A soil management plan been prepared and implemented.

7.4.11 Reducing resources: Beneficial re-use of topsoil (8.3.7)

7.4.11.1 All topsoil been re-used beneficially as topsoil on the site or on a site within a reasonable distance.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>All beneficially re-used off site</td>
<td>2</td>
</tr>
<tr>
<td>Majority (over 50%) beneficially re-used on site</td>
<td>4</td>
</tr>
<tr>
<td>All beneficially re-used on site</td>
<td>8</td>
</tr>
</tbody>
</table>

7.4.12 Reducing resources: Reclaimed or recycled materials (8.7.5)

7.4.12.1 A percentage (by volume) of materials from offsite (excluding bulk fill and sub-base) for use in the permanent works has been specified and made from reclaimed or recycled material, whether reclaimed from the site or elsewhere.

(i) Specified

<table>
<thead>
<tr>
<th>Percentage specified</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% or more</td>
<td>1</td>
</tr>
<tr>
<td>50% or more</td>
<td>4</td>
</tr>
<tr>
<td>75% or more</td>
<td>7</td>
</tr>
</tbody>
</table>

(ii) Used

<table>
<thead>
<tr>
<th>Percentage used</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% or more</td>
<td>1</td>
</tr>
<tr>
<td>50% or more</td>
<td>4</td>
</tr>
<tr>
<td>75% or more</td>
<td>7</td>
</tr>
</tbody>
</table>
7.4.13 Reducing resources: Reclaimed or recycled bulk fill and sub-base (8.7.6)
7.4.13.1 A percentage (by volume) of bulk fill and sub-base material from off site is specified in the project and was made from previously used material, whether reclaimed from the site or elsewhere.

(i) Specified:

<table>
<thead>
<tr>
<th>Percentage specified</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>40% or more</td>
<td>2</td>
</tr>
<tr>
<td>60% or more</td>
<td>3</td>
</tr>
<tr>
<td>80% or more</td>
<td>4</td>
</tr>
<tr>
<td>If this was generated on site (for example, demolition material crushed on site)</td>
<td>Additional 1</td>
</tr>
</tbody>
</table>

(ii) Used:

<table>
<thead>
<tr>
<th>Percentage used</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>40% or more</td>
<td>2</td>
</tr>
<tr>
<td>60% or more</td>
<td>3</td>
</tr>
<tr>
<td>80% or more</td>
<td>4</td>
</tr>
<tr>
<td>If this was generated on site (for example, demolition material crushed on site)</td>
<td>Additional 1</td>
</tr>
</tbody>
</table>

7.4.14 Reducing resources: Beneficial re-use of excavated material (8.10.3)
7.4.14.1 A percentage (by volume) of excavated material has been beneficially re-used on-site.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>30% or more</td>
<td>14</td>
</tr>
<tr>
<td>50% or more</td>
<td>20</td>
</tr>
<tr>
<td>90% or more</td>
<td>26</td>
</tr>
<tr>
<td>100%</td>
<td>32</td>
</tr>
</tbody>
</table>

7.4.15 Reducing resources: Surplus materials (8.10.6)
7.4.15.1 An assessment has been undertaken and implemented to reduce the amount of surplus materials ordered.

7.4.16 Reducing resources: Materials storage (8.10.7)
7.4.16.1 Materials have been stored appropriately to avoid wastage.

7.4.17 Reducing resources: Beneficial re-use of surplus materials (8.10.8)
7.4.17.1 A percentage of unused (surplus) materials have been beneficially re-used (or stored for re-use).

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% or more</td>
<td>6</td>
</tr>
<tr>
<td>70% or more</td>
<td>9</td>
</tr>
<tr>
<td>90% or more</td>
<td>12</td>
</tr>
</tbody>
</table>
Guidance

7.4.1, 7.4.2 Business models for a circular economy

BS 8001:2017 suggests there are six business model options that can support delivering a circular economy; these include:

- On-demand
- Dematerialization
- Product life cycle extension/reuse
- Recovery of secondary raw materials/by-products
- Product as a service/product–service system (PSS)
- Sharing economy and collaborative consumption

For more information, see BS 8001:2007 Framework for implementing the principles of the circular economy in organizations – Guide.

7.4.3 Regenerative design: Durability and low maintenance

Extending the lifetime of a structure is likely to have considerable environmental benefits as it avoids the environmental impacts associated with later refurbishment or the building of a new structure. In the same way, a low maintenance structure reduces the environmental impacts relating to maintenance and is likely to enhance the structure’s lifetime. Admittedly, there are likely to be trade-offs in this area, for example between more-durable paint systems and environmentally damaging treatments.

It is important to recognise that, in the context of CEEQUAL, what is being looked for in the assessment of these options is consideration of the environmental cost, and a judgement about which option has the greatest lifetime environmental benefit and least adverse impact. This may correlate with reduced expenditure in terms of the whole life costs of the structure. Synergies between financial and environmental savings will present a particularly compelling case to Clients.

It is essential that the desired lifespan of a built structure is reflected in every detail of a structure. Often durability is compromised by minor components within it that have a shorter design life than the structure itself and that were specified without bearing the overall objective in mind.

7.4.4 Regenerative design: Long-term planned maintenance

This should cover, at a minimum, the nature and practicality of work expected to be needed, the timescales for this work, and the provision of safe access for maintenance to be carried out. It should be written in a plan for maintenance for the project, and delivered to the Client.

7.4.5 Regenerative design: Future disassembly / de-construction

Examples for suitable material types may include bricks, blocks, stone and concrete, treated and untreated timber, glass, PVC, different types of plastic, metal, paper and cardboard, and components (for example, sinks, toilets, radiators).

7.4.6 Regenerative design: Materials register

No specific guidance provided.

7.4.7 Reducing resources: Retention of existing structures & materials

This requirement is about the retention and re-use of existing structures. Any structures that are demolished, crushed and then re-used on the project are covered in 8.7.5 and 8.7.6.
The appropriate re-use of structures and parts of structures can significantly reduce the demand for new construction materials and other environmental burdens resulting from a development.

A pre-demolition audit and other site surveys will provide information on the existing structures and materials present on site in order to support decision making around the feasibility of incorporating existing structures and materials into the project.

It is important that these issues are considered at feasibility stage so that the design process can be focussed on re-use rather than new construction. Actions to re-use or recover existing structures or materials will also lead to savings in cost and programme and a significant reduction in the carbon footprint of the project. Examples for this include re-use of existing foundations, roads or walls, or, for a flood defence project for instance, the re-use of an existing lock structure as part of new flood defence walls (see CIRIA publication Reuse of Foundations (C653, 2007)). The volume of the structures would normally be worked out as part of the bills of quantities and, where re-used, as part of an assessment of their suitability for re-use.

Examples also include the recovery of all stone in dry-stone walls that were ‘in the way’ of a new access road to a business park. Rather than the walls being bulldozed and excavated along with other materials, the walls were dismantled, the stone stored carefully and then re-used in new boundary walls and in facings to wingwalls for culverts under the new road. A triple-win resulted: reduced off-site disposal; reduced new materials imported to the project; and the ‘new’ walls and wingwall facings blending more quickly into the landscape.

7.4.8 Reducing resources: On-site use of demolition arisings

A single score is given across all three roles, because the Client or Designer may specify this requirement, rather than just leave the Contractor to choose to do it.

Ideally a pre-demolition audit is completed by an independent and competent third party for any existing buildings, structures or hard surfaces that require demolition on site.

The key findings of the audit should be referenced within the Resource Management Plan (RMP) and include potential applications and any related issues for the reuse and recycling of the demolition materials in accordance with the waste hierarchy.

Targets for levels of reuse and recycling should be set by the project delivery team.

Post-construction, an evaluation of the difference between the actual and the predicted levels figures are reported to CEEQUAL.

7.4.9 Reducing resources: Cut and fill optimisation

‘Cut and fill’ is the term used to describe the whole process of profiling of the landform for the project – excavation in some parts, deposition and compaction of excavated and/or imported material in others. The balancing of these two elements leads to minimisation of the import or export of materials to and from the project. This balancing can be done by computer modelling or other, more-traditional methods.

Clearly, this requirement is most applicable to road and rail schemes, and sometimes to airports and industrial estate development. However, it does need to be considered in any project where there is major excavation. In particular, it applies to structures that are semi-buried (such as service reservoirs) where there may be scope to balance cut and fill with how much of the tank is below ground.

Note that, in this requirement excavated material does not include buried structures that are demolished. The re-use of this material is considered in 7.4.1.

7.4.10 Reducing resources: Soil management

The Defra document Code of Practice for the sustainable use of soils on construction sites recommends undertaking a Soils Resource Survey prior to commencing work and preparing a Soil
Management Plan to be implemented during construction. The Code of Practice requires that a Soils Resource Plan should be produced on all construction sites where re-useable reserves of topsoil and/or subsoil have been identified by the Soils Resource Survey. The code is available from Defra at https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites.

Topsoil is correctly stored in stockpiles no higher than 2 metres. To avoid compaction of the soil, stockpiles must not be driven on by heavy machinery. Vegetating long-term stockpiles with suitable plants (for example, mustard or annual lupines) may help prevent dust blow and erosion, silt run-off, and should assist in preventing invasive and/or noxious weeds from invading the soil. However, the extent to which this is appropriate, and which plants should or should not be used depends on the intended use of the topsoil. Note: stockpiles should not be located within 10 metres of a watercourse. (See BS3882: 2007 Specification for topsoil and requirements for use.)

7.4.11 Reducing resources: Beneficial re-use of topsoil

Refer to 7.6.1 if the topsoil is to be or has been moved off site because waste management controls may apply.

Topsoil is an organic material and is only re-used beneficially if layers are not applied too deep as this would destroy its structure. In addition, certain types of habitats actually require very little or no topsoil at all. Re-use on site for the sake of it, in places and at a thickness that is not required, would therefore not be ‘beneficial’ re-use. What represents a ‘reasonable distance’ must be judged in the context of the project and its location. It might be 15km in a built-up area, but up to 100km if the site generating the surplus topsoil is in a remote area.

7.4.12 Reducing resources: Reclaimed or recycled materials

Examples include reclaimed bricks, and elements or components using recycled materials such as recycled plastics or reprocessed timber. Recycled materials must satisfy the necessary performance and quality criteria.

Where materials are re-used or recycled, the highest grade of re-use possible will be the most environmentally beneficial. There are a number of opportunities to re-use or recycle materials:

- re-using or recycling materials already on site in the new works (which also minimises transport impacts);
- bringing in reclaimed or recycled materials from off site without imposing high transport impacts;
- seeking opportunities for use elsewhere of reclaimed or recycled on-site materials that cannot be used on site (also without imposing high transport impacts);
- ensuring that opportunities for the re-use and recycling of materials at the end of the structure’s lifetime are maximised.

Note that recent quality protocols for aggregates and composts now allow for up to a defined percentage of secondary or previously used materials to be incorporated within an aggregate type or soil conditioner. So simply specifying ‘Type 1 material’ for a particular use may or may not ‘automatically’ include some re-used or recycled materials. See www.wrap.org.uk/construction for more details and Quality Protocol checklist for producers and Quality Protocol checklist for purchasers and specifiers.

WRAP's web-based guidance on 'Recycled Content' and the Net Waste tool enables projects to calculate the recycled content of a project and identify quick wins and benefits, after some financial investment, to maximise the recycled content of materials used within construction – (http://www.wrap.org.uk/content/recycled-content-0).
Metric guidance

In addition, to calculating the percentage by volume of materials used in permanent works made from reclaimed and recycled material, the recycled content by total project construction value may also be reported, through a metric such as:

\[
\frac{\text{Value (\text{\£}) or Volume of recycled content per \text{\£}100k construction value, using a formula such as:}}{\text{Total project construction value \text{\£}}}
\]

Recycled content for products used may be estimated based on standard industry practice for most products, or project specific data may be used for products where good practice is deliberately being used, i.e. the recycled content of given material product exceeds the industry standard.

7.4.13 Reducing resources: Reclaimed or recycled bulk fill and sub-base

See guidance for 7.4.12.

7.4.14 Reducing resources: Beneficial re-use of excavated material

Design for re-use and recovery of materials already on site is fundamental to achieving materials resource efficiency, minimising the quantities of materials that have to be imported or exported from site. The ability to score for the design stage in this question reflects the importance of this stage in identifying and specifying materials for re-use especially as it is rarely possible to amend the design at construction stage to take advantage of any surplus excavation arisings.

Re-use near the site, as opposed to on the site, is covered in 7.6.10 and 7.6.11 on diversion of waste away from landfill. Re-use of excavated materials off site includes taking material to landfill if the material is genuinely inert and is used for beneficial re-use, such as for capping and other engineering purposes.

7.4.15 Reducing resources: Surplus materials

Over-ordering is still standard practice within construction, but it can contribute to the overall wastage rates if materials become surplus to requirements. Reducing over-ordering can help reduce the amount of waste produced as well as saving money. Examples of actions to reduce over-ordering include targeting accurate ordering (accurate material requirements, realistic wastage rates), logistics planning (delivery strategy, adequate storage, efficient movement of materials to the workface) or installation elements (efficient working and installation and storage of

Metric guidance

Assessment and monitoring of measures taken to reduce surplus materials ordered may be reported as comparisons of initial targets set for minimum surplus materials ordered against actual ordered surplus materials, based on calculations of:

Percentage of materials ordered and not used in the completed permanent works, for all material ordered, using a formula such as:

\[
\frac{\text{Volume of all(material ordered – material used in permanent works)} \times 100}{\text{Total volume of materials ordered}}
\]

Surplus materials ordered per \text{\£}100k project construction value, using a formula such as:

\[
\frac{\text{Volume of material ordered that is identified as surplus material } \times 100,000}{\text{Total project construction value \text{\£}}}
\]

Total cost (\text{\£}) of surplus materials per \text{\£}100k project construction value, using a formula such as:

\[
\frac{\text{Volume of ordered surplus materials } \times 100,000}{\text{Total project construction value \text{\£}}}
\]
Percentage of project construction value from ordered surplus materials, using the formula:
\[
\frac{\text{Total cost (£) of ordered surplus materials}}{\text{Total project construction value (£)}} \times 100
\]

7.4.16 Reducing resources: Materials storage
For guidance on this issue, see CIRIA Environmental good practice on site guide (fourth edition) (C741, 2015).

7.4.17 Reducing resources: Beneficial re-use of surplus materials
Unused (surplus) materials are any construction materials not used within the project (such as bricks, concrete, reinforcing mesh, timber and/or prefabricated components), but can also include bulk materials that are not only usable without processing, but are also movable to a site where such use is made of them. For the purposes of this question, the definition of re-use is that given in the Waste Framework Directive, i.e. any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.

To achieve the maximum score for "no or minimal unused materials", the evidence must demonstrate that the assessment in 7.4.15 was fully implemented and no or minimal unused materials were generated.

Unused materials are, regretfully, almost inevitable on any civil engineering project, but this question is in no way meant to encourage their accumulation, nor to encourage breakages, just to score points for their re-use elsewhere.

Some unused materials can be stored and re-used at another site or it may be possible to donate them to a local group or community project – seek advice from the Environment Agency, SEPA, NIEA, NRW or other appropriate regulator first. For others this may not be practicable, but they may still be crushed and used as sub-base or fill (i.e. recycled in order to re-use the base material of which they were made).

The level that can be considered 'no surplus or minimal surplus materials' is related to the scale of the project and may require discussion between the Assessor and Verifier. Deciding the percentage of recycled or re-used materials will also require the Assessor and Verifier to make, and justify, a judgement on the value or volume of the project, but not necessarily calculate it.

### Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.4.1, 7.4.2 Business models for a circular economy</td>
<td>To demonstrate that circular economy business models have been used the project should provide evidence that one or more of the mentioned procurement models have been used for specific goods or services. If more than one procurement model can be demonstrated score for each can be added together.</td>
</tr>
<tr>
<td>7.4.3 Regenerative design: Durability and low maintenance</td>
<td>Evidence should be found in the specifications or in the report of a life-cycle costing analysis or a value-engineering project.</td>
</tr>
<tr>
<td>7.4.4 Regenerative design: Long-term planned maintenance</td>
<td>Evidence could be found in the specifications, a hazard and operability study (HAZOP) assessment (or similar), in a contract maintenance schedule or in the form of a maintenance plan to be handed to the Client or managing agent.</td>
</tr>
<tr>
<td>7.4.5 Regenerative design: Future disassembly / de-construction</td>
<td>Evidence needs to substantiate the percentage being claimed. This can be calculated by any appropriate means that assesses how materials are utilised and combined within the works. The volume of materials that contribute to 80% of the total by value should be used as a basis for the calculations.</td>
</tr>
<tr>
<td>7.4.6 Regenerative design: Materials register</td>
<td>Evidence can include a Health &amp; Safety File, provided this has been extended to include information about material types that will enable recycling on demolition.</td>
</tr>
<tr>
<td>7.4.7 Reducing resources: Retention of existing structures &amp; materials</td>
<td>Evidence could include inclusion in a SWMP, site photographs, construction drawings, and/or bills of quantities, along with some form of substantiation of the percentage being claimed. Evidence could include a comparison of design calculations with waste transfer notes or other quantity surveying documentation. In any case, the percentage being claimed needs some form of substantiation. Information should also be included within the SWMP.</td>
</tr>
<tr>
<td>7.4.8 Reducing resources: On-site use of demolition arisings</td>
<td>Evidence should be found in quantity surveyors’ documentation or project accounts. The evidence provided should substantiate the percentage being claimed.</td>
</tr>
<tr>
<td>7.4.9 Reducing resources: Cut and fill optimisation</td>
<td>Evidence could be in the form of calculations showing the cut and fill balance and/or contract drawings with mapped out areas for cut and fill and/or contract drawings with mapped out areas for cut and fill.</td>
</tr>
<tr>
<td>7.4.10 Reducing resources: Soil management</td>
<td>Evidence could be the results of the Soil Resource Survey and a copy of the Soil Management Plan. The Plan should contain detailed instructions on soil handling for the relevant project (not a general statement). Evidence could also include a soil handling and management strategy, or minutes of site meetings referring to the handling and storage of topsoil.</td>
</tr>
<tr>
<td>7.4.11 Reducing resources: Beneficial re-use of topsoil</td>
<td>Evidence could be some form of calculation to support the points awarded. This could be a comparison of design calculations to waste transfer notes. The definition of reasonable distance needs to be mutually agreed between the Assessor and Verifier.</td>
</tr>
<tr>
<td>7.4.12 Reducing resources: Reclaimed or recycled materials</td>
<td>Evidence could be in the form of specification requirements. Any evidence needs to substantiate the percentage being claimed. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>7.4.13 Reducing resources: Reclaimed or recycled bulk fill and sub-base</td>
<td>Evidence could include bills of quantities, delivery notes, and/or a quantity surveyor’s report, along with some form of substantiation of the percentage being claimed. WRAP’s Net Waste Tool can be used to forecast, monitor and capture actual performance.</td>
</tr>
<tr>
<td>7.4.14 Reducing resources: Beneficial re-use of excavated material</td>
<td>Evidence should include some form of calculation to demonstrate the points being awarded. This calculation could be on the basis of design calculations compared to information documented in the SWMP or equivalent and actual waste transfer notes or some other form of quantity surveying documentation.</td>
</tr>
<tr>
<td>7.4.15 Reducing resources: Surplus materials</td>
<td>Evidence would include documented evidence that material forecasting and logistics planning have been undertaken, which clearly illustrates how over-ordering has been addressed. Evidence of measures taken to record material ordered to site and then not used in works, could be within Site Waste Management Plan and/or other quantity surveying documentation. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>7.4.16 Reducing resources: Materials storage</td>
<td>This could be photographic evidence or site records. The Verifier should ascertain that photographs demonstrate a sustained achievement of this requirement for the duration of the project.</td>
</tr>
<tr>
<td>7.4.17 Reducing resources: Beneficial re-use of surplus materials</td>
<td>Evidence can include records that show that surplus materials have been taken to another site for use, compared with waste disposal records. Any records need to substantiate the percentage being claimed. A declaration made by the Contractor as to how surplus materials have been used and/or disposed of would be acceptable.</td>
</tr>
<tr>
<td>The exact score and evidence acceptable must be at the discretion of the Verifier.</td>
<td></td>
</tr>
</tbody>
</table>
Responsible sourcing of construction products

Aim

To encourage the procurement and use of sustainably and responsibly sourced materials.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5.1 Legal and sustainable timber</td>
<td>Only scope out if no timber is used in the works</td>
</tr>
<tr>
<td>7.5.6 Locally-Sourced and Recycled Materials</td>
<td>Only scope out where it can demonstrate that the use of locally-sourced and recycled material is not appropriate or feasible.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5.1 Prerequisite: Legal and sustainable timber</td>
<td></td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>7.5.2 Responsible Sourcing of Materials</td>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>7.5.4 Locally-Sourced and Recycled Materials</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5.5 Locally-Sourced and Recycled Materials</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5.6 Locally-Sourced and Recycled Materials</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assessment criteria

7.5.1 Prerequisite: Legal and sustainable timber\(^{(8.7.3\text{ – updated})}\)

7.5.1.1 All timber and timber-based products used on the project are legal and sustainable timber as per the UK Government's Timber Procurement Policy (TPP).

7.5.2 Responsible sourcing of materials – consideration\(^{(8.7.1\ a)}\)

7.5.2.1 The responsible sourcing of materials has been evaluated through the development of sustainable procurement plan and specified as a project requirement prior to placing the order.

7.5.3 Responsible sourcing of materials – implementation\(^{(8.7.1\ b)}\)

7.5.3.1 The specification for responsible sourcing has been achieved.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50% (by volume) achieved</td>
<td>5</td>
</tr>
<tr>
<td>50% or more (by volume) achieved</td>
<td>10</td>
</tr>
<tr>
<td>80% or more (by volume) achieved</td>
<td>18</td>
</tr>
</tbody>
</table>

7.5.4 Locally-sourced and recycled materials – early consideration\(^{(8.7.2\ a)}\)

7.5.4.1 The Client required consideration be given to the use of locally sourced and recycled material.
7.5.5 Locally-sourced and recycled materials – further consideration (8.7.2 b)

7.5.5.1 The Designer and Contractor researched all locally available material sources, including recycled materials.

7.5.6 Locally-sourced and recycled materials – use (8.7.2 c)

7.5.6.1 The Designer and Contractor adapted the designs and specifications to allow for their use, where appropriate.

Guidance

7.5.1 Prerequisite: Legal and sustainable timber


At the time of writing, the policy requires all timber and wood-based products to be covered by at least one of the following (but the webpage below should be checked for changes):

1. Third party, independent forest certification schemes–Category A (e.g. FSC or PEFC)
2. Evidence on a case-by-case basis in line with the Framework for Evaluating Category B evidence–Category B.

For the avoidance of doubt, 100% of the timber and timber-based products must be compliant.


7.5.2, 7.5.3 Responsible sourcing of materials

Responsible sourcing of materials covers a range of issues, including organisational management systems, supply chain management systems and a range of social and environmental issues (including greenhouse gas emissions, material traceability and life-cycle assessment).

The emphasis of these criteria rewards specifying and achieving responsible sourcing rather than just considering it. The scoring also rewards the consideration and specification of responsibly sourced materials at earlier stages in the project's lifecycle to reflect the greater influence that can be exerted at these stages.

Consideration to purchase materials from sustainable sources may be given via the specification of materials from the Client and/or Designer. Implementation will be in accordance with sector-specific schemes (for example, BES 6001:2008), contract requirements and/or the specification.

7.5.4, 7.5.5, 7.5.6 Locally-sourced and recycled materials

The traditional approach of using standard designs and specification clauses can lead to the exclusion of acceptable locally sourced and more-sustainable material choices. Good practice of actively seeking sustainable local materials on a site-specific basis should be encouraged.

WRAP has produced a range of resources for recycled content in construction products http://rcproducts.wrap.org.uk/ along with the AggRegain Specifier http://aggregain.wrap.org.uk/specifier/index.html.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
</table>

---

© BRE GLOBAL LTD 2019
### 7.5.1 Legal and sustainable timber

CEEQUAL follows the UK government's definition of legally sourced timber, as outlined in the Central Point of Timber (CPET) 5th Edition of the UK Government Timber Procurement Policy (TPP) (www.gov.uk/government/uploads). The policy requires all timber and wood-based products to be covered by at least one of the following (but the webpage below should be checked for changes):

- Third party, independent forest certification schemes—Category A (e.g. FSC or PEFC)
- Evidence on a case-by-case basis in line with the Framework for Evaluating Category B evidence—Category B.

For the avoidance of doubt, 100% of the timber and timber-based products must be compliant. Further information on the UK Government's TPP and compliant responsible sourcing certification schemes is available from the CPET website ([https://www.gov.uk/guidance/timber-procurement-policy-tpp-prove-legality-and-sustainability](https://www.gov.uk/guidance/timber-procurement-policy-tpp-prove-legality-and-sustainability)).

### 7.5.2, 7.5.3 Responsible sourcing of materials

Evidence in relation to 7.5.2 could be a statement in a Client tender brief or contract documents, or record of discussions. Evidence in relation to 7.5.3 could be a comparison of specification requirements to overall material purchase, sub-contract documents with general material suppliers, or a declaration from the supplier (usually provided as certificates). In any case, some substantiation of the specification being claimed needs to be provided. At the current time, only BES 6001-based schemes or schemes that are third party accredited as being compliant with BS 8902:2009 can be considered suitable sector-specific schemes. Schemes listed in GN18 are OK to submit as evidence.

### 7.5.4, 7.5.5, 7.5.6 Locally-sourced and recycled materials

Evidence could be the Client’s tender brief, design briefs or reports from research into materials sourcing.

### Definitions

#### Sustainable procurement plan

A plan that sets out a clear framework for the responsible sourcing of materials to guide procurement throughout a project and for all involved in the specification and procurement of construction materials. The plan may be prepared and adopted at an organisational level or be project specific and for the purposes of CEEQUAL compliance, will cover the following as a minimum:

- Identification of risks and opportunities against a broad range of social, environmental and economic issues. BS 8902:2009 Responsible sourcing sector certification schemes for construction products- Specification can be used as a guide to identify these issues
- Aims, objectives and targets to guide sustainable procurement activities. BS 8903: 2010 Principles and framework for procuring sustainably - Guide can be used to inform setting of aims, objectives and targets
- The strategic assessment of responsibly sourced materials available locally and nationally. There should be a policy to procure materials locally where appropriate and practical in line with the principles set out in the UK Public Services (Social Value) Act 2012
- Responsible sourcing policies that will be employed by the contractor and subcontractor
- Procedures that are in place to check and verify that the sustainable procurement plan is being implemented and adhered to on individual projects. These could include setting out measurement criteria, methodology and performance indicators to assess progress and demonstrate success
- Information on how the chain of custody of materials will be fully audited and evidenced.
Responsible sourcing

The management and implementation of sustainable development principles in the provision, procurement and traceability of construction materials and components. In CEEQUAL this is demonstrated through auditable third-party certification schemes.

Additional information

BES 6001:2008 Framework Standard for Responsible Sourcing of Construction Products

This is a BRE Global standard that provides a framework for the assessment and certification of the responsible sourcing of construction products. The Standard has been structured so that compliance can be demonstrated through a combination of meeting the requirements of other recognised certification schemes, establishing written policies, setting objectives and targets and engaging with relevant stakeholders.

To comply with the standard a product must meet a number of mandatory criteria. Where a product demonstrates compliance beyond the mandatory levels, higher levels of performance can be achieved. The standard's performance ratings range from Pass to Good, Very Good and Excellent.

The development of this standard and subsequent certification schemes will, it is envisaged, provide construction products, not wholly covered under current recognised standards, a means for demonstrating their responsibly sourced credentials. In turn this will allow clients, developers and design teams to specify responsibly sourced construction products with greater assurance and provide a means of demonstrating compliance with the assessment criteria in this issue.

To view a list of products approved to BES 6001 and additional information about the standard visit: www.greenbooklive.com.
Construction waste management

Aim
To minimise the amount of waste produced throughout the project and manage the waste produced in line with best practice requirements.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.6.2 Prerequisite: Permitting for Waste Treated or Used on Site</td>
<td>Scope out only on projects that do not treat waste on site or import waste for use on site</td>
</tr>
<tr>
<td>7.6.3 Prerequisite: Hazardous or Special Waste</td>
<td>Scope out only on projects with no hazardous waste (‘special waste’ in Scotland).</td>
</tr>
<tr>
<td>7.6.8 Hazardous Material Assessments</td>
<td>The decision to scope out depend on whether there are any materials requiring COSHH assessments, or whether the team has decided to assess the wider environmental impacts of those materials by another process.</td>
</tr>
<tr>
<td>7.6.9 Transfer Station/Recycling Centre Performance</td>
<td>The decision on whether to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>7.6.6 Clearance and Disposal of Existing Vegetation</td>
<td>Scope out only if no vegetation present on the site before work starts.</td>
</tr>
<tr>
<td>7.6.7 Clearance and Disposal of Existing Vegetation</td>
<td>Scope out only if no vegetation present on the site before work starts.</td>
</tr>
<tr>
<td>7.6.10 Inert Waste Diverted from Landfill</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project. Although scoping-out is unlikely.</td>
</tr>
<tr>
<td>7.6.11 Non-Hazardous Waste Diverted from Landfill</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.6.1 Prerequisite: Duty of Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.6.2 Prerequisite: Permitting for Waste Treated or Used on Site</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>7.6.3 Prerequisite: Hazardous or Special Waste</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>7.6.4 Site Waste Management Planning</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.6.5 Site Waste Management Planning</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.6.6 Clearance and Disposal of Existing Vegetation</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.6.7 Clearance and Disposal of Existing Vegetation</td>
<td>18 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.6.8 Hazardous Material Assessments</td>
<td></td>
<td>7 (up to)</td>
<td></td>
</tr>
</tbody>
</table>
7.6.9 Transfer Station/Recycling Centre Performance 20
7.6.10 Inert Waste Diverted from Landfill 18 (up to)
7.6.11 Non-Hazardous Waste Diverted from Landfill 20 (up to)

Assessment criteria

7.6.1 Prerequisite: Duty of care (8.9.2)
7.6.1.1 All waste produced on site has been managed to meet duty of care requirements, including:
   a. All waste has been transported by Registered Waste Carriers
   b. All Waste Transfer Notes (and consignment notes) have been retained.
   c. All waste has been taken to licensed, permitted or exempt facilities.
   d. Transfer or disposal sites have been checked to ensure they are licensed to take the material.
   e. Disposal or transfer sites have been checked to ensure the waste was taken there.

7.6.2 Prerequisite: Permitting for waste treated or used on site (8.9.4)
7.6.2.1 The appropriate permits, licenses or exemptions have been obtained for waste that has been treated on site or for waste imported to site.

7.6.3 Prerequisite: Hazardous or special waste (8.9.5)
7.6.3.1 Hazardous (special) waste has been appropriately segregated (from other controlled waste) and stored appropriately on site.
7.6.3.2 This waste has been taken to a suitable facility and the construction site registered as a hazardous waste producer where appropriate.

7.6.4 Site waste management planning – preparation (8.9.1 a)
7.6.4.1 A Site Waste Management Plan (SWMP) or waste section of a SEMP has been prepared and updated as appropriate for the duration of the project

7.6.5 Site waste management planning – implementation (8.9.1 b)
7.6.5.1 Targets or key performance indicators for waste reduction and waste recovery have been met.

7.6.6 Clearance and disposal of existing vegetation – consideration (8.10.1 a)
7.6.6.1 The most environmentally beneficial ways of dealing with clearance and disposal of existing vegetation have been explored and recommendations have been made.

7.6.7 Clearance and disposal of existing vegetation – implementation (8.10.1 b)
7.6.7.1 These recommendations have been implemented for the majority of vegetation cleared.

<table>
<thead>
<tr>
<th>Percentage of recommendations implemented</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>40% or more</td>
<td>5</td>
</tr>
<tr>
<td>60% or more</td>
<td>10</td>
</tr>
<tr>
<td>80% or more</td>
<td>18</td>
</tr>
</tbody>
</table>

7.6.8 Hazardous material assessments (8.8.4)
7.6.8.1 The health and safety assessment process for hazardous materials has been:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(i) Extended to cover the wider environmental impacts of those materials.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>70% or more</td>
<td>6</td>
</tr>
<tr>
<td>85% or more</td>
<td>12</td>
</tr>
<tr>
<td>95% or more</td>
<td>16</td>
</tr>
</tbody>
</table>

7.6.9 Transfer station/recycling centre performance (§8.9.3)

7.6.9.1 If transfer stations and/or recycling facilities have been used, the recycling rate of the facilities was considered prior to placing the order.

7.6.10 Inert waste diverted from landfill (§8.10.4)

7.6.10.1 A percentage (by volume) of inert waste material has been segregated (on or off site) in accordance with the SWMP or RMP and diverted from landfill.

7.6.11 Non-hazardous waste diverted from landfill (§8.10.5 – updated)

7.6.11.1 A percentage (by volume or weight) of non-hazardous waste material has been segregated (on or off site) in accordance with the SWMP or RMP and diverted from landfill.

<table>
<thead>
<tr>
<th>Type of waste</th>
<th>Diversion (by volume)</th>
<th>Diversion (by weight)</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>92%</td>
<td>95%</td>
<td>13</td>
</tr>
<tr>
<td>Demolition</td>
<td>80%</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>98%</td>
<td>98%</td>
<td>20</td>
</tr>
<tr>
<td>Demolition</td>
<td>85%</td>
<td>95%</td>
<td></td>
</tr>
</tbody>
</table>

Guidance

7.6.1 Prerequisite: Duty of care

There is a large body of legislation relating to waste management and, as a minimum, this must be adhered to. The waste producer, normally the Contractor but sometimes the Client, has a legal ‘Duty of Care’ to ensure that all waste produced on site is stored, transported and disposed of without harming the environment.


Information on Licensed and exempt sites in Scotland can be accessed using the public register maintained by SEPA: www.sepa.org.uk/waste.aspx.

The equivalent information for Northern Ireland is provided by the Department of Environment Northern Ireland www.doeni.gov.uk/niea/waste-home/public_reg.htm.
7.6.2 Prerequisite: Permitting for waste treated or used on site

Some on-site waste treatment activities, such as the treatment of contaminated soils prior to re-use, require an Environmental Permit, waste management license or registered exemption, depending on the nature of the process employed. Similarly, the use of waste materials imported to site might also require a permit, license or exemption.

7.6.4, 7.6.5 Site waste management planning

For all SWMPs, irrespective of location, to score points on 7.6.4 the SWMP should be prepared at least in line with industry best practice and/or expectations. However, to score maximum points on this question it will have to go beyond simple compliance and demonstrate good and best practice. SWMPs for projects outside England (including private sector projects in Northern Ireland) should be prepared in line with best practice guidance either using the resources developed by WRAP and now held by CIRIA. It is also acceptable for organisations to use their own SWMP tools and resources.

It is good practice to initiate the SWMP at the design stage. The earlier in the project a SWMP is implemented, the greater the benefits that can be achieved with regard to waste reduction, recovery and recycling. Therefore, to score maximum points a SWMP should have been developed by the Designers at design stage.

Forecasting waste streams as part of the SWMP process enables practical decisions to be taken about segregating materials on site for recycling and/or for disposal, as well as for the layout of site facilities, including waste storage. A properly prepared and maintained SWMP can be a powerful tool to help plan waste management activities and waste movements off site during construction. With properly managed supporting documentation, it can also help ensure compliance with legislation around Duty of Care and other relevant waste management legislation. SWMPs can also be used to record progress against targets and savings in materials and waste disposal.

As with all such plans, the aim needs to be to clearly show the actions site staff and operatives should take when dealing with ‘waste’ (either surplus materials or genuine waste) in order to maximise practical re-use and recycling, and to make landfill genuinely the disposal route of last resort. Therefore, a properly implemented SWMP should also be accompanied by appropriate communication between Clients, Designers and Contractors and subsequently with sub-Contractors and other suppliers.

Metric guidance

Targets for site waste management can be accompanied by monitoring and calculations of the total waste produced, throughout the duration of the project. This will require monitoring all types of waste arisings and their end through metrics such as:

Total waste produced per £100k construction value (reference to targets set in 8.3.2), using a formula such as:

\[
\frac{\text{Volume of all site arisings, components and materials classified as waste on site}}{\text{Total project construction value £}} \times 100000
\]

The above measure may be disaggregated into potential site waste streams (e.g. reused, composted, incinerated, recycled, recovered and landfilled) per £100k construction value, using a formula such as:

\[
\frac{\text{Identified volume of given site waste type (.i.e.reused, composted, recycled)}}{\text{Total project construction value £}} \times 100000
\]

The identified measure can then be compared to what is actually achieved on site. Targets and monitoring of waste diverted from landfill may be reported as:

Percentage of all on-site waste diverted from landfill using the formula:
Waste arisings diverted from landfill per £100k construction value, using a formula such as:

\[
\frac{\text{Volume of all waste diverted from landfill}}{\text{Total volume of all waste arisings taken to landfill}} \times 100
\]

7.6.6, 7.6.7 Clearance and disposal of existing vegetation

The best method for dealing with and/or disposing of vegetation that needs to be cleared depends mainly on the type of vegetation involved. Options range from energy recovery, through chipping for composting or to provide mulch, to leaving log piles to provide shelter for amphibians or small mammals. If the vegetation contains noxious weeds or Schedule 9 plants, safe disposal according to the relevant guidance is the only option. Note that it is important to ensure beneficial use of any timber that has had to be felled to enable a project to proceed, ideally on the project itself but, if that is not possible, on a suitable other project as close by as possible.

7.6.8 Hazardous material assessments

In a UK context, the health and safety assessment process is covered by COSHH. An example of a COSHH Assessment being extended to cover environmental impacts might be guidance on how to store and dispose of materials to avoid pollution to the environment, as opposed to harm to humans in health & safety terms.

7.6.9 Transfer station/recycling centre performance

This can be done by visiting the transfer station or recycling facility and completing an audit of where the material is taken after sorting or processing, or asking them to submit waste returns, which should be submitted to the Environment Agency, SEPA, NIEA or NRW quarterly.

7.6.10 Inert waste diverted from landfill

As a minimum waste should be segregated into inert, non-hazardous and hazardous fractions this can happen either on site or at a Waste Transfer Station. If the latter then the waste contractor’s activities must be checked to ensure they are rigorously segregating waste. It must be remembered that even if the waste contractor offers and is capable of delivering high levels of segregation and recycling, this may not be the best option for the project as some wastes will have an economic value and could be beneficially resold directly by the project, although it must be noted that this may well require additional Environmental Permits to be applied for and gained.

All liquid wastes should be kept in appropriate containers, not poured onto other wastes, which would make them, if nothing else, unusable or unsuitable for re-processing. Such minimal segregation will ensure at the very least the lowest rate of landfill tax is paid on the genuinely inert material, and that hazardous wastes are dealt with at least as carefully as the virgin materials from which they were manufactured.

The aim here is to reward projects that go beyond such minima, and either capture the recyclable wastes identified in the SWMP dealt with under 7.6.4, or take the minimum of three waste streams described above to a construction and demolition waste recycling centre nearby, where the re-usable and recyclable materials are extracted. Where mixed non-hazardous wastes are sent off site to be separated for recycling, it is good practice to obtain evidence from the waste contractor of the amounts and/or proportions of collected waste that have been recycled or recovered.

It should be noted that any on-site re-use of waste must be undertaken in accordance with the EPR 2010 as certain activities, such as crushing and screening of inert waste, may require either an Environmental Permit or an Exemption. Examples for diverting waste from landfill can include waste sent for reprocessing, recovery for suitable use (used on an exempt site) or recovered in an energy-from-waste plant.
### 7.6.11 Non-hazardous waste diverted from landfill

See guidance for 7.6.10.

**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.6.1 Prerequisite: Duty of care</td>
<td>Evidence could include documentary evidence retained in a straightforward file record, which should be available on site. The file record should include copies of waste carriers certificates for all carriers of waste materials, Waste Transfer Notes (or consignment notes for any special or hazardous wastes), copies of Environmental Permits, Licenses and Exemptions for the sites to which the waste is sent and/or documented evidence that waste has been transported to the appropriate facility. This may include telephone checks, following trucks, and/or requiring completed transfer or consignment notes to be returned on a daily basis.</td>
</tr>
<tr>
<td>7.6.2 Prerequisite: Permitting for waste treated or used on site</td>
<td>Evidence would include documentary evidence showing that the appropriate permits, license or exemption have been obtained.</td>
</tr>
<tr>
<td>7.6.3 Prerequisite: Hazardous or special waste</td>
<td>Evidence could be within a SWMP supported by hazardous waste consignment notes and site photographs.</td>
</tr>
<tr>
<td>7.6.4, 7.6.5 Site waste management planning</td>
<td>Evidence would normally be copies of the SWMP, including the appropriate evidence to demonstrate that it has been updated, reviewed and implemented as appropriate. Evidence will also be required to show that waste reduction, recovery and recycling actions have been implemented and targets achieved. These can include design details and notes of meetings, data on waste collection and recycling rates, including waste transfer notes and waste Contractor returns. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>7.6.6 Clearance and disposal of existing vegetation – consideration</td>
<td>Evidence needs to show that the type of vegetation has been assessed and different options have been considered, leading to recommendations that take account of the environmental benefit of the suggested method.</td>
</tr>
<tr>
<td>7.6.7 Clearance and disposal of existing vegetation – implementation</td>
<td>Evidence will depend very much on the recommendations made but, in any case, site records need to demonstrate implementation. Records could include photographs, waste transfer notes, and/or evidence of exempt activity. Information should also be included within the SWMP.</td>
</tr>
<tr>
<td>7.6.8 Hazardous material assessments</td>
<td>Evidence could be within a site waste management plan supported by waste consignment notes and site photographs.</td>
</tr>
<tr>
<td>7.6.9 Transfer station/recycling centre performance</td>
<td>Whichever way the checks are carried out, they must be documented and satisfy legal requirements. If the project team has no direct control over the final destination of their waste, then evidence from the Waste Management Contractor that demonstrates where they will be taking the project’s waste can be used.</td>
</tr>
<tr>
<td>7.6.10 Inert waste diverted from landfill</td>
<td>Evidence could be within a site waste management plan supported by waste consignment notes and site photographs.</td>
</tr>
<tr>
<td>7.6.11 Non-hazardous waste diverted from landfill</td>
<td>Evidence could be in the form of waste transfer notes, photographs showing the different segregated groups or waste contractor returns showing the proportion of waste segregated for recycling or recovery.</td>
</tr>
</tbody>
</table>
Energy use

Aim

To reduce energy demands and increase energy efficiency during design, delivery and operation and minimise carbon emissions and other pollutants associated with energy consumption.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.7.1 Energy &amp; Carbon Emissions Reduction</td>
<td>This can only be scoped out on projects that are not operable, such as land remediation works or flood defence banks</td>
</tr>
<tr>
<td>7.7.2 Implementation of Reductions</td>
<td>Scope out if evidence to 7.7.1 shows that there are no energy-in-use issues to be considered (not even maintenance).</td>
</tr>
<tr>
<td>7.7.3 Opportunities For Renewable / Low-Carbon / Zero-Carbon Energy</td>
<td>Scope out on projects where energy consumption in use is non-existent (for example, a flood defence).</td>
</tr>
<tr>
<td>7.7.4 Incorporating Renewable / Low-Carbon / Zero-Carbon Energy</td>
<td>Scope out where it was considered (under 7.7.3) and found to be not possible or inappropriate. It is not possible to scope this out if 7.7.4 has failed to score.</td>
</tr>
<tr>
<td>7.7.6 Energy Consumption – Consideration During Design</td>
<td>7.7.6 can be scoped out if there were genuinely no opportunities identified. It is unlikely that where 7.7.5 has failed to score that 7.7.6 can be scoped out, except where it can be demonstrated that there were no opportunities.</td>
</tr>
<tr>
<td>7.7.11 Renewable / Low-Carbon / Zero-Carbon Energy During Construction</td>
<td>7.7.11 can be scoped out only in the unlikely event that consideration of this issue identified no useful application of renewable and/or low- or zero-carbon resources. 7.7.11 cannot be scoped out if 7.7.10 has failed to score.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.7.1 Energy and Carbon Emissions Reduction</td>
<td>54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.7.2 Implementation of Reductions</td>
<td></td>
<td>95 (up to)</td>
<td></td>
</tr>
<tr>
<td>7.7.3 Opportunities For Renewable / Low-Carbon / Zero-Carbon Energy</td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>7.7.4 Incorporating Renewable / Low-Carbon / Zero-Carbon Energy</td>
<td></td>
<td>80 (up to)</td>
<td></td>
</tr>
<tr>
<td>7.7.5 Energy Consumption – Consideration During Design</td>
<td></td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>7.7.6 Energy Consumption – Consideration During Design</td>
<td></td>
<td></td>
<td>72</td>
</tr>
<tr>
<td>7.7.7 Energy Consumption – Consideration By Contractor</td>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>7.7.8 Energy Consumption – Consideration By Contractor</td>
<td></td>
<td></td>
<td>58 (up to)</td>
</tr>
<tr>
<td>7.7.9 Construction Plant - Selection And Maintenance</td>
<td></td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>
7.7.10 Renewable / Low-Carbon / Zero-Carbon Energy During Construction

7.7.11 Renewable / Low-Carbon / Zero-Carbon Energy During Construction

Assessment criteria

7.7.1 Energy and carbon emissions reduction for operation (8.4.1)

7.7.1.1 The design has considered options for reducing both the energy consumption and carbon emissions of the project during operation, including the option of designing-out the need for energy-consuming equipment and the energy requirements in maintenance.

7.7.2 Implementation of energy and carbon reductions for operation (8.4.2)

7.7.2.1 Appropriate measures have been incorporated in the design to reduce energy consumption and carbon emissions in use and a percentage of the recommended energy consumption reduction has been saved.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% or more</td>
<td>19</td>
</tr>
<tr>
<td>20% or more</td>
<td>38</td>
</tr>
<tr>
<td>40% or more</td>
<td>57</td>
</tr>
<tr>
<td>60% or more</td>
<td>76</td>
</tr>
<tr>
<td>80% or more</td>
<td>95</td>
</tr>
</tbody>
</table>

7.7.3 Opportunities for renewable / low-carbon / zero-carbon energy within the operational scheme (8.4.3)

7.7.3.1 The design has explored opportunities for the incorporation of energy from renewable and/or low- or zero-carbon sources and thus a reduction in carbon emissions.

7.7.4 Incorporating renewable / low-carbon / zero-carbon energy within the operational scheme (8.4.4)

7.7.4.1 Energy from renewable and/or low- or zero-carbon sources been incorporated in the scheme where appropriate. A percentage of the identified potential renewable energy generation identified in 7.7.3 has been implemented.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% or more</td>
<td>16</td>
</tr>
<tr>
<td>20% or more</td>
<td>32</td>
</tr>
<tr>
<td>40% or more</td>
<td>48</td>
</tr>
<tr>
<td>60% or more</td>
<td>64</td>
</tr>
<tr>
<td>80% or more</td>
<td>80</td>
</tr>
</tbody>
</table>

7.7.5 Energy consumption during construction – consideration during design (8.5.1 a)

7.7.5.1 The Designer has identified opportunities to reduce the energy consumption of the project during construction.
7.7.6 Energy consumption during construction – incorporation in design (8.5.1 b)
7.7.6.1 The Designer has incorporated appropriate measures to reduce energy consumption during construction where feasible.

7.7.7 Energy consumption during construction – consideration by contractor (8.5.2 a)
7.7.7.1 The Contractor has considered measures to reduce the energy consumption and associated carbon emissions of the project during construction and these have been incorporated through an energy management plan or equivalent.

7.7.8 Energy consumption during construction – implementation by contractor (8.5.2 b)
7.7.8.1 The measures in the plan have been monitored throughout construction stage and the measures have been achieved.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitored</td>
<td>46</td>
</tr>
<tr>
<td>Achieved</td>
<td>58</td>
</tr>
</tbody>
</table>

7.7.9 Construction plant – selection and maintenance (8.5.3)
7.7.9.1 The selection and procurement/hiring of construction plant has been influenced by consideration of their energy efficiency, energy type or carbon emissions.
7.7.9.2 The construction plant and ancillary equipment has been maintained to maximise fuel efficiency and minimise carbon emissions.

7.7.10 Renewable / low-carbon / zero-carbon energy during construction – consideration (8.5.4 a)
7.7.10.1 Energy from renewable and/or low- or zero-carbon resources has been considered during construction.

7.7.11 Renewable / low-carbon / zero-carbon energy during construction – implementation (8.5.4 b)
7.7.11.1 A percentage of the savings from the above considerations has been implemented.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5%</td>
<td>8</td>
</tr>
<tr>
<td>5% or more</td>
<td>16</td>
</tr>
<tr>
<td>10% or more</td>
<td>24</td>
</tr>
</tbody>
</table>

**Guidance**

7.7.1 Energy and carbon emissions reduction
Consideration should be given to reducing the following over the expected lifetime of the asset:

- Operational energy demand
- Operational primary energy consumption
- Operational carbon emissions

**Metric guidance**
Resultant greenhouse gas emissions and equivalent carbon emissions for the operation of the works can be reported using equivalent carbon emissions per year, (tCO2e /year). This could be calculated and reported through the following calculation:
Further and more detailed guidance may be found in:

7.7.2 Implementation of reductions
If a full LCA has been completed in 7.3.1, appropriate in this context means those measures that contribute to the LCA and not necessarily the lowest energy solution.

In demonstrating implementation of measures, it must be demonstrated that the original baseline was design to current project norms and not including unnecessarily high-energy consuming equipment. In future versions it is anticipated that this question will be re-focussed to measure improvement from current industry norms but, at this point, these are not readily available to give a robust baseline.

7.7.3 Renewable / low-carbon / zero-carbon energy within the operational scheme
It is important to note that a project does not have to be an energy-consuming works for it to be worth investigating the inclusion of renewables, nor does the installed capacity have to just match the demand of the works in question, especially if other consumers are close by.

Selection or rejection of suitable options should be informed by any life cycle assessment for the project and recommendations from a suitable practitioner. This assessment should be informed by modelling, setting out objectives or targets for the life cycle stages with estimates of savings of total carbon equivalent emissions.

7.7.4 Incorporating renewable / low-carbon / zero-carbon energy within the operational scheme
As with previous questions, in this section it should be stressed that the measurement has to be carried out from the baseline of current industry norms and not an artificial design.

As with 7.7.3, it is important to note that a project does not have to be an energy consuming works for it to be worth investigating the inclusion of renewables, nor does the installed capacity have to just match the demand of the works in question, especially if other consumers are close by.

Metric guidance
The implemented potential renewable energy generation may be calculated and reported using the following metrics:

Percentage of total energy consumed, using a formula such as:

\[
\frac{\text{Estimated annual implemented renewable energy consumed by works}}{\text{Estimated annual total energy consumed by works}} \times 100
\]

Percentage of renewable energy generated and consumed by the completed project to total energy consumed, using a formula such as:

\[
\frac{\text{Estimated annual implemented renewable energy generated and consumed}}{\text{Estimated annual total energy consumed by works}} \times 100
\]

It is possible for the renewable energy generated to be greater than the actual energy consumed during the operation of works. If this is the case, this is a positive outcome, only if the unused renewable generated energy is distributed and shared with consumers close by.

7.7.5, 7.7.6 Energy consumption during construction – consideration during design
It is acknowledged that the responses to these questions are going to be based on estimated savings and, in many cases, the savings may be anecdotal rather than quantified.
When designing and siting the asset the project team could consider:

1. Optimising earth movements required during the construction of the asset and the surrounding site
2. Reducing the amount of site clearance and demolition, e.g. by utilising existing structures where possible.
3. Minimising the dimensions of the asset without impacting on capacity, e.g. reducing length for a linear asset or overall dimensions for a point asset
4. Siting the asset to avoid destruction of existing carbon sinks, e.g. woodland
5. Minimising the extent of temporary works, e.g. length of fencing or access routes required.

When selecting construction methods the project team could consider the following.

**Design team**

1. Using off site construction techniques
2. Standardising permanent materials and components
3. Using ground improvement techniques to avoid excavating soft foundations

When exploring offsite construction techniques, the project team could:

1. Confirm if off-site construction is a viable alternative to traditional construction for aspects of the project through:
   a. Identifying parts of the asset that could be manufactured off site
   b. Identifying activities that could become assembly processes rather than construction processes.
   c. Liaising with all members of the project team including specialists affected by the identified off-site construction opportunities.
2. Compare the environmental impact of off-site construction with traditional on-site construction to determine if off-site construction would have a lower environmental impact than on-site construction. The comparison includes the following for either option:
   a. Potential waste generated.
   b. Predicted volume of materials used.
   c. Predicted impact of the transport of materials i.e. number of movements, distances travelled and where appropriate vehicle types and fuel consumption.
   d. Potential for reuse or recovery of the components at the end of the asset's life
3. Ensure the data gathering process and content of the study is not biased.

Note: Offsite could be considered ‘not viable’ where the risks of pursuing off-site construction outweigh the benefits e.g. risks may be introduced with regards to installation, procurement, timing, safety, maintenance or fitness for purpose.

**Design and construction teams**

1. Reducing the overall construction time, e.g. to reduce the quantity of work required and to reduce ancillary energy requirements such as lighting and site accommodation.
2. Minimising use or designing out high energy-consuming plant and machinery, e.g. tunnel boring machines (TBMs), where feasible.

**7.7.7, 7.7.8 Energy consumption during construction – consideration by contractor**

Whereas using energy-efficient plant reduces energy consumption and carbon emissions, just using renewable energy only reduces carbon unless there is evidence of an energy efficiency programme, such as heating or cooling of on-site cabins.

The primary purpose of 7.7.5, 7.7.6, 7.7.7 and 7.7.8 is to reward the reduction of energy and carbon during construction. It should be noted that if the team have done a full LCA and scored it in 7.3.1 then these issues may well have already been considered, if so then the same evidence can be used.

Monitoring energy use and carbon emissions can highlight differences in utilisation and control of energy, thus providing data for comparison and enabling energy savings in future.
Metric guidance

Energy consumption considerations on site could include the transportation, processing and assembly of materials to and from site; construction and assembly activities or processes; and general site operation and maintenance. Resultant carbon emissions during construction may be reported and calculated using:

Calculated tCO₂e emissions (impact of all major GHG emissions expressed as carbon dioxide equivalent, CO₂e) relative to £100k project construction value, using a formula such as:

\[
\frac{\text{identified tCO₂e emissions}}{\text{Total project construction value} \times 100000}
\]

Reductions achieved through energy management plan or equivalent, using a formula such as:

\[
\frac{\text{identified tCO₂e reductions}}{\text{tCO₂e originally estimated (or typical values)}} \times 100
\]

7.7.9 Construction plant – selection and maintenance

Considering the energy consumption of construction plant and machinery before purchase or hiring will ensure that the better environmental option can be chosen, and savings on fuel can be made in the long run. Regular maintenance of plant and machinery will ensure fuel efficiency and prolong the life of machines and power tools.

When selecting construction plant and machinery the project team could consider:

1. Selecting construction plant and machinery with a high efficiency (%), i.e. the percentage of output rating achieved under typical operating conditions
2. Selecting efficient ancillary equipment, e.g. accommodation, temporary lighting.
3. Select appropriately sized plant and machinery that will carry out the necessary work in the most energy efficient manner.
4. Select plant, machinery and ancillary equipment with timers and other automatic controls which:
   a. Lead to efficiency gains by avoiding additional work being carried out and reduction in the time taken to complete a task
   b. Switch off the lighting during daylight or curfew hours in outdoor areas

The following questions can be asked to assist in the selection of the most efficient equipment that is appropriate for the task:

1. Is the size (output) of the equipment appropriate for the size of the task?
2. At what speed can the equipment perform the task?
3. Is the equipment available?
4. What are the transport costs and associated energy use (distance travelled and mode of use)?
5. How is the performance of the equipment affected by:
   a. The soil characteristics on site?
   b. The geometrical characteristics of the task?
6. Are there space and weight constraints on site?
7. What is the energy source used by the equipment?

When selecting temporary lighting the project team could investigate:

1. The need for lighting on site during construction, including:
   a. Key locations on site where lighting is necessary, e.g. tunnels, and whether light could be limited to these areas
   b. Whether it is feasible to limit construction to daylight hours for all or part of the programme.
2. The applicability of curfews and automated controls to save higher levels of lighting for when needed
3. Opportunities for energy efficient and low carbon lighting solutions.

7.7.10, 7.7.11 Renewable / low-carbon / zero-carbon energy during construction

As with 7.7.3, it is important to note that a project does not have to be an energy consuming works for it to be worth investigating the use of renewables in the construction stage. Measures should be appropriate to the scale and nature of the project, for example, one solar panel on a multi-cabin site office for a multi-million pound project would definitely be insufficient.


**Evidence**

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy and carbon emissions reduction</td>
<td>If an LCA has been completed the evidence here will be a sub-set of that provided in 7.3.1. If an LCA has not been completed, then evidence could include project records and/or minutes of project team meetings. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>Implementation of reductions</td>
<td>Evidence could include project records – minutes of project team meetings, technical reports, and/or drawings</td>
</tr>
<tr>
<td>Opportunities for renewable / low-carbon / zero-carbon energy</td>
<td>Evidence could include minutes of project team meetings, technical reports, and/or drawings.</td>
</tr>
<tr>
<td>Incorporating renewable / low-carbon / zero-carbon energy</td>
<td>Evidence could include drawings, specifications or photographs. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>Energy consumption – consideration during design</td>
<td>Evidence could be in the form of design records or value engineering reports considering the construction methods, such as the size of components to enable efficient lifting and placing as well as the amount of on-site processing or handling of materials.</td>
</tr>
<tr>
<td>Energy consumption – consideration by contractor</td>
<td>Evidence can include records showing consideration of energy issues in site planning and demonstration that energy use and/or carbon emissions are assessed and then monitored. This can include evidence of actions to reduce consumption and emissions as appropriate. This could also include the setting of targets. Evidence could also show use of equipment to proactively manage consumption and emissions, such as timers and passive infrared sensors. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>Construction plant – selection and maintenance</td>
<td>Evidence could be contract specifications and other procurement documents, or plant documentation (for example, records of regular maintenance and emission testing).</td>
</tr>
<tr>
<td>Renewable / low-carbon / zero-carbon energy during construction</td>
<td>Evidence showing the source of site energy is needed. This could be copies of agreements with electricity suppliers showing use of certified fully-renewably-sourced ‘green’ tariffs or photographs showing use of alternative energy sources (such as wind turbines, solar panels, or small-scale combined heat &amp; power). Evidence needs to show that the use of renewable, low- or zero-carbon energy is more than a token effort.</td>
</tr>
</tbody>
</table>
Water use

Aim
To reduce water demands and increase water efficiency during design, delivery and operation and minimise carbon emissions and other pollutants associated with water consumption.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.8.3 Capturing run-off for beneficial use</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project, for example on a refurbishment project that cannot affect the drainage arrangements.</td>
</tr>
<tr>
<td>7.8.4 Water consumption during operation</td>
<td>Scope out on projects where water consumption in use is not an issue, for example a flood defence bank.</td>
</tr>
<tr>
<td>7.8.5 Water consumption during operation</td>
<td>Scope out on projects where water consumption in use is not an issue, for example a flood defence bank.</td>
</tr>
<tr>
<td>7.8.6 Water consumption during operation</td>
<td>Scope out on projects where water consumption in use is not an issue, for example a flood defence bank.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.8.1 Embodied water</td>
<td></td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>7.8.2 Embodied water</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>7.8.3 Capturing run-off for beneficial use</td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>7.8.4 Water consumption during operation</td>
<td></td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>7.8.5 Water consumption during operation</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>7.8.6 Water consumption during operation</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>7.8.7 Water consumption during construction</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>7.8.8 Water consumption during construction</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>7.8.9 Water consumption during construction</td>
<td></td>
<td></td>
<td>24 (up to)</td>
</tr>
</tbody>
</table>

Assessment criteria

7.8.1 Embodied water (8.6.1 a)
7.8.1.1 An assessment has been made at design stage considering the embodied water in the materials required during construction.

7.8.2 Embodied water – implemented (8.6.1 b)
7.8.2.1 The outcomes of the assessment been implemented.
7.8.3 Capturing run-off for beneficial use (7.4.3)

7.8.3.1 The project team has made provision for capturing run-off for beneficial use on the project or nearby and, if appropriate, those provisions have been incorporated in the completed project.

7.8.4 Water consumption during operation – consideration during design (8.6.2 a)

7.8.4.1 The potential impacts on water resources of the operation and maintenance of the completed project have been actively considered during design.

7.8.5 Water consumption during operation – reduction measures included in design (8.6.2 b)

7.8.5.1 Measures to conserve water and reduce water consumption during operation and maintenance of the completed project have been included in the design.

7.8.6 Water consumption during operation – reduction measures incorporated in works (8.6.2 c)

7.8.6.1 The measures referred to in 7.8.5 have been incorporated in the works.

7.8.7 Water consumption during construction – client requirements (8.6.3 a)

7.8.7.1 Specific and measurable requirements to measure, monitor and minimise the consumption of mains or abstracted water during construction have been included in the project brief and the procurement documentation (such as Expressions of Interest, Pre-Qualification Questionnaires and/or Invitation to Tender).

7.8.8 Water consumption during construction – policies, plans, and targets (8.6.3 b)

7.8.8.1 Formal project-level policies and identified measurable targets for reducing water usage during construction have been adopted; and a plan to measure, monitor, and minimise the consumption of mains, tankered, or abstracted water used during the construction process has been produced.

The water minimisation plan should specifically cover:

- Site welfare facilities
- Dust suppression roads
- Dust suppression of stockpiles
- Washing facilities
- Site staff training
- Water Champion

7.8.9 Water consumption during construction – implementation of plans and policies (8.6.3 c)

7.8.9.1 The plan has been implemented and covers the following aspects.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score (for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient use of water in site facilities</td>
<td>6</td>
</tr>
<tr>
<td>Efficient use of water in construction activities</td>
<td>6</td>
</tr>
<tr>
<td>Capturing runoff for reuse during construction</td>
<td>12</td>
</tr>
</tbody>
</table>

Guidance

7.8.1, 7.8.2 Embodied water

The interest in the concept of a ‘water footprint’ and the accompanying methods and tools for its assessment is rooted in the recognition that human impacts on freshwater systems can ultimately be linked to human consumption and that issues like water shortages and pollution can be better understood and addressed by considering production and supply chains as a whole. Therefore,
information on the embodied water of construction products can provide information to facilitate decisions that can help reduce the overall environmental impact of a project.

The water footprint concept and its use to inform materials selection is, however, still relatively new. Organisations such as the Water Footprint Network (www.waterfootprint.org) have published useful guidance documents, including The Water Footprint Assessment Manual: Setting the Global Standard (A. Hoekstra and A. Chapagain et al, 2011). ISO has also published ISO14046:2014 Environmental management – Water footprint – Principles, requirements and guidelines to complement existing standards on Life-Cycle Assessment.

Existing data that could be used to inform a study into the embodied water of construction materials can be found in sources such as the BRE Green Guide to Specification and Environmental Product Declarations.

Metric guidance

It would be advantageous if the volume of embodied water saved or reduced from implementing water efficient construction activity processes is monitored. This could be achieved through comparison and assessment of different design solutions and construction activity plans. Estimates and calculations could be supported by:

1. Consideration of embodied water in LCA of difference design schemes and procedures.
2. Additionally, the total embodied water may be calculated and reported respective to source type, Sources types may include:
   - Potable water (water fit or suitable for drinking, typically mains supplied)
   - Rainwater
   - Grey water (domestic waste water produced, excluding sewage)
   - Surface water (water from overland flow and storage, such as rivers and lakes)
   - Seawater (water from sea or ocean)
   - Groundwater (water held in and recovered from underground formations)
   - Volume of water consumed from different sources during construction, per £100k of project construction value.

The following formula for calculating embodied water may be used:

\[
\frac{\text{Total volume of particular source (e.g. potable water) of water consumed}}{\text{Total project construction value £}} \times 100,000
\]

Based on the above calculations, the reductions achieved from water efficient design and construction may be calculated and reported as:

\[
\frac{\text{Total embodied water savings (m3) achieved}}{\text{Total project construction value £}} \times 100,000
\]

7.8.3 Capturing run-off for beneficial use

Flood risk from new developments can be reduced by keeping the number of sealed surfaces requiring drainage to a minimum (for example by using permeable paving materials or green roofs) and by introducing capture of run-off before it reaches the main drainage system. SuDS such as balancing ponds or wetlands are covered in Section 4.4.

However, this question is focusing on capturing run-off for beneficial use, for example in tanks for non-potable uses on the site. This capture may involve systems included within the wide-ranging definition of SuDS, but it is the capture for beneficial use that is important here. It is therefore possible that a project may be able to score both here and in Section 4.4 for the overall system they implement.
7.8.4, 7.8.5, 7.8.6 Water consumption during operation

Measures to conserve water and reduce water consumption during operation and maintenance could include the use of water efficient or moisture controlled irrigation systems, the use of collected rainwater or greywater as an alternative non-potable water supply, or the installation of a leak detection system.

Options to mitigate the project's impact on the water environment could also include using captured water for energy generation, passive cooling, and/or district heating.

The consideration of these issues during design could be part of a PEMP or can be included in a separate document. The review should assess questions such as:

- What water use does the project entail?
- Are suitable water resources available?
- Are new water resources needed?
- Are they sustainable?
- Does the project endanger security of water supply to existing users?

Metric guidance

Potential reductions achieved from measures to conserve and reduce potable/mains water consumption during operation and maintenance of completed works can be reported through calculation of:

Potential percentage savings of operational annual water (m³/year), using a formula such as:

\[
\text{Water consumed:} \quad \frac{\text{Estimated total volume of all water consumed annually for operational and maintenance} - \text{with conservation and reduction measures}}{\text{Estimated total volume of all water consumed annually for operational and maintenance}}
\]

Percentage of total potential water consumed for maintenance and operation of completed works annually that is from a potable source, using a formula such as:

\[
\frac{\text{Estimated volume of potable water consumed annually}}{\text{Estimated total volume of all water consumed annually for operation and maintenance}} \times 100
\]

7.8.7, 7.8.8, 7.8.9 Water consumption during construction

A proactive approach to reducing water usage in construction should begin at the procurement stage and it is the responsibility of the Client to ensure that requirements are set for water use in the construction process. Improving the efficiency of water use in construction follows the following hierarchy:

1. eliminate water wastage on site;
2. improve efficiency of water-using processes; and
3. offset consumption of mains water with alternative sources such as rainwater harvesting.

A water minimisation plan for the project should be developed that considers:

1. All identified water demands over the life of the asset and how this may be influenced by changes in climate, population and future demand
2. Existing water supplies and how these may be affected by changes in climate, population and future demand
3. Identification of water stressed areas within the geographic location of the asset, by reviewing the water management plans of the local water company
4. The potential for and risks associated with excessive or uncontrolled water usage and leakage from fittings, fixtures, processes etc.
5. Opportunities for implementing water efficient measures and features within the current design and, where appropriate, additions or alterations to meet future needs
6. Opportunities for water reuse and rainwater or grey water recycling during construction and operation

7. Potential water savings available at the construction stage (and where relevant operational stage) from a combination of the following measures:
   a. Water efficient fittings
   b. Water efficiency measures and processes
   c. Reusing and recycling water.

Key water using processes on construction sites are considered to be:

1. site cabins and temporary accommodation;
2. general site activities including tool washing;
3. wet trades, such as brickwork, screeding, concreting and plastering;
4. groundworks, including grouting and drilling;
5. dust suppression, including road and wheel washing;
6. hydro-demolition;
7. cleaning of tools and plant equipment, lorry washing; and
8. commissioning and testing of building plant and services.

Activities where it is thought the majority of water wastage occurs include:

1. general dust suppression, suppression on site roads and wheel washes;
2. hydro-demolition with high pressure water;
3. lorry wash out;
4. wash out of ready mixed concrete wagons;
5. site and general cleaning;
6. specialist and high pressure cleaning; and
7. commissioning plant and services.

Water metering for the construction stage is essential to manage water prudently. The following should be considered:

1. The main water meter supplying the site is accessible for reading the meter.
2. Sub-meters are installed on:
   a. Each water zone
   b. Water discharge points which have the potential for uncontrolled flow because of human behaviour, e.g. leaving a tap running
   c. Water discharge points considered to have the highest estimated daily volumetric use within each zone
   d. Rainwater recycling technology
   e. Grey water recycling technologies.
3. Water consumption is recorded weekly for the items mentioned and an assessment made of erroneous consumption, e.g. high or low water demands to identify leaks or maintenance requirements.
4. A monthly site inspection is carried out to identify:
5. Inefficiencies in water devices and water discharge points including leaks and overflows
6. Actions needed because of the inspection including relevant operation, maintenance or replacement information
7. Out-of-hours assessment of base load water consumption.
8. Total and net water consumption is recorded at the end of the project or yearly and compared with the target. The end of project figures are reported.

At the procurement stage, requirements can be set to minimise water use during construction from mains and abstracted sources. For example, requirements could include the re-use of water from settlement lagoons as a non-potable water supply for damping down during dusty periods. See guidance at www.strategicforum.org.uk/water.shtml.

Evidence
<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embodied water</td>
<td>Evidence would include information gathered on the embodied water of the construction products and materials required for the project, either from product or material suppliers. It would also include documentary evidence that decisions on material or product choice have been made on the basis of embodied water. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>Capturing run-off for beneficial use</td>
<td>Evidence should show what measures (such as the ones mentioned above) have been incorporated into the design. This could be in the form of drawings, specifications or other design output documents, with construction records or photographs to demonstrate their construction.</td>
</tr>
<tr>
<td>Water consumption during operation</td>
<td>Evidence of the design consideration could include assessment of predicted water use, review of availability of water resources or a copy of consultation with the relevant water authority regarding water supply and resource availability. At design stage, evidence is required of investigations into water conservation measures. This could be in various documented forms (such as notes of brainstorming sessions, and notes, specifications or drawings showing measures incorporated into the design). Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
<tr>
<td>Water consumption during construction</td>
<td>Evidence could be a copy of documentation (such as the Project Environment Policy) showing that the Client has formally adopted policies and targets and copies of reports (such as Environmental or Corporate Responsibility report) demonstrating the measurement of performance against targets. The Client would also need to provide copies of the procurement documentation and contracts showing these requirements have been cascaded throughout its supply chain. A proactive approach to reducing water usage in construction should begin at the procurement stage and it is the responsibility of the Client and Designer to ensure that requirements are set for water use in the construction process.</td>
</tr>
</tbody>
</table>
Transport

Summary

This category encourages the effective management of transport impacts from all modes of transport both during construction and as operational impacts. Transport impacts considered within this assessment include the movement of construction materials and waste, construction workforce transport, as well as disruption to other users of the transport network during the life of the asset. An emphasis is placed on designing out transport impacts wherever possible and consultation with local community to create opportunities for an integrated transport system.

Category summary table

<table>
<thead>
<tr>
<th>Assessment issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport networks</td>
</tr>
<tr>
<td>Construction logistics</td>
</tr>
</tbody>
</table>
Transport networks

Aim
To enhance local transport networks and promote active travel for community benefit.

Assessment scope
Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1.1 Relationship to the transport network</td>
<td>Scope out for projects having no permanent effect on the level of service provided by existing transport networks.</td>
</tr>
<tr>
<td>8.1.2 Transport effects of the completed project</td>
<td>Scope out for projects that generate no additional traffic impact, (for example flood defences or pipelines); and/or are wholly or essentially refurbishments.</td>
</tr>
<tr>
<td>8.1.3 Access for pedestrians and cyclists</td>
<td>This applies to any site that was publicly accessible prior to development. It can be scoped out where the site is of necessity a secure site where public access is inappropriate.</td>
</tr>
<tr>
<td>8.1.4 Need for additional transport infrastructure</td>
<td>This should be scoped out for projects that are on or creating new elements of transport infrastructure. It can also be scoped out for civil engineering projects that generate no additional impacts from traffic. Examples include flood defences, pipelines, and new water or sewage treatment works where, after construction, traffic may well be reduced as fewer staff may work on the new plant. Minor access works can be scoped out.</td>
</tr>
<tr>
<td>8.1.5 Enhanced operational transport outcomes</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>8.1.6 Community consultation on the design objectives</td>
<td></td>
</tr>
<tr>
<td>8.1.7 Resilience of the transport network</td>
<td>Scope out where the project has little or no impact upon the transport network.</td>
</tr>
<tr>
<td>8.1.8 Adaptability of the transport network</td>
<td>Scope out where the project has little or no impact upon the transport network.</td>
</tr>
<tr>
<td>8.1.9 Performance for non-motorised users</td>
<td>Scope out where the project has little or no impact upon all modes of transport.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1.1 Relationship to the transport network</td>
<td>27 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1.2 Transport effects of the completed project</td>
<td></td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>8.1.3 Access for pedestrians and cyclists</td>
<td></td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>8.1.4 Need for additional transport infrastructure</td>
<td></td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>8.1.5 Enhanced operational transport outcomes</td>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>8.1.6 Community consultation on the design objectives</td>
<td></td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>8.1.7 Resilience of the transport network</td>
<td></td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>
8.1.8 Adaptability of the transport network  

<table>
<thead>
<tr>
<th>Mode with improved level of service</th>
<th>Score (for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Car or Van</td>
<td>3 for each mode</td>
</tr>
<tr>
<td>(ii) HGV</td>
<td></td>
</tr>
<tr>
<td>(iii) Bus</td>
<td></td>
</tr>
<tr>
<td>(iv) Bicycle</td>
<td></td>
</tr>
<tr>
<td>(v) Walking</td>
<td></td>
</tr>
<tr>
<td>(vi) Equestrian</td>
<td></td>
</tr>
<tr>
<td>(vii) Rail</td>
<td></td>
</tr>
<tr>
<td>(viii) Aviation</td>
<td></td>
</tr>
<tr>
<td>(ix) Water</td>
<td></td>
</tr>
</tbody>
</table>

8.1.9 Performance for non-motorised users  

16 (up to)

Assessment criteria

8.1.1 Relationship to the transport network (9.1.1)

8.1.1.1 In the case of a transport project, the project provides improved levels of service and extends to all modes in a way that delivers improved integration.

8.1.2 Transport effects of the completed project (9.1.2)

8.1.2.1 The project team has considered and incorporated measures that reduce relevant, transport-related impacts of the completed project on the local community.

8.1.3 Access for pedestrians and cyclists (9.1.3)

8.1.3.1 There has been consultation on, or consideration given to, the ability of pedestrians and cyclists to pass through the site on dedicated paths and to establishing links with existing and proposed routes to local services.

8.1.4 Need for additional transport infrastructure (9.2.1)

8.1.4.1 The project does not require provision of, or increase the need for, additional transport infrastructure.

8.1.5 Enhanced operational transport outcomes (9.2.2a)

8.1.5.1 There is evidence from the design process that Designers have worked beyond the standards specified in the design codes to deliver enhanced operational transport outcomes.

8.1.6 Community consultation on the design objectives (9.2.2b)

8.1.6.1 There is evidence from the design process that the community affected by the project has been involved in specifying the design objectives.
8.1.7 Resilience of the transport network (9.2.3)
8.1.7.1 The resilience and recovery of the transport network has been considered during the design process.

8.1.8 Adaptability of the transport network (9.2.4)
8.1.8.1 The design delivers a transport network with improved ability to accommodate future change.

8.1.9 Performance for non-motorised users (9.2.5)
8.1.9.1 The project team has provided measures that improve the level of performance for non-motorised users either within or outside the project site.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score (for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures taken to mitigate adverse impacts such that the net effect is no change</td>
<td>3</td>
</tr>
<tr>
<td>Measures taken that provide enhancements for able-bodied people.</td>
<td>4</td>
</tr>
<tr>
<td>Measures taken include enhancements for vulnerable members of the community.</td>
<td>9</td>
</tr>
</tbody>
</table>

Guidance

8.1.1 Relationship to the transport network
A sustainable project places few demands on the construction of new transport infrastructure and existing services. Where additional demands exist or are justified, then it is important that they be matched by increased transport capacity that enables no significant loss in the level of service available to existing users.

8.1.2 Transport effects of the completed project
Road schemes may score if they reduce the overall volume of traffic by, for example, developing bus or cycle lanes. In addition, redesigning a junction may make that part of the road network more-efficient, thus reducing congestion and thus emissions. Such projects are now considered to be an important part of the better management of the road network so, if this can be demonstrated, then points should be awarded.

The issues that could be relevant include:

- Severance
- Ease of use (signs and communications)
- Safety
- Congestion
- Parking spaces
- Inconvenience

8.1.3 Access for pedestrians and cyclists
When introducing a new built feature into the landscape, issues regarding public access and security need to be addressed during the planning and design stages. If a scheme results in the closing-off to the public of previously accessible areas, there has to be a trade-off between the loss of accessible land and the provision of public access. This could be the provision of new access routes, such as bridleways, cycle paths or walkways, or the enhancement of existing routes or amenity features. Consideration of the balance can also result in preventing public access on health & safety grounds and to avoid nuisance.
Please note that this question applies to any site that was publicly accessible prior to development for formal or informal amenity use, for example, for walking, dog walking or as informal play area. Such areas, even where not formally protected, can have an important amenity value for the local community and some compensation for the loss of that amenity should be made where possible. Any such compensation scheme should also include maintenance arrangements to ensure its long-term success.

For road projects, ‘public space’ should refer to space provided for community benefit rather than road users.

8.1.4 Need for additional transport infrastructure

The requirement is not necessarily about demand on the transport network but the ability of the transport network to absorb any demand the project places on the network. A project with significant demands that can be absorbed by existing transport infrastructure can score, whereas a more-modest project that requires additional transport infrastructure will not.

8.1.5 Enhanced operational transport outcomes

Suitable evidence would be where departures from standards have been sought from the regulatory authorities, or where a novel technique or approach has been adopted that does not feature as standard industry practice.

8.1.6 Community consultation on the design objectives

Community consultation on the design objectives Community engagement in the project specification may be demonstrable from the identification of projects within local plans or consultation with the community on the design objectives to be applied before the design process commences. Hence, consultation events would need to be held at the project inception rather than at the optioneering or project consent stage.

8.1.7 Resilience of the transport network

Resilience and recovery of the transport network is to be considered in terms of the ability of the asset to return to normal levels of service following severe weather, terrorism and unusual events.

8.1.8 Adaptability of the transport network

This seeks to recognise that enhancements to the transport network may incorporate some level of future-proofing. It also recognises that a project may deliver benefits for other planned projects such as through financial contributions or additional capacity.

Future-proofing is to be considered in terms of the project’s design life, adaptability, allowance for future provision and aiding delivery of future projects.

8.1.9 Performance for non-motorised users

With an increasingly elderly population who will be less mobile, measures that ease their transport needs are to be recognised. Vulnerable members of the community not only include groups such as the elderly and people with mobility difficulties but could also include children and women, particularly if road safety or safety at night is a consideration.

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1.1 Relationship to the transport network</td>
<td>Evidence could be found in an Environmental Statement or Transport Impact Assessment.</td>
</tr>
<tr>
<td>8.1.2 Transport effects of the completed project</td>
<td>Evidence could be found in an ES, TIA, drawings and plans.</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>8.1.3</td>
<td>Access for pedestrians and cyclists</td>
</tr>
<tr>
<td>8.1.4</td>
<td>Need for additional transport infrastructure</td>
</tr>
<tr>
<td>8.1.5</td>
<td>Enhanced operational transport outcomes</td>
</tr>
<tr>
<td>8.1.6</td>
<td>Community consultation on the design objectives</td>
</tr>
<tr>
<td>8.1.7</td>
<td>Resilience of the transport network</td>
</tr>
<tr>
<td>8.1.8</td>
<td>Adaptability of the transport network</td>
</tr>
<tr>
<td>8.1.9</td>
<td>Performance for non-motorised users</td>
</tr>
</tbody>
</table>
Construction logistics

Aim

To reduce carbon emissions and avoid negative effects on local health, safety and travel arising from construction stage transport movements and diversions arising as a result of preparation and construction works.

Assessment scope

Only criteria listed in the table below can be scoped out of assessments. All other criteria are fixed.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Scoping guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2.2 Transport effects of construction activities</td>
<td>Scope out only for self-contained sites that do not require access to public highways nor disrupt the rights of way network.</td>
</tr>
<tr>
<td>8.2.5 Minimising disruption from construction traffic</td>
<td>The decision to scope out will depend on the nature, scale, location and context of the project.</td>
</tr>
<tr>
<td>8.2.6 Success in minimising construction traffic impacts</td>
<td>Scope out for projects with little in the way of construction traffic.</td>
</tr>
<tr>
<td>8.2.7 Movement of construction materials</td>
<td>This may be scoped out if the analysis used to answer 8.2.7.a shows that no such alternatives are either available or would be appropriate on the project.</td>
</tr>
</tbody>
</table>

Scoring

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Strategy</th>
<th>Design</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2.1 Planning construction traffic movements</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.2 Transport effects of construction activities</td>
<td>23 (up to)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2.3 Reducing risks for vulnerable road users</td>
<td></td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>8.2.4 Responsible fleet operation</td>
<td></td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>8.2.5 Minimising disruption from construction traffic</td>
<td></td>
<td>9</td>
<td>28</td>
</tr>
<tr>
<td>8.2.6 Success in minimising construction traffic impacts</td>
<td></td>
<td></td>
<td>20 (up to)</td>
</tr>
<tr>
<td>8.2.7.a Movement of construction materials</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8.2.7.b Movement of construction materials</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>8.2.8.a Workforce travel planning</td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>8.2.8.b Workforce travel planning</td>
<td></td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Assessment criteria

8.2.1 Planning construction traffic movements (9.3.1)

8.2.1.1 Construction traffic movements have been reviewed or considered by the project team prior to the construction stage commencing.

8.2.2 Transport effects of construction activities (9.3.2 – modified)

8.2.2.1 The project team has incorporated measures that deliver improved performance on the following effects of construction activities on the local community.
8.2.3 Reducing risks for vulnerable road users (New)

8.2.3.1 The project team have incorporated measures that improve safety for vulnerable road users.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score (for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The construction site entrance has been managed to minimise the risks to vulnerable road users arising from vehicles approaching and leaving the development footprint.</td>
<td>4</td>
</tr>
<tr>
<td>The development footprint is accessible for delivery vehicles fitted with safety features (e.g. side under run protection).</td>
<td>4</td>
</tr>
<tr>
<td>Access routes to the development footprint, including for heavy vehicles, have been managed to minimise risks to vulnerable road users.</td>
<td>4</td>
</tr>
<tr>
<td>All fleet operator(s) have undertaken regular driver training and awareness to promote safety within the development footprint and off site.</td>
<td>4</td>
</tr>
<tr>
<td>The fleet operator(s) have captured and investigated any road incidents and near misses and reported them back to the principal contractor for analysis.</td>
<td>4</td>
</tr>
</tbody>
</table>

8.2.4 Responsible fleet operations (New)

8.2.4.1 All fleet operators travelling to or from the construction site have used a compliant organisational, local, or national considerate fleet operations scheme and their performance against the scheme has been confirmed by independent assessment and certification or verification.

8.2.4.2 The fleet operators have achieved the relevant level of performance for the compliant scheme.

8.2.5 Minimising disruption from construction traffic (9.3.3)

8.2.5.1 Measures have been included in the project specification and construction management that minimise disruption caused by construction traffic, whether on the public network, from construction vehicles on site, or on both.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures included in the project design</td>
<td>9</td>
</tr>
<tr>
<td>Measures delivered during the construction stage</td>
<td>28</td>
</tr>
</tbody>
</table>

8.2.6 Success in minimising construction traffic impacts (9.3.4)

8.2.6.1 There is evidence available at the end of the construction stage to demonstrate that measures to minimise the impacts of construction traffic have been monitored and been successful.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitored</td>
<td>8</td>
</tr>
<tr>
<td>Successful</td>
<td>20</td>
</tr>
</tbody>
</table>
8.2.7.a Movement of construction materials

8.2.7.a The project team has considered possible use of other, more-sustainable transport routes (other than road), such as rail and/or water, for the movement of construction materials and/or waste.

8.2.7.b Movement of construction materials

8.2.7.b The outcome of this assessment has implemented some or all of the measures.

8.2.8.a Workforce travel planning

8.2.8.a There is a travel plan in place for each of the organisations responsible for delivering the project that is aimed at an appropriate balance of effectiveness for the travellers, and at minimising adverse environmental and social impacts associated with the travel involved.

a. Client organisation
b. Design teams
c. Lead construction Contractor

8.2.8.b Workforce travel planning

8.2.8.b For each travel plan identified in 8.2.8.a, the plans have been successfully implemented for each of the project team organisations.

a. Client organisation
b. Design teams
c. Lead construction Contractor

Guidance

8.2.1 Planning construction traffic movements

The consequences of construction traffic upon all modes of transport, including on cycling and walking as well as vulnerable members of society, must be part of the consideration to score. Evidence could be baseline study data (a stand-alone report or produced as part of an EIA) but, where appropriate, could also be minutes of meetings where the issue has been actively considered.

8.2.2 Transport effects of construction activities

This can be achieved, for example, by assessing the transport impacts of materials delivery and construction staff travel, considering options for site access and transport routes. Consideration of alternative means of transport for materials (other than by road) is considered in 8.2.7.

8.2.4 Responsible fleet operations

Compliant schemes are listed in the table below, along with the minimum required level of performance.

If you wish us to evaluate a scheme to be recognised in future, contact BRE Global with 'Infrastructure: Responsible fleet operation - New scheme evaluation' in the subject header (support@ceequal.com).

<table>
<thead>
<tr>
<th>Location</th>
<th>Scheme name</th>
<th>Minimum level</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>Fleet Operators Recognition scheme (FORS)</td>
<td>FORS Silver</td>
</tr>
</tbody>
</table>

8.2.5 Minimising disruption from construction traffic

This question focuses upon the movement of construction materials and waste rather than the movement of the construction teams, which is considered in 8.2.8. In addition, it is important to recognise that noise and dust nuisance may be caused by internal haul roads as well as by the effects of construction traffic upon the transport network.
Measures by the Client or Contractor could include a contractual ability to impose sanctions on the company causing an infringement or hard enforcement measures, such as local liaison and/or cameras. Further measures at construction stage could include direction signage, and route planning to avoid particular roads.

**8.2.6 Success in minimising construction traffic impacts**

This question is focused on successful implementation of the measures outlined in 8.2.5.

**Metric guidance**

Monitoring and measurement of success in minimising construction traffic impacts could be done through recording and auditing of construction transportation movements, to and from site. Possible calculations and reporting methods include:

- **Total number of commercial vehicle movements onto site per £100k construction value**, using a formula such as:
  
  \[
  \frac{\text{Total number of commercial vehicle movements recorded}}{\text{Total project construction value}} \times 100,000
  \]

- **Total distance (km) due to commercial movements to site per £100k construction value**, using a formula such as:
  
  \[
  \frac{\text{Total recorded distance travelled due commercial vehicle movements}}{\text{Total project construction value}} \times 100,000
  \]

- **Total distance travelled (km) per tonne of construction material**, using a formula such as:
  
  \[
  \frac{\text{Total recorded distance travelled due commercial vehicle movements}}{\text{Total weight of material consumed in permanent works}}
  \]

- **Percentage of carbon emissions due commercial vehicle movements**, using the formula:
  
  \[
  \frac{\text{Calculated tCO2e due to construction vehicle movements}}{\text{Total embodied tCO2e}} \times 100
  \]

**8.2.7 Movement of construction materials**

The project team needs to demonstrate that appropriate alternatives have been considered, even if they are apparently extreme. For example, the use of helicopters to transport materials and or equipment to a remote, sensitive site to avoid building of a temporary haul road may be acceptable, but needs to be fully justified.

In considering this question, the movement of materials not just to and from the construction site should be considered, but also the effect that the supply chain may have on the movement of major elements of the project components.

**8.2.8 Workforce travel planning**

Even if movements by the Client organisation or design team are modest compared to those at the construction stage, these travel plans are felt to be helpful in not only reducing adverse impacts but in setting a tone for the project team.

Distance and carbon emissions are both significant, so distance and form of travel are relevant, and, hence, executive travel by air would be considered a potentially a very significant movement.

Appropriate measures may include, for example, access to public transport links, provision of a minibus, provision of temporary accommodation, encouraging car-pooling or prescribing specific routes for journeys (including access arrangements, compounds, parking and public transport).
Metric guidance

Workforce travel may be managed and controlled by implementing systems to monitor and record travel movements during the construction of works.

A workforce transport survey or travel diaries may be used to record:

- The different transportation modes used.
- Frequency of and distance of movements to and from site.

Minimising and monitoring of workforce transport movements may be reported through calculation of:

- The total number of workforce vehicle or transportation movements (individual round trips) to site per £100k construction value, using a formula such as:

  \[
  \frac{\text{Total number of workforce transportation movements recorded}}{\text{Total project construction value £}} \times 100,000
  \]

- The total distance (km) due to workforce movements to and from site (total distance of each individual round trip) per £100k construction value, using a formula such as:

  \[
  \frac{\text{Total recorded distance travelled due to workforce vehicle movements}}{\text{Total project construction value £}} \times 100,000
  \]

- Average distance travelled per person to and from site, using a formula such as:

  \[
  \frac{\text{Total recorded workforce distances travelled to and from site}}{\text{Total number of recorded workforce movements}} \times 100
  \]

- Percentage use of local public transport modes, using the formula:

  \[
  \frac{\text{Total number of recorded local public transportation mode uses}}{\text{Total number of workforce transportation movements}} \times 100
  \]

Evidence

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Evidence guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2.1 Planning construction traffic movements</td>
<td>Evidence is likely to be found in a TIA, ES and/or contract documentation.</td>
</tr>
<tr>
<td>8.2.2 Transport effects of construction activities</td>
<td>Evidence is likely to be in the form of drawings, plans or photographs that demonstrates the incorporation of measures that reduce the effects upon local communities.</td>
</tr>
<tr>
<td>8.2.5 Minimising disruption from construction traffic</td>
<td>Evidence is likely to be drawn from the commitments made in the ES, the evidence supporting the planning application, the specifications or terms &amp; conditions that the tendering Contractors are operating under, or the transport sections of a Construction Environmental Management Plan (CEMP) or similar document.</td>
</tr>
<tr>
<td>8.2.6 Success in minimising construction traffic impacts</td>
<td>It is accepted that proving success in these situations is difficult because there is no control project running alongside the one with the measures in place, and because of the challenge of proving that an issue has been minimised. However, a combination of demonstrating the measures were aimed at minimising impacts and that they have been achieved (for example using video clips and photographs) is what is being sought here. In addition, a signed statement by the Project Director to confirm the absence of complaints may also be appropriate. Evidence of monitoring and measuring transportation movements may be from security or gate records, material order/receipts or waste transfer notes etc in order to record number/frequency of vehicle movements and the average distance of round trip to site. Evidence</td>
</tr>
<tr>
<td>8.2.7 Movement of construction materials</td>
<td>Evidence will need to be shown in the Client’s requirements or in design and/or site records to demonstrate consideration of alternative transport methods.</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8.2.8 Workforce travel planning</td>
<td>Evidence is required that demonstrates that the need for travel plans has been considered rather than evidence of the number of movements by particular transport modes. For implementation, evidence could be reports on numbers of workforce travelling to work by car as opposed to public transport, car counts compared to total number of workforce employed on site or similar. Evidence could alternatively include the calculation and reporting of the metric-based guidance.</td>
</tr>
</tbody>
</table>