



**CEEQUAL**

The Assessment and Awards Scheme for improving sustainability in civil engineering and the public realm

**CEEQUAL Version 4.1  
Assessment Manual for  
Term Contracts**

**Part 2: Multiple Small New Works**  
(for use in the UK & Ireland)

**Rev 0, March 2011**

***To be read in conjunction with the  
Scheme Description and Assessment Process Handbook***

CEEQUAL was originally developed by a team led and part-funded by the Institution of Civil Engineers and the UK Government. It was initially called The Civil Engineering Environmental Quality Assessment & Awards Scheme. It is operated through CEEQUAL Ltd, which is owned by a group of organisations that were actively involved in the development of the scheme, including the ICE, ACE, CECA and CIWEM.

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## Glossary

ACE	Association for Consulting and Engineering	IEMA	Institute of Environmental Management and Assessment
AGLV	Area of Great Landscape Value (local authority designation)	IFA	Institute of Field Archaeologists (in Ireland)
AONB	Area of Outstanding Natural Beauty	IHBC	Institute of Historic Building Conservation (in Ireland)
BAP	Biodiversity Action Plan	IPPC	Integrated Pollution Prevention and Control
BAT	Best Available Technology	IT	Information Technology
BATNEEC	Best Available Technology Not Entailing Excessive Cost	IUCN	International Union for Conservation of Nature
BPEO	Best Practicable Environmental Options	LBAP	Local Biodiversity Action Plan
BRE	Building Research Establishment	LDF	Local Development Framework
BREEAM	BRE Environmental Assessment Methodology	LMS	Landscape Management Strategy
CATNAP	Cheapest Available Technique Narrowly Avoiding Prosecution	LNR	Local Nature Reserve
C&D	Client & Design	LPA	Local Planning Authority
C&OD	Client & Outline Design Interim Award	LWP	Landscape Works Plan
CABERNET	Concerted Action on Brownfield and Economic Regeneration Network	NE	Natural England
CADW	The Welsh Assembly Government's historic environment division.	NGO	Non-Governmental Organisation
CEMP	Contract Environmental Management Plan	NIEA	Northern Ireland Environment Agency (formerly the Environment & Heritage Service, Northern Ireland)
CCS	Considerate Constructors Scheme	NNR	National Nature Reserve
CCW	Countryside Council for Wales	NRA	National Roads Authority (in Ireland)
CDM	Construction (Design and Management) Regulations	NSO	Question cannot be scoped out
CECA	Civil Engineering Contractors' Association	ODPM	Office of the Deputy Prime Minister (now DCLG)
CL:AIRE	Contaminated Land: Application in Real Environments	PEFC	Programme for the Endorsement of Forest Certification Schemes
CLEA	Contaminated Land Exposure Assessment	PIR	Passive Infra Red
COSHH	Control of Substances Hazardous to Health Regulations 2002	PFI	Private Finance Initiative
CPA	Construction Products Association	PPG	Planning Policy Guidance
CRoW	Countryside and Rights of Way Act	PPS	Planning Policy Statement
CSA	Canadian Standard Associations	QRA	Quantitative Risk Assessment
CSR	Corporate Social Responsibility	RBCL	Risk-Based Clean-up Levels
D&B	Design & Build	SEMP	Site Environmental Management Plan
DCLG	Department for Communities and Local Government	SEPA	Scottish Environment Protection Agency
DEFRA	Department for Environment, Food and Rural Affairs	SFI	Sustainable Forestry Initiative
DETR	Department of the Environment, Transport and the Regions (before reorganisation in 2001)	SGV	Soil Guideline Values
DMRB	Design Manual for Roads and Bridges	SiLC	Specialist in Land Condition
DREAM	Defence Realm Environmental Assessment Method	SINC	Site of Importance for Nature Conservation
EA	Environment Agency (for England & Wales)	SMR	Sites and Monuments Record
EC	European Commission	SNH	Scottish Natural Heritage
ECI	Early Contractor Involvement	SSSI	Site of Special Scientific Interest
EH	English Heritage	SuDS	Sustainable Drainage Systems
ECJ	European Court of Justice	SWMP	Site Waste Management Plans
EIA	Environmental Impact Assessment	TIA	Transport Impact Assessment
EMAS	Eco-Management and Audit Scheme	TPO	Tree Preservation Order
EMS	Environmental Management System	TRADA	Timber Research and Development Association
EPA	Environmental Protection Act 1990	UDP	Unitary Development Plan
ES	Environmental Statement	VOC	Volatile Organic Compound
EWC	European Waste Catalogue	WCA	Wildlife & Countryside Act
FSC	Forest Stewardship Council	WPA	Whole Project Award
HAZOP	Hazard and Operability Studies	WRAP	Waste & Resources Action Programme
HIA	Health Impact Assessment		
ICE	Institution of Civil Engineers		
ICRCL	Interdepartmental Committee on the Redevelopment of Contaminated Land		

# Introduction to the Assessment Manual for Term Contracts for Multiple Small New Works

CEEQUAL for Term Contracts has been specifically created for the assessment of civil engineering and public realm works that are undertaken through contracts covering work in a geographical or operational area over a number of years. Examples include highway, rail or sewer maintenance, regular interventions in rivers or drainage channels to maintain channel capacity, and a series of minor new works such as road junction remodelling, track maintenance and minor realignments, all undertaken through what we are calling 'Term Contracts'. With multiple works orders for the individual jobs within the contract, not only is the nature of the work often different from projects, but its procurement and management are also normally different.

This new tool is being operated in addition to, and is complementary to, CEEQUAL for UK Projects, so there are now three derivatives of the overarching CEEQUAL methodology: CEEQUAL for UK Projects, CEEQUAL for International Projects and CEEQUAL Term Contracts. CEEQUAL Term Contracts has been developed to extend the scope of CEEQUAL in allowing term contract works to be assessed and gain Awards against essentially the same underlying criteria as new civil engineering or refurbishment projects are assessed using the Projects Version.

The question set and guidance in this new Version apply as far as is appropriate Version 4.1 of the overall CEEQUAL methodology. Some of the questions and scores within each section of the Manual have had to be removed or adapted to take account of the different parameters for a term contract rather than a project, but the main structure and approach is the same as in the CEEQUAL Assessment Manual for Projects.

It should be noted at the outset that there are two question sets, one for maintenance works and one for new works, contained in two matching Manuals, and two matching spreadsheets for capturing the scores and evidence. For contracts whose scope includes both maintenance and new works, these will need to be assessed separately and the scores aggregated after completion of each assessment, as explained below. This Manual contains the CEEQUAL assessment questions and guidance for the environmental and social assessment of contracts for multiple small new civil engineering and/or public realm works.

The Manual must be read in conjunction with the separately-available CEEQUAL Scheme Description and Assessment Process Handbook, which sets out not only the purpose and origins of CEEQUAL but also the fundamental principles and process of a CEEQUAL Assessment and its Verification. A description of how the assessment of Term Contracts is to be undertaken is provided below, together with a summary reminder of the operation of a CEEQUAL Assessment and its Verification.

Throughout the Manual, wherever practicable, references are provided to relevant law and guidance. Within the UK there is a wide range of regional variations, some regulations being applicable across the UK, some only to England, Wales, Scotland or Northern Ireland. In some sections where it has been practical to do so these regional variations are listed in detail, whereas in others just one has been quoted with 'or equivalent' added. These 'equivalents' within the UK and into northwest Europe will be progressively addressed in future updates (either within the Manual or as separate guidance sheets) and we invite users to write in with any details that they are able to supply – please write to Ian Nicholson, CEEQUAL Technical Manager at [ian.nicholson@ceequal.com](mailto:ian.nicholson@ceequal.com).

## What is different about CEEQUAL Term Contracts compared to CEEQUAL UK Projects

### *What are term contracts? And why a separate Version of CEEQUAL?*

By 'term contracts', we mean those where a civil engineering or public realm works activity – such as road, sewer or water-main maintenance or a series of minor improvements – is undertaken in a geographical area over a term of often 3, 4, 5 or more years, and with multiple works orders for the individual jobs. Not only is the nature of the work often different from projects, but its procurement and management are also normally different.

In addition, the environmental management of such works, which are distributed over a wide geographical area and with each item of work often comparatively small, presents special challenges. It is, however, important to note that, at one end of the scale, the works covered by such contracts may simply be straightforward road maintenance whereas, at the other end, significant new construction may be involved.

For this reason, there is the provision for an increased level of scoping-out of questions to match the scale and nature of the works being assessed – see Section ‘How contracts are to be assessed’ below.

CEEQUAL for Term Contracts has been developed to extend the scope of CEEQUAL in allowing term contract works to be assessed and gain Awards against essentially the same underlying criteria as new civil engineering or refurbishment projects are assessed using CEEQUAL for UK Projects. The question set and guidance in this Manual match as far as is appropriate Version 4.1 of the CEEQUAL Scheme, but some of the questions and scores within each section of the Manual have had to be removed or adapted to take account of the different parameters for a term contract as opposed to a project. However, the main structure and approach is the same as in the Manual for CEEQUAL for UK Projects.

Where a question has been removed because it is not relevant to the assessment of term contracts, subsequent questions have not been renumbered, but retain the same question number as in CEEQUAL for UK Projects.

A Term Contract offers a convenient means of carrying out large numbers of discrete jobs of relatively low individual value. Through this mechanism procurement costs per job are minimised by work simply being initiated by a written order/instruction. The success of such a contract is normally a reflection of the strength of the contractor’s understanding of the Client’s requirements, the teamwork generated amongst the parties, and the successful delivery of these requirements. So it is recognised that any assessment of term contracts should be a team effort between all parties involved in the contract: Client, Designer (if included), Contractor and Contract Manager or Engineer. This approach should maximise the opportunity for any CEEQUAL assessment to be ultimately successful. It is also why each question does not use the three separate scoring columns for Client, Design & Construct used in CEEQUAL for UK Projects.

## Terminology

To avoid any confusion over the terminology used in this Term Contracts version of CEEQUAL, please note the following definitions of some of the terms used throughout the Manual:

<b>Term Contract</b>	A time-based contract where an agreed schedule of rates is used to execute work as a particular need arises.
<b>Contract team</b>	All the parties defined in the contract
<b>Delivery team</b>	The contract team minus the client
<b>Client</b>	The owner of the assets being maintained or the owners agent
<b>Principal Contractor</b>	The primary contracting team
<b>Managing agent</b>	Anyone acting as the owners agent
<b>Contracted works [as a whole]</b>	All the works to be done under the contract
<b>Work type</b>	A term which differentiates the types of work being undertaken for the purposes of carrying out the CEEQUAL Assessment.
<b>Works order</b>	An instruction to undertake specific item of work under the terms of the contract.
<b>Works order sites</b>	Any maintenance or new works site
<b>New works</b>	Any works orders that involve construction of new assets or renewals of existing assets.
<b>Maintenance works</b>	Any works orders that involve the repair, refurbishment or upkeep of an existing asset.
<b>Area of works being assessed</b>	A sub-area of the whole contract area if the whole area is too large to do the assessment in question
<b>Contract Management Sites</b>	Any facilities being used to manage the contract. This includes offices, workshops, depots and manned or unmanned compounds and storage areas.
<b>Contract area</b>	The geographical area in which works will be undertaken
<b>Delivery [of the contracted works]</b>	The stage of completing the works orders
<b>Design process</b>	Preparation for delivery of a particular works order
<b>Completed works</b>	A finished works order
<b>Contract specifications</b>	The overall specification that works orders are designed to.

The type of work for which the contract is suited may cover a very wide range of activities such as routine service work as well as small new works – anywhere where there is a recurring, planned requirement for a type of work.

### **Special features of the CEEQUAL Term Contracts**

The primary changes in creating CEEQUAL for Term Contracts have been to the assessment methodology.

- 1) The questions are focused in two areas:
  - questions addressing Contract Management matters, which would largely be required to be assessed on all contracts; and
  - questions related to 'Delivery on the ground' covering the assessment of issues at the work sites.

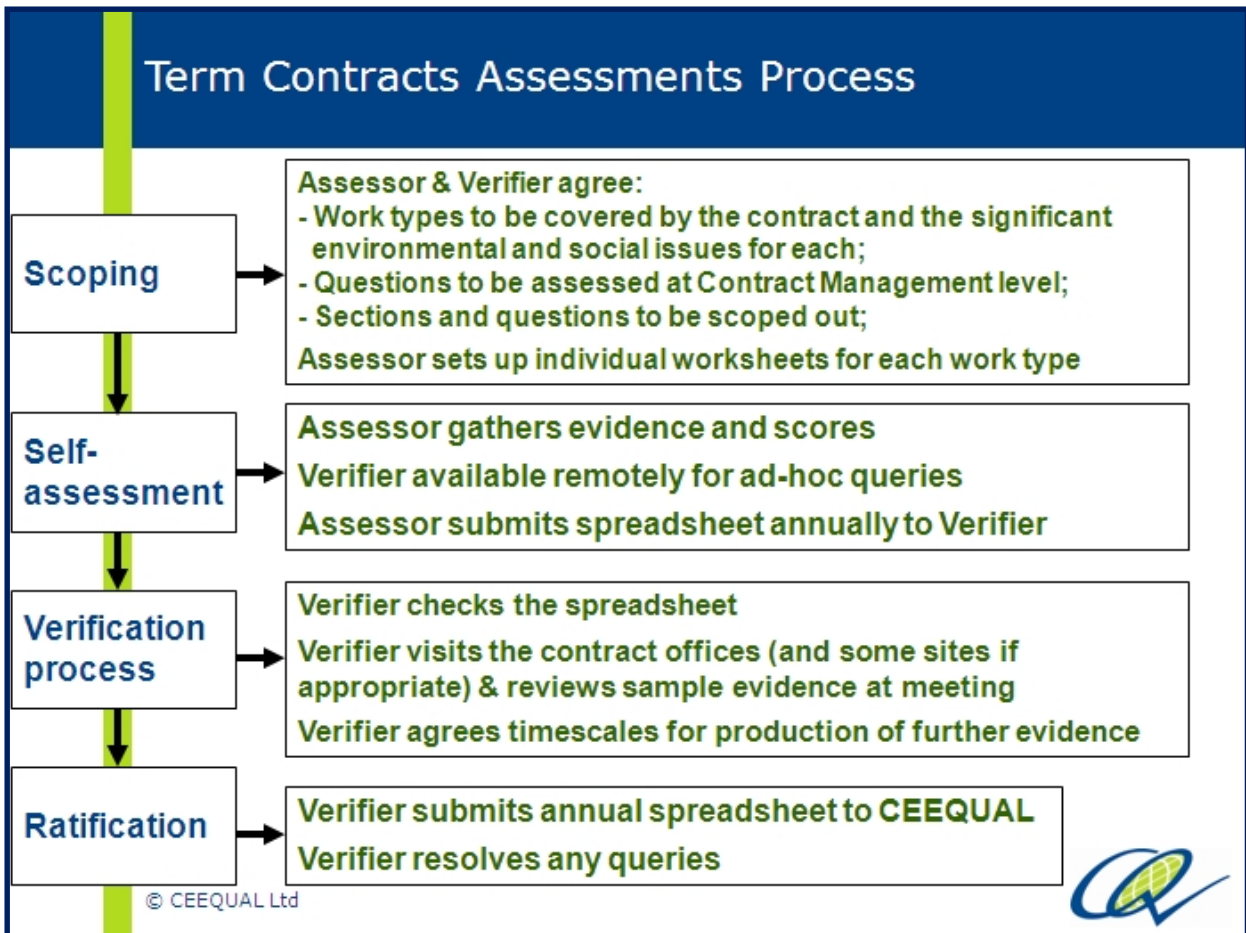
There are therefore two scoring columns, one for Contract Management and one for Delivery on the Ground. All questions fall into one category or the other but, where appropriate, questions may be moved from one category to the other to correctly reflect how the particular term contract, or a work type within the contract, is being managed.

- 2) In principle, the Contract Management questions cover how the contract was set up, what plans are in place to manage the delivery of issues such as prevention of water pollution, waste management etc. on the ground
- 3) It should be noted however that the ability of some Contract Management questions to be assessed at an overall level is dependent on the geographic area covered by the contract. This is another reason why questions are moveable between the Contract Management and Delivery on the Ground levels.
- 4) The 'Delivery on the Ground' questions relate to how the works under the contract are delivered, and need to be related to the nature or type(s) of work being undertaken under a Term Contract and the nature and/or significance of the environmental or social issues faced. As a result, the scoping-out of questions is a much more important task and could involve scoping out whole sections (including NSO questions) for specific types of work. For instance, reactive maintenance in the highway is highly unlikely to have any significant effects on the Historic Environment, while the refurbishing of sewers is highly unlikely to have any land use issues.
- 5) As a result, the scoring of Delivery on the Ground has a slightly different scoring methodology than the Contract Level.
- 6) The Assessor and Verifier carry out the scoping-out process to arrive at a suitable question set and assessment approach for each type of work, using the guidance later in this Manual.
- 7) The Assessor then gathers evidence and enters scores and evidence details into the scoring and evidence spreadsheet (this will be upgraded onto the Online Assessment Tool used for UK Project Assessments over the coming months).
- 8) Some questions are only applicable during certain stages of the contract, as follows:
  - a few questions are set only for in year 1 in order to establish a baseline;
  - most questions are applicable during all years of the contract;
  - a few questions are applicable once the Contract has gone beyond year 1 because they are about demonstrating improvements in performance year upon year as the contract progresses;
  - a further few final questions are to be used at the end of the contract to demonstrate certain targets and/or achievements indicated at the start of the Term Contracts have been achieved.
- 9) The only type of award available for the Term Contracts assessment is a Whole Team Award.
- 10) There will be a minimum of an Interim Verification after 1 year and every other year thereafter, with the option available of Annual Verifications if so desired;
- 11) There will then be a final Verification at the end of the contract term or at the end of five years whichever is the sooner, followed by presentation of the Award as appropriate.
- 12) To enable continuous improvement to be demonstrated throughout the contract, the Award Grades of Pass, Good, Very Good and Excellent will only be used at the end of the contract or at five years. Earlier certificates will only display a percentage score.

- 13) If a contract is running for more than five years, then after the five-year verified assessment, the contract assessment will need to upgrade for the following five years to any later Version of the CEEQUAL Methodology for the following five years' assessment of the term contract works.
- 14) Due to the need to assess different work types separately, and the need to reflect their different environmental issues, the scoping process will take longer than for a project assessment.
- 15) As a result of the extremely varied nature of works undertaken through Term Contracts the number of questions that are marked NSO (no scoping out) are much reduced.

## How term contracts are to be assessed

The overall process is summarised in the diagram below and amplified by the following text.



### 1. Application and Identification of an Assessor

The organisation applying for a Term Contracts Award under the CEEQUAL Scheme needs to identify, either on its staff or contracted in, an individual who has been or can be trained and certified by CEEQUAL Ltd to act as its Term Contracts Assessor. The Assessor is responsible for the self-assessment and for gathering the necessary evidence to support the scores awarded.

### 2. Assessment Set-up

- a) Once the first year's instalment fee has been settled, the Assessor will be sent a copy of the Handbook and the two Assessment Manuals (for Maintenance and New Works), and the Term Contracts Scoring Spreadsheet.
- b) The spreadsheet contains two (copy-able) worksheets, one to be used for maintenance works and the other for New Works. Both worksheets containing all of the questions – the Contract Management questions and the Delivery on the Ground questions – relevant to either

maintenance or new works. The remaining instructions apply to the use of either of these “master” worksheets.

- c) Scores are able to be moved from Contract Management to Delivery on the Ground. Scoping-out is undertaken by marking the question as scoped out which removes the maximum score that question. *(Note that for Version 5 of CEEQUAL for Term Contracts, it is envisaged that the Online Assessment Tool will be expanded to enable it to be used for Term Contracts Assessments)*
- d) The spreadsheet is set up for use in accordance with the scoping and Workbook set-up process detailed in the next section. That set-up process
  - i. identifies which (if any) of the questions that *can* be moved from Contract Management to Delivery on the Ground (or vice versa) *should* be moved for all aspects of the contract
  - ii. records the scoping-out of the Contract Management questions, and
  - iii. creates appropriate worksheets for each type of work covered by the contract.
- e) The spreadsheet also provides for entry of the scores awarded by the Assessor, the listing of evidence, as well as the Verifier’s comments and amendments, and automatically calculates the percentage total score.
- f) The Assessor records the evidence and scores in the scoring spreadsheets as the contract progresses, and then submits the spreadsheet annually or biennially to the Verifier for verification (see paragraphs 7 to 8 below).
- g) *In order not to miss essential guidance and scoping-out restrictions, it is necessary to use the Manual for the assessment, and to use the spreadsheet only to record scores achieved and evidence provided.***

### 3. Verifier nomination and scoping

- a) CEEQUAL nominates a Verifier according to a combination of workload, availability, distance to the contract and expertise relevant to the contract.
- b) Once the Verifier has been appointed, the Assessor sets up the scoping process, which needs to be undertaken face-to-face, with all appropriate details of the contract and its scope readily to hand. The Assessor and Verifier agree the scoping-out of the contract management questions, and then agree a suitable question set and assessment approach for each type of work, using the guidance below.

### 4. Scoping

- a) The ***purpose of the scoping process*** is to match the question set to the work to be/being undertaken under the contract. For Term Contracts it needs to be undertaken in a series of steps:
  - Step 1 in the process is to identify all the Work Types (maintenance and new works) that are covered by the contract, and that are likely to be undertaken during the year to be assessed, and to determine the significant environmental aspects for each. From this assessment the scoping out process can commence.
  - For each Work Type only the significant environmental aspects need to be assessed. So the sections of the CEEQUAL Assessment covering areas not deemed significant can be scoped out in their entirety (see Step 5). For example, reactive maintenance in the highway is highly unlikely to have any significant effects on the Historic Environment, while the refurbishing of sewers is highly unlikely to have any land use issues.
  - Work types that will only have minor environmental impacts can be excluded from the assessment completely.
  - It is down to the Assessor to propose, and then the Assessor and Verifier ultimately to agree, a sub-division of the work being undertaken under the Contract into Work Types. On highways maintenance contracts, these types may, for example, be pothole and patch repairs, surface dressing or re-surfacing, kerb restoration. On New Works Term Contracts,

these may be realignments, junction improvements, lighting installation. Different Work Types with the same environmental issues can be combined into a single assessment within the spreadsheet.

- Step 2 identifies which questions should be assessed at Contract Management level, and so be included in *all* Work Types. This involves a review of each question and ensuring they are flagged correctly in the spreadsheet. At the same time, it will be necessary to identify which work types might need their own separate split of assessment between Contract Management and Delivery on the Ground, to enable the third step to be undertaken.
  - Step 3. Scope out any Contract Management questions where that scoping-out applies across the whole contract.
  - Step 4. Then the Assessor copies the worksheet as many times to create a worksheet for each different work types, labelling each sheet accordingly.
  - Step 5. In conjunction with the Verifier, an assessment then needs to be made for each work type of whether any of the sections in the assessment are not considered to generate significant impacts for that work type. These sections are then completely scoped out. If a work type is deemed to have no significant impacts then that work type may be completely excluded from the Term Contracts assessment.
  - Step 6. Review each Work Type and scope-out any individual questions that are irrelevant to that work type. Each work type or group of work types should be reviewed and individual questions scoped out depending on the nature, scope, quantity, location(s) and the environmental and social impact management provisions of that work type.
  - Step 7. The Assessor and Verifier then also agree the mechanisms by which the Project Team will demonstrate that the Contract Management level policies, plans and procedures have been suitably implemented on each works order at Delivery on the Ground level. For some maintenance activities, this would be by 'exception reporting' because an environmental assessor is not going to visit every single worksite; whereas at another level such as junction improvements a Project Team may need to undertake the assessment (, either singly or in groups) using the Assessment Manual for New Works under Term Contracts in much the same way as for a large-project Assessment using the Assessment Manual for Projects. The Assessor should propose for the Verifier's amendment or agreement the particular mix the Project Team believe is appropriate to the work being undertaken under the contract. These proposals should include proposed levels of sampling of works orders to demonstrate evidence.
- b) It is thus down to the Assessor and Verifier to use the framework in either, or both, of the Manuals for Term Contract Assessment to ***develop a bespoke or customised tool for the Term Contract in question***. Once scoping-out has been agreed, the results should be recorded in the spreadsheet including the ***reasons for scoping out must be noted in by the Assessor in the evidence column***. The Scoring Spreadsheets automatically adjust to take account of scoped out questions and re-calculates the total maximum score and the percentage achieved accordingly.
- c) It may be necessary to **review the scoped-out questions as the assessment progresses**, for example if the scoping-out is undertaken before it is established whether any land contamination is present in the area where works are being undertaken. Changes to the initial scoping agreement can be made, but only in consultation with and agreed by the Verifier.
- d) More detail on **scoping the assessment, and scoring, of Delivery on the Ground**
- Dividing the scope of the contracted works into different Work Types means that there can – and likely will be – different methodologies for demonstrating compliance and appropriate action on each Work Type, and that the scoping out will or could be different.
  - So, for the different Work Types, scoping out will be need to be conducted question-by-question, but has the potential for whole sections to be scoped out. However, this all depends on whether a work type involves management of adverse risks, delivery of environmental and/or social enhancement or both. See the chart overleaf linking these options to the 12 Sections of the CEEQUAL Question set.

- For scoring Work Types where only a few (5 or 6 for example) 'Delivery on the Ground' work examples can be expected, then the questions need to be scored 'Yes/No'. However, 'Delivery on the Ground' with a much higher number of works orders needs to be on a sliding scale.
- For each Work Type (there does not have to be several Work Types, it is all dependant on the Term Contracts) there will be an individual spreadsheet. This is because the scoping out and/or the evidence mechanism need to be tailored to the contract and work type.
- The Assessor is recommended to note down how many Works Orders there are in each Work Type, and also for each question, the approximate number of Works Orders that apply. An example of this is shown below.

Work Type Assessment			
Question	No. of Work Orders in Work Type	% or No. of Work Orders question applies to	Score (Yes/No)
2.1.7	1000	>70%	
2.1.8	1000	2	

- In Summary, each Assessor and Verifier pairing will therefore build a tool specific to the Term Contract being assessed.

## 5. Calculating Maximum and Actual Scores

The final task at the scoping stage is for the Assessor and Verifier to agree the mechanism for aggregating the scores from the Contract Management and Work Type assessments. The mechanism will be based on the following approach.

### a) Contracts with just one type of work

- There will be just one spreadsheet, containing the Contract Management Questions and Delivery on the Ground questions.
- Each question will be subject to scoping-out in the usual way, arriving at a maximum score after scoping in the same way as for projects.
- The final score from the assessment will be automatically added up and the total expressed as a percentage of the maximum score after scoping.

### b) Contracts with more than one type of work

- There will be one spreadsheet for each work type and these need to be aggregated together to provide an overall score for the contract. This is done by a work-value weighted averaging process, as follows.
- Each sheet will give a percentage score for the work type. (WT1%, WT2% etc).
- The assessor will need to ascertain the work value in £ (V1, V2, V3 etc) of each type of work so that the following calculation can be performed.
- The maximum score after scoping-out will then be equal to

$$\text{Overall Score} = \frac{((\text{WT1\%} \times \text{V1}) + (\text{WT2\%} \times \text{V2}) + (\text{WT3\%} \times \text{V3}) \dots)}{(\text{V1} + \text{V2} + \text{V3} \dots)}$$

## 6. Verification Frequency

CEEQUAL require the following minimum number of verifications:

- End of Year 1 (baseline verification)
- Every other year thereafter, with the option available of Annual Verifications
- Final Verification at the end of the contract term, and presentation of the Award as appropriate.

## 7. Assessment Process

Once the scoping out has been completed the Assessor works through the questions in the Term Contract Manuals, gathering all necessary supporting evidence for performance in the year under assessment, and allocating provisional scores based on the evidence available. It is important to recognise that, in this process, two over-riding assessment rules apply:

- a) if no evidence can be found to match a question, no points can be scored; and
- b) partial scores for partial evidence are not possible unless the scoring scale expressly provides for this.

The Verifier will be available throughout the contract period for consultation over the telephone or by email.

## 8. Verification Process

- a) Once a year's assessment is complete and the scores have been entered in the Scoring Spreadsheet, together with a detailed list of supporting evidence in the relevant column, the spreadsheet file, including the completed project information sheet, is emailed by the Assessor to the Verifier for review.
- b) The Verifier will:
  - i. review the scores and the listing of supporting evidence;
  - ii. agree a date for a verification visit to the contract's offices, which should not be any later than 4 weeks after receiving the self-assessment report;
  - iii. attend the verification meeting and review a random sample of questions and their associated evidence and resolve any other queries they may have.
- c) At the verification visit the Verifier will meet the Assessor and any other staff that may be helpful to the verification process. Occasionally, he or she may need to get expert help for specialist subjects, such as ecology or archaeology. Any site visit should be used to confirm that the self-assessment has been fair and robust, and is supported by evidence both in writing and on the ground.
- d) If there is a small amount of missing evidence found during the verification visit, the Assessor has the opportunity to provide to the Verifier this missing evidence in support of their case. This should be done within two to four weeks.
- e) The final agreed Scoring Spreadsheet for the year being assessed, and the calculation of the percentage score in line with paragraph 5 above, is then emailed by the Verifier to the CEEQUAL Technical Manager for ratification. This ratification will usually be completed within three weeks. Once ratification is completed the above process repeats itself from paragraph 7.

## Award Grades

At the end of the Contract the final score will be awarded an Award Grade as follows:

- Pass = over 25%
- Good = over 40%
- Very good = over 60%
- Excellent = over 75%.

It should be noted that a 100% score in the CEEQUAL assessment is not possible. There are issues that conflict with each other, and a high score on one aspect may mean that points will not be scored on other aspects. For example, refurbishment of an historic bridge may call for matching materials to be brought a long distance so that they match the existing, whereas another question rewards the project for minimising the distance that major materials are transported. Applicants and their Assessors have to accept this point; the grade threshold levels take this into account.

The CEEQUAL assessment has been designed to reward efforts that go beyond the legal minima, striving for best environmental and social practice and 'going the extra mile'. Therefore a 'Pass' at 25% suggests that the project's environmental performance is approximately 25% of the way from minimum legal compliance to the pinnacle best practice represented by the highest achievable score.

Any contract team or team member that has been successfully prosecuted for breach of environmental legislation or fails to score positively on any of the legal compliance questions will be referred to a panel of Verifiers for a judgement to be made, on the merits of the individual case, about the maximum level of score that can be allowed. As a result, such projects may have a reduction applied to their score for the year of the contract being assessed. If prosecution is pending at the desired time for verification, the finalisation of the verification will be shelved pending the outcome of the prosecution.

## Technical queries about operation of the Scheme

For technical queries about operation of the Scheme and/or on interpretations of this Manual, contact the Scheme Technical Manager, Ian Nicholson, on 01509 320100 or at [ian.nicholson@ceequal.com](mailto:ian.nicholson@ceequal.com).

## Assessment and verification process summary

- **Role of Assessors**
  - Take the lead in making the assessment happen
  - Arrange the scoping and verification meetings
  - Propose scoping and agree with the Verifier
  - Collect the evidence and complete the official CEEQUAL Term Contracts Scoring Spreadsheet Workbook
  - Submit assessment annually or biennially to the Verifier in the Spreadsheet Workbook
  - Meet the Verifier for the verification meetings
  - Respond to the Verifier's queries
  - Comply with the CEEQUAL Code of Conduct
- **Role of Verifiers**
  - Agree the scoping with the Assessor
  - Respond to the Assessor's queries
  - Review the completed assessments annually or biennially
    - § Check the Spreadsheet Workbook – does the evidence match the scores?
    - § Annotate the Spreadsheet Workbook where the evidence is not sufficient
    - § Mark the score down (if felt to be too generous) or up (if scoring felt to be too harsh)
    - § View selected evidence at the verification meeting
    - § Adjust scores further as necessary
  - Submit the verified assessment Spreadsheet Workbook to CEEQUAL for ratification
  - Act as an ambassador for CEEQUAL Ltd
  - Keep up to date with Scheme updates
  - Comply with the CEEQUAL Code of Conduct

- **Code of Conduct, requires everyone involved in the scheme to:**
  - act fairly and impartially in undertaking Assessments and/or Verifications;
  - respect confidentiality and not disclose to third parties any information about the projects assessed or verified that is unconnected with the CEEQUAL assessment;
  - act with integrity;
  - follow the relevant CEEQUAL procedures;
  - act with reasonable skill, care and diligence in all matters concerned with the Scheme.
  
- **Reminders of evidence and process requirements**
  - Make sure the **evidence fully meets scoping requirements** – read the guidance and do not try to change the rules.
  - **Do not scope out a NSO question!** Talk to your Verifier or CEEQUAL if you are concerned.
  - **Give reasons for everything**
    - § Why points have been awarded or deducted
    - § Why questions have been scoped out
    - § Provide a full commentary in the spreadsheet.
  - **No evidence means no points.**
  - If a question asks for evidence of actions by more than one party to the contract, separate items of evidence will be required.
  - Look for **2 part scores** – e.g. implementing and monitoring – where separate evidence may be needed for each.
  - **Make sure evidence is appropriate** to the nature, scope and scale of the contract and the type of work being assessed.
  - Make sure the evidence demonstrates an action took place at the time the question indicates was appropriate – for example a single photo of an outcome when the question relates to contract set-up is unlikely to be acceptable.
  - **Photographs** – make sure they are appropriate, and be clear about their acceptability – is a snapshot acceptable or does the question ask for evidence of *continuous* performance.
  - **Process vs outcomes:**
    - § Evidence of plans
    - § Evidence of checking/auditing plans – X visited site ½ day per week – but what did X do?
    - § Evidence of performance (percentages).
  - **Appraisal – Plan – Implement – Monitor**
    - § Appropriate evidence for the stage in this sequence.
    - § An EIA is not a plan and a plan does not demonstrate implementation.
    - § Performance data does not demonstrate a plan.
  - **Consider the big picture**
    - § Look at the inter-relationship of questions and evidence.
  - **If health & safety documents are used for evidence**
    - § Make sure they *explicitly* cover the environmental and/or social matters being addressed by the question.



- ✓ Evidence could include a written commitment from the Contract Team, a Contract Environmental Policy Statement, objectives & targets, etc. However, a general organisational Environmental Policy Statement from each organisation within the contract team is not sufficient, unless it includes a specific commitment to consider and assess environmental aspects for every contract.
- ✓ Evidence could also include responses to questions in prequalification and tender stage, the contractor's submissions, proposed Contract Environmental Management Plan etc

		Contract Management	Delivery on the ground
1.1.2 NSO	Is there clear evidence that a member of the contract team was identified as responsible for managing the environmental and social aspects of the contract and was aware of the duties and responsibilities involved?  If No, score 0; if Yes, score 12.	12	

Every item of work completed under the term contract, irrespective of size, should have someone designated as being responsible for environmental aspects. On smaller contracts, a member of the Contract Team may of course be responsible for this along with their other duties. On larger-scale contracts it is more likely to be a dedicated Environmental Manager or Coordinator. Detailed duties and responsibilities in relation to the contract must have been set out on appointment for the score to be awarded.

- ✓ Evidence could be a formal note of the appointment, records of meetings where the role is clearly set out, or reports from the identified person to the Contract Team.

1.1.3 NSO	Have the environmental impacts, opportunities for environmental enhancements and associated social issues been: a) identified and clearly recorded for each new works site or appropriate groups of new works sites, and b) prioritised according to significance  If No, Score 0 if yes, score 12 points for part a); and 8 points each for part b)		20
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All adverse environmental impacts – and associated social issues – of individual works orders should be identified, as well as positive impacts and opportunities for environmental and social improvements resulting from the new works to be completed.

The significance of adverse impacts is 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 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 carried out during the term of the contract This will then guide decisions on which of the opportunities the contract team should concentrate.

- ✓ Evidence could be a report on the impact and opportunity assessments, minutes of team meetings at which the process was undertaken, or the charts prepared after such discussions.

## 1.2 Environmental Management

		Contract Management	Delivery on the ground
1.2.1 NSO	Have appropriate mechanisms been put in place to manage the contract's environmental issues, impacts and opportunities?  If No, score 0; if Yes, score 10	10	

These 'appropriate mechanisms' could be in the form of a Contract Environmental Management Plan (CEMP) or Action Plan. It should be recognised, however, that even if an environmental appraisal or impact assessment has been done for all or some of the works to be completed under the contract cannot of itself be regarded as evidence that mechanisms for the *management* of issues identified in such a study are being operated effectively and appropriately.

During delivery of works, 'appropriate mechanisms' could also be in the form of a CEMP or an Integrated Contract Management Plan that includes coverage and management of environmental issues. Such a plan would cover the management of all significant environmental and social aspects of implementing the contracted works, and would be expected to be specifically drawn up either for the contract as a whole or for work types or appropriate groups of work orders. It should address issues such as the management of sub-contractors' and suppliers' environmental performance, training requirements, procedures for monitoring its implementation and emergency response plans as well as operational control procedures (for example, waste disposal and spill prevention).

It is very important that the contract team positively seek information on, and get copies of, agreements, commitments and undertakings made during the consents process, integrate their contents into the implementation of the contracted works and ensure that commitments made early in the development of the contract are adhered to and that inappropriate actions are not taken.

- ✓ Evidence could be procedures, flowcharts, checklists and/or documented control measures, and would form part of an EMS if there were one in place. Appropriate mechanisms could have been put in place without the existence of a full EMS but 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 and social issues relevant to the work type or overall contract scope.
- ✓ The output from an environmental appraisal or impact assessment that included discussion of how the individual scheme or overall contract environmental issues, impacts and opportunities are to be managed would not be sufficient evidence to gain the points for this question. Evidence is required that such outputs have been translated into action.

1.2.2	Have regular* checks been made to ensure that these mechanisms have been implemented on the contract?  If No, score 0; if Yes, score 10	10	
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*This question can be scoped out only on very-short-duration new works.*

\*Interpretation of '*regular*' depends on the volume of new works within the contract and in particular the length of time the new works are predicted to take. On the majority of contracts a review on a three-monthly basis would be acceptable. 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 nature of works completed under the contract.

✓ Evidence could be contract review meetings minutes, site inspections (checklists etc) or audit reports.

		Contract Management	Delivery on the ground
1.2.3	Is there a record of actions to be taken as a result of these checks, with individuals identified and timeframes stipulated?  If No, score 0; if Yes, score 6	6	

*This question can be scoped out only on very-short-duration new works.*

✓ Evidence could include actions shown as being closed off in minutes, close-out of audit non-conformance reports, or other evidence demonstrating completion of actions arising from the contract review meetings or site inspections.

1.2.4a)	Have the results (success or otherwise) of the implementation of these mechanisms been assessed for all the contracted works?  If No, score 0; if Yes, score 10	10	
1.2.4b) NSO	Is there a commitment to continuous improvement by the contract team and is there evidence that improvements are being identified from the previous year of the contract under assessment and being implemented during the current year of the contract under assessment.  If No, score 0; if Yes, score 10	10	

*Part a) can be scoped out only on very-short-duration new works.*

As opposed to the regular checks of *implementation* referred to in Question 1.2.2, this questions asks about the review of the *results* of implementation, which implies a further step and a more pro-active review, looking at the *outcome* of the implemented mechanisms, not just whether they have been undertaken.

The length and repeatability of works undertaken in Term Contracts also provides great opportunities for reviewing performance and demonstrating continual improvement from year to year in the contract. Clearly the annual assessment and CEEQUAL score will provide an indicator of continuous improvement but this can only be sustained if there is a commitment and acknowledged process that operates within the contract.

✓ Evidence would be a review that took place routinely as opposed to being only as a result of a check that has taken place in 1.2.2. For instance, a standing item in contract progress meetings or reports, which routinely review environmental performance and the success of control mechanisms established, would be acceptable. Evidence could also include the achievement of appropriate contract targets set for environmental performance.

1.2.5 NSO	Has there been a programme of contract-specific environmental training on environmental and social issues relevant to the contract delivered at an appropriate level for those engaged in the contract?  If No, score 0; if Yes, score 16.	16	
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Contract-specific environmental training should at a minimum cover the significant environmental impacts identified (as covered by Question 1.1.3), as well as instructions on how to deal with these. It can also include issues of material sourcing, energy performance over the whole life of the completed works, water consumption minimisation etc. These issues can be dealt with in a wide range of training sessions, including formal courses for the Contract Team(s), sessions within Contract Management Team Meetings, or via contract or site inductions and toolbox talks. Records of these should be available.

✓ **Evidence could include records of contract or site inductions or toolbox talks, more formal environmental training workshops for contract team members, briefings or other training on specific issues for the work under the contract (e.g. on pollution prevention when working in a culvert, or the use of new equipment).**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>1.2.6a)</b> <b>NSO</b>	Is there evidence that the contract team actively considered the principles of sustainable development in the planning and delivery of the contracted works? And is there evidence that it has been actively implemented throughout the contract?  If No, score 0. If evidence of consideration score 6; If evidence of implementation throughout the contract score 18.	<b>18</b>	

The incorporation of sustainable development principles within a term contract requires the consideration of a number of different issues. These can include effects of the works on the local environment, impacts on society and the economic impacts of works under a contract on the local community, both during the implementation/on-site phase of the works and the subsequent operation of the repaired facility and eventual decommissioning. A number of these issues are covered in more detail by other questions within CEEQUAL, so what this question is looking for is whether there is an overarching objective within the contract management team to consider the broader concepts of sustainable development within their decision-making.

Guidance on these matters is available in the Royal Academy of Engineering’s guide *Engineering for Sustainable Development: Guiding principles* (2005) downloadable from the Academy’s website, [http://www.raeng.org.uk/education/vps/pdf/Engineering\\_for\\_Sustainable\\_Development.pdf](http://www.raeng.org.uk/education/vps/pdf/Engineering_for_Sustainable_Development.pdf).

✓ **Evidence could be a sustainable development policy or sustainability framework for the contract. Further evidence that this has received active consideration could include contract team meeting records, or a sustainability assessment or appraisal report.**

### 1.3 Contractual and Procurement Processes

The client is a key enabler in setting and achieving high environmental standards in civil engineering and public realm works, including term contracts. The client owns their contracts and is responsible for their direct and indirect impacts, which in the case of infrastructure projects and maintenance can be far-reaching. Approaches to procurement, costing, selection criteria, contractual agreements and team working are key factors in the client’s environmental management role and provide a measure of ‘EMS quality’ at this stage.

Contract and procurement processes play a very influential role in determining the importance of environmental and social issues and how people will be motivated to minimise adverse environmental or social impacts and maximise positive ones, to maintain quality standards throughout the contract and to play a role in enhancing standards as the contract proceeds. Simply put, the greater the equity share or benefit people have throughout the supply chain, the more motivated they will be to consider the risks and opportunities associated with environmental and social impacts of the contracted works.

No standard published contracts are referred to in this section because none are known to include standard clauses on dealing with environmental and/or social issues in the same way that most cover health & safety issues. However, detailed requirements on environmental matters, specifications and designer and/or contractor performance are now regularly included in other contract documentation by individual clients, and questions can be asked about the underpinning principles and intentions of the term contract and procurement process, such as:

- Do they seek to increase partnership and ownership throughout the process by aiming to share both risks and rewards?
- Do they seek to extend the timescale over which parties are responsible for the outcomes of the contract and over which success is to be measured?

Other key questions include the following.

- Is there evidence of environmental and social criteria being used in the selection of contractors and sub-contractors?
- Is there provision for environmental and social issues to be considered through other parties in the supply chain?
- What targets, measures and checks are put in place to demonstrate how environmental and social criteria have been used in the selection?
- To what extent are environmental and social issues included in the contract reporting and review process?

		Contract Management	Delivery on the ground
1.3.1 NSO	Have all those directly engaged in the contract been informed of the significant environmental impacts and associated social issues of their part and/or stage of the contract?  If No, score 0; if Yes, score 10		10

This would cover the outcome of any environmental and/or social impact assessment, and can be relayed via contract documents and invitations to bid, contract environmental management plans, method statements, start-up and progress meetings, work instructions etc. 'All those directly engaged in the contract' includes contract team, 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.*

**Note: Assessment of impacts (see question 1.1.3) would have to have been carried out to be able to score on this question.**

✓	<b>Evidence could include communication of environmental impacts within tender documents, specifications etc. For the contract team this could include how they have briefed their team on the environmental and social issues that require consideration. For the delivery team it could include the incorporation of environmental mitigation actions in method statements, toolbox talks or other work-site briefings such as communicating the requirements of the CEMP. For any stage it could also include more workshops, such as on value management and value engineering, that include consideration of the environmental and social impacts for the contracted works.</b>
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1.3.2a)	Did the selection procedure for the principal contractor consider their past environmental performance?  If No, score 0; if Yes, score 9	9	
1.3.2b)	Did the selection procedure for the key sub-contractor(s) consider their past environmental performance?  If No, score 0; if Yes, score 9	9	

✓ Evidence could include contractor and supplier appraisals, and quality submissions information on environmental issues during tender stage.

## 1.4 Delivering performance on environmental and social aspects of the contracted works

Most of the other eleven sections in this Manual deal with the performance delivery on specific environmental and/or social aspects of the contract. Therefore this section focuses on the basic systems and procedures that can be implemented to ensure that environmental and social performance is given a high priority in the contract. Having the appropriate plans and procedures in place is considered as evidence for the *intention* and the *commitment* to deliver high environmental and social performance. Whether the actual steps to achieve this have subsequently been taken will then be assessed in the other sections of the CEEQUAL Manual.

### **Planning for lifetime operations**

The first cost of work under a contract is always important, but it can lead to problems both financially and environmentally if it is the only consideration in the specification of that work. It is important therefore to consider the future costs of repeat maintenance and repair of the works, as well as the first cost. This applies in both financial and environmental terms. The assessment is therefore looking for evidence that the work under the contract has been prepared, designed, specified and delivered with this in mind.

### **Application of ‘Best Practice’**

Some environmental statutes advise that the civil engineering industry should be looking to apply the best techniques and options to their activities in order to minimise environmental impact and to achieve stated objectives. However, these statutes also state clearly that these techniques and options have to be reasonable in terms of cost and that they should not be so leading-edge that they are not tried and tested. The terms ‘*Best Available Technique Not Entailing Excessive Cost*’ (BATNEEC) and ‘*Best Practicable Environmental Option*’ (BPEO) are two of the expressions that are commonly seen in environmental legislation and codes of good practice, which sum up this approach. In addition to these terms, which were primarily introduced in the Environmental Protection Act 1990, the Integrated Pollution Prevention Control (IPPC) Regulations use the term Best Available Technique (BAT). In practice this is a very similar approach to BATNEEC with the only difference being that the economic viability is considered within the word ‘Technique’. Overall, both methodologies are trying to balance the costs of the technique against the level of environmental protection it provides. They should be contrasted with the ‘let’s see what we can get away with’ approach encapsulated in ‘CATNAP’: ‘Cheapest Available Technique Narrowly Avoiding Prosecution’.

### **Choice of construction process**

Construction processes can have a great influence on overall environmental and social performance, from the whole-contract level down to the execution of an individual new works activity. By having systems in place that examine the potential environmental and social impacts of alternative means of undertaking the necessary work, the ability to select the best option for the environment and the contract will be maximised. (Most of these detailed measures are dealt with under the individual issue headings.)

		Contract Management	Delivery on the ground
1.4.1 NSO	Is there clear evidence that the contract team has adopted a whole-life approach to environmental aspects of the contract?  If No score 0; if Yes 14	14	

For instance, has a whole-life-costing exercise been carried out?

Note: The terminology surrounding 'Whole-Life Costing', 'Life-Cycle Costing', 'Life-Cycle Analysis', 'Whole-Life Environmental Assessment' and 'Full-Life Costing' can be confusing. However, the important feature of all of them is that *impacts at different phases must be accounted for*, right through to the end of the useful life of the works or assets, and *including the indirect effects* such as those associated with winning raw materials and manufacture of components. It is important in this instance to recognise that, in the context of CEEQUAL, what is being looked for is consideration of the *environmental* costs and benefits of the contracted works from inception through design and implementation, to the operational and decommission phases. The whole-life exercise should also therefore consider indirect operational issues such as nuisance and natural environment enhancement.

The principles of Life Cycle Costing for construction are set out in the International Standard BS ISO 15686-5:2008 *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*, available from the British Standards Institution and the Royal Institute of Chartered Surveyors' Building Cost Information Service. It provides comprehensive advice on how to undertake life cycle costing for the UK construction industry. How applicable these will be to an individual term contract will be dependent upon the work types included.

Having carried out a study, additional points may follow from appropriate design/specification to allow for efficient or reduced levels of further maintenance, and for ease of deconstruction and recycling at the end of life. These aspects are assessed in Sections 8 (Material Use) and 9 (Waste Management).

**✓ Evidence will need to be in the form of a report from the process. There are currently no standardised techniques known to be available, but these are likely to appear over time.**

		Contract Management	Delivery on the ground
<b>1.4.2 NSO</b>	Did the whole-life approach include consideration of the potential effects of predicted climate change scenarios, leading to appropriate adaptation strategies?  If No, score 0. If Yes, score 10	10	

Apart from trying to reduce the release of CO<sub>2</sub> and other 'greenhouse' gases into the atmosphere, to avert the predicted change in climate, all new civil engineering or public realm assets should be designed in such a way that the potential impacts of climate change can be alleviated or, at a minimum, are not worsened, and/or that the contracted works can be adapted to cope with predicted changes in climate.

This might, for example, new pavement materials that will cope easily with significant changes in temperatures, systems designed to cope with heavier and more frequent storms, very high wind speeds, higher rainfall in winter and longer periods of drought in summer, and precautions against flooding on work sites and downstream, as well as emissions-reduction facilities.

More guidance on the potential impacts of climate change is available from the UK Climate Impacts Programme, [www.ukcip.org.uk](http://www.ukcip.org.uk).

**Note that this question raises separate issues to the specific consideration of flood risk covered by Questions 2.3.1 and 2.3.2.**

**✓ Evidence could be any reference to reports of studies undertaken by or on behalf of the contract team, or notes of contract team meetings to consider the issue.**

		Contract Management	Delivery on the ground
1.4.3	Is there evidence that the environmental and social implications of different construction methods and materials have been considered for each new works site (for example, through workshops, briefing papers or an environmental assessment and report)?  If No score 0; if Yes score 8		8

*Scope out when the extent and/or nature of the new works are very limited*

✓ **Note that the evidence here may be the same as for Question 1.1.3 but this is quite acceptable.**

1.4.4 NSO	Have specific targets* been set during the contract term for the environmental and social performance of the delivery of the contracted works and is progress towards them monitored?  If Yes, score 6. If no targets set or not monitored, score 0	6	
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\* Targets should be quantifiable and where possible refer to timescales (**SMART** Targets = Specific, Measurable, Achievable, Repeatable/Realistic, within a Timeframe).

✓ **Evidence could include the setting of targets for achieving or exceeding compliance levels (e.g. water quality targets); specifying targets for completion of work elements to avoid “closed” seasons (e.g. nesting birds etc). Whatever targets are set, evidence MUST also be provided to demonstrate that they were regularly monitored for the points to be gained.**

1.4.5	Have specific targets* been set during the design process for the environmental and social performance of the new works site or groups of sites <b>once in use</b> , and is there a monitoring programme in place for the operational phase?  If no targets set, or no monitoring programme in place, score 0 If Yes, score 8		8
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*Scope out if the new works concerned are intrinsically not ‘operable’, e.g. renewal of flood defence structures.*

**\*Note: Targets have to be set for the operational phase and a monitoring programme to be undertaken once construction, or renewal works are 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 through maintenance. Note that *compliance with legislation cannot be regarded as an appropriate operational target.*

✓ **Evidence: Although an environmental appraisal may include targets or equivalent statements on a wide range of issues such as operational noise, air pollution control etc, the presence of these recommendations is not considered sufficient evidence here. Evidence needs to demonstrate that such targets have been positively adopted by the contract team, for example through contract team meeting minutes or equivalent.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>1.4.6</b>	<p>Were risk assessments undertaken at each new works site and a pollution control plan prepared and implemented as necessary to prevent and mitigate emissions of the completed works to air, land and water?</p> <p>If No, score 0; if risk assessment undertaken/plan prepared scorer 8 If plan prepared and implemented, score an additional 8</p>		<b>16</b>

*Can be scoped out only for new works where no emissions occur directly as a result of the completed works.*

Pollutants include any substances released into air, soil or water that can have potentially harmful impacts on the environment. In addition to the obvious and known pollutants, they therefore also include the release of dust, soil or sediment.

✓ **Evidence could include assessments within an environmental appraisal or more-specific assessments for noise, dust, liquid or air pollution.**

## 1.6 Contract Management Sites

It is common on term contracts for new offices, depots, workshops, materials compounds etc. to be set up to assist in the efficient delivery of the contract. These all clearly have the potential have an impact on the environment and hence the performance of the contract. For this Term Contracts version of CEEQUAL we have therefore duplicated relevant questions from within the CEEQUAL assessment and that are specifically relevant for contract management sites.

For guidance on each of these questions please refer to the questions “home” section. The questions therefore maintain their original numbering

Technical Note: These questions have been grouped here for convenience their contribution to the overall weightings remains within the questions “home” section and as such are not part of the weighting for the Contract Management section.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>2.1.5</b>	Is there evidence that the contract team has made effective use of any Greenfield land take made available for use as contract management sites?  If No, score 0; if yes, score 5	<b>5</b>	
<b>3.2.1</b>	Are any new contract management sites in an area of acknowledged and/or protected high amenity value for its landscape or townscape character*?  If Yes, score 0; if No, score 12	<b>12</b>	
<b>3.2.3</b>	Is there evidence that:  a) the contract team have actively considered retention of trees and other vegetation as part of the development of any new contract management sites; and/or  b) that the layout has been influenced by the results of a tree survey at each site carried out by a suitably qualified arboriculturist in accordance with the current version of BS5837: Trees in Relation to Construction or equivalent?  a) If No, score 0; if Yes, score 7 b) If No, score 0; if Yes, score 4	<b>11</b>	
<b>3.2.5</b>	What percentage of substantial trees, trees protected by a Tree Preservation Order, other trees of value and/or substantial hedgerows present on any new contract management sites have been retained as part of the contracted works?  Retention under 25%, score 0 25% to <50%, score 2 50% to <75%, score 5 75 to 90%, score 9 More than 90%, score 11 If less than 90% retained but translocation of some or all of the rest is undertaken (as %age of all substantial vegetation on the relevant site) 10 to <40% score an additional 2 40 to <70% score an additional 4 70 to 100% score an additional 6	<b>11</b>	
<b>4.1.1</b>	Is the land used for temporary works, or contract management sites, being placed on or using land that has been identified as of high ecological value or as having species of high value*? (Note that points cannot be scored here unless surveys or desk studies are carried out to identify the ecological value of the sites in question)  If Yes, score 0. If No, score 8	<b>8</b>	
<b>4.2.1</b>	Have appropriate surveys for protected species been undertaken for all contract management sites needed for the contract?  If No, score 0. If Yes, score as indicated	<b>5</b>	

<b>4.2.2</b>	If protected species were found on any contract management sites, have plans for protecting these been:  – Drawn up and approved? Score 4 – Monitored? Score 2 – Achieved? Score 2 If No to all, score 0	<b>8</b>	
<b>6.1.1 a)</b> <b>NSO</b>	Has an assessment been undertaken, and appropriately reported, to identify the likely impacts on the water environment at contract management sites?  If No, score 0; if Yes, score 5	<b>5</b>	
<b>6.2.1</b>	Has consultation been undertaken with regulatory authorities about water issues identified in the assessment asked for in Q6.1.1a) related to contract management sites, including the need for any consents, and has the outcome been communicated across the contract team?  If No, score 0; if Yes, score 5	<b>5</b>	
<b>6.3.2</b>	Has a practical system been put in place to minimise consumption of mains or abstracted water at contract management sites?  If No, score 0; if Yes, score 4	<b>4</b>	
<b>6.3.3 b)</b>	If monitoring measures were in place during the previous year of the contract under assessment, is there evidence of learning from the experience and improvements made to management of the contract management sites in the subsequent year?  If Yes, score 0; if No, score 1	<b>1</b>	
<b>7.3.1</b>	Is there evidence that the contract team has considered the energy consumption at contract management sites?  If No, score 0; if Yes, score 10	<b>10</b>	
<b>8.2.7</b>	Is there evidence that materials have been stored appropriately at contract management sites so as to avoid wastage?  If No score 0; if Yes score 4	<b>4</b>	
<b>11.6.1</b>	Is there evidence that measures have been taken to minimise the adverse visual impact of the contract management sites?  If No, score 0; if Yes, score 7	<b>7</b>	

## 2. LAND USE

### 2.1 Basic principles

Land is a scarce resource. In a crowded country like the UK, the pressures on land from competing uses – such as development, transport, recreation, nature conservation, water resource management, heritage and agriculture – are high.

While many civil engineering and public realm schemes – whether large or small – intrinsically improve environmental quality and human well-being, they are still often perceived by many in society as having a damaging effect on the living environment. This perception is exacerbated where the land resources used for civil engineering work – such as for junction improvements – may have significant agricultural, nature conservation, mineral resource, recreational or amenity value. Careful planning and implementation of civil engineering and public realm works, together with a good communications and consultation strategy, can help to optimise land-use decisions, even for maintenance depots, enabling safe, efficient and appropriate use of land and reducing pressure on greenfield sites. In urban areas this includes remediation of land contamination, re-use of derelict land and urban regeneration. In rural areas it can assist with the conservation of specific land resources and ecological habitats, such as woodland or wetland.

In this section, land use in relation to brownfield and greenfield land, management and treatment of land contamination, and land-use efficiency, are all assessed, and land-use decisions in relation to flood risks, local amenity and soil/mineral resource preservation are also covered. Issues relating to groundwater, surface water, ecology, archaeology, pollution prevention, waste, materials use, transport, and other issues, although related to land use, are considered in other sections of this Manual.

*It is acknowledged that for some individual new works within a Term Contract, land use will not be a relevant issue, for instance, minor junction improvements or renewal work. Contracts that fall into this category of not using land may therefore find that they can scope out all of Section 2 (including questions marked NSO). However, contracts that do use land but only for temporary site compounds will still need to review the land use questions in section 1.6 to decide if they are relevant or not, because for example a site compound could generate additional flood risk or potential for contamination.*

#### **Use of Brownfield Sites**

Although not likely to be a significant issue for many Term Contracts, beneficial use of brownfield sites (defined in the guidance after Question 2.1.4) assists with regeneration, potentially revitalising local communities and conserving greenfield land. Land re-use is in line with government policy, current thinking on planning, and compatible with the principles sustainable development.

However, brownfield sites, particularly in urban areas, may also have special ecological 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 under Question 2.1.4.

#### **Efficiency of land use**

Land is not only a scarce resource but also an expensive one. Design – for example of a road junction improvement under a term contract – is a primary influence on how efficiently land is used. Careful site layout, optimisation of the scale of structures, and selection of space-efficient processes will all minimise land take.

In addition, site selection plays an important role. Selection of sites with existing infrastructure sufficient for the new site use will minimise the need for the construction of, for example, electricity supplies or drainage. Existing local water resources may avoid the need for additional pipeline construction.

Using a site with characteristics appropriate for the commission in terms of topography, geology, water features, areas of ecological importance, historical monuments, etc will also contribute to using land to the best effect.

***Inclusion of flood risk in this section***

Section 2.3 on Flood risk is included in this section rather than Section 6 on Water because choice of site and the need to minimise flood risk on a site elsewhere as a result of the contract can generate significant land use issues and affect the overall environmental and social effectiveness of a contract.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>2.1.1</b>	Is there evidence that the contract team has considered the site characteristics, environmental issues and flood risk during the process for defining and selecting the new works site?  If No, score 0. If Yes, score 4		<b>4</b>

***This question must not be scoped out except where the client can demonstrate that they have absolutely no choice about the location of the new works , for new works that involve structures that are necessary for health & safety (for example, navigation equipment along coastlines, or improvements to waste-water treatment plants) or to enable access to a site for public education or enjoyment.***

On new works covered by this version of CEEQUAL, there is often little or no choice of location – for example a remodelling of a road or railway junction. However, for some types of new works – for example routing of a pipeline or cable route - there may well be situations where there are opportunities for an active choice of site location to be made on a range of grounds. So this question is challenging clients to, whenever appropriate, actively consider issues of site characteristics, environmental issues and flood risk in their selection of the most appropriate location for their contracted works.

**✓ Evidence must be provided to demonstrate that genuine consideration of options has been undertaken. This should include consideration of sterilisation of mineral resources.**

<b>2.1.2</b>	Has a desk study been undertaken during the design process that assists the contract team in deciding that the new works site is suitable? This study would include collation of information on past and current land uses, site sensitivities and land condition, and including a review of previous investigations into ground stability, soil quality, groundwater, ground gases, residual man-made structures and surrounding land uses.  If No, score 0 If comprehensive desk study, score 6 If comprehensive information thorough desk study and site walkover, score 8		<b>8</b>
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***Scope out for new works that do not involve any active use of new land- and/or for new works where the team genuinely has no ability to consider land take.***

Some investigation has to be carried out in order to establish the suitability of the sites involved. The study has to be carried out before specification so that the specification can take the results into account. For this question this assessment needs to be combined with knowledge of the proposed new works, identifying sensitivities of the sites involved and their surroundings, and the implications for the design and delivery of the new works. Such a study may result in different site selections. Obviously in some cases, sites for the new works may be fixed but the question is still valid in deciding what works are suitable to be undertaken in which locations.

- ✓ Evidence would ideally be in the form of 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. Note, that to score as ‘comprehensive’ the reports should cover all the aspects mentioned in the question, not just geo-environmental information but a general assessment of the site with regard to engineering, environmental and social perspectives. The report should also identify shortfalls in available information.

		Contract Management	Delivery on the ground
2.1.3	Has the land-take of different arrangements or layouts of the new works site been calculated, and have these calculations influenced the design process and the land-use efficiency of the final design?  If No, score 0; if Yes, score 6		6

*Scope out for new works that do not involve any change to the land-take of the assets being constructed and/or amended by the new works and/or for new works where the team genuinely has no ability to consider land take.*

- ✓ Evidence must be provided to demonstrate that specific attention, above normal practice, has been given to the new works design with the express intention of enhancing land-take efficiency. This should include consideration of sterilisation of mineral resources.

2.1.4	Has the new works site been previously used?  If Greenfield*, score 0 if >25% Brownfield*, score 2 if >50% Brownfield*, score 5 if >75% Brownfield*, score 8 Or, if refurbishment: score 8		8
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*Scope out if the new works does not involve a new use for the ‘sites’ in question. Scope in for any ‘small projects’ that happen to be undertaken through a Term Contract.*

**\* Terminology:**

- For the purposes of this document ‘Greenfield’ sites are defined as those that are *essentially covered in vegetation*, 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.
- Integral areas of infrastructure that are ‘green’ such as grass verges that are included in the works area should be considered in the scoring and if, for example, they make up 45% of the relevant work site then score as >50% brownfield but not >75% .
- ‘Brownfield’ 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
  - require intervention to bring them back to beneficial use.
- In respect of development on previously used land, Government policy in England is clarified in Planning Policy Statements. PPS3 on Housing defines ‘previously-developed land (often referred to as brownfield land)’ as:

*“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”*

- However, the exclusions are important.
  - “The definition includes defence buildings, but excludes:
    - § 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 Brownfield site is being developed that falls under this definition then it should be treated as a Greenfield site and awarded zero points.

✓ Evidence could include calculations derived from site layouts or information contained in an environmental assessment. Photographs may also provide evidence of land use.

		Contract Management	Delivery on the ground
2.1.5	Is there evidence that the contract team has made effective use of land resources made available to them for the construction of new works?  If No, score 0; if yes, score 5.		5

*Scope out if the new works does not involve a new use for the ‘sites’ in question. Scope in for any ‘projects’ that happen to be undertaken through a Term Contract.*

For new works, careful planning and site selection, and adaptation of process and mechanical design to minimise the footprint of finished works will ensure that the best possible use is made of the land resource available. This includes sensible site selection and layouts, minimising the site footprint, tapping into existing infrastructure where it has the necessary capacity, and using existing site features to the advantage of the new works. Even if the new works do not involve new use this question should be considered in section 1.6 for any temporary land use, in connection with depots and/or site compounds and material storage areas.

✓ Evidence would be found in the brief, or in design notes, drawings and calculations. Evidence could also cover the areas of temporary land take that have been avoided to prevent disturbance e.g. cordoning off woodlands or grass verges from the work sites. Photographs may also provide evidence of land use.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>2.1.6</b>	<p>Apart from the actual land-take, did the contract team also take into consideration the conservation of topsoils, subsoil, and conservation or use of on-site mineral resources on the new works site?</p> <p>If No, score 0; if yes, score as indicated.</p>		6

*Scope out if the new works does not involve a new use for the ‘sites’ in question. Keep in for any ‘small projects’ that happen to be undertaken through a Term Contract, for example junction re-modelling.*

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.

Note: Further scores are available for the re-use of subsoil and topsoil in Section 8.

✓ **Evidence could be in the form of documented statements in appropriate reports or meeting notes about the optimal use of soils.**

## 2.2 Land contamination

Land contaminated with substances that are potentially hazardous owing to their nature or quantities present and originating from previous uses may need to be treated to protect human health and the environment, and to enable redevelopment. The nature, distribution and hazards posed by contamination must be assessed on a site-specific basis. Hazards often include substances such as heavy metals and hydrocarbons that can pose risks to human health and the environment including water resources.

Hazardous gases and vapours often originate from thick fill or deposits of waste either on or near to the site, or from coal or other mining activities beneath the site, and may impact on any works undertaken above them. Gases of most concern are methane, which can be explosive or flammable, and carbon dioxide, which can be toxic and an asphyxiant through the displacement of oxygen. Both are, in addition, significant ‘greenhouse gases’ implicated in triggering global warming and therefore climate change. Other hazardous gases and vapours, such as hydrogen sulphide, hydrogen cyanide and solvents, could arise from old industrial process sites. Hazardous gases can also derive naturally from organic deposits such as peat (for example, methane and carbon dioxide) or rocks such as granite (radon).

Remediation of land for civil engineering works involves the same processes and technologies as remediation for other types of use. However, the ‘suitable for use’ principle indicates that, depending on the type of civil engineering, clean-up may not be needed to the standard required for more sensitive land uses such as housing or schools.

The principal legislation controlling development of land affected by contamination in the UK is planning legislation, which requires developers to deal with any contamination as an integral part of a planning application. Furthermore, Part IIA of the *Environmental Protection Act 1990* addresses the issue of how to deal with historical contamination that may lead to significant harm. It presents a risk-based definition of what legally constitutes land contamination. The management and reduction of risks posed by contamination are key drivers of current contaminated land policy and practice. In addition to environmental risk reduction, the sustainability of the remedial solution selected, the residual environmental risk remaining after remediation, and the durability of the solution, all need to be considered.

**Note: Questions 2.2.2 to 2.2.8 can be scoped out if no hazardous substances are likely to be present at any new works site covered by the contract. However, an audit and/or investigation (Question 2.2.1) must have been carried out to establish this. If an audit or investigation has not been carried out, these questions cannot be scoped out.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>2.2.1 a)</b>	Was the desk study(ies) covered by Question 2.1.2 a formal Phase 1 Desk Study assessing risk and implications that may be associated with the land involved, including issues related to soil, groundwater, gas, residual man-made structures and surrounding land uses, or has it been extended into such a formal Phase 1 Desk Study?  If No, score 0; if Yes, score 5		<b>5</b>
<b>2.2.1 b)</b>	Did the study go beyond the above scoring to provide additional input to decision-making for the work:  If comprehensive information through desk study, site walkovers and adequacy of information assessed against risk, score 3  If desk study additionally includes a visual and descriptive sense, the links between contaminant source, pollution pathways, and receptors, score a further 2		<b>5</b>

***Question 2.2.1(b) can be scoped out if the Phase 1 Desk Study indicated that these additional studies would be unnecessary or inappropriate. Both parts of the question can be scoped out if the new works involve no excavation below sub-base level.***

This question is addressed once sites have been chosen for the works. A Phase I Desk Study has to be carried out in order to establish whether or not there is a potential for a work site or group of work sites to be contaminated. The information identified in the study covered by Question 2.1.2 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 sites in a form of a walkover is important in understanding their dynamics. The walkovers and investigations have to be carried out before design so that the design can take the results into account.

Note that in some cases, Questions 2.1.2 and 2.2.1 may be answered by the same study – it will depend upon how the contract development has been organised and the site options available to the client.

**✓ Evidence should include an outline study including a risk assessment of contamination impacting current and future receptors including consideration of how the outline proposals will impact on any source-pathway-receptor linkages. This is best represented in an outline conceptual site model.**

<b>2.2.2</b>	If the studies mentioned in 2.2.1 have suggested that contamination may be present at one or more works order sites, has a suitably experienced chartered environmental specialist or even a SiLC* been consulted?  If No, score 0 If chartered environmental specialist with at least 5 years' experience, score 6 If SiLC, score 8		<b>8</b>
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A specialist in land condition and/or contamination should be a suitably recognised professional such as CEng, IEng CGeol, CSci or CEnv and have appropriate relevant professional land condition experience over a period of at least 5 years. SiLCs have 8 years' relevant experience and are subject to examination and a review process. \*Specialist in Land Condition, registered by IEMA.

✓ Evidence could include further reports or notes of discussions with a specialist or even a SiLC verifying the initial findings and where appropriate identifying strategies to deal with contamination.

		Contract Management	Delivery on the ground
2.2.3	<p>If contamination was present on a works order site was the site assessed in line with CLR11*?</p> <p style="text-align: right;">If No, Score 0 If a Report defining risk assessment, score 5 If a Report evaluating feasible remediation options and determining the most appropriate remediation strategy for the site, score 8</p>		8

CLR11 (\*Model Procedures for the Management of Land Contamination, Environment Agency Contaminated Land Report 11) 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 Environment Protection Act 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.”

✓ Evidence could be in the form of a remediation strategy outlining the methods and values to be achieved.

2.2.4	<p>If the site(s) for a work order or group of work orders had been contaminated, is there evidence that:</p> <p style="text-align: right;">If none of the following, score 0 If feasible remediation options were evaluated and the most appropriate remediation strategy determined for the site as agreed by an appropriate expert, score 6 If the remedial solution removed/eliminated the need to landfill and material removed in the remediation was utilised in other construction projects (other than landfill construction or cover), score 8 If the remedial solution was above the minimum requirements of the regulatory authority and used innovative technology*, score an additional 10.</p>		10
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See scoping-out guidance above Question 2.2.1.

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 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 CL:AIRE (Contaminated Land: Applications in Real Environments) 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 (e.g. 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.

✓ **Evidence could again be in the form of a remediation strategy and action plan, which has been approved by the EA, SEPA, NIEA or equivalent. To score the maximum points the innovative technology must fit the criteria specified above. It is recognised that it is unlikely that this would be done for small Term Contract projects so this maximum score may not be available to them.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>2.2.5</b>	<p>If ground-generated gases are present or a plausible pollutant linkage established for any works order site or group of works order sites under the contract, is there evidence of risk reduction and management in place and fully implemented*</p> <p style="text-align: right;">If no, score 0 if yes, score 3</p> <p>if yes, and design and implementation is not reliant on management and intervention that is ‘fit and forget’, then score 7</p>		7

\* This includes protective measures in the ground and/or in buildings and structures.

Although it is unlikely that ground gases would be a significant issue for new works undertaken under term contracts, if the contract involves working near landfill sites, harbours where estuarine sediments prevail or on former gasworks sites, then it is a possibility. There have been cases in the past where a contractor has been commissioned to install ‘minor’ underground services and found himself in possession of considerable quantities of polluted ‘waste’.

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.

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.

**✓ Evidence will be likely to include design details and a monitoring plan.**

		Contract Management	Delivery on the ground
<b>2.2.6</b>	<p>Is there evidence that the impacts of the implementation of the remedial solution have been assessed and appropriate control measures been put in place?</p> <p style="text-align: right;">If No, score 0; if Yes, score 6.</p>		6

*See scoping-out guidance above Question 2.2.1.*

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.

**✓ Control measures, monitoring data, regulatory visits and actions, waste disposal activities etc should all be documented, and this documentation should be available to demonstrate that this was the case (for example, site records, photographic or otherwise, delivery, transfer and consignment notes, invoices etc).**

<b>2.2.7</b>	<p>Is there evidence that the effectiveness and durability of the remedial solution, and maintenance and monitoring, have been considered over the contract period and beyond, and operational information conveyed to the client and/or managing agent?</p> <p style="text-align: right;">If No, score 0 if some evidence, score 3 If evidence is captured in a Validation Report and Operations Manuals, score 7 A further 1 point can be awarded if warranties and insurance are in place in addition to having a Validation Report and Operations Manuals</p>		8
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*See scoping-out guidance above Question 2.2.1.*

Evidence should be available regarding the longevity of the remedial solution and normal maintenance requirements. The projected lifetime of the work covered by the contract 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, etc.

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.

**✓ Evidence should demonstrate that the remedial solution for each new work location appropriately meets the requirements outlined in the guidance above.**

		Contract Management	Delivery on the ground
2.2.8	Is there evidence that pollution control measures are in place to prevent any future contamination of any new works sites?  If No, score 0; if Yes, score 7		7

***The question 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.***

This question applies to previous contamination from on or off the site, which has been remediated using a temporary measure (see question 2.2.5 above), as well as 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 new works and should be assessed accordingly.

For example, in the design of new facilities such as 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.

**✓ 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.**

## 2.3 Flood Risk

Any civil engineering works has *some* flood risk associated with it and may alter the flood risk for others. The central tenet of this sub-section is for designers first to assess what the run-off is likely to be from the new works once completed and then undertake any measures to deal with run-off or to reduce flood risk, whether for the new works site or elsewhere. It may emerge that no such measures are needed; hence Question 2.3.1 is marked NSO but 2.3.2, 2.3.3 and 2.3.4 are not.

2.3.1 NSO	Have the run-off, flood risk, and potential increased flood risk elsewhere as a result of the completed works all been assessed over their expected working life, in line with the requirements of PPS25 in England, TAN15 in Wales, PPS15 in Northern Ireland or equivalent, <i>and</i> appropriate flood resilience measures included in the design of each works order or group of works orders as appropriate?  If No, score 0. If Yes, score 15		15
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***Scope out only when the scope of the new works makes it self-evident that no run-off is generated directly by the works.***

Any civil engineering works, 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 including 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. PPS25 and its equivalents now requires assessment of run-off, control of run-off such that it is no larger than would be the case from a Greenfield site of the same size, minimisation of increased flood risk elsewhere as a result of the development, and appropriate flood resilience measures.

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

✓ **Evidence would include assessment or calculations of run-off. On certain types of new works a qualitative assessment may be sufficient evidence. For example, the assessment may have been made at and recorded in the minutes of a design meeting.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>2.3.2</b>	Is there evidence that the development of the contract specification has actively considered the merits of designing for larger events or for greater flood resilience than required by PPS25 or appropriate equivalent?  If No, score 0; if Yes, score 7		7

*Scope out if the results of the assessment undertaken for Question 2.3.1 indicate that insignificant run-off is generated directly by the new works or when the scope of the contract makes it self-evident that no run-off is generated directly by the works.*

Such action may be appropriate for new works on particular sites that are very sensitive to intense rainfall, or run-off from nearby sites.

<b>2.3.3</b>	If the consideration assessed in question 2.3.2 led to proposals for designing for a larger event or greater flood resilience than required by PPS25 or its equivalents, is there evidence that those features have actually been incorporated in each works order as appropriate?  If No, score 0 If Yes, score 5 for evidence of inclusion in design Score a further 5 for evidence that features have been actually incorporated in the works		10
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*This question can be scoped out if a PPS25 or equivalent assessment was carried out (Q2.3.2) and did not require any measures to be taken or if the scope of the contract makes it self-evident that no run-off is generated directly by the works.*

<b>2.3.4</b>	Is there evidence that the contract team has made provision for capturing run-off for beneficial use on the new works site or nearby and, if appropriate, have those provisions actually been incorporated in the completed works at all appropriate new works sites?  If No, score 0. If Yes, score 15		15
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*This question can be scoped out if a run-off assessment was carried out (Q2.2.1) and did not require any measures to be taken or if the scope of the contract makes it self-evident that no run-off is generated directly by the works.*

Flood risk from new works can be reduced by keeping the number of sealed surfaces requiring drainage to a minimum (by using permeable paving materials, green roofs etc) and by introducing capture of run-off before it reaches the main drainage system. Sustainable Drainage Systems (SuDS) such as balancing ponds or wetlands are covered in Section 6 and further guidance on these issues is available:

- in PPS25 *Development and flood risk* (PPS15 in Northern Ireland)

- from CIRIA (*Sustainable Urban Drainage Systems*, 2001, *The SUDS Manual* (C697) 2007, *Site handbook for the construction of SUDS* (C698) 2007, and, despite its building orientation, *Building greener: Guidance on the use of green roofs, green walls and complementary features on buildings* (C644) 2007)
- from DEFRA and the Environment Agency/SEPA/ NIEA.

However, this question is focusing on capturing run-off *for beneficial use*, for example in tanks for non-potable uses on or near the new works 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 contract may be able to score both here and in section 6 for the overall system they implement.

**✓ 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 contract records or photographs to demonstrate their construction.**

### 3. LANDSCAPE ISSUES (includes rural landscape *and* townscape)

#### Introductory note on scoping this section

It is fully recognised that for much work undertaken under Term Contracts landscape impacts and landscaping will not be relevant. However, it also needs to be recognised by Assessors and their colleagues that any new facilities established to manage a Term Contract – depots, temporary offices, waste management facilities etc – may themselves have significant landscape impacts and landscaping requirements, and how these are tackled needs to be assessed in section 1.6 and these should be considered irrespective of whether landscape is an issue on new works sites.

*So, as with Section 2, it is acknowledged that, for some work undertaken under term contracts, landscaping will not be a relevant issue. Works falling into this category of not using any land and therefore not requiring landscape works can therefore scope out the whole of Section 3 (including NSO questions). Examples can include sewer or highway maintenance and highway resurfacing. By contrast, junction sight-line improvements are almost certain to have some impact on the landscape and have some landscaping associated with the works so in those circumstances each question must be considered on its merits.*

The guidance in this section is therefore written on the assumption that landscape impact and landscaping *are* relevant to the Term Contract being assessed, and the scoping process will decide whether they are or are not relevant, and therefore whether the guidance as well as the questions need to be considered.

A final point in this introductory note is that some questions – for example 3.1.2 – have to be considered in the context of the time period since any earlier interim assessment – i.e. the previous 1 or 2 years – rather than the whole contract.

#### 3.1 Basic principles

The visual impacts of civil engineering works on their surroundings have long been an issue of concern in the UK, where the density of development and infrastructure can dominate the small-scale, complex and often valuable landscape and townscape settings.

Guidance on the evaluation of such effects covers both the visible effects on the intrinsic qualities and value of the setting and the visual effects on people within that setting. The all-too-widespread general assumption has in the past been that civil engineering works will have an adverse effect on the appearance of a place. However, the CEEQUAL Scheme allows equally for the assessment of beneficial effects. In addition, work in the ‘public realm’ that CEEQUAL also covers, in addition to more-traditional civil engineering, is almost always aimed at ‘improving’ the landscape and/or townscape.

Considerable benefits can be gained from the inclusion of landscape planning and design skills in a contract team from the earliest stage, to influence the design as well as assessment of issues. Options are then developed with best ‘fit’ into their environment as a key aspect, concerns being addressed through the basic form of the proposed methods of work and not left for expensive mitigation measures to be added after decisions have been made.

Landscapes and townscapes of particular value are protected and much has been written about the characteristics of these areas. The Countryside Agency (now part of Natural England) provided a definition and description of the many different rural landscape character areas to be found across England, which also reflects conservation and cultural values. Smaller-scale studies are gradually filling in the detail within these broad character areas and on the character of towns, as a background to planning policy and other strategies. CABE – the Commission for Architecture and the Built Environment – is the UK Government’s advisor on architecture, urban design and public space, and deals with urban landscape in a roughly equivalent manner. Similar approaches are being adopted in other parts of the UK. It is therefore becoming possible for all civil engineering works to be assessed according to appropriate guidance and for some degree of context information to be readily available.

Landscaping works for new works are often implemented by specialist sub-contractors and may be designed by sub-consultants. These works usually contain most of the environmental measures included within the

new works, such as planting, habitat creation, public space, recreation facilities, screen walls or fences, interpretation, and amenity lighting. They may also have had community involvement in design development and in aspects of the implementation. These elements of the new works will have a significant influence on the public perception of the contract as a whole. Maintenance of the landscape works may continue long after the new works have been completed and brought into use.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>3.1.1</b>	Is there evidence that landscape and visual factors have been considered at each new works site, including the evaluation of options?  If No, score 0; if Yes, score 10		<b>10</b>

*See scoping out guidance at the start of this section.*

This includes any design considerations such as siting, massing, colour, texture, materials, earthworks, lighting, signs, planting and aftercare.

At delivery stage of the new works, measures could include fencing (and its appearance); siting of temporary routes and structures, and spoil heaps; lighting; good housekeeping, general appearance, tidiness etc.

✓ **Evidence could include Term Contract documentation (including specifications), contract brief, landscape/townscape assessment reports and comparison of alternatives at design, site visit reports, photographs, meeting minutes and management plans.**

<b>3.1.2</b>	Is there evidence that, for relevant new works sites, there has been a suitable level of consultation on, or consideration to, pedestrian and cyclist access, links with existing and proposed routes to local services, links between communities, the quality of any new open space provided as part of the works?  If No, score 0; if Yes, score 9		<b>9</b>
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*For new works sites that had no public access prior to work starting, and/or where there was no evidence of such uses, this question can be scoped out.*

If works such as a junction remodelling 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 and safety grounds and to avoid nuisance.

Please note that this question applies to any site or works area 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 roadworks, ‘public space’ should refer to space provided for community benefit rather than road users.

✓ **Evidence could include consultation meetings with councils or other local groups, or evidence from drawings or other documents that show consideration of open space/public access.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>3.1.2</b>	Where opportunities have been identified for introducing new public amenity features, including any identified in 3.1.2, or enhancing existing ones; is there evidence that these opportunities have been recorded and fed back to the contract team for future implementation?  If No, score 0; if Yes, score 9		<b>9</b>

*See scoping out guidance at the start of this section. It may be appropriate to scope it out for works in remote areas where public amenity features would be of no benefit to anyone (this does not include remote beauty spots where public amenity is an important consideration), or for projects where evidence is provided that there are no such opportunities, or where the work involved under the contract provides no opportunity for such improvements.*

Examples for enhancing existing amenity features could be the provision of formal and informal public open space, footpaths, extended planting schemes, consequent environmental enhancement, or the introduction of an improved lighting scheme, thus enhancing security.

**✓ Evidence could include evidence from drawings, the contract specification, other contract documents or photographs that demonstrate incorporation of new/enhanced public amenity.**

<b>3.1.4</b>	Is there evidence that the design and/or specifications for new works fits the local character in terms of:  <ul style="list-style-type: none"> <li>– landform or levels?, Score 3</li> <li>– materials?, Score 3</li> <li>– planting?, Score 3</li> <li>– style/detailing?, Score 3</li> <li>– scale?, Score 3</li> <li>– landscape/townscape pattern?, Score 3</li> </ul>		<b>18</b>
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*See scoping out guidance at the start of this section.*

Ideally, each new works, 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, retention, etc. Detailing of walls (for example, regional styles in dry stone walls), facings, fences, posts, hard surfaces and lighting, etc 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, shelterbelt form, 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.

**✓ Evidence could be in the form of relevant instructions in the brief, contract specifications or evidence of research into and understanding of local character all related to the design and implementation of the completed works.**

## 3.2 Legal Requirements

National Parks and Areas of Outstanding Natural Beauty (AONBs) are afforded statutory protection under the *National Parks Act*. These place strict controls on the extent and types of work that can be undertaken, with a general presumption against development. Regionally important areas of landscape are designated in structure and unitary plans, with presumption against some forms of development and controls on others. Conservation Areas and Green Belts are defined in the unitary and local plans: Green Belts are protected primarily for their openness rather than any intrinsic landscape qualities but also include a presumption against development.

Planning documents also include policies intended to foster improvement in landscape quality outside the protected areas, often in association with development and/or with the establishment of community forests.

Heritage Coasts are a non-statutory landscape definition, defined by agreement between relevant maritime LPAs and Natural England, and managed so that their natural beauty is conserved, and visitor accessibility is improved where appropriate. New rights of access on mapped open access land (mountain, moor, heath, down and registered common land) came into effect on 31 October 2005 under the Countryside and Rights of Way Act 2000 (CRoW Act). These areas are subject to exceptions and temporary closures and restrictions, but are important as areas where the public has the 'right to roam'.

Most of the adverse impacts of new works on the landscape or townscape are the direct result of the choice of location or alignment and can be broadly identified from an early stage. It is therefore important that these fundamental decisions are made on the basis of appropriate design standards and evaluation of options for any given new works. Poor location or alignment can also lead to a cumulative impact with other adjacent facilities, which can be greater than the sum of its parts. This should lead to some reconsideration of the design, but may not be brought out by current assessment guidance. It is a particular factor in the gradual erosion of landscape quality in rural and Green Belt areas.

Public access to the landscape, beyond established rights of way, confers its own added value, provided that this includes consideration of safety and security in design that results in adequate levels of natural surveillance. Doing so avoids the creation of havens for anti-social behaviour, or publicly accessible areas that are perceived as unsafe and consequently are not used by the public.

		Contract Management	Delivery on the ground
3.2.1	Are any new works sites in an area of acknowledged and/or protected high amenity value for its landscape or townscape character*?  If Yes, score 0; if No, score 12		12

- *This question can only be scoped out: Where the new works involves existing infrastructure and remaining within the existing footprint of the works; or*
- *on new works that involve structures that are necessary for health & safety (for example, repair of an unsafe road surface or junction improvement on H&S grounds) or to enable access to a site for public education or enjoyment.*

\* An acknowledged and/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.

**✓ Evidence needs to show that local or other statutory authority plans have been viewed to establish land status. This could be included within a new works-specific environmental assessment or otherwise shown by a record on the works order file. Evidence for scoping out should demonstrate that the new works is within its existing footprint.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>3.2.3</b>	<p>Is there evidence that:</p> <p>a) the contract team have actively considered retention of trees and other vegetation as part of the new works; and/or</p> <p>b) that the layout has been influenced by the results of a tree survey carried out by a suitably qualified arboriculturist in accordance with the current version of BS5837: Trees in Relation to Construction or equivalent?</p> <p>a) If No, score 0; if Yes, score 7 b) If No, score 0; if Yes, score 4</p>		<b>11</b>

*Scope out if no substantial trees, hedgerows or TPO trees on the new works site.*

<b>3.2.5</b>	<p>What percentage of substantial trees, trees protected by a Tree Preservation Order, other trees of value and/or substantial hedgerows present on new works sites* have been retained as part of the contracted works?</p> <p>Retention under 25%, score 0 25% to &lt;50%, score 2 50% to &lt;75%, score 5 75 to 90%, score 9 More than 90%, score 11</p> <p>If less than 90% retained but translocation of some or all of the rest is undertaken (as %age of all substantial vegetation on the relevant site) 10 to &lt;40% score an additional 2 40 to &lt;70% score an additional 4 70 to 100% score an additional 6</p>		<b>11</b>
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\* Excluding trees that had to be removed for health & safety reasons or because they were causing damage to a building or structure.

*Scope out if no substantial trees, hedgerows or TPO trees on the new worksite.*

Substantial and well-established trees or hedges are not only important landscape features, but also perform important functions such as improving air quality by filtering dust, adjusting the microclimate and producing oxygen. For instance, in order to replace one 100-year-old Beech tree, at least 2000 young trees would have to be planted to achieve a similar performance in these functions. Substantial native trees are also of considerable habitat value, especially large old trees. The definition of ‘substantial’ will vary according to species and location, but for most instances can be taken as trees with a girth of 600mm (190mm diameter) at 1.5m above ground.

Under the *Town and Country Planning Act 1971*, a LPA can place a Tree Preservation Order (TPO) on any tree, group of trees or woodland to conserve the amenity value. There are conditions that the local authority can place on development regarding the removal of or works to trees in Conservation Areas. Trees over a certain size (over 100mm diameter measured at a height of 1.2m) may require a felling licence before they can be removed. Consent to fell trees under a TPO will normally require new planting in compensation. Good practice should be to avoid felling of substantial trees altogether. Where this cannot be avoided, adequate replanting should always form part of the landscape proposals, whether legally required or not.

Please note that translocation of substantial trees or hedgerows is a laudable alternative to felling, but can be expensive and always carries a risk of failure, especially if essential aftercare is not guaranteed. The most desirable solution should therefore always be to retain and protect existing vegetation of landscape value.

✓ **Evidence: initial site surveys, photographs, aerial photographs, vegetation surveys, in comparison with design drawings.**

### 3.3 Implementation and management

There is some concern amongst clients that the quality of implementation of landscape works has declined noticeably over recent years, due to the changes in forms of procurement. Term contracts are perhaps an example of this trend. This may lead to an increase in the level of prescription provided in the (term) contract specifications. Inclusion of an Environmental Management System (EMS) and its related detail in the Landscape Management Strategy (LMS) or Landscape Works Plan (LWP) or equivalent for any given new works within the contract should both help to counter this downward trend. If an Environmental Management Plans (EMPs) are drawn up to manage the environmental aspects of the new works – over and above any generic EMS established at the outset of the Term Contract – it should include a section on landscape, which can then be considered equivalent to an LMS or an LWP. However, this will only work if sufficient means of control are built into the contract and carried through into implementation.

In addition to good environmental practice relating to landscape works, the development of the new works through the design and delivery stages needs to acknowledge the importance of safeguarding existing landscape features, and existing water and soil conditions in areas where future establishment of plants and habitat is proposed.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>3.3.1</b>	<p>Is there evidence that current best practice has been applied for planting or habitat areas on all relevant works orders:</p> <ul style="list-style-type: none"> <li>- to avoid any damage to landscape features</li> <li>- to safeguard soil conditions</li> <li>- to safeguard water conditions</li> </ul> <p>If No, score 0            If plan developed by contract team, score 3            If plan then implemented, score 5</p>		<b>8</b>

*See scoping out guidance at the start of this section. This question can be scoped out for new works that have no 'landscape' issues or threaten no relevant features.*

\*This could be a Landscape Management Strategy (LMS), a Landscape Works Plan (LWP) or an equivalent section in an appropriate EMP or Integrated Contract Plan.

Any civil engineering work, however small can cause damage to landscape features, through access, transport of materials and so on, and any such plan would lay down procedures for avoiding or remediating these. It should include procedures for identifying responsibilities and personnel, for minimising the impact of the civil engineering work on landscape features, for the management of the landscape while the civil engineering work is ongoing, as well as a monitoring and reviewing process. It is worth stressing here that 'landscape features' include both soft and hard landscape features, 'green' and 'brown', and rural and townscape.

The plan must be in place early enough to permit implementation from the start of implementation of the works. However, as circumstances may change over the course of a contract, the regular monitoring and reviewing process needs to take account of these changes and ensure that the plan is amended accordingly.

✓ **Evidence of commitment to safeguard existing and proposed landscape features and of the implementation of the plan can include documentary evidence such as drawings, meeting minutes, and/or photographic evidence.**

### 3.4 Completion and aftercare

Aftercare of landscape in regard to any relevant new works, of for any new contract management sites—depots, temporary offices, waste management facilities etc – can be as important for its success as good design and implementation. This is particularly the case for works that incorporate wild flowers and/or herbaceous planting, which aim to create a diverse flora over time, or establish conditions suitable for a particular species, group of species, or generally to enhance biodiversity. Public perception of amenity planting schemes is too often let down by an unkempt appearance, or by planting / habitat creation schemes not developing their full potential due to lack of appropriate management and maintenance. Soft landscape schemes are dynamic in nature and require monitoring and review of objectives in response to changing conditions over time. It is important that the level of management, monitoring and review of objectives is appropriate for the type of planting or habitats involved. Involvement of an ecologist is desirable for habitat restoration, enhancement and creation. Maintenance of hard landscape elements should not be overlooked, especially for any new contract management sites.

		Contract Management	Delivery on the ground
3.4.1	Is there evidence that maintenance and monitoring requirements for any new habitat or vegetation created has been communicated/handed over to the client or managing agent for the completed works?  If No, score 0; if Yes, score 10	10	

*This question may be scoped out only on new works where there were genuinely no opportunities for the creation and management of different habitat and vegetation types. In these cases the Assessor and Verifier should establish and agree whether there was genuinely no opportunity.*

The Management Plan can either have been prepared as part of the Landscape Management Strategy / Landscape Works Plan etc within the Term Contract specifications, or can be a separate document (for example a Landscape Management Plan) relating to the individual new works as appropriate.

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 etc) including an indication of frequency (once a fortnight, once a year, every six years etc) 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 ‘term’ of the contract itself or, indeed, the normal 3- or 5-year maintenance plan that usually forms part of a landscape contract.

- ✓ **Evidence should be in the form of a plan covering landscape management objectives and/or measures that go beyond the normal 5-year maintenance requirements. This may reside within the Term Contract specifications or documentation. correspondence or meeting minutes illustrating evidence that appropriate skills to manage the scheme through establishment and long term maintenance are also in place.**

## 4. ECOLOGY AND BIODIVERSITY

### 4.1 Basic principles

There is concern amongst society in general, and nature conservation organisations in particular, that wildlife habitats and the species that occupy them are continuously being damaged and destroyed. New development is often cited as one of the reasons for this destruction. As a result, the biodiversity of an area, and ultimately of the UK, can be harmed.

In order to support the conservation of biodiversity at all scales, the UK government signed up to the *Convention on Biodiversity* at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. This commitment has been translated into action through the publication of *Biodiversity – the UK Action Plan 1994* and, more recently, national Biodiversity Action Plans such as *Working with the Grain of Nature – A biodiversity strategy for England* and Biodiversity Action Plans (BAPs) at the local, county or district, or even company level. The UK Action Plan from 1994 remains the core document, although species action plans have been updated and plans at a local, county and/or district level are now taking a lead over the national plan.

However, development – and civil engineering projects in particular – need not have a negative impact on biodiversity and wildlife, and such potential positive outcomes extend to maintenance and improvement programmes. There are many occasions when careful planning and implementation of civil engineering projects, however small, can not only avoid damaging important habitats and harming protected species, but can also lead to the creation of new habitats or the creation of facilities to encourage certain species. It can thereby assist Local Biodiversity Action Plans (LBAPs) in achieving their targets. Maintaining biodiversity and, where appropriate, enhancing it, are key aspects of sustainable development and as such are important parts of Government policy.

Ecological assessment<sup>1</sup> of any civil engineering work at the design and specification stage can help to identify potential adverse impacts and can also identify ways in which these can be mitigated or compensated for, or where existing interest can be enhanced, new habitats created or species encouraged (although it is acknowledged that small new works may have limited opportunity to create new habitats). Land that is of high or moderate value for wildlife is normally recognised in some way, usually by a designation such as Site of Special Scientific Interest (SSSI), which is a statutory designation, or Site of Importance for Nature Conservation (SINC) or similar, usually placed on a site by the local planning authority. Wherever possible, the development of such sites should be avoided, as the opportunities to mitigate for damage to or loss of habitats or species may be strictly limited.

A major guidance document *Working with Wildlife: A Resource and Training Pack for the Construction Industry* (C587) was published by CIRIA in March 2004, supplemented in 2005 by a companion ‘Site Guide’ (C567). These assist all involved in civil engineering or public realm works to better address and manage the wildlife issues on development sites.

Note: If there has been a significant delay between initial surveys having been undertaken and works proceeding then an updating of the initial surveys may be necessary. This is especially true if any protected species such as bats have the potential to be present or if invasive plants such as Japanese knotweed are likely to occur. Active management of civil engineering and public realm sites is needed throughout the contracted works. Protected species not originally on the site may find conditions on site, including boundary features, advantageous to colonise, resulting in delays. For example water fowl nesting on a temporary coffer dam would delay its removal.

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<sup>1</sup> An Ecological Assessment should, at a minimum, be a Phase 1 type of assessment, as defined in the *Handbook for Phase 1 Habitat Survey* (Nature Conservancy Council 1990), and carried out prior to any construction activity taking place on site.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>4.1.1</b>	Are the new works being placed on or using land that has been identified as of high ecological value or as having species of high value*? (Note that points cannot be scored here unless surveys or desk studies are carried out to identify the ecological value of the sites in question)  If Yes, score 0. If No, score 8		8

***This question must not be scoped out except for new works:***

- *that involves existing infrastructure and remains within the existing footprint of the work site; or*
- *that involve structures that are necessary for health & safety (for example, a junction improvement on H&S grounds); or*
- *to enable access to a site for public education or enjoyment, or for renewal works that happen to be in areas of high ecological value.*

***For example, renewals to pipework on an existing wastewater treatment plant in an AONB could be scoped out, provided the work was undertaken essentially within the plant's existing footprint, but road junction improvements simply to increase capacity and that involved new land take could not be scoped out.***

\* Land that is of 'high ecological value' is

- Land that is designated for its nature conservation value, for example, as a Site of Special Scientific Interest (SSSI), a National Nature Reserve (NNR), a statutory Local Nature Reserve (LNR) or land designated as a Site of Importance for Nature Conservation (SINC) or equivalent by an official conservation body such as NE, CCW, SNH, a Wildlife Trust or a local planning authority, or has been designated as an important green corridor;

and/or

- Land that has been identified by an ecological assessment of the site, carried out prior to any site clearance or other activity, as being of ecological importance. The ecological assessment should either have been carried out by a suitably controlled ecologist – such as a Chartered Biologist, a full member of the Chartered Institution of Water and Environmental Management, a Chartered Environmentalist, Chartered Scientist, or a full member of the Institute of Ecology and Environmental Management.

Land is deemed to be of ecological importance if it comprises UK and/or Local Biodiversity Action Plan habitats or hosts high value species.

Species are deemed to be of high value if they are:

- protected by law;
- a UK and/or Local Biodiversity Action Plan priority species;
- Birds of Conservation Concern;
- IUCN Red List species.

Note that 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 question appears here as well as the equivalent question in Section 3.

**✓ Evidence would be in the ecological assessment or some other environmental assessment as defined in the footnote on the previous page.**

		Contract Management	Delivery on the ground
4.1.2	Has consultation with a relevant nature conservation organisation* on the ecological impact of relevant works orders or groups of works orders been undertaken and communicated to the contract team members?  If No, score 0; if Yes, score 8	8	

*This question should not be scoped out unless it can be demonstrated that there are no ecological issues for the work type being assessed.*

\* for example, NE, CCW, SNH, the EA, SEPA, the local authority ecologist, or the local Wildlife Trust or equivalent.

**✓ 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.**

4.1.3	Has an ecological works plan or an ecological section in the Contract Environmental Management Plan been drawn up and then implemented on all relevant works orders?  If No, score 0; if Yes, score 5	12	
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Such a plan 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 new works sites, control of noxious plants, methods to prevent colonisation of work sites during the works (if inappropriate), communication about these issues with contract staff, and procedures for regular monitoring and reviewing.

An Ecological Works Plan or an ecological section in the Contract Environmental Management Plan should be drawn up by the contract team and designed to be implemented in the delivery phase of the new works. A contract ecologist may need to be appointed to assist with implementation. Depending on the size of the new works or numbers of new works being assessed, 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 works.

**✓ Evidence that ecological considerations (such as nesting seasons, protected areas of the work sites etc) have been built into the contract planning needs to be identified. This may be incorporation of requirements into the contract brief and/or works orders and specifications. Evidence of implementation should be shown through routine contract progress monitoring and reporting.**

## 4.2 Legal requirements

Certain species of plants and animals and/or their nesting and roosting habitats are protected by legislation, such as the *Wildlife and Countryside Act 1981* (WCA 1981) (as amended), the *Natural Heritage (Scotland) Act 1991*, the *Countryside and Rights of Way Act 2000* (CRoW Act 2000), the *Protection of Badgers Act 1992* and the *Conservation (Natural Habitats, &c) Regulations 1994* (as amended). Failure to take adequate steps to protect such features could lead to adverse impacts and, possibly, to prosecution. The CRoW Act 2000 amends the wording of section 9(4) of the WCA 1981 to include the offence of 'recklessly' disturbing sheltering places of Schedule 5 animals (such as bats). This change now places the onus on the developer of land, including contract teams working on maintenance and/or refurbishment to demonstrate that they took

all reasonable steps to identify if any protected species were present on their work sites and that, if they were, they were adequately protected throughout the development process.

Section 14 (2) of the WCA 1981 makes it an offence for certain species of plant (as listed in Schedule 9, Part 2 of the WCA 1981) to be planted in the wild or otherwise caused to grow in the wild. The two plants that give the most problems to civil engineering projects are Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*), the removal and disposal of which requires special procedures.

Injurious weeds as defined by the *Weeds Act 1959*, such as common ragwort (*Senecio jacobaea*), may also be a problem. Other weeds may cause particular problems in wetlands. If these are defined as invasive, injurious or otherwise in need of control by an independent body such as the Environment Agency or the Aquatic Plant Management Group (<http://www.ceh.ac.uk/sections/wq/CAPM1.htm>) at the Centre for Ecology & Hydrology (<http://www.ceh.ac.uk>), then these also may need to be controlled on relevant work sites.

The advice and views of a suitably qualified ecologist – such as a Chartered Biologist, a full member of the Chartered Institution of Water and Environmental Management, a Chartered Environmentalist, Chartered Scientist, or a full member of the Institute of Ecology and Environmental Management – may be needed to judge whether or not the following actions have been achieved.

Clients may care to consider including the services of ecologists in the schedule of rates for a Term Contract.

		Contract Management	Delivery on the ground
4.2.1	Have appropriate surveys for protected species been undertaken for all relevant work order sites?  If No, score 0. If Yes, score as indicated		5

4.2.2	If protected species were found on any works order site, have plans for protecting these been:  – Drawn up and approved? Score 4 – Monitored? Score 2 – Achieved? Score 2 If No to all, score 0		8
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Plans are likely to include guidance on appropriate times for carrying out work – for example, clearing vegetation outside the nesting season – together with method statements and instructions for relocation of species. Plans should be approved by all relevant parties e.g. client, contractor and ecologist. In certain circumstances, especially when dealing with protected species, plans may need approval by a statutory agency such as NE, CCW or SNH 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.

- ✓ **Some evidence of steps taken to safeguard protected species may be gained from documentation such as a Contract Environmental Management Plan, but site visits 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.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>4.2.3</b>	<p>If there were Schedule 9 species (Wildlife &amp; Countryside Act 1981 or Wildlife (Northern Ireland) Order 1985) injurious weeds, or other invasive plants or animals present on any works order site, has:</p> <ul style="list-style-type: none"> <li>– A method statement (or equivalent) been drawn up and Approved for their control and management? Score 6</li> <li>– Has it been monitored? Score 5</li> <li>– And achieved? Score a further 5</li> </ul> <p>If No to all, score 0</p>		<b>16</b>

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 new works are 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 introduced animal species are invasive as a result of reproductive or competitive advantage, such as Signal Crayfish or Mitten Crabs. 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 Publication C679 *Invasive Species management for infrastructure managers and the construction industry*, 2008.

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.

**✓ 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.**

### 4.3 Conservation and Enhancement of Biodiversity

Biodiversity represents the richness and variety of plants, birds, animals, insects and soils that exist throughout the world. The UK has lost over 100 species in the last century or so, and many more have declined in number, range or both (*Making Biodiversity Happen*, DETR 1998). As a response to this issue, and in accord with its obligations under the Convention on Biological Diversity, a UK Biodiversity Action Plan was first published in 1994 and is now being implemented and developed by a partnership of the UK Biodiversity Partnership and the UK Government – see <http://www.ukbap.org.uk/>. Biodiversity Action Plans (BAPs) have been or are being produced at local level in response.

The construction industry generally, and especially civil engineering, has a major influence on the landscape and, even with small new works, is likely to have at least some impact on biodiversity. The industry should be seen as a contributor to achieving the targets set out in local BAPs rather than simply as always harming biodiversity. A first step would be to avoid any reduction in biodiversity, a second to enhance biodiversity wherever possible.

Where potential damage to existing wildlife or wildlife habitat – identified in any ecological assessment of new works sites – is avoidable, then measures should be put in place in the contract management processes to protect such features – see CIRIA *Working with Wildlife training pack* (C587, published 2004) for guidance,

supplemented in 2005 by a companion 'Site Guide' (C567). Where the new works being assessed will lead to the permanent loss of such wildlife features, there should be evidence that this loss will be compensated for or mitigated, preferably on the new works site in question or on another covered by the contract as near as possible to it.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>4.3.1a)</b>	<p>Have recommendations been included in the design process for relevant work types or works orders for conserving existing ecological features (including BAP species and habitats) identified in an ecological assessment as being of value*?</p> <p style="text-align: right;">If less than 30% conserved, Score 0            More than 30% and up to 50%, Score 2            More than 50% and up to 70%, Score 4            More than 70% and up to 90%, Score 7            More than 90% and less than 100%, Score 10            100%, Score 12</p>		<b>12</b>
<b>4.3.1b)</b>	<p>Have recommendations been included in the design process for relevant work types or works orders for mitigating or compensating for any loss of such ecological features?</p> <p style="text-align: right;">100%, Score 8            More than 70% and up to 100%, Score 6            More than 50% and up to 70%, Score 5            More than 30% and up to 50%, Score 4            More than 10% and up to 30%, Score 3            If up to 10% mitigated/compensated, Score 0</p>		<b>8</b>
<b>4.3.1c)</b>	<p>Have recommendations been included in the design process for relevant work types or works orders for enhancing the ecological value of the site?</p> <p style="text-align: right;">If enhancement in addition to conservation, mitigation or compensation, score additional 4</p>		<b>4</b>

**Parts a), b) and c) can only be scoped out if there are no existing ecological features on site. It is only possible to scope out the whole question, or part c) on its own. Note that the maximum score attainable for parts a)+b)+c) combined is 16. See the table overleaf to assist in calculating the score.**

\* For example, ecological features identified in an ecological assessment as being of value could include designated land, protected species, local, regional or national BAP habitats or species – see definitions under Question 4.1.1 and see scope-out guidance under Question 4.3.2. To calculate the percentages for the purpose of scoring, identify the existing ecological features on the new works site, decide for each what the appropriate measure is (number or area), calculate the % conserved, mitigated or compensated for of each feature at the end of the design, and then average them arithmetically to arrive at the percentage to be used for scoring.

4.3.1b) can be completely ignored if the score in 4.3.1a) is for 100% conservation. If there is less than 100% conservation then 4.3.1b) should be considered for the habitat not conserved. The maximum scores available for a) and b) combined are therefore as shown overleaf.

4.3.1c) can be scored only if the score in a) or b) is greater than zero, and the enhancement has to be proportionate to the nature, scale, context and location of the site – see guidance below.

Conservation	Mitigation/ Compensation	4.3.1a) score	4.3.1b) score	Combined Score 4.3.1a+b
0%	100%	0	8	8
0% - less than 30%	70% to less than 100%	0	6	6
30% - less than 50%	50% to less than 70%	2	5	7
50% - less than 70%	30% to less than 50%	4	4	8
70% - less than 90%	10% to less than 30%	7	3	10
90% - less than 100%	0% to less than 10%	10	0	10
100%	0%	12	0	12

- ✓ **Conservation or protection** includes protection of existing habitats and other measures to ensure that existing species on or near the site are not harmed (e.g. protection of badger setts, bat roosts, ponds, fencing off with clear signs, staff briefings, and reptile/amphibian fences put up to ensure that species will not migrate into the construction area.) This is greatly preferred to relocation.
- ✓ **Mitigation or compensation** (which might include relocation or re-instatement of existing habitats) is the minimum requirement, if leaving the area untouched is not possible. This has to be carried out by, or in liaison with, a qualified ecologist. Relocation sites have to be very carefully selected and re-instatement of habitats requires careful planning and skilful implementation. Long-term aftercare and monitoring is essential to ensure that these measures have been successful – see Section 4.5.
- ✓ **Enhancement** means ‘added-value’ measures that go beyond, but include, conservation and protection measures. Examples of these measures include re-instatement of appropriate vegetation such as reeds along banks of lakes or ponds, strengthening of hedgerows to improve or increase wildlife corridors, clearing intrusive vegetation (such as rhododendron or sycamore) from existing woodland, linking existing habitats (for instance via lines of trees or hedgerows, ditches etc). But note, for example, that one square metre of new reeds added to a 20-hectare site is nowhere near sufficient to score the points. The acceptable threshold for an enhancement to score should, for example, be at least sufficient to provide a new viable habitat in proportion to the overall scale of development, say at least 1% of the site area.
- ✓ Evidence would be in the form of drawings and specifications showing that the recommendations were incorporated into the planned works and actually delivered.

		Contract Management	Delivery on the ground
<b>4.3.2</b>	Is there evidence that the implementation of these recommendations is being monitored by the client or delivery team throughout the duration of the contract?  If No, score 0; if monitoring has taken place Score 8		8

*If the ecological assessment identified features of value, but no measures to protect, conserve or enhance these have been recommended, Questions 4.3.1 and 4.3.2 should both score 0. They should only be scoped out if no features of ecological value were identified on any of the new works sites.*

- ✓ **Evidence: Data that shows that monitoring has taken place or is taking place.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>4.3.3</b>	Does monitoring data show that implementation of these measures has been successful?  If No, score 0; if Yes, Score 10		<b>10</b>

*Scope out if there are no ecological features on the new works sites being assessed or if the timescale of the contract does not allow for gathering of conclusive monitoring data.*

The Assessor should judge these factors against recommendations and observations contained in any ecological assessment of the new works sites. 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: Monitoring data that shows that measures have been successful.**

## 4.4 Habitat creation measures

Civil engineering works can often present opportunities for existing wildlife habitats to be extended or new habitats to be created. Land of previously low wildlife interest can be adapted so as to provide wildlife habitat, thus enhancing biodiversity and the overall ecological interest of the area. Some assets, particularly linear ones such as roads and railways, hinder the movement of animals and create an added threat to their existence. The deliberate incorporation of features for animals can both reduce this threat and also positively encourage them to get to the new habitats the contracted works has created or maintained.

It is acknowledged that many term contracts will not offer habitat creation opportunities but it is stressed that these questions should not be scoped out just because the opportunities are difficult to exploit, but only when there are genuinely no opportunities presented by the new works

<b>4.4.1</b>	Have recommendations or opportunities for enhancing existing wildlife habitats or creating new ones (including BAP species habitat) been identified and incorporated for all appropriate new works sites?  If No, score 0 If plans drawn up, score 2 If plans includes BAP habitats or species, score an additional 2 If incorporated in the works, score 4 If includes BAP habitats or species, score an additional 4		<b>12</b>
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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, grassland, etc. It does not include artificial features such as bird boxes, bat boxes, badger setts, otter holts etc, which are covered in question 4.4.2. New habitats are those that currently do not exist on the work sites, but may otherwise be appropriate.

**✓ 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 contract.**

		Contract Management	Delivery on the ground
4.4.2	<p>Have recommendations or opportunities for installing special structures or facilities for encouraging or accommodating appropriate wildlife (especially BAP species) been identified and incorporated for all appropriate new works sites?</p> <p style="text-align: right;">If No, score 0 If plans drawn up, score 4 If incorporated in the works, score 8</p>		12

Such structures or facilities may include artificial bat boxes or chambers, bird nest boxes, artificial badger setts or otter holts, green bridges or tunnels under roads or railways etc. Measures should be appropriate to the scale and nature of the new works.. As with newly created habitats, these should have been recommended, designed and sited by, or in consultation with, a suitably qualified ecologist.

**Note: To be awarded points under this section the structures need to be *in addition* to any measures that were included either to compensate or mitigate for the loss of a structure or facility previously on the new works site, or to protect existing species from harm (such as road tunnels where a new road layout creates a barrier within existing territories of animal species).**

✓ 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.

4.4.3	<p>Is there evidence that the implementation of these recommendations is being monitored either by the client or the delivery team?</p> <p style="text-align: right;">If No, score 0; if Yes, score 8</p>		8
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✓ Evidence in the form of work-site inspections or other work-site records, such as contract progress meeting minutes that demonstrate implementation. Evidence from the client that demonstrates that the site is being monitored through an arrangement outside the contract would also be acceptable.

4.4.4	<p>At each annual assessment and on completion of the contract, is there any evidence of a net increase in area of appropriate wildlife habitat compared to the baseline data at the start of the contract?</p> <p style="text-align: right;">If &lt;5%, score 0 If 5% to &lt;25% increase, score 2 If 25% to &lt;50 % increase, score 4 If 50% to &lt;75% increase, score 8 If over 75% increase, score 12</p>	12	
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***Scope out only if there was genuinely no opportunity for increasing such habitat throughout the life of the contract or if doing so was regarded as actively unhelpful.***

The assessment work that needs to be undertaken to gain these points should compare the area of wildlife habitat that has been created with that which was on the sites covered by the new works before works commenced. There is an assumption that, in time, the quality of the habitat will be similar to that which has been affected by the works. If this is not likely to be the case, a simple comparison in area terms may not be justified.

In respect of urban sites this can be accomplished by creating landscaping that incorporates ecological principles in its design and implementation. It can also be achieved by creating green or brown roofs or by providing nest boxes and other structures that help to accommodate wildlife.

Note: The Assessor or the Verifier may wish to seek the advice of a representative of a local Wildlife Trust or by a suitably qualified ecologist – such as a Chartered Biologist, a full member of the Chartered Institution of Water and Environmental Management, a Chartered Environmentalist, Chartered Scientist, or a full member of the Institute of Ecology and Environmental Management – to assess whether the issues covered in this section have been adequately addressed.

- ✓ **Evidence could be a written report by an ecologist or equivalent specifically covering the sites in question or it could be evidence from the client showing the results of as separate monitoring contract.**

## 4.5 Monitoring and Maintenance

Maintaining and monitoring any habitat creation or species conservation measures is crucial not only to the success of those measures but also in helping to develop a body of knowledge about what works and what does not. The monitoring programmes will focus on the main species of interest, whether plant or animal, taking into account any season restriction or habits of the species in question. Larger animal monitoring programmes, such as for badgers, bats or birds, can easily be established, as can checks for amphibians and reptiles. However, more detailed investigations may be necessary for invertebrates, notably where plant habitats have been created or managed to enhance their invertebrate potential.

Maintenance programmes need to coordinate with any landscape management proposals, so that vegetation management takes place at the appropriate time of year that will be beneficial for nature conservation. Five years of management and maintenance should be considered as a minimum period, although 7 to 10 years would be preferable.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>4.5.1</b>	<p>Is there evidence that requirements for the <i>ongoing ecological management</i> of habitats and species conservation measures, including instructions for emergencies or abnormal events, has been handed over to the client or managing agent of the completed works?</p> <p style="text-align: right;">If No, score 0; if Yes, score 12</p>		12

- ✓ **Evidence could be in the form of a landscape management plan with specific reference to requirements of ecological habitat management or species conservation measures if requirements were complex, for much more simple maintenance requirements evidence could be as simple as a memo or other formal communication for requirements to the client or managing agent.**

## 5. THE HISTORIC ENVIRONMENT

The landscape today – rural and urban – is the product of thousands of years of human activity and can be referred to in physical terms as the **historic environment**. The historic environment comprises those buildings, structures and other features surviving in the current rural landscape or townscape as evidence for how mankind has shaped and managed our environment (the historic landscape character) over past centuries and millennia. Included in the term historic environment is the wealth of now-buried and often-invisible evidence that has been created and then buried below the existing ground levels – this is referred to as the **archaeological heritage**. Archaeological heritage contains much diversity, and significance is attached to all kinds of evidence, ranging from Palaeolithic scatters of flint artefacts some 500,000 years old, through Roman Villas buried below ploughed fields, to evidence – both buried and visible – for the industrial and military archaeology of the 20<sup>th</sup> century.

The basic principles that are currently applied to the protection, conservation and enhancement of the historic environment by EU governments derive from the understanding that the constituent parts are a non-renewable resource that not only provides an essential educational and academic resource for humankind's development, but also an historical context and framework for new development. The public and economic values of heritage preservation have been recently explored in depth by the Republic of Ireland and UK governments (see, for example, *Capturing the Public Value of Heritage*, English Heritage 2006 and *Conservation Principles, Policies and Guidance*, English Heritage 2008).

Historic environment assets are protected by UK and European legislation. A great deal of the historic environment may not be specifically protected by legislation but may be afforded protection through the planning consents regime. Careful planning plus working to professional standards and guidance are vital in these cases to identify their significance and value, and to identify the role these assets should play in development decisions. Even if a Term Contract is exclusively concerned with maintenance, there is the potential for the contracted works to impact on historic and/or archaeological assets.

Frequently, the surviving historic environment is fragile and highly susceptible to damage and destruction; its significance is also not always easy to recognise. Therefore evidence for the process of professional appraisal and assessment, coupled with key consultations, is essential to achieving scores in this section.

The principles for managing development (and maintenance) impacts on the historic environment in the planning process are encapsulated in the relevant national heritage legislation and in the UK through national (PPGs and the forthcoming PPS) and local (UDP and LDF) planning policy guidance notes. A summary for the UK and links to useful websites can be found in CIRIA report C672 *Archaeology and Development*, 2008.

In the UK and Ireland, the national heritage agencies (i.e. English Heritage in England, CADW in Wales, Historic Scotland in Scotland, the Environment and Heritage Service in Northern Ireland, and the Department for Environment, Heritage and Local Government in Eire) issue regular advice and specific guidance of historic environment matters in the planning system. Advice and guidance can also be found at local government level and the majority of local governments apply specific local policies and guidance to works affecting the historic environment in their areas. Likewise specific sectors issue their own guidance for application on government funded development such as the Highways Agency Design Manual for Roads and Bridges (DMRB) and the National Roads Authority in Ireland (NRA).

Standards and guidance are also issued by the various professional standards institutions such as Institute of Field Archaeologists (IFA), the Institute of Historic Building Conservation (IHBC) and, in Ireland, the Institute of Archaeologists of Ireland.

Assessing performance for CEEQUAL focuses on gaining an understanding of the following areas:

- Have the baseline conditions been properly assessed and documented?
- Have constraints and opportunities been incorporated into the design?
- Has a mitigation strategy been prepared and consulted on?
- Has the mitigation been successfully implemented and monitored?
- Have the results of the mitigation works been properly archived and disseminated for public access?

**Note: It may be appropriate to scope out the majority of questions within this section if no features of historic environment interest are affected by undertaking the contracted works. However, in order to establish this, the necessary studies must have been carried out. Hence Questions 5.1.1 and 5.1.2 cannot be scoped out and are thus marked NSO**

## 5.1 Basic Principles

The contract team should demonstrate that a formal process has been followed to establish the baseline conditions at the work site(s) and establish through desk study and field surveys, the value and significance of the various historical assets that may be present. This should reflect the broad classes of historic environment significance represented by buildings and other structures, historic landscapes, archaeological buried deposits, and marine heritage sites if offshore works are anticipated.

		Contract Management	Delivery on the ground
<b>5.1.1 NSO</b>	<p>Has a baseline historic environment study/survey been undertaken to assist the contract team in identifying any historic environment assets on the new works site? And has it considered the full range of registered and non-registered historic environment assets including:</p> <ul style="list-style-type: none"> <li>• historic built heritage</li> <li>• historic landscape/townscape</li> <li>• below ground archaeological remains (on or off shore)</li> <li>• non-registered or non-designated assets</li> <li>• reference to existing characterisation studies and/or regional research agendas?</li> </ul> <p style="text-align: right;">If No, score 0; if Yes, score 2 for each of the items above</p>		<b>10</b>
<b>5.1.2 NSO</b>	<p>Has the baseline study/survey been :</p> <p>a) prepared or authorised by a suitably qualified* historic environment professional?</p> <p>b) prepared to a recognised standard** appropriate to the scope of the works and location of the site?</p> <p style="text-align: right;">If No, score 0. If Yes, score as follows: a) 4 and b) 4</p>	<b>8</b>	

**Scope out only if no features of historic environment interest are affected by undertaking the new works.**

\* Suitably qualified may be indicated by being a member of a professional heritage body such as the Institute of Historic Building Conservation (IHBC) or the Institute of Field Archaeologists (IFA). 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 to be sufficient.

\*\* A recognised standard may be those published by the national heritage agencies or other bodies specific to the work being undertaken. Both DMRB and IFA have a range of standards and guidance suitable for different situations, for example IFA Standards and *Guidance for Desk-based Assessment 2001*.

It is important that historic environmental interests are identified at the commencement of the contract and early in the design process for individual new works and that significant related issues are incorporated into design planning. Best practice requires that sufficient surveys (desk study and site-based investigations as appropriate) are carried out before work starts, 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 delivery of the new works and have led to options for alterations to be set out.

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

Guidance on appropriate levels of investigation can be found in the Highways Agency’s *Design Manual for Roads and Bridges*, Volume 11 and CIRIA Publication C672 *Archaeology and Development*. 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 new works.
- **Simple Assessment:** Assess the likely impact of the new works on identified assets through detailed desk-based assessment and historic buildings assessment. This may lead to design changes or to agreement for early exploratory excavation to determine the nature of the sites. Field surveys and the techniques used should be recorded.
- **Detailed assessment:** Depending on the level of archaeological importance identified, this stage should include a full and detailed assessment of the relevant new work site(s) with site-specific investigations and surveys.

✓ **Evidence could be in the form of reference to a central database of historic records covering the contract area; a stand-alone desk-based assessment and other survey reports; a chapter in an environmental appraisal or impact assessment 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, and historic landscape. Evidence needs to show that a specialist has been consulted during the design phase to ensure the appropriateness of the proposed design. This could be a formal report from the specialist or notes of a meeting with them.**

## 5.2 Legal requirements, planning guidance and consultation

A review should be undertaken to establish that the new works have been developed and designed with reference to the applicable legislative and planning guidance and that sufficient consultation with national and local bodies had been completed at appropriate stage(s).

		Contract Management	Delivery on the ground
5.2.1	Have the relevant statutory consents been sought, approved and complied with prior to work commencing at all relevant works order sites?  If statutory consents have been approved, score 3 If they have also been complied with, score 4		7

*Scope out only on contracts where it can be demonstrated that the work did not involve any impact on registered assets requiring consents.*

		<b>Contract Management</b>	<b>Delivery on the ground</b>
5.2.2	<p>Have the relevant consultations been carried out with:</p> <p>a) local government</p> <p>b) national government agency*</p> <p>c) Statutory Amenity Societies, and</p> <p>d) other voluntary consultations with local and amateur public organisations?</p> <p style="text-align: right;">If No, score 0  . If Yes, score 1 for each of a), b) and c) and 4 for d)  If this consultation was conducted prior to planning application submission, score a further 2</p>		9

*\* 5.2.2(b) may be scoped out where the national body did not need to be consulted by way of deference to local government duties.*

*The whole question can be scoped out on new works where it can be demonstrated that there were no significant changes to the historic environment.*

*The 4 points for consulting statutory national amenity societies can be scored where it can be demonstrated that the new works is not covered by the remit of any of these societies*

Statutory National 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 20<sup>th</sup> Century Society) and the Scottish Civic Trust and Scottish Architectural Heritage Society in Scotland.

These 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.

This should be done during the design process so that guidance or advice can be properly taken into account in the management of the new works.

**✓ Evidence may be summarised in a section of the documents reviewed at 5.1.1 or be contained in correspondence and/or meeting notes with the relevant consultees.**

### **5.3 Cultural Heritage Conservation and enhancement**

If feasible and appropriate to the new works to be delivered, the design should have sufficient flexibility to consider the conservation and incorporation of historic environment assets into the works. Sympathetic re-development of existing structures can provide positive enhancement. The design should minimise the adverse impact of the development on historic structures and their setting, and consider sympathetic re-use of buildings, features such as street furniture, and the use of local materials.

A Cultural Heritage Appraisal and Management Plan (or an equivalent section in an Integrated Contract Environmental Management Plan) should be produced if there are any historic-environment aspects to the relevant new work sites or their vicinity, whether required by the local authority or other consultee or not.

If a report on the archaeological or historic environment recording work carried out has been produced, it should be available to the public. Furthermore, there should be active publicity for this report to ensure the public knows about it.

Relevant specialists should be consulted at the earliest opportunity in the design process to identify both constraints and opportunities for the new works and wider historic environment. The assessment may need to consider below-ground and above-ground issues separately.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>5.3.1</b>	<p>If statutory listed or registered heritage assets* have been identified in 5.1.1, has:</p> <p>a) the design of the new works enabled their retention, restoration and successful re-use or integration into the asset?</p> <p>b) a future management strategy been agreed</p> <p style="text-align: right;">If No, score 0 If Yes, score 7 for part a)</p> <p>If this methodology has successfully been extended to include non-listed built heritage of local importance, score a further 4</p>		<b>11</b>

*Scope out for new works that have no heritage assets identified.*

\*Currently identified as Listed Buildings, Scheduled Monuments, Registered Parks and Gardens, and Registered Battlefields. In the UK, the 2008 Heritage Bill proposes that a new register comprising Heritage Structures, Heritage Open Spaces, and World Heritage Sites. Marine Heritage Sites will replace the current regime in 2009/10.

<b>5.3.2</b>	<p>Has the design successfully addressed any setting issues and provided a neutral or enhanced setting for listed buildings, scheduled monuments or historic landscape areas?</p> <p style="text-align: right;">If No, score 0. If Yes, score 7</p>		<b>7</b>
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*Scope out for new works that have no heritage assets identified.*

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.

- ✓ 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.**

<b>5.3.3</b>	<p>If the potential for significant* below-ground archaeological remains has been identified from the studies/surveys in 5.1.1, have the appropriate staged surveys been undertaken to establish the extent and condition prior to the works order design being finalised? (These may include both non-intrusive and intrusive methods as identified in CIRIA Report C672 – Archaeology and Development.)</p> <p style="text-align: right;">If No, score 0. If Yes, score 5 If agreed with relevant consultees, score a further 3</p>		<b>8</b>
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*Scope out if the study for Q5.1.1 concludes that there is no potential for significant below-ground archaeological remains.*

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>5.3.4</b>	<p>If the surveys identified in 5.3.3 above have revealed the presence of significant archaeological remains, has a mitigation strategy document been prepared for archaeological investigation and agreed with the relevant development control archaeologist?</p> <p>If No, score 0. If Yes, score 5</p> <p>If it contains an element of preservation in-situ score an extra 3</p>		8

*Scope out if the study for Q5.3.3 concludes that there are no significant below-ground archaeological remains.*

\*'significant archaeological remains' are those that are assessed to be of more than local importance in the evidence set out in 5.1.1 and/or those that are of exceptional importance locally and are identified as such in local planning policy and regional and national research agendas.

<b>5.3.5</b>	<p>If historic environment assets (whether listed, scheduled, registered or not) have been demolished or removed, has an appropriate mitigation design been developed and agreed with the relevant conservation regulator? (This may include relocation or restoration/replacement, conservation or in-situ building recording.)</p> <p>If No, score 0. If Yes, score 5</p> <p>If any innovative methods for assessment or mitigation measures for historic environment assets can be demonstrated, score a further 3</p>		8
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*Note that implementation is covered in 5.3.6.*

- ✓ **Evidence for 5.3.3 to 5.3.5: It should be established how the new works have 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 heritage impact assessments, conservation management plans, mitigation design reports, evidence for partnership with owners and/or regulators, correspondence, meetings notes, use of research agendas and, for larger projects, preparation of specific research strategies or frameworks.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>5.3.6</b>	Is there evidence that the mitigation designs referred to in 5.3.5 have been implemented, managed and monitored in accordance with a CEMP or other management framework?  If No, score 0. If Yes, score 6		6
<b>5.3.7</b>	Have sensitive receptors been cordoned off or other protection measures put in place to avoid accidental damage and have contract staff received appropriate instruction (e.g. via toolbox talks)?  If No, score 0. If Yes, score 7		7
<b>5.3.8</b>	Has an appropriate institution accredited historical environment professional (archaeologist, conservation architect or historic buildings specialist, heritage advisor or conservation engineer) been appointed to manage and inspect the mitigation works?  If No, score 0. If Yes, score 7		7

*Note: Approval of this work is covered in question 5.2.1*

**✓ Evidence could be in the form of registers for work-site briefings and associated attendance sheets, signed contract 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.**

<b>5.3.9</b>	If restoration or enhancement works have been completed is there evidence that current best practice has been applied and historically appropriate materials used?  If No, score 0. If Yes, score 8		8
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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 new works by the stakeholders and the importance of the historical feature. However, an informed decision can only be made if an assessment has been carried out.

**✓ 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 is considered feasible then evidence of details being incorporated into the specifications would be appropriate. Evidence would include documentation of consultation with relevant expert organisations, receipts of material purchase, etc. If the materials have actually been used, then photographs could also be used as evidence**

		Contract Management	Delivery on the ground
5.3.10	Has the contract been able to contribute to maintaining key conservation skills and creating sustainable heritage employment?  If No, score 0. If Yes, score 8	8	

✓ Evidence could include specifications, training records, and meeting minutes.

## 5.4 Information and Public Access

For an archaeological excavation or building recording project, there is a mandatory requirement under the terms of most consent regimes and planning determinations to provide professional, academic-related outputs on the results of investigations and recording the project. Where archaeological remains or an historic building have been removed or demolished, the written and drawn record (and other media) is the key output of the agreed mitigation works. The resulting analysis and presentation of the results should be described in a final project output and when complete, may be disseminated in a published format or other media. A project archive should be prepared that meets professional standards; the location and contents of the archive should be documented.

5.4.1	Has the final output* from the archaeological excavation or building recording works been prepared and agreed with the relevant regulator?  If archives are prepared and submitted by the end of construction stage, score 3 If in preparation by end of construction stage, score 7 If completed by end of construction stage, score 11		11
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\*Final outputs may comprise historic building recording records, archaeological fieldwork reports, or extensive laboratory-based analytical reports, texts and figures for publication.

*This question can be scoped out only where there has been no archaeology or historic buildings work undertaken for new works, including any formal output from 5.1.1.*

*The first 3 points should only be scoped out where there was no work undertaken. Where documents have been prepared at 5.1.1 but no work has progressed from them, desk-based assessments should in any case be provided to the relevant local government Historic Environment Record (HER). However, if the contract does not require a formal post-excavation phase or building recording reports completing then the remaining 8 points can be scoped out.*

✓ Evidence will include a design for post excavation assessment and analysis, details of proposed or completed publications (journal articles, books and monographs), details of archives prepared and submitted (to local museums or to digital online archives). Evidence needs to be provided to support the level of points being scored. There should be evidence that the design has been reviewed and accepted by the relevant consultee and/or funding body.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>5.4.2</b>	<p>Has there been any public opportunity provided to learn about, observe or take part in any activity to understand or promote the historic environment local to the contracted works?</p> <p style="text-align: right;">If none at all, score 0</p> <p>If information board on or near the relevant works only, score 3 if leaflets printed or other active publicity such as web-based information, score an additional 4</p> <p>If educational activities carried out with the local community, or local voluntary organisations invited to participate in assessment or mitigation works, score an additional 4</p>		<b>11</b>

*This question may be scoped out if archaeological or other appropriate experts working on the find advise that public access is inappropriate or advise against publicity.*

The new works 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 contract team through public access to the work site or by publicity materials such as 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. The contract team may also be able to contribute to local education objectives through providing visits to relevant work sites, 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 relevant work site or contribute to desk based or field based activities should be considered. This will help to maintain relations with the local community and help meet government public value targets. The access can be at a specified time outside operating hours, although a member of the contract management team will have to be present. Alternatively it can be in an area partitioned off from the rest of the work site, or visits can be arranged in guided groups etc.

**✓ Evidence needs to be provided to demonstrate the level of public access provided. This could be in the form of visitors' books, press advertisements of access and/or tour times, or photographs of public facilities or information boards provided.**

## 6. WATER RESOURCES AND THE WATER ENVIRONMENT

### 6.1 Basic Principles

Protection of the water environment has risen up the public agenda during that last decade and legislation has been introduced in order to minimise future impacts on this valuable resource. The government's policies on Sustainable Development (1999, 2005) and Sustainable Construction (2000 and 2008) identify water use during building and civil engineering works, and prevention of pollution of the water environment, as key issues for the construction industry in particular. Defra's *Making Space for Water* and PPS25 – *Development and Flood Risk* highlights the need to consider flood risk from the concept stage of any building or civil engineering project or contract. Legislation is in force to protect the water environment in the UK and this has recently been strengthened by the implementation of the *Water Framework Directive* (WFD), which is the most substantial piece of EC water legislation to date (see later).

When looking at the impacts of small scale civil engineering works on water, it must be remembered that many term contracts can lead to opportunities as well as threats to the water environment. Three main aspects need to be considered:

- impacts on water resources and flood risk;
- consumption during the contract period and subsequent operation of whatever facilities have been worked on;
- protection and enhancement of the water environment.

A further aspect is the water resource use that is embodied in materials. However, this aspect has not yet been researched sufficiently to supply the data necessary for assessment. It is intended that it will, if possible, be included within a later version of CEEQUAL, once more research has been made available.

		Contract Management	Delivery on the ground
<b>6.1.1 a)</b> <b>NSO</b>	Has an assessment been undertaken, and appropriately reported, to identify the likely impacts on the water environment from works on the new works site?  If No, score 0; if Yes, score 5		5
<b>6.1.1 b)</b>	Has a contract management plan to control the impacts of the works under the contract on the water environment been produced and implemented?  If No, score 0; if Yes, score 10	10	
<b>6.1.1 c)</b>	Where required by the nature of the works, has a plan or plans to control the impacts on the water environment during any individual works order or appropriate group of works orders been produced and implemented? (this may require more than one plan per contract)  If No, score 0; if Yes, score 10		10

*It is anticipated that, on most term contracts, the first of these questions will, in effect, be NSO. But Questions 6.1.1.b) and c) can be scoped out only if it is demonstrated in the assessment answering Q6.1.1.a) that there is genuinely no possibility of impact on the water environment, for instance carrying out installation of new cable ducts in a location where the chances of any polluting material reaching a water body or road drain is effectively zero. But note that if an assessment as asked for in Q6.1.1.a) is not undertaken, none of the three questions can be scoped out.*

The plans can be part of a Contract Environmental Management Plan or equivalent, or can be a separate document. It should assess questions such as:

- What water use does the completed works entail?

- Are suitable water resources available?
- Are new water resources needed?
- Are they sustainable?
- Is the site(s) where the works are to be undertaken vulnerable to flooding, or does the proposed work cause any change in flood risk to those adjacent to, or downstream of, the site(s)?
- Do the completed works endanger security of water supply to existing users?
- Are the completed works likely to affect the local surface water and groundwater including groundwater flows?
- Do the above include consideration of the effects of climate change i.e. despite the uncertainties about impacts in any particular location, have the works been designed with climate change in mind?

It is very important that *all* potential impacts on the water environment be considered for all of the new works to be undertaken. Some contracts may use very limited water resources, but nearby surface water resources or groundwater may need protecting or *vice versa*. Therefore the need for abstraction, land drainage or discharge consents and/or land drainage appraisals has to be considered as part of such an assessment and plan, as well as possible designs for drainage systems etc. As with all plans of this type, it needs to include procedures for regular monitoring and reviewing. For further guidance regarding impacts of construction and maintenance works, see *Environmental good practice on site*, CIRIA Publication C650 and *Control of water pollution from construction sites*, CIRIA Publication C532).

✓ Evidence could include assessment of water consumption, sources of that water, run-off, hydrological impacts, risk assessment etc and subsequent incorporation into operational plans.

## 6.2 Legal requirements

Numerous acts and regulations deal with the protection of water resources and the prevention of their pollution. Of particular relevance to UK construction are the *Water Resources Act* and *Water Industry Act* of 1991, and the *Environment Act* 1995, which established the Environment Agency (EA) and the Scottish Environment Protection Agency (SEPA). Legislation derived from European Directives is also now higher on the agenda, for example from the *Water Framework Directive* and *Floods Directive* (2007/60/EC).

The UK's *Water Resources Act* 1991 made provision for the need to apply for consent to abstract or discharge water from or into controlled waters. Since their establishment through the *Environment Act* 1995, the EA and SEPA are the bodies responsible for granting these consents, with the Northern Ireland Environment Agency undertaking similar duties in Northern Ireland. The *Environment Act* 1995 also added new sections to the *Water Resources Act* (Section 161, A-D), which provide for the issue of anti-pollution 'works notices'. They empower the Environment Agency to serve notices on those responsible for actual or threatened pollution, requiring them to carry out clean-up and/or remedial action as necessary. Failure to do so is a criminal offence.

Also relevant to UK civil engineering and public realm works are the *Control of Pollution (Oil Storage) Regulations 2001*, which set minimum standards for works carried out and precautions to be taken to prevent pollution of controlled waters from oil storage facilities of 200 litres or more, and equivalent provisions in Scotland such as the *Controlled Activities Regulations* and the *Oil Storage Regulations*. This could be especially relevant to the set-up and operation of the Contract HQ offices and compound.

The *Water Framework Directive* (WFD) (made UK law in 2003) is designed to improve and integrate the way ground and surface waters are managed throughout Europe. Member States must aim to reach good chemical and good ecological status in inland and coastal waters by 2015. The WFD is designed to enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands, to promote the sustainable use of water, to reduce pollution and to ensure progressive reduction of groundwater pollution. It requires hydromorphological elements to be considered (i.e. both hydrology and geomorphology).

This is not an exhaustive list of UK legislation relating to water and civil engineering works. Details of relevant legislation should form part of an EMS or equivalent.

		Contract Management	Delivery on the ground
6.2.1	Has consultation been undertaken with regulatory authorities about water issues identified in the assessment asked for in Q6.1.1a) related to the contract area and appropriate work types, including the need for any consents, and has the outcome been communicated across the contract team?  If No, score 0; if Yes, score 9	4	

*This Question may be scoped out only in the unlikely event that it is demonstrated in the assessment answering Q6.1.1a) that there is genuinely no need to consult with the regulatory authorities about the potential impact of the new works on the water environment.*

It is advisable to consult the relevant regulatory authorities on any potential impacts the new works may have on the water environment, and whether discharge or other consents are required. This includes new works where effects on water are not immediately obvious as, for example, hydro-geological issues, which are not instantly visible, may apply to the sites where works are to be undertaken. The assessment undertaken for Q6.1.1a) will inform the need for such consultation.

✓ Evidence could be in the assessment undertaken for Q6.1.1a), followed up with meeting notes or letters regarding obtaining consents or licences 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.

6.2.2 a)	Have there been regulatory actions during the year of the contract under assessment?  If Yes, score 0; if No, score 1	1	
6.2.2 b)	If there were regulatory actions during the previous year of the contract under assessment, is there evidence of learning from the experience and improvements made to management procedures in the subsequent year?  If Yes, score 0; if No, score 1	1	
6.2.2 c)	If there were regulatory actions at any time during the contract under assessment, is there evidence of feedback from the contract team to their colleagues on other work to reduce the chances of repeat events on other similar work by the contract's parties?  If Yes, score 0; if No, score 1	1	

*Scope out Questions 6.2.2b) and 6.2.2c) in year 1 and if no regulatory actions since the last verification.*

It is acknowledged that whether or not there have been negative regulatory actions these may be due to varying inspection levels, site size variations and possible geographical variations in application of the regulations in regions. However, in principle, the number of regulatory actions on a contract (for example, proceedings against the contractor by the relevant authority – Environment Agency, SEPA, the Northern Ireland Environment Agency and/or a Local Authority or equivalents elsewhere – for breach of environmental legislation, or the issue of a Works Notice or equivalent) is considered to be a valid way of assessing breaches of regulations.

✓ A signed statement from the applicant will be acceptable evidence for this (as it is impossible to obtain evidence of non-existence of any regulatory action).

### 6.3 Minimising water usage

Minimising water usage is a widely accepted way of reducing human impact on water resources. During design of the new works, minimising water usage during operation should be considered and ought to take account of long-term water requirements. Designs for utilisation of greywater and rainwater should be encouraged if appropriate. Training on these issues should be encouraged to ensure knowledge of new designs and benefits of conservation and toolbox talks have been found to be invaluable.

It is all very well to have plans in place for protection and enhancement of the water environment, but they need careful and rigorous implementation on the ground to provide the desired outcomes. So monitoring performance and responding should implementation go awry is very important. Training on these issues should be encouraged to ensure knowledge of the plans in place and how to deliver them and toolbox talks have been found to be invaluable.

		Contract Management	Delivery on the ground
6.3.1	Have measures to conserve water and reduce water consumption <b>during operation</b> of the completed works been incorporated in the design and specification?  If No, score 0; if Yes, score 20		20

*Scope out on contracts where water consumption in use after completion of the works is not an issue, for example installation of cable ducts.*

- ✓ 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 will vary greatly depending on the type of new works being assessed. Appropriateness of measures will have to be judged and agreed by the Assessor and Verifier. However, the guidance above gives examples of the sorts of measures that could be considered.

6.3.2	Has a practical system been put in place to minimise consumption of mains or abstracted water within the contracted works?  If No, score 0; if Yes, score 8	4	
6.3.3 a)	During the delivery of the contracted works, has the amount of water used been measured and monitored?  If No, score 0; if Yes, score 3	3	
6.3.3 b)	If monitoring measures were in place during the previous year of the contract under assessment, is there evidence of learning from the experience and improvements made to management of the contract management sites in the subsequent year?  If Yes, score 0; if No, score 1	1	

*Scope out on contracts where water consumption during the contract is very limited or not an issue.*

**Scope out 6.3.2 c) in year 1 and if no water consumption monitoring in the preceding year.**

Re-use of water can be encouraged, as well as conservation measures introduced, such as the creation of settlement lagoons intended to protect watercourses from pollution by containment of spillages, and such lagoons can also be used as a non-potable water supply, for example for damping down during dusty periods. It must also be noted that, in attempting to minimise use of water during construction works, there are potential conflicts linked to economical use of water: for instance, dust damping and wheel washes may be required for other environmental considerations and the water use involved will thus be well justified. The contract team's measures for dealing with these potential conflicts should be examined.

During the delivery of new works, metering water use will provide useful data for comparison and target-setting. In addition, simply by increasing the awareness among contract staff and management of the amounts of water used for different aspects of the construction processes, it can contribute to more-conscious use of water.

- ✓ **Evidence is required of positive measures to protect water resources. They could include assessments of expected water consumption patterns and monitoring usage to them or evidence of mitigating actions taken should the expected consumption be exceeded. It could also be targets set for reduction of water use and monitoring of their achievement.**
  
- ✓ **Photographs are likely to be acceptable but a visit by the Assessor may be required to see examples of practical measures. The conflicts mentioned above need to be acknowledged.**

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## **6.4 Protection of the water environment (ground and surface water)**

When evaluating the potential impact of new works on the water environment, the potential impact on both groundwater and surface water must be considered.

At design stage, for any new works, the geological history and hydro-geological details of the area will be important, as these will determine the groundwater movement in the area. This will help decide the best design and implementation method to protect the environment, including the hydro-geological regime. The design should aim to control run-off paths and drainage, and the quality and turbidity of the run-off is of greater concern.

During the delivery stage of any new works, prevention of water pollution is of extreme importance. There are a variety of potential sources of on-site groundwater and surface water contamination, including:

- operational leaks and spillage from tanks, pipes and vehicles;
- accidents or spillage during storage and transport of raw materials, manufactured products and waste materials;
- storage of waste on or adjacent to the site(s);
- leaks from drains from process areas;
- movement of contaminated groundwater onto the site(s) from areas that are contaminated;
- demolition of works that have contained contaminating materials;
- silt washed from the site(s).

Contamination of the water environment may also come from materials incorporated into the works. The potential of materials and products to leach pollutants into the environment should be assessed at design stage.

Sound advice on these issues is available from the following CIRIA publications:

- C649 *Control of water pollution from linear construction projects. Site Guide*
- C648 *Control of water pollution from linear construction projects. Technical Guidance* and
- C650 *Environmental good practice on site.*

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>6.4.1 a)</b>	Have specific measures been planned to prevent pollution of groundwater or existing water features on relevant new works sites?  If No, score 0; if Yes, score 8		<b>8</b>
<b>6.4.1 b)</b>	Have the planned measures detailed in Question 6.4.1 a) to prevent pollution of groundwater or existing water features been implemented?  If No, score 0; if Yes, score 10		<b>10</b>

Q6.4.1 a) This could include the location of storage for fuels, chemicals or other potentially-polluting substances away from sensitive areas; separating foul and surface water; the inclusion of interceptors and drainage channels; plus other measures to prevent leakage of pollutants into a water course, such as bunding, appropriate storage, spill kits, emergency response plans etc.

Consideration should be given to minimisation of usage, options for recycling, prevention of pollution and improvements to water quality through the operation and maintenance of the completed works. Examples are a restriction on the use of chemical weedkillers near a watercourse, inclusion of green infrastructure, etc.

For Question 6.4.1 b), the measures or actions could include the location of storage for fuels, chemicals or other potentially-polluting substances away from sensitive areas; separating foul and surface water; the inclusion of interceptors and drainage channels; plus other measures to prevent leakage of pollutants into a water course, such as bunding, appropriate storage, spill kits, emergency response plans etc.

- ✓ **Evidence for Q6.4.1 a) of positive measures should be documented in the Contract Management Procedures and Plans.**
- ✓ **Evidence for Q6.4.1 b) of implementation could be in the form of photographs and other documentation or could be gained from sample works visits. Note that company-wide key performance indicators are insufficient as evidence for this question.**

<b>6.4.2</b>	Have measures (or equipment) been incorporated at appropriate new works sites to allow the long-term monitoring of the completed works impact on the water environment?  If No, score 0; if Yes, score 10	<b>10</b>	
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Examples include understanding the water-body quality rating under the *Water Framework Directive*, measuring run-off quantities, monitoring hydrological impacts of new works that involve changes to existing watercourses, groundwater quality monitoring, and use of flow recorders or level monitors.

- ✓ **Evidence will vary greatly depending on the type of new works being assessed. Appropriateness of measures will have to be judged and agreed by the Assessor and Verifier. However, the guidance above gives examples of the sorts of measures that could be considered.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
6.4.3	Is there evidence that the incorporation of Sustainable Drainage Systems* (SuDS) has been considered for implementation at relevant new works sites?  If No, score 0; if Yes, score 4		4

**Scope out for contracts where the contract scope is limited to maintenance, with no elements of new or refurbished construction work.**

\* For example, rainwater retention, balancing ponds, reedbed systems, grass roofs etc.

For the policy context, see PPS25 *Development and Flood Risk*. For guidance on SuDS refer to CIRIA publications *Sustainable Urban Drainage Systems*, 2001; *The SUDS Manual (C697) 2007*; *Site handbook for the construction of SUDS (C698) 2007*; and *Design for exceedance in urban drainage – Good Practice (C635 2006)*.

The incorporation of SuDS should always be actively considered for new works or refurbishments. If the new works are small and generate no significant run-off, or 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 Question 6.4.4 can be scoped out on that basis.

As an example, when undertaking Storm Drainage design to DMRB, Volume 4, Section 2, Part 3, HD33/06, paragraph 6.3 refers to increasing design rainfall intensities by 20% to allow for climate change. This is mandatory for trunk roads but would be best practice for other Term Contract minor improvement drainage works and may fit category as evidence for SuDS?

**✓ 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 and/or include printouts from storm water design software.**

6.4.4	Have any Sustainable Drainage Systems recommended as part of the evaluation asked for in Question 6.4.3 been incorporated at new works sites where appropriate?  If No, score 0; if Yes, score 16		16
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**Scope out if points have been scored on question 6.4.3 and SuDS have been deemed inappropriate (for example, river wall strengthening).**

**✓ Evidence may include drawings, specifications or photographs showing the incorporation of SuDS**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
6.4.5 a)	If the assessment in Q6.1.1a) demonstrates that the works could affect a body of ground or surface waters, has the water quality of that water body been monitored before the works begin and then regularly during delivery of the contracted works in accordance with the regime identified as appropriate in the risk assessment?  If No, score 0 If monitoring system in accordance with the results of the risk assessment, score 6		6
6.4.5b)	If the monitoring shows no adverse effect, score 6 If the monitoring shows adverse effect, but effective mitigation measures can be demonstrated, score 4		6

*May be scoped out if no significant or sensitive body of ground or surface water is within or near the site.*

*Scoping-out may be considered if the interventions necessary to monitor the body or feature would themselves introduce a disproportionate adverse risk of environmental impact, but only if there is a suitable alternative mitigation strategy available. This should be agreed between Assessor and Verifier on a contract-specific basis.*

Visual inspection of water courses 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. This level of inspection is therefore not considered a sufficient level of investigation to score on this question. Risk assessment of the water quality impacts on the environment should be undertaken to establish appropriate level of on-site monitoring and chemical analysis.

Monitoring may be carried out in liaison with the EA, SEPA or NIEA 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. These may, for example, have delayed pollution characteristics, which would be costly and possibly difficult to rectify.

**✓ Evidence can be in the form of monitoring data and other documentation showing the methods of monitoring used.**

<b>6.4.6</b>	Have the impacts on the water environment at new works sites been considered for the operation and maintenance of the completed works?  If No, score 0. If Yes, score 6		6
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*May be scoped out if no significant or sensitive ground and surface waters or features are within or near the site.*

Consideration should be given to minimisation of usage, options for recycling, prevention of pollution and improvements to water quality through the operation and maintenance of the completed works. Examples are a restriction on the use of chemical weedkillers near a watercourse, inclusion of green infrastructure, etc.

✓ Evidence can be drafts of operation and maintenance manuals, minutes of meetings and other documentation.

		Contract Management	Delivery on the ground
6.4.7	Have existing water features been protected from degradation or physical damage by the construction plant and processes used?  If No, score 0; if Yes, score 5		5

*May be scoped out if no significant or sensitive water features, ground and surface waters are within or near the site.*

The important distinction in this question compared to the pollution-related questions is of *physical damage* to the water feature. Examples of work that would cover this question include protection of banks of ponds, lakes, streams, rivers and canals against damage by construction plant or processes.

Evidence could be gained from a site visit. Further evidence can be in the form of photographs and other documentation.

## 6.5 Enhancement of the water environment

Opportunities should be taken to enhance the water environment whenever appropriate. Most of these will arise at the design or specification stage of new works, when modifications to the design can be carried out at little or no extra cost. At the delivery on the ground stage, opportunities can still occur once conditions on work sites are better known. However, this will require good co-operation between the client, designer and contractor. It is acknowledged that on some, maybe many, term contracts there may be no or very limited opportunities to exploit.

During assessment, it is necessary to understand reasons why an evaluation of opportunities may not have led to enhancement of the water environment, even though opportunities may have been identified. It is important to take account of costs, appropriate use of contract funding, contract programme and safety issues.

Positive impacts on the water environment may not be visible for a long time, possibly long after handing over the completed works to the client. This is why there are no questions on the long-term success of the measures.

6.5.1	Have opportunities to improve the local water environment been included in the planning and specification of the contracted works?  If No, score 0; if Yes, score 16		16
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Examples of opportunities to improve the local water environment 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.

✓ Evidence needs to demonstrate that features (such as the examples above) have been included in the works. This needs to demonstrate consideration at the design and specification stage (such as through drawings or specifications) and during delivery on the ground (such as through photographs).

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>6.5.2</b>	<p>Have existing water features been incorporated (for example as an amenity and/or for site drainage) in the design and specification of relevant new works and implemented?</p> <p>If No, score 0; if incorporated into the design/specification score 3 If implemented score an additional 5</p>		<b>8</b>

*Should be scoped out if there are no existing water features present on or near the site(s).*

**✓ Evidence needs to be appropriate to the type of scheme and could include drawings or photographs showing how existing features have been incorporated.**

## 7. ENERGY AND CARBON

### 7.1 Basic principles

There is now a widespread belief and ever-mounting evidence that pollutants arising from human activities are largely responsible for global warming and consequent climate change (although this view is not held by everyone). The burning of fossil fuels and the consequential release of carbon dioxide in the generation of energy are seen to be particularly important in this respect. At the 1997 Kyoto Conference, the UK Government, along with most of the developed nations, made a commitment to reduce emissions of greenhouse gases over the period 2008 to 2012 and this has subsequently been re-confirmed at later meetings on climate change. The UK agreed to a reduction target of 12.5% but, in addition, the Government has set itself the objective of a 20% reduction in carbon dioxide emissions by 2010, compared to 1990 levels, and the Climate Change Act incorporates an 80% reduction by 2050 compared to 1990 levels.

Whether everyone agrees about the connection to human activities or not, in order to achieve these very challenging targets, all industries and individuals will need to reduce dramatically their overall energy consumption, especially that generated by burning fossil fuels, and thus dramatically reduce their carbon emissions. The quantity of carbon emitted through an organisation's annual use of energy in all its forms is commonly referred to as their 'carbon footprint'.

In the building sector, the *Code for Sustainable Homes* and Part L of the UK's *Building Regulations* translate UK Government policy into performance standards for the building industry, and for the first time the Building Regulations have been applied to replacement of existing equipment such as boilers.

There are no equivalents to the Code or Part L for civil engineering, whether new works or maintenance, so the challenge is for civil engineering teams to consider energy and carbon emissions issues at *all* stages of their work and all stages of the works they create and maintain. This includes:

- the energy consumed and carbon emitted (both directly and indirectly) in the production and transport of materials and components (embodied energy);
- the energy used during construction activities; and
- the energy consumed in the operation of the completed works.

They may also choose to consider the carbon footprint of the company's overall operations, not just their contracts activities.

In civil engineering and public realm works contracts, examples of energy and carbon emission reductions include

- low-energy plant in water or wastewater treatment plants;
- optimisation of all processes including dosing of chemicals used in treatments, and thus minimising the embodied energy in those chemicals;
- timing of processes to use energy off-peak;
- logistical management between work sites and depots/quarries;
- evidence of the use of low-carbon materials;
- use of recycled materials to reduce energy consumption of winning and processing virgin materials;
- \*inclusion of wind-power generation and/or combined heat & power generation in a major development; and
- \*the embedment and use of solar energy for street lighting, parking meters or any small scale or remote installations;
- use of low-energy or low-carbon construction equipment;
- effective maintenance procedures that encourage energy-efficient operations;
- the recycling and re-use of materials in renewal programmes, such as road re-surfacing.

\* It should be noted that the asterisked items are low-carbon-emitting energy generation solutions and so will provide reductions in carbon emissions but not necessarily reductions in energy consumption.

It should also be noted that energy issues are also – indirectly – included in the transport and materials sections of CEEQUAL. It is accepted that the same actions on a contract may occasionally, in effect, score twice in different sections of the Scheme.

A final introductory point is to stress that the adoption of renewable sources of energy, including electrical energy, is not an excuse to suddenly become profligate with one’s energy use. Every kWh of renewably-generated electricity that is wasted is a kWh that could have been used for something else by someone else, and reduced *their* consumption of fossil-fuel-derived electricity.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>7.1.1</b>	Has a life-cycle energy assessment been undertaken for the key materials and components to be used in the contract?  If No, score 0; if Yes, score 10	<b>10</b>	

A life-cycle energy assessment for materials and components must include balancing the impacts of embodied energy from their extraction, refinement and manufacture, distance transported and energy performance in use after their incorporation for any completed works. This is in accord with latest UK Government efforts and international standards drawn up by the EU, including Defra’s Operational Emission Factors and ISO standards for life-cycle analysis data. However, it needs to be recognised that this type of assessment is leading-edge in civil engineering and examples will be added to the Manual as they are found.

The assessment should ideally be done early in the contract so that its results can be properly taken into account in the decision-making about how the works under the contract are to be completed.

**✓ Evidence could be a life-cycle assessment report or equivalent.**

<b>7.1.2</b>	What percentage of the energy consumptions reduction identified in the life-cycle assessment has subsequently been incorporated in the completed works?  If under 10%, score 0 if 10% to <20%, score 4 if 20% to <40%, score 8 if 40% to <60%, score 12 if 60% to <80%, score 16 if above 80%, score 20	<b>20</b>	
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It is accepted that there may be practical difficulties in identifying precisely the scale of the reductions arising from undertaking an assessment. This is in part why the scoring bands above are set as they are. What is important is to drive down the energy consumption of the works being assessed irrespective of the source of that energy.

**✓ Evidence will need to reflect the points earned, and should include contract records – minutes, technical reports etc – showing to what extent the results of the assessment have influenced the implemented solution, for example through choice of materials, components and design solutions.**

<b>7.1.3 NSO</b>	Has a life-cycle carbon assessment been undertaken for the key materials and components to be used in the contract?  If No, score 0. If Yes, score 10	<b>10</b>	
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This analysis could be a sub-element of the life cycle energy analysis or a complete stand-alone analysis.

✓ Evidence needs to be in the form of an analysis from a carbon footprint analysis or an appropriate software tool.

		Contract Management	Delivery on the ground
7.1.4 NSO	<p>What percentage of the carbon emission reduction identified in the life-cycle assessment has subsequently been incorporated in the completed works?</p> <p>If under 10%, score 0                      If 10% to &lt;20%, score 4                      If 20% to &lt;40%, score 8                      If 40% to &lt;60%, score 12                      If 60% to &lt;80%, score 16                      If above 80%, score 20</p>	20	

As with the equivalent energy question, 7.1.2, it is accepted that there may be practical difficulties in identifying precisely the scale of the reductions arising from undertaking an assessment. This is in part why the scoring bands above are set as they are. What is important is to drive down the carbon emissions associated with implementation of the new works being assessed. And it needs to be stressed that questions on energy consumption *and* carbon emissions are included in CEEQUAL to indicate that reduction of all energy consumption, whether renewably generated or not, *and* reduction of carbon emissions are both important.

✓ Evidence will need should be in the form of an analysis from a full carbon footprint analysis or a software tool.

## 7.2 Energy consumption and carbon emissions in use

Considering energy consumption in use and carbon emissions reduction at design stage can bring significant long-term environmental (and economic) benefits.

7.2.1	<p>Is there evidence that the contract team has considered options for reducing the energy consumption and carbon emissions of the completed works <b>during operation</b>, including the option of designing out the need for energy consuming equipment and the energy requirements in maintenance?</p> <p>If No, score 0; if Yes, score 9</p>		9
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An example is for road improvement schemes designed to reduce congestion on road and at junctions. CO2 emission rates and other pollutants such as Oxides of nitrogen increase under stop-go conditions compared to those when vehicles move smoothly, e.g. provision of filter lane/right turning lane/staggered layout to increase capacity and ease of traffic flow at road junctions would reduce vehicle emissions. Given that 20% of CO2 emissions are produced from road transport, any improvement in this area is beneficial. The reductions of emissions per scheme may be relatively small but added together over the entire country may be significant. (Reference: DMRB, Vol 11, Section 3, Air Quality.)

Equally, the quest for reductions in energy consumption, from whatever source, can and should include the option of simply not including energy-consuming equipment, or installation of smart technologies, such as lighting of the depot or office car park so that it comes on only when people are using it.

Energy use in maintenance is equally important to consider. This can include frequency and type of maintenance required and accessibility issues, as well as overall durability and lifespan.

✓ Evidence could include contract energy records, minutes of team meetings, before and after traffic surveys rather than measurement of emissions etc.

		Contract Management	Delivery on the ground
7.2.2	Is there evidence of appropriate measures having been incorporated to reduce energy consumption of the completed works during operation ?  If No, score 0; if Yes, score 22		22

*Scope out if evidence to Question 7.2.1 shows that there are no energy-in-use issues to be considered (not even maintenance).*

✓ Evidence could include contract records – minutes of team meetings, technical reports, drawings etc.

7.2.3	Is there evidence that the contract team has explored opportunities for the incorporation of energy from renewable and/or low or zero carbon sources and thus a reduction in carbon emissions?  If No, score 0; if Yes, score 7		7
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*Scope out for new works which do not consume energy in use.*

✓ Evidence could include contract records – minutes of team meetings, technical reports, drawings etc.

7.2.4	Has energy from renewable and/or low- or zero-carbon sources been incorporated into the contracted works where appropriate?  If No, score 0; if Yes, score 22		22
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*Scope out where it was considered (under Q7.2.3) and found to be not possible or inappropriate.*

✓ Evidence could include drawings, specifications or photographs.

### 7.3 Energy and carbon performance during delivery on the ground

On many individual new works, for example modifications to wastewater treatment plants, the energy consumption during operation of the completed works is very much more significant than the consumption during delivery of the works. However, controlling energy consumption during the delivery stage is still important and, for many other kinds of civil engineering works – for example installing cable ducts – there is little or no in-use consumption, so energy consumption during delivery of the works becomes the significant energy issue on that contract.

One of the main contributors to greenhouse gas emissions during construction processes is the use of construction plant, together with the transport impacts of delivering materials to the works, and staff travel. The latter are dealt with in the Transport section, as well as forming part of a life-cycle assessment for

materials, dealt with in question 7.1.1. This section therefore focuses on the energy and carbon impacts of plant and machinery.

The use of the correct plant for the job, only running that plant when needed, selecting more-efficient plant where available, and even designing out the need for energy-consuming plant will assist in improving the energy performance of the works. Best Available Techniques Not Entailing Excessive Cost (BATNEEC) or Best Available Technique (see Section 1.3) should be in evidence in respect of plant and methods for carrying out work in order to reduce energy use (and other environmental impacts – for example noise). Similarly, good programming of the introduction and use of certain types of plant, and where to position them while undertaking the contracted works, can avoid waste of energy through plant transport, excessive start-up and shut-down, premature arrival and unnecessary running.

The UK Environment Agency has developed a carbon calculator for construction activities – available at <http://www.environment-agency.gov.uk/business/sectors/37543.aspx> – which calculates the embodied carbon dioxide (CO2) of materials, plus CO2 associated with their transportation, plus personal travel, site energy use and waste management.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>7.3.3</b>	Is there evidence that the design for individual works orders or groups of works orders has incorporated appropriate measures to reduce energy consumption during their delivery where feasible?  If No, score 0; if Yes, score 12		<b>12</b>

**✓ Evidence could show inclusion of items considered in 7.3.1 within the specification or tender documents.**

<b>7.3.4 NSO</b>	Is there evidence that the contract team has considered appropriate measures to reduce energy consumption and/or carbon emissions in delivering the contracted works and have these been incorporated through an energy management plan, or energy management section of a Contract Environmental Management Plan?  If No, score 0. If Yes, score 12	<b>12</b>	
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**✓ Evidence could show as a minimum inclusion of items considered in 7.3.1 within the design of new works or some considerations of energy issues in contract planning, along with evidence of measures being implemented.**

<b>7.3.5</b>	Has the procurement, maintenance and use of plant used in the delivery of the contracted works been influenced by consideration of their energy efficiency, energy type or carbon emissions?  If No, score 0; if Yes, score 7	<b>7</b>	
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Considering the energy consumption of construction plant and machinery before purchase will ensure that the better environmental option can be chosen, and savings on fuel can be made in the long run.

**✓ Evidence: contract specifications and other procurement documents, plant documentation.**

		Contract Management	Delivery on the ground
7.3.6	Has energy from renewable and/or low- or zero-carbon resources actually been used during the delivery of the contracted works?  If No, score 0; if Yes, score 7	7	

As with Qs 7.2.3 and 7.2.4, it is important to note that contracted works do not have to be an energy consuming works for it to be worth investigating the use of renewables in the delivery stage. Measures should be appropriate to the scale and nature of the works, for example, one road sign with renewable energy facilities in a programme of renewing road signs across the contract area is not sufficient.

- ✓ Evidence showing the source of energy consumed on the contract is needed. This could be photographs showing use of alternative energy sources (e.g. wind turbines or solar panels).
- ✓ Evidence needs to show that the use of renewable, low- or zero-carbon energy is more than a token effort.

7.3.7	Is there evidence that plant and ancillary equipment used in the delivery of the contract has been maintained to maximise fuel efficiency and minimise carbon emissions?  If No, score 0; if Yes, score 6	6	
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Regular maintenance of plant and machinery will ensure fuel efficiency and prolong the life of machines and power tools.

- ✓ Evidence: for example, records of regular maintenance, emission testing.

7.3.8	Is there evidence that energy use has been monitored and controlled throughout the contract?  If No, score 0 if monitored, score 3 if monitored and evidence of control measures, score 8 If this is converted into carbon, score an additional 2	10	
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Monitoring energy use and carbon emission can highlight differences in utilisation and control of energy, thus providing data for comparison and enabling energy savings in future.

- ✓ Evidence can include demonstration that energy use and/or carbon emissions are assessed and then monitored, including 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 e.g. timers, PIR sensors etc.

## 8. MATERIAL USE

### 8.1. Basic principles

The construction industry uses a significant volume of materials that are derived from natural resources, such as timber, aggregates, tarmac, asphalt, concrete and steel. The manufacture and supply of these materials can have an adverse environmental impact. It is important therefore that proper consideration is given to the responsible sourcing and use of materials in construction and maintenance activities.

There are many opportunities during the various stages of a civil engineering or public realm projects and later maintenance to influence the supply and use of materials – through design, specification, selection, supply chain management, storage and use. There are also opportunities to conserve the use of material resources through the reduction, re-use and recycling of waste materials – see AggRegain Specifier (<http://aggregain.wrap.org.uk/specifier/index.html>) and the WRAP Quality Protocol at [http://aggregain.wrap.org.uk/quality/quality\\_protocols/index.html](http://aggregain.wrap.org.uk/quality/quality_protocols/index.html).

It is acknowledged that there is some overlap between this section and Section 9 on Waste Management, and stressed that the impacts of the *transport* of materials are covered in Section 10.

		Contract Management	Delivery on the ground
8.1.1 NSO	Was a plan that makes recommendations for material use in the contract, to minimise environmental impact* drawn up?  If No, score 0; if Yes, score 6	6	
8.1.2	Has this plan been implemented?  If No, score 0; if Yes, score 12	12	

\*This includes selection of materials on the basis of a ‘reduce, re-use, recycle’ approach and of environmental impact (such as the potential for pollutants leaching into the environment, transport impacts and design for waste minimisation).

*These questions cannot be scoped out because of the significance of the issues they address and their importance on any size or nature of civil engineering or public realm works.*

‘Implemented’ in Question 8.1.2 could be at design stage by incorporation of design solutions to minimise material environmental impact, which are subsequently constructed, and/or at the delivery stage through procurement of low-impact materials and components.

✓ Evidence could be a specific materials plan or a specific consideration recorded within project meeting records. Implementation of the recommendations could be demonstrated by incorporation into specifications and drawings, or through physical evidence such as photographs.

### 8.2. Minimising material use and waste

Minimising material use is closely linked to minimising waste and re-using materials. Section 9 addresses in detail issues arising from on-site waste management, and many of these measures will also reduce material use. Section 8.4 addresses issues specifically relating to the re-use and recycling of material.

Over-specification in design is a common phenomenon, with consequent unnecessary material consumption. It can be reduced through careful design, and discussions between the client and design team, to define better the current and future performance requirements of the works. Examples of positive steps that can be taken include:

- use of standard lengths and repetition of elements to avoid off-cuts;

- balancing the extent of waste arising from packaging with waste through breakage due to inadequate packaging;
- pre-fabrication of elements where appropriate;
- optimising cut and fill to reduce the quantity of material brought to the works and to reduce the quantity of excavation spoil taken from sites as waste;
- incorporation by design of temporary works into the permanent works.

Monitoring the quantity of material specified at the design stage and comparing this with the material used during construction can provide performance indicators. What is important is a process that enables the assessment of the effectiveness of material reduction measures. This also provides retrospective information for the contract team to feed into future work.

The opportunities to reduce material use can be a trade-off between, for example, standard lengths, pre-fabricated components and over-specification. There is also a balance between over-specification and flexibility, which is difficult to assess.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>8.2.1</b>	Is there evidence that the selection and use of prefabricated units* has been considered for use in the contract on the merit of their environmental benefits?  If No score 0; if Yes score 6		<b>6</b>
<b>8.2.2</b>	Have the outcomes of this consideration been implemented?  If No, score 0. If Yes, score 6 No score here unless 6 scored for 8.2.1		<b>6</b>

***Question 8.2.2 can be scoped out only if evidence of consideration has been provided in 8.2.1.***

\* Consider as ‘prefabricated units’ any parts or units that can either be constructed on site or prefabricated off site, such as pre-cast concrete units, panels etc. This does not include earthworks or components that can only be bought as complete units, such as pumps, transformers and other mechanical or electrical equipment etc.

Prefabrication improves the chances of minimising material use and waste through controlled off-site processes. The higher level of quality control likely to be deliverable in a factory environment should also reduce failure and increase component durability and lifetime, with associated environmental benefits. The potential to reap these benefits is often higher on Term Contracts than individual projects, because of the repeat work often involved. However, there may be conflicts between these benefits of prefabrication and the environmental impacts of longer transport distances for prefabricated units, or the constraints they may place on the appearance of the completed works. These environmental benefits or adverse impacts should be assessed and the decision made accordingly.

**✓ Evidence would be in design records such as meeting notes. If component parts are actually being used then evidence could be found in specifications or drawings as well as photographs.**

<b>8.2.3</b>	Has an assessment been made to ensure optimisation of cut and fill to reduce the quantity of excavated material to be taken off each new works site?  If No score 0; if Yes score 4		<b>4</b>
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***Scope out only on new works 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 (e.g. storm tanks).***

‘Cut and fill’ is the term used to describe the whole process of profiling of the landform for the works – 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 works. This balancing can be done by computer modelling or other, more traditional methods.

Clearly, in the context of this version of CEEQUAL, this question is most applicable to minor road and rail schemes, and the gains are likely to be much more modest than on major new projects. However, it is advantageous to consider the issue in any works where there is significant excavation.

It is acknowledged that there are occasions where the action sought by this question here may be in conflict with specifications imposed on the contract team by other considerations but it important that the assessment is made to maximise the potential benefits.

**✓ 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.**

		Contract Management	Delivery on the ground
8.2.4	What percentage by volume of excavated material that is suitable for use has been beneficially re-used on works order sites? Up to 15% re-used , score 0 15% to 30% re-used, score 2 More than 30% up to 50% re-used, score 4 More than 50% up to 90% re-used, score 6 More than 90% re-used, score 8 100% re-used, score 10	10	

Re-use *near* the work sites, as opposed to *on* the work sites, is covered in Section 9 on Waste Management – Question 9.4.6 on diversion of waste away from landfill. This re-use off-site includes taking material to landfill if the material is genuinely inert and is used for beneficial re-use (it is a beneficial re-use, since landfill sites need inert waste as capping layers and to mix in with other waste).

**✓ 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 Site or Contract Waste Management Plan or equivalent and actual waste transfer notes or some other form of quantity surveying documentation.**

8.2.5	Have subsoil and topsoil been separated and stored correctly for re-use after completion of the works?  If No, score 0; if Yes, score 4		4
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Topsoil is correctly stored in stockpiles no higher than 2m. 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 10m of a watercourse. (See BS3882:2007 *Specification for Topsoil*.)

**✓ Evidence could be the existence of detailed instructions on soil handling for the relevant works orders (not a general statement), a soil handling and management strategy, or minutes of contract meetings etc, referring to the handling and storage of topsoil.**

		Contract Management	Delivery on the ground
8.2.6	<p>Has all topsoil been re-used beneficially as topsoil on works order sites or on a site within a reasonable distance*?</p> <p style="text-align: right;">If No, score 0 If all beneficially re-used off site, score 1 If majority (over 50%) beneficially re-used on site, score 2 If all beneficially re-used on site, score 4</p>	4	

Refer to Section 9 if the topsoil is or has been moved off site in an unplanned way because appropriate exemptions are then required.

\* 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 work sites 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 contract and its area of operation. 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.

The 'Code of Practice for the Sustainable Use of Soil on Construction Sites' (see <http://www.defra.gov.uk/environment/quality/land/soil/built-environ/documents/code-of-practice.pdf>) is a practical guide to assist anyone involved in the construction (and maintenance) industry to protect the soil resources with which they work.

✓ **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.**

8.2.7	<p>Is there evidence that materials have been stored appropriately on works order sites so as to avoid wastage?</p> <p style="text-align: right;">If No score 0; if Yes score 4</p>		4
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For guidance on this issue, see Section 3.2 of CIRIA Publication C650 *Environmental Good Practice: Site Guide*.

✓ **This could be photographic evidence or work site records. The Verifier should ascertain that photographs demonstrate a sustained achievement of this question for the duration of the new works.**

### 8.3 Responsible sourcing of materials

The sourcing, manufacture, use and disposal of construction and maintenance materials can have a significant impact on local and global environments from which they are obtained or in which they are produced. The issue is complex and it is not within the scope of the CEEQUAL scheme to identify which materials are less environmentally damaging or more environmentally beneficial than others.

The concept of responsible sourcing within the UK is developing at a rapid pace, most notably with the development of the BRE *Framework Standard for the Responsible Sourcing of Construction Products* BES 6001: September 2008. This document provides criteria against which environmental management, as well as social and economic facets of sustainable construction products, can be assessed and independently certified.

Note that, whilst an EMS certified as compliant with ISO14001 may provide a very good tool for assessing and improving an organisation’s environmental performance, using suppliers with an ISO 14001 certificate or equivalent (e.g. BS 8555 or EMAS) does not guarantee that their products are less environmentally damaging than materials from suppliers without one.

The following common maintenance and construction materials need to be considered in this section – ready-mixed concrete, aggregates, asphalt, steel, pre-cast concrete products and timber. There are a number of sector schemes currently being developed, details of which will be included in future versions of the CEEQUAL Manual.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>8.3.1 NSO</b>	Is there evidence that the responsible sourcing of materials has been considered prior to placing orders?  Not considered, score 0 Considered but not specified, score 4	<b>4</b>	
<b>8.3.2 NSO</b>	Has responsible sourcing been specified?  If No, score 0 If specified for 50% materials, score 2 If specified for 100% materials, score 4 If specification achieved, score 8	<b>8</b>	

Consideration to purchase materials from sustainable sources may be given via the specification of materials from the client. Implementation will be in accordance with sector-specific schemes, contract requirements and/or the specification.

**✓ Evidence could be a comparison of specification requirements to overall material purchase, sub-contract documents with general material suppliers, or a declaration from the supplier. In any case some substantiation of the percentage being claimed needs to be provided.**

<b>8.3.3</b>	a) Has the contract team researched all locally available material sources, including recycled materials?  b) Have the contract team adapted the designs and specifications to allow for their use, where appropriate?  If No, score 0. If Yes, score 4 for a) and 8 for b)	<b>12</b>	
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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.

**✓ Evidence could be design briefs or reports from research into materials sourcing.**

## 8.4 Timber

It is reasonably widely accepted that timber is an environmentally beneficial material, provided it is derived from a sustainably managed source and not derived from a ‘timber mine’ (the term used to describe a source of timber that is not being replenished). However, as with other maintenance and construction materials, the transport of timber can significantly contribute to embodied energy and life-cycle impacts.

Separate analysis of such issues may be necessary. Note also that it is important to ensure beneficial use of timber that has *had* to be felled to enable works to proceed, ideally within the contracted works.

		Contract Management	Delivery on the ground
8.4.1	<p>Is there evidence that the highest possible proportion of timber and timber products used in completed works has been from legal and sustainably managed sources with recognised timber labelling (Forest Stewardship Council or equivalent), or from re-use?</p> <p>Under 10%, score 0            10% to &lt;25%, score 2            25% to &lt;40%, score 4            40% to &lt;55%, score 6            55% to &lt;70%, score 8            70% to &lt;85%, score 10            85% and above, score 12</p>	12	

*Scope out if no timber is used in the permanent.*

Forest Stewardship Council (FSC) certification is the most widely recognised global timber labelling system. It is acknowledged that there may be other timber certificates that effectively fulfil the same criteria, and as long as this can be proven, these are also acceptable.

Other schemes that can be expected include Canadian Standard Associations (CSA), Programme for the Endorsement of Forest Certification (PEFC), and Sustainable Forestry Initiatives (SFI). Details of materials recycling, including timber, are available at the website of the Waste and Resources Action Programme, [http://www.wrap.org.uk/construction/materials\\_recycling/index.html](http://www.wrap.org.uk/construction/materials_recycling/index.html). Further information can be obtained from TRADA who are a centre of excellence for the specification and use of timber and wood products ([www.trada.co.uk](http://www.trada.co.uk)).

✓ Evidence could be a comparison of specification requirements to overall timber quantities, sub contract documents with timber suppliers, or a declaration from the timber supplier. In any case some substantiation of the percentage being claimed needs to be provided.

8.4.2	<p>Is there evidence that the highest possible proportion of timber and timber products used in temporary works under the contract has been from re-use or certified sources?</p> <p>Under 30%, score 0            30% to &lt;60%, score 4            60% to &lt;90%, score 8            90% and above, score 12</p>	12	
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*Scope out if no timber is used in any temporary works.*

Temporary works are those used during construction processes, for example, formwork or scaffolding that will not form part of the finished structure. It is common practice to re-use timber for these types of structures; hence the banding of scores to be achieved differs from that for permanent timber structures.

✓ Evidence could be in the form of comparison of specification requirements to sub-contract quantities, or a declaration from the material supplier. In any case some substantiation of the percentage being claimed needs to be provided.

## 8.5 Using re-used and/or recycled materials

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. 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 within the works in the new or refurbished 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).

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 [http://aggregain.wrap.org.uk/quality/quality\\_protocols/index.html](http://aggregain.wrap.org.uk/quality/quality_protocols/index.html) for more details and Quality Protocol checklists.

		Contract Management	Delivery on the ground
8.5.1	<p>What percentage by volume of any existing structures, such as roads, tanks, pipework etc, have been retained and used within the contracted works?</p> <p>Under 25%, score 0 25% to &lt;50%, score 2 50% to &lt;75%, score 4 75% and above, score 6</p>		6

*Scope out if no existing structures on the new works sites.*

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.

**✓ Evidence could be inclusion in a Site or Contract Waste Management Plan, work site photographs, drawings, bills of quantities etc, along with some form of substantiation of the percentage being claimed.**

8.5.2	<p>What percentage by volume of materials (excluding bulk fill and sub-base) for use in the contracted works have been specified to be made from reclaimed or recycled material, whether reclaimed from the site or elsewhere?</p> <p>Under 5%, score 0 5% to &lt;20%, score 2 20% to &lt;40%, score 4 40% to &lt;60%, score 6 60% to &lt;80%, score 8 80% to 90%, score 10 90% and above, score 12</p>	12	
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Examples include reclaimed asphalt, bricks, elements or components using recycled materials such as recycled plastics or reprocessed timber. Recycled materials must satisfy the necessary performance and quality criteria (e.g. plastic piles and envirokerbs).

The Waste Resources Action Programme (WRAP) has a 'Recycled Content Guide' at [http://www.wrap.org.uk/construction/tools\\_and\\_guidance/achieving\\_resource\\_efficiency/recycled\\_content/in](http://www.wrap.org.uk/construction/tools_and_guidance/achieving_resource_efficiency/recycled_content/in)

[dex.html](#), which enables contract teams to plan to maximise the recycled content of works and to identify quick wins and benefits, after some financial investment, to maximise the recycled content of construction and maintenance.

✓ Evidence could be in the form of specification requirements, or bills of quantities, delivery notes, quantity surveyor’s report etc. Any evidence needs to substantiate the percentage being claimed.

		Contract Management	Delivery on the ground
8.5.3	<p>What percentage by volume of bulk fill and sub-base material specified and used in the contracted works was made from previously used material, whether reclaimed from work sites or elsewhere?</p> <p>Under 20%, score 0 20% to &lt;30%, score 4 30% to &lt;60%, score 6 60% and above, score 8</p> <p>If this was generated on site (for example, demolition material crushed on site), score 2 additional points.</p>	10	

*Scope out if the new works used no bulk fill or sub-base.*

See Section 9 on Waste Management for information on use of previously used materials (e.g. recycled glass sand).

✓ Evidence could be in the form of specification requirements or bills of quantities, delivery notes, quantity surveyor’s report etc. Any evidence needs to substantiate the percentage being claimed. Completion of the WRAP recycled content tool.

## 8.6 Minimising use and impacts of hazardous materials

Minimising use and impacts of hazardous materials is closely linked to health & safety considerations. However, assessments undertaken to comply with the *Control of Substances Hazardous to Health Regulations* (COSHH) can be extended to cover environmental aspects of those materials being assessed.

An example of such an environmental issue is the pre-treatment of preserved timber for use in fence repair: on-site treatment, which is often applied by non-specialist personnel, represents a hazard from environmental as well as health & safety considerations, compared to treatment carried out under controlled conditions by trained specialists.

8.6.1	<p>Have all coatings and treatments for materials used in the contracted works been factory-applied (except for cut ends) wherever practicable?</p> <p style="text-align: right;">If No, score 0; if Yes, score 4</p>	4	
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*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 on the works.*

Note that this question applies to all coatings for the permanent works, not just to timber coatings.

✓ Evidence could be in the form of specification or sub-contract requirements, plus inspection reports or equivalent.

		Contract Management	Delivery on the ground
8.6.2	<p>What percentage of all coatings and other treatments used in the contracted works (for temporary and permanent works) has been specified as low-VOC and/or biodegradable?</p> <p>Under 10%, score 0 10% to &lt;40%, score 2 40% to &lt;80%, score 4 80% and above, score 6</p>	6	

8.6.3	<p>Can use of the specified coatings and other treatments identified in 8.6.2 (whether specified or actually used even if not explicitly specified) be demonstrated?</p> <p>If No, score 0. If Yes, score 4</p>	4	
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✓ Evidence could be in the form of specification or sub-contract records. Any evidence needs to substantiate the percentage being claimed.

8.6.4	<p>a) Has the COSHH Assessment process for hazardous materials used in the contract been extended to cover the wider environmental impacts of those materials?</p> <p>b) Have the results of this been used in drawing up the Contract Environmental Management Plan or equivalent?</p> <p>If No, score 0. If Yes, score 2 for a) and 4 for b)</p>	6	
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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 and safety terms.

✓ Evidence needs to specifically show the environmental impacts. Standard COSHH assessment sheets are not acceptable. Evidence for part b) needs to demonstrate that these requirements have been incorporated in other management documents, which could include methods statements or toolbox talks.

## 8.7 Durability and maintenance

Extending the lifetime of completed works 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 also 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, in many cases, 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.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>8.7.1</b>	Is there evidence that durability and low maintenance of assets and components have been actively considered in design and specification of the new works?  If No score 0; if Yes score 6		<b>6</b>

It is essential that the desired lifespan of a built structure is reflected in every detail of a structure. Often durability of a structure is compromised by minor components within it that have a shorter design life than the structure itself and were specified without bearing the overall objective in mind.

**✓ Evidence should be found in the specifications or in life-cycle costing data.**

<b>8.7.2</b>	Is there evidence that long-term planned maintenance has been considered properly in the design and specification process for the new works?  If No score 0; if Yes score 4		<b>4</b>
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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 new works, and delivered to the client.

**✓ Evidence could be found in the specifications, a 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.**

## 8.8 Future de-construction or disassembly

Designing for de-construction, dismantling or disassembly (note that these terms are currently used almost interchangeably) will ensure that as many as possible of the components from a works or structure that has come to the end of its useful life can be re-used or recycled. Structures and components that can be easily dismantled will yield more materials for high-grade reclamation. Minimising the use of composite forms will avoid the need to process the component in order to separate the materials for re-use.

Labelling of components, particularly plastics, to identify the materials used, will also make recycling more effective. In some cases there will be a trade-off between avoiding the use of composite forms and minimising material use.

<b>8.8.1</b>	Is there evidence that the contract team has actively included design for disassembly and/or de-construction in the specification of all new works?  If No score 0; if Yes score 6		<b>6</b>
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*Scope out on contracts that contain no component parts.*

**✓ Evidence will be some form of statement or brief by the Contract Team. It could include a statement extending the requirement of the Health & Safety File to include recycling issues at disassembly.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>8.8.2</b>	<p>What percentage by volume of components or pre-fabricated units used in the contracted works can be easily separated on disassembly/de-construction into material types suitable for recycling?</p> <p>Under 15%, score 0  15% to &lt;30%, score 2  30% to &lt;45%, score 4  45% to &lt;60%, score 6  60% to &lt;75%, score 8  75% to &lt;90%, score 10  90% and above, score 12</p>		<b>12</b>

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). See guidance for Question 8.2.1 on pre-fabricated units.

**✓ 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.**

<b>8.8.3</b>	<p>Has a materials register been provided to the client or future managing agent on contract completion that identifies main material types to facilitate recycling during disassembly or de-construction?</p> <p>If No score 0; if Yes score 4</p>		<b>4</b>
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**✓ Evidence can include a Health & Safety File, provided this has been extended to include information about material types that will enable recycling on demolition.**

## 9. WASTE MANAGEMENT

### 9.1 Basic principles

Construction, demolition and maintenance waste make up a large percentage of the total controlled waste disposed of in the UK. Waste minimisation has been identified by the UK Government as an area where significant improvements can be made as part of a wider strategy for more-sustainable civil engineering and building. The way in which waste is generated and disposed of is one of the central issues when implementing a sustainable approach to development and asset management. Dealing with waste effectively is particularly important for conserving natural resources, avoiding dramatic changes to the landscape and minimising the risks of pollution. Statutory Site Waste Management Plans became a legal requirement in England in April 2008, for projects over £300,000, (see <http://www.defra.gov.uk/environment/waste/topics/construction/index.htm#swmp>). Consultation on regulations with a similar intent was started in Wales in July 2009.

This section is very closely related to the previous Section on ‘Material Use’ and there is indeed some overlap between questions in the two sections. However, for the purpose of the CEEQUAL assessment this does not matter. It is also important to note that the section covers *all* waste arising from the contract, not just construction waste.

It is now apparent that landfill sites can have a major effect on the environment as well as being an increasingly scarce resource. The possibility of recycling waste produced on contracted works should always be investigated. This will reduce the likelihood of, and potential for, pollution produced by waste, and will conserve resources by avoiding the need for extraction of virgin materials. In the first instance the quantity of waste produced should be reduced and if possible eliminated through improved design and contract management. If waste *is* produced, the possibility of re-using the waste stream on or off site should always be considered and only then should opportunities for recovery and recycling be sought. If it is then concluded that none of the aforementioned treatment options are available, then the waste stream can be segregated and sent to landfill.

Waste materials should be considered a resource. It is possible to reduce significantly the waste produced on contracted works through raising awareness of personnel, through the selection of appropriate maintenance or construction processes, through the selection and storage of materials to prevent waste, and through the segregation and recycling of construction, demolition and maintenance wastes. See section 9.2 below for a reference to definition of waste.

Waste management issues on Term Contracts will depend on the type of work being undertaken. For new works and renewals it will be about the traditional challenges of construction processes and the waste generated.

		Contract Management	Delivery on the ground
9.1.1	Is there evidence that the contract team has incorporated the principles of waste minimisation in the design, specification and management arrangements for the completed works and/or for the delivery for the contracted works?  If No, score 0; if Yes, score 10	10	

Examples of designing for waste minimisation include the use of arisings in the works (for example as engineering fill), use of standard sizes to avoid off-cuts and/or pre-fabrication where possible, incorporation of the function of temporary works such as shuttering for concrete into elements of the permanent structures.

For the delivery stage, this could include careful ordering of appropriate quantities, use of standard items on many works orders, and re-use of cut-offs.

Some advice on the issues of waste minimisation in the civil engineering industry can be found in the following publications and websites:

- CIRIA Publications C536 (2001) *Demonstrating Waste Minimisation Benefits in Construction*
- WRAP: [www.wrap.org.uk/construction](http://www.wrap.org.uk/construction)
- NetRegs: <http://www.netregs.gov.uk/netregs/businesses/construction/default.aspx> .

✓ **Evidence will need to include more-detailed records than just cut & fill optimisation. Some other examples are included in the guidance above. Information should be included within the Contract Waste Management Plan.**

## 9.2 Legal and other requirements

Waste must be recognised as a relevant legal issue by the management of civil engineering and maintenance companies. There is a large body of legislation relating to waste management and, as a minimum, this must be adhered to.

The main area covered by legislation is the correct disposal of waste.

Statutory Site Waste Management Plans became a legal requirement in England in April 2008, for projects over £300,000, (see <http://www.defra.gov.uk/environment/waste/topics/construction/index.htm#swmp> and the NetRegs website ([www.netregs-swmp.co.uk/](http://www.netregs-swmp.co.uk/)), but each work site under a Term Contract is designated as a ‘project’, so it is unlikely that a SWMP would need to be generated for each works order unless the value of work on an individual site exceeds £300,000. However, best practice demands that a Contract Waste Management Plan should be prepared as required by Question 9.1.1.

Under the ‘Duty of Care’ Code of Practice (issued under the *Environmental Protection Act 1990*) a waste producer – normally the contractor but sometimes the client – is required to ensure that all waste is carried by a registered waste carrier and taken to a suitably licensed waste management site, recycling centre or waste transfer facility.

Recent case law has prompted reconsideration by the regulators of the definitions of waste and the way surplus materials (and materials made from processing previously-used materials) should be treated under the law, so no definitions of waste are given here. However, the CEEQUAL assessment of waste management performance is essentially based on current good and best environmental practice, rather than legal provisions. To find the latest thinking on waste definitions and on how surplus materials (and materials made from processing previously-used materials) should be treated under the law, read the Environment Agency’s April 2006 publication *The Definition of Waste: Developing Greenfield and Brownfield Sites*, or the DEFRA publication *ECJ Judgements: The definition of waste* (2008) or visit [www.aggregain.org.uk/waste\\_management\\_regulations](http://www.aggregain.org.uk/waste_management_regulations) and <http://www.environment-agency.gov.uk/business/sectors/32731.aspx>.

In certain circumstances an exemption from the *Environmental Permitting Regulations (England and Wales) 2007* can be registered with the regulator to allow for the re-use or recycling of certain waste materials, for example, if the waste can be put to a beneficial use elsewhere without causing any environmental risk or damage. In term contracts, this would be the responsibility of the contract team in developing the specification for works under the contract, as early application for the exemption will enable better contract design, planning and management. It is, however, still possible for a contractor to register an exemption on works where the client or designer has not already done so, should they identify a suitable opportunity for the re-use or recycling of the waste.

Under the *List of Waste Regulations (England) 2005*, waste must be characterised as inert, non-inert/non-hazardous or hazardous. Individual waste types are listed in the Regulations and each waste type must be identified in relation to the appropriate European Waste Catalogue codes and dealt with differently in accordance with the relevant regulations. In this context, please also note the guidance in Section 4.2 regarding Schedule 9 plants, some of which are classified as non-hazardous waste and need to be disposed of at suitably licensed facilities.

The introduction of the *Landfill Regulations* has meant that co-disposal of waste at landfills is no longer permitted, and that a landfill site is no longer able to accept the following types of waste:

- liquid waste (including wastewater, but excluding sludge)
- waste, that in the conditions of the landfill site, is explosive, corrosive, oxidising, or flammable;
- hazardous or non hazardous waste that has not been treated prior to disposal at landfill; and
- whole or shredded tyres.

Finally, it must be recognised that a very few contracts – for example an on-site bioremediation contract – may generate zero waste for off-site disposal, but waste will still be generated from canteen facilities and plant & machinery maintenance and need to be disposed of appropriately. A core aim with regard to waste in the UK Government’s *Sustainable Construction Strategy* (2008) is to halve the quantity of waste sent to landfill by 2012 based on 2008 levels.

Information on waste management facilities, including directories for England and Wales, Scotland and Northern Ireland, can be found at <http://www.netregs.gov.uk/netregs/1724261/?referrer=/netregs/>.

		Contract Management	Delivery on the ground
9.2.1 NSO	Have all regulations relating to the <i>planning</i> for waste management on the contract been implemented?  If No, score 0; If Yes, score 8	8	

Under the *Site Waste Management Plans Regulations 2008*, Site Waste Management Plans (SWMPs) are required in England for all projects with a works value over £300,000 that commenced after 1<sup>st</sup> April 2008. For guidance on Site Waste Management Plans, see the NetRegs website ([www.netregs-swmp.co.uk/](http://www.netregs-swmp.co.uk/)) and <http://www.defra.gov.uk/environment/waste/topics/construction/index.htm#swmp>. Plans for projects outside England should be prepared in line with best practice guidance from CIRIA and the relevant regulatory authorities.

✓ Evidence would normally be copies of the Contract Waste Management Plan, including evidence that it is updated, reviewed and implemented as appropriate.

9.2.2	Has all waste taken from the works order sites been carried by licensed carriers?  If No, score 0; if Yes, score 6	6	
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Whenever waste is transferred from one person or organisation to another, the person or organisation transferring the waste must hold the appropriate Waste Carriers Certificate. The Environment Agency maintains a public register of Registered Waste Carriers in England and Wales – at <http://www2.environment-agency.gov.uk/epr/?lang=e> and in Scotland [http://www.sepa.org.uk/waste/waste\\_regulation/waste\\_carriers\\_and\\_brokers/who\\_is\\_registered.aspx](http://www.sepa.org.uk/waste/waste_regulation/waste_carriers_and_brokers/who_is_registered.aspx). Organisations should routinely check the validity of all Waste Carriers Licences.

✓ Copies of certificates should have been taken for all carriers of waste materials and a straightforward file record should be available.

9.2.3	Is there evidence that all waste has been taken to licensed facilities or an exempt site?  If No, score 0; if Yes, score 6	6	
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In England and Wales, the licence can be checked on the Environment Agency’s public register website <http://www2.environment-agency.gov.uk/epr/?lang=e> and in Scotland [http://www.sepa.org.uk/waste/waste\\_regulation/waste\\_carriers\\_and\\_brokers/who\\_is\\_registered.aspx](http://www.sepa.org.uk/waste/waste_regulation/waste_carriers_and_brokers/who_is_registered.aspx).

- ✓ Evidence could include copies of an Environmental Permit, PPC Permit, Waste Transfer notes (or consignment notes for any special (hazardous) wastes), together with evidence of steps taken to check that waste is being sent for recycling or disposal at a licensed facility. If a Waste Exemption Registration applies, a copy needs to be supplied.

		Contract Management	Delivery on the ground
9.2.4	Have the disposal or transfer site(s) been checked to ensure they are licensed to take the material sent to them?  If No, score 0; if Yes, score 6	6	

Ask the receiver(s) of the waste for evidence or, in England and Wales, a copy of the licence(s) can be requested on the Environment Agency's public register website <http://www2.environment-agency.gov.uk/epr/?lang=e> and in Scotland [http://www.sepa.org.uk/waste/waste\\_regulation/waste\\_carriers\\_and\\_brokers/who\\_is\\_registered.aspx](http://www.sepa.org.uk/waste/waste_regulation/waste_carriers_and_brokers/who_is_registered.aspx).

- ✓ Evidence would be a simple check of the disposal or transfer site's licence and the waste produced on site. Comparison of European Waste Catalogue Codes would be sufficient for this.

9.2.5	Have the disposal or transfer sites used throughout the course of the contract been checked to ensure the contract's waste was taken there?  If No, score 0; if Yes, 6	6	
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This can be done by way of telephone checks, following trucks, requiring completed transfer or consignment notes to be returned on a daily basis, etc.

- ✓ Whichever way the checks are carried out, they must be documented.

9.2.6	If transfer stations and/or recycling facilities were used, is there evidence that the recycling rates of the transfer stations/facilities were considered prior to placing the order?  If No, score 0. If Yes, score 6	6	
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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 quarterly.

- ✓ Whichever way the checks are carried out, they must be documented and satisfy legal requirements.

		Contract Management	Delivery on the ground
9.2.7	Is there evidence that hazardous (special) waste generated by the contracted works has been appropriately segregated (from other controlled waste) and taken to a suitable facility and, that the waste disposal facilities used have been registered as a hazardous waste producer where appropriate?  If No, score 0; if Yes, score 6	6	

*Scope out only on contracts with no hazardous waste (special waste in Scotland).*

For guidance on this issue, see the guidance for question 9.4.3. The contract site(s) may be required to be registered as a hazardous waste producer (only in England and Wales).

**✓ Evidence could be within a Contract Waste Management Plan supported by waste consignment notes and appropriate photographs.**

### 9.3 Site preparation

Term Contracts that involve the creation of new civil engineering works and/or the creation of new facilities to manage a Term Contract – depots, temporary offices, waste management facilities etc – preparation of the sites needs to be assessed under CEEQUAL similar to the way they are with the Projects Version of the Scheme.

For new works, the issue of Waste Management is particularly relevant with the current emphasis on limiting the amount of work on greenfield sites. Development on brownfield sites often requires extensive preparation works giving rise to a range of wastes that require proper management. However, it can also offer the opportunity to re-use materials.

If at all possible, waste should be taken to a local waste processing or disposal facility to minimise transport impacts. The location relative to the contracted works of landfill and reprocessing sites should be established at the start of the contract to enable such judgements to be made. A balance needs to be struck – and recorded – between distance to a landfill site and a greater distance to a recycling facility.

9.3.1	Have the most environmentally beneficial ways of dealing with clearance and disposal of existing vegetation on works order sites been explored and recommendations been made?  If No, score 0; if Yes, score 6	6	
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*Scope out only if no vegetation present on the new work sites before work commences.*

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 the works to proceed, ideally on the works themselves but, if that is not possible, on suitable other work as close by as possible.

**✓ 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.**

		Contract Management	Delivery on the ground
9.3.2	Have these recommendations been implemented for the majority of vegetation cleared from works order sites?  If not implemented, score 0 up to 50% of recommendations implemented, score 4 more than 50% of recommendations implemented, score 8	8	

✓ Evidence will depend very much on the recommendations made, but in any case contract records need to demonstrate implementation. Records could include photographs, waste transfer notes, evidence of exempt activity etc. Information should also be included within the SWMP.

9.3.3	What proportion by volume of material present on works order sites (excluding topsoil and subsoil) has been incorporated into the contracted works, as opposed to being disposed of?  <30% score 0 30 to 60%, score 4 >60 %, score 8	8	
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One example of possible action is the recovery of stone in dry-stone walls that are ‘in the way’ of a junction remodelling. Rather than the walls being bulldozed and excavated along with other materials, the walls could be dismantled, the stone stored carefully and then re-used in new boundary walls and/or in facings to other walls such as those for culverts under the new roads. A triple-win results: reduced off-site disposal; reduced new materials imported to the works; and the ‘new’ walls and wingwall facings blending more quickly into the landscape.

✓ 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 a SWMP or contract-level equivalent.

9.3.4	What percentage by volume of waste from demolition or de-construction on works order sites has been taken to landfill?  If >70% score 0 50 to 70%, score 2 from 30 and <50%, score 6 from 10 and <30 %, score 10 if less than 10%, score 14	14	
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See [www.ceequal.com/awards\\_047.htm](http://www.ceequal.com/awards_047.htm) for example at Orient way sidings of what is possible.

✓ Evidence should be found in quantity surveyors’ documentation or contract accounts. The evidence provided should substantiate the percentage being claimed.

		Contract Management	Delivery on the ground
9.3.5	Does the delivery team have specific documented mechanisms for adopting an approach to waste minimisation and for identifying and dealing with all wastes arising from the contracted works?  If No, score 0; if Yes, score 4 If evidence that these have been adopted and adhered to score 12	12	

Note that this question refers to *all* wastes arising from the contracted works, not just waste materials, but not to the wastes from office, catering and welfare activities, since these are not currently assessed under CEEQUAL.

✓ Evidence for adherence would include quality or environmental management system records.

## 9.4 Waste Management during delivery of works orders on the ground

Work-site management is one of the most crucial areas for the control of waste. Waste Management should be part of the training for all managers of the contract to ensure they are aware of their legal responsibilities and the possibilities that exist for the prevention and reduction of waste. It is important that all of the personnel working on delivery of the contracted works, whether directly employed by the principal contractor or a sub-contractor, are aware of their responsibilities for reducing the amount of waste produced and for managing the waste that is produced in the correct manner.

9.4.1	Has an identification of waste streams arising from the contracted works been undertaken?  If No, score 0; if Yes, score 4	4	
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9.4.2	Have appropriate options for disposal been considered and implemented and have targets been set for them?  If No, score 0; if Yes, score 6	6	
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Identifying potential waste streams enables practical decisions to be taken about the materials to be segregated for recycling and/or for disposal by selling on to someone who can make beneficial use of the materials, as well as for the layout of facilities for running the contract, including waste storage. Examples include materials such as ferric metals, aluminium, timber – hard and soft, treated and untreated – and cardboard, for all of which there is the potential to secure removal from the works or depot by brokers or by organisations such as scrap metal dealers who could use the materials as they are. The appropriate waste licensing provisions must to be adhered to, however.

✓ Evidence could be an analysis of the contract documents that ascertains where waste is likely to be generated, what material it is likely to be made of, and how much of it there might be. From this information, disposal strategies should be defined.

		Contract Management	Delivery on the ground
<b>9.4.3 a)</b>	Has a formal contract waste minimisation plan or equivalent section of SWMP for appropriate new works been developed and implemented?  If No, score 0; if Yes, score 6	9	
<b>9.4.3 b)</b>	Does the waste minimisation plan set targets to reduce, re-use and/or recycle waste, and have they been actively monitored for the duration of the contract?  If No, score 0; if targets set and monitored, score 6	6	
<b>9.4.3d)</b> <b>NSO</b>	Have the targets set in 9.4.2 or 9.4.3b) been met?  If No, score 0. If Yes, score 10	10	

Question 9.2.1 deals with any legal requirements for waste planning; this 4-part question is about good and best practice. A separate document headed 'Waste Management Plan' may not be required here but, if one does not exist, waste management needs to be explicitly covered in the Contract Environmental Management Plan. As with all such plans, the aim needs to clearly show the actions works order 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, not the first resort as is too often the case.

**✓ Evidence of waste planning needs to be shown within the overall contract planning or a separate Work-type Waste Management Plan or Contract Waste Management Plan.**

		Contract Management	Delivery on the ground
<b>9.4.4</b>	What percentage by volume of inert waste material has been segregated (on or off site) and diverted from landfill?  Under 10%, score 0 10% to <25%, score 1 25% to <40%, score 2 40% to <55%, score 3 55% to <70%, score 4 70% to <85%, score 5 85% and above, score 6	6	
<b>9.4.5</b>	What percentage by volume of non-hazardous waste material has been segregated (on or off site) and diverted from landfill??  Under 10%, score 0 10% to <25%, score 1 25% to <40%, score 2 40% to <55%, score 3 55% to <70%, score 4 70% to <85%, score 5 85% and above, score 6	6	

It is now generally accepted that segregation into inert, non-hazardous and hazardous wastes is a sensible minimum measure, rather than having all such waste placed in mixed-waste skips. Even on term contracts where each works order may generate only very small amounts of waste, such segregation, coupled with the contractor's depot being licensed to receive and sort such wastes, will be environmentally beneficial as well

as saving on landfill tax. It is also accepted practice for all liquid wastes to 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 that 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 were the virgin materials from whence they came.

But the aim here is to reward contracts that go beyond such minima, and *either* capture the recyclable wastes identified in the waste stream analysis dealt with under question 9.4.1, *or* take the minimum of three waste streams described above to a suitable waste recycling centre nearby, where the re-usable and recyclable materials are extracted. It is acknowledged that there may be areas of the country where the commercial infrastructure for re-use and recycling is limited, but it is developing fast through a variety of initiatives such as those operated or promoted by the Waste & Resources Action Programme ([www.wrap.org.uk/construction](http://www.wrap.org.uk/construction)).

It should be noted that any on-site re-use of waste must be undertaken in accordance with waste management licensing regulations. 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.

For further guidance, see CIRIA Publication C536 (2001) *Demonstrating Waste Minimisation Benefits in Construction*.

**✓ Evidence could be in the form of waste transfer notes or photographs showing the different segregated groups.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>9.4.6</b>	<p>What percentage of unused materials* on any works order or group of works orders have been beneficially re-used within the contracted works (or stored for re-use)?</p> <p style="text-align: right;">Under 10% score 0            10% to &lt;30%, score 2            30% to &lt;50%, score 4            50% to &lt;70%, score 6            70% to &lt;90%, score 8            90% and above, score 10            No or minimal unused materials, score 12</p>	<b>12</b>	

\* Unused materials are any materials not used within the contract, such as bricks, pipes, concrete, reinforcing mesh, timber, prefabricated components, but can also include bulk materials that are not only usable without processing, but are also movable to another site where such use is made of them.

Unused materials are, regrettably, almost inevitable on civil engineering works, 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.

Many unused materials can be stored in a contract depot and re-used on another works order or it may be possible to donate them to a local group or community project – but seek advice from the EA, SEPA, NIEA or other appropriate regulator first if the quantities involved are more than minimal. 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 to be ‘no surplus, or minimal surplus materials’ is relevant to the scale of the contracted works, and may require discussion between the Assessor and Verifier. Deciding the percentage of recycled or reused materials will also require the Assessor and Verifier to make, and justify, a judgement on the value or volume of the contracted works, but not necessarily calculate it.

- ✓ Evidence can include records that show that surplus materials have been taken back to the depot for subsequent re-use, or to other works order sites 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. The exact score and evidence acceptable must be at the discretion of the verifier.
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## 10. TRANSPORT

### 10.1 Basic principles

Road transport is a major source of local air and noise pollution, and contributes significantly to CO<sub>2</sub> emissions. The World Health Organisation estimates that seven times more people die as a result of traffic-based pollution than as a result of road collisions. Transport is the most pervasive source of noise in the environment and the EU estimates that 20% of the UK's population suffer from unacceptable noise levels.

Some civil engineering work undertaken under Term Contracts (for example minor flood defence schemes) will only generate modest amounts of traffic during delivery, and therefore have a negligible adverse effect, and the completed work produces a positive environmental impact. But some other even minor civil engineering work (for example, road junction improvements) may generate significant amounts of traffic in the short term, during the delivery stage, and for some also in the long term.

During all stages of a term contract, a full understanding and appreciation of the relevant transport issues is essential if the negative environmental impacts of the contract are to be minimised. Furthermore, an understanding of the transport issues is also essential if any possible opportunities for positive environmental impacts are to be achieved as a result of the contract. The planning, design and delivery of any works under a term contract must include the formulation and implementation of appropriate methods and strategies to deal with the relevant transport issues.

		Contract Management	Delivery on the ground
10.1.1	Have the plans to deliver the new works been developed to take account of appropriate planning guidance?  If No, score 0; if Yes, score 8	8	

*Scope out on contracts that do not involve any work that will generate traffic after its completion.*

The main objectives of PPG 13 (Planning Policy Guidance Note (for England) on Transport) are to:

- promote more-sustainable transport choices for both people and moving freight;
- promote accessibility to jobs, shopping, leisure facilities and services by public transport, walking and cycling; and
- reduce the need to travel, especially by car.

**✓ Evidence could be found in the results of an environmental assessment or other planning document, or in design reports.**

This assessment would be of the movement of materials or people during construction and/or operational phases. All modes of transport could be considered, although the assessment would normally focus on road traffic, and include such issues as traffic numbers, road geometry and capacity, sight lines etc. Evidence may be found in an environmental appraisal report, environmental commentary, or – if the scale of the new works warrants it, the report of an EIA, which should contain at least a summary of any TIA undertaken.

### 10.2 Works-order-delivery transport, including nuisance and disruption

Transport issues that may be of concern during the delivery of the contracted works should be considered in the specification and/or design stage of the work. Thus, possible problems that could result in adverse environmental impacts can be forecast, and mitigating measures designed in from the start. The sooner potential impacts are identified, the more likely it is that the mitigation measures and strategies formulated to minimise them will be effective.

Traffic and transport of goods, materials and staff to and from a works site can cause considerable nuisance to local people. Delivery lorries, in particular, can cause local air pollution, create noise and vibration, and can spread dirt onto roads and even onto neighbouring property. They also can be a hazard to other road users and pedestrians.

A number of simple measures can help to reduce significantly the amount of nuisance and disruption caused by traffic to and from a works site. Routing of works-related traffic should be agreed with local authority transport planners, in line with the requirements of the *Traffic Management Act 2004* and all contract traffic required to use them. Deliveries to the depot and work sites should be timed so as to avoid vehicles queuing up. If this is not feasible, a designated queuing area or a waiting area some distance from the depot or sites can be used to keep delivery vehicles away from buildings and offices where they would cause a nuisance, and from busy roads where they would cause major disruption to traffic flows. Large lorries turning in narrow streets can also cause considerable disruption to traffic flow, and this should be considered when choosing the location for access.

Another important point is the additional traffic generated by contract personnel. At a minimum this can be addressed by arranging designated parking areas for staff, but ideally by promoting alternative staff transport arrangements, such as park & ride or car sharing schemes (see Section 10.3).

Mud and other deposits on access roads to work sites are a further cause of nuisance, as well as representing a safety hazard. Ensuring that all depot access roads and/or roads near and leading to work sites are regularly cleaned is established good practice. Precautions to prevent dirt getting onto access roads in the first place would be even better. On contracts for new works, site roads should be managed to minimise pollution they can create, such as dust and silt run-off into drains and watercourses.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>10.2.2</b>	<p>Is there evidence that transport impacts of the works order or groups of works orders have been considered,</p> <p style="text-align: right;">If No, score 0. If Yes, score 5</p> <p>And that steps have been taken to minimise these?</p> <p style="text-align: right;">If No, score 0; if Yes, score 5</p>		<b>10</b>

This can be achieved, for example, by assessing the transport impacts of materials and contract staff, considering options for access to work sites and/or any depot, and alternative means of transport for materials (other than by road), which could also determine the choice of source of materials.

**✓ Evidence could include, for example, a transport assessment, evidence of using material sources that reduce the need for road transport, or choosing alternative means of transport (such as water or rail) over road transport where this option exists.**

<b>10.2.3</b>	<p>Has a Contract Traffic Management Plan been drawn up to outline measures for minimising disruption caused by contract-related traffic arising from delivering works orders and has this been implemented?</p> <p style="text-align: right;">If No, score 0; For a plan with outline measures, score 6 For implementation score a further 8.</p>		<b>14</b>
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Measures could be laid out in a works order traffic management plan or equivalent. Issues to be addressed include disruption to local traffic flows, nuisance caused by delivery vehicles and severance caused by access roads. Measures can be applied to any form of transport.

✓ **In the absence of such a plan, other evidence is required to identify the range of measures taken and verify their implementation, such as copies of instructions and appropriate photographic evidence.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>10.2.4</b>	<p>Have the measures outlined in 10.2.3 been monitored during the delivery of works orders or appropriate groups of works orders and have they been successful in reducing disruption caused by construction/maintenance related traffic?</p> <p style="text-align: right;">If No, score 0 If monitored, score 3 If successful, score a further 5</p>		<b>8</b>

✓ **Evidence could be comparison of actual movements to the baseline data or what was predicted in the planning stage. As such this may not be assessable until the end of each year of the contract. If appropriate, evidence may also be obtained from local authorities and police views on traffic management and/or from the contract's complaints register(s).**

<b>10.2.5</b>	<p>Has the contract team assessed possible use of other, more sustainable transport routes (other than road), such as rail, water etc, for the movement of materials and/or waste?</p> <p style="text-align: right;">If No, score 0; if Yes, score 6</p>		<b>6</b>
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The team needs to demonstrate that all of the 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.

✓ **Evidence will need to be shown in the contract management records to demonstrate consideration of alternative transport methods.**

<b>10.2.6</b>	<p>Has the outcome of the assessment asked for by Q10.2.5 been fully implemented?</p> <p style="text-align: right;">If No, score 0; if Yes, score 16</p>		<b>16</b>
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*Scope out if the assessment concluded that there were no practical alternatives.*

✓ **Evidence will be in the form of the assessment being included into contract plans and sub-contract orders.**

<b>10.2.7</b>	<p>Is there evidence of measures (and their effectiveness) to keep access roads that are open to the public (including pavements and public rights of way) clean and any site roads properly managed?</p> <p style="text-align: right;">If No, score 0; if Yes, score 10</p>		<b>10</b>
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Site roads should be managed to avoid dust and silty water run-off. Appropriate measures for road cleaning may include, for example, use of road sweepers, paving of haulage roads, use of wheel-washing facilities and chemical stabilisers for site-road wetting-down, and silt fencing. The *New Roads and Streetworks Act 1991* requires contractors to demonstrate that roads have been kept clean.

✓ Evidence can be in the form of copies of instructions and photographs during the delivery of the new works. The Verifier must ascertain that what they see from photographs was sustained throughout the delivery stage. This could be evidenced through plant returns showing how frequently road sweepers were used or bowsers were on site. They may also wish to review complaints records to ensure these are consistent with other evidence.

### 10.3 Minimising workforce travel

Due to the nature and scope of term contracts large distances may be travelled each day to and from work, generating traffic on local roads and leading to increased pollution and traffic congestion locally, as well as contributing to the overall problem of CO<sub>2</sub> emissions globally. Even modest civil engineering works can bring many people into an area from afar and in some locations could outnumber the local population.

By employing local people, distances travelled to and from work can be reduced, thus minimising the disruption caused to local communities. In addition, the works may be perceived in a more positive light if they provide local employment. The provision of organised transport to deliver the workforce to work sites can further reduce the number of vehicular movements. Alternatively, the provision of on-site accommodation can be considered for members of the contract staff who are not local to the works.

		Contract Management	Delivery on the ground
10.3.1a)	Is there a contract requirement for the principal contractor to have a Green Travel Plan in place?  If No, Score 0; If Yes, score 4	4	
10.3.1b)	Is there a contract requirement for key sub-contractors to have Green Travel Plans in place?  If No, Score 0; If Yes, score 4	4	

Inclusion of this issue in contract documentation represents good working practice and should be adopted wherever possible. There may also be a regulatory requirement or planning conditions.

✓ Evidence could include requirements for Travel-to-Work Plans in invitations to tender and/or tender documentation.

10.3.2	Did the contract set-up include measures to minimise travel impacts of the workforce and/or did the delivery team prepare a Green Travel Plan, whether a contract requirement or not?  If No, score 0; if Yes, score 8	8	
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✓ Evidence needs to show what facilities the contract team has provided to assist minimisation of workforce travel. These could include some of the examples listed below Question 10.3.3.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>10.3.3</b>	<p>Have these measures been successful in reducing workforce travel impacts during delivery of the contracted works?</p> <p style="text-align: right;">If No, score 0 If Yes, score 6 If success not monitored, score is also 0</p>	<b>6</b>	

Appropriate measures may include, for example, provision of a minibus, provision of temporary accommodation, access to public transport links, encouraging car-pooling or prescribing specific routes for journeys e.g. access arrangements, compounds, parking, public transport etc.

**✓ 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 the contract or similar.**

# 11. EFFECTS ON NEIGHBOURS

## 11.1 Basic principles

Unlike some of the other environmental issues associated with construction and maintenance works, the area of ‘effects on neighbours’ covers issues that, by and large, do not have a great or long-lasting adverse environmental impact. They can, however, cause inconvenience and stress amongst neighbouring communities during the period of time over which they take place. They can also have an effect on animal and, to a lesser extent, plant communities, in the vicinity of the works.

On the other hand, there can be significant beneficial effects on the neighbours to such works after they have been completed – reduced congestion, smoother travel after re-surfacing etc – and these are often insufficiently acknowledged.

Adverse effects on neighbours, and especially nuisance, can often be one of the most important and difficult of environmental aspects for a civil engineering works to deal with and get right, because it is largely about disruption to human communities, however temporary. A community that is antipathetic towards civil engineering or public realm works may also decide that everything that is done on a site is a nuisance whether or not this really is the case. Overall, this makes adverse impacts hard to define and assess. Right and wrong are often determined by the application of common law principles and legal debate over what constitutes a nuisance. However, some aspects, such as noise, are governed by statute.

For further guidance on good practice regarding the issues assessed in this section refer to the CIRIA handbook *Environmental good practice on site*, C650 (2005).

*Note: Some questions or sub-sections in this section may be scoped out if all the contracted works are in a remote location with no neighbours. However, some adverse effects, such as noise, ground-borne noise and light, can also disrupt nearby wildlife or cause environmental damage (for example, dust and pollution). This must be considered when deciding whether or not to scope out elements of this section.*

		Contract Management	Delivery on the ground
<b>11.1.1a) NSO</b>	Does the delivery team, or where appropriate the contractor alone, have a policy or code of practice regarding considerate behaviour to neighbours to the contracted works?  If No, score 0; if Yes, score 3	3	
<b>11.1.1b) NSO</b>	Has the policy been communicated to all appropriate people working on the contract?  If No, score 0. If Yes, score 4	4	
<b>11.1.1c) NSO</b>	Is there evidence that the policy is embedded in the management system?  If No, score 0. If Yes, score 4	4	
<b>11.1.1d) NSO</b>	Were the policy and its implementation independently assessed and judged to be at least satisfactory?  If No, score 0. If Yes, score 4	4	

If the contractor has their own policy, then it needs to cover, at a minimum:

- relations with neighbours
- communications to neighbours
- good housekeeping
- presentation of the depot and/or work sites

- relations with other stakeholders
- complaints procedures
- auditing process
- 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. Implementation and monitoring are covered in 11.1.2. Communication should be both internally within the contract team and externally to interested stakeholders.

**✓ Evidence: Code of Practice or Policy statement, registration with Considerate Constructors Scheme or similar, plus assessment results.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>11.1.2a) NSO</b>	Has the contract team considered the effects of the delivery of the contracted works on neighbours?  If No, score 0; If Yes, score 4	4	
<b>11.1.2b) NSO</b>	Have the considerations in 11.1.2a) been implemented in the delivery of the contracted works?  If No, score 0. If Yes, score 6		6
<b>11.1.2c) NSO</b>	Have the effects of the contracted works on neighbours been monitored including corrective action?  If No, score 0. If Yes, score 4	4	

*Note that all parts of this question is marked NSO. What matters is that these issues have been considered and appropriate measures included in the Plan, and that that Plan is then implemented. If on consideration it was found that no specific measures are necessary on a particular works order site, for any or all of the issues to be considered, the points can still be given, as long as evidence can be provided that this decision has been made consciously.*

Points can only be scored for b) and c) 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 work-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 the points under the question.

Some examples of such measures are listed in the relevant sub-sections in this chapter. For further guidance see CIRIA Publication *Environmental good practice on site C650* (2005).

**✓ Evidence needs to show that these areas were included within contract planning documents or as stand-alone plans.**

## 11.2 Legal requirements

Effects on neighbours is covered both by common law interpretation of what constitutes a nuisance and by statutory legislation, including the *Control of Pollution Act 1974* and the *Environmental Protection Act 1990*. Section 60 of the *Control of Pollution Act* allows local authorities to control noise from construction sites by serving a Section 60 Notice. A developer may apply for prior consent for construction works through a

Section 61 Consent. Provided the terms and conditions of that consent have been adhered to, this acts as a defence against prosecution under Section 60.

It is considered good practice to liaise with the local authority and any neighbours to work sites regarding noise issues. The local authority may invite the contractor to apply for Section 61 consent prior to any potentially noisy works. Even if the consent is not required or not considered appropriate by the local authority, it will still require the contractor to consider the likely noise impacts of the development.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>11.2.1a)</b>	Has the local authority(s) been consulted regarding any potential noisy aspects of the new works?  If No, score 0; if Yes, score 2		<b>2</b>
<b>11.2.1 b)</b>	If there are noisy aspects of the new works, have they been monitored at appropriate intervals throughout the contract period?  If No, score 0. If Yes, score 3		<b>3</b>

***This question can only be scoped out if the local authority has been consulted and agrees that there are no noise implications of the new works.***

Consultation with the local authority may include the completion of a Section 61 application, or can lead to appropriate action being drawn up in liaison with the Environmental Health Officer.

It is acknowledged that it is very easy to accidentally exceed noise restrictions for short periods. What is assessed here is whether monitoring has taken place and has effectively assisted in alerting contract staff to breaches in noise limits so that appropriate control measures could be taken.

**✓ Evidence would include correspondence with the local authority(s), the Section 61 consent (if granted), or Action Plan and monitoring data.**

<b>11.2.2</b>	On completion of works orders or groups of works orders, have any abatement notices been served and not revoked?  If Yes, score 0 for this question and for Question 11.2.1 above, if No, score 11		<b>11</b>
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Note that a justified Abatement Notice may classify as a major incident in relation to the allowable maximum score discussed in the last paragraph of Section 6 of the *CEEQUAL Scheme Description and Assessment Process Handbook*. They may cover any nuisance assessed in this section – noise, vibration, dust and light.

The context here is that contract team should aim for a proactive relationship with their neighbours and the local authority such that the local authority is not forced to issue an Abatement Notice. The element of revoking the notice is there to acknowledge that Abatement Notices can be served erroneously, or as part of some local authorities' standing procedures for short-term or accidental exceedances, which are then mitigated through appropriate control measures.

**✓ A signed statement from the applicant will be acceptable evidence for this. If in any doubt the Verifier could check with the relevant local authority.**

## 11.3 Noise and vibration

Noise can have powerful effects on humans, animals and the environment. The ability of noise and vibration to disturb, annoy and cause stress should not be underestimated either during construction or maintenance work, or in operation of any completed works. Consultation should therefore be carried out and initial background noise surveys commissioned.

BS5228 provides guidance on noise levels from construction and what measures can be expected to minimise the adverse effects caused by noisy operations. For instance, in noise-sensitive areas, careful selection of plant is important. As a rule of thumb, older construction machinery tends to be noisier than newer models, and it may be helpful to avoid their use on sites where noise levels are a significant issue.

Ground-borne noise is low-frequency noise (perceived as a ‘rumble’) and is normally only an issue when airborne noise levels are very low. Some people and species are sensitive to both ground-borne noise and vibration, and the levels that disturb them are considerably lower than the levels that have the potential to cause damage to buildings and other structures. The control of vibration levels that *could* cause damage should primarily be regarded as part of the engineering of the works, not its environmental management. However, it must be recognised that, depending on the scale of the works and the sensitivity of the location, noise and vibration generated during construction or maintenance work can be a major factor in the overall environmental impact of the scheme.

Structure-borne noise is a term used to describe noise transmitted through a structure to a point a significant distance from the noise source. It reaches a receiving person as airborne noise but the proximate source – maybe part of a structure, or a pipe or other static equipment attached to the structure – is not the original source of the noise.

Typically, adverse vibration lies within the frequency range of approximately 10 to 250Hz and ground borne noise approximately 150 to 1000Hz. Monitoring techniques necessary to score points in the monitoring questions (11.3.3 and 11.3.6) need to be appropriate to the frequencies likely to be encountered.

**Note: This entire sub-section (11.3) can be scoped out if there are no built structures, sensitive wildlife habitats (not just protected species) and/or public recreation areas that might be affected by any individual works order issued under the contract.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>11.3.1a)</b>	Have baseline studies and predictions for noise in the operation of the new works been carried out and have proposals been put forward for mitigating this noise?  If No, score 0 Baseline studies undertaken, score 1 and predictions developed, score 2 and proposals for mitigating noise, score 4		4
<b>11.3.1b)</b>	Have the proposals for mitigation for the operational stage been implemented in full as far as can be expected at completion of the new works?  If No, score 0; if Yes, score 4 No score here unless full points for a)		4

***This question can be scoped out only if there is genuinely no likelihood of any operational noise nuisance. Evidence should be provided and is likely to be found in an environmental assessment of the operational section.***

Note that ‘implemented’ in question 11.3.1b) above must be assessed appropriately up to the point of the CEEQUAL assessment being done. If all mitigation measures are included in the scope of the contract 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 or

refurbishment stage, then the assessments must be against what can reasonably be achieved by the end of contract, not against a prediction of what is anticipated to be implemented in the long term.

Consideration must be given to all forms of noise, including ground-borne noise, structure-borne noise and audible noise. Example measures include noise bunds and barriers.

**✓ Evidence should be a written report on the results of the baseline studies and design drawing and/or specifications.**

		Contract Management	Delivery on the ground
<b>11.3.2a)</b>	Have proposals been put forward in the design process for mitigating noise during the delivery of a works order or group of works orders?  If No, score 0; if Yes, score 2		2
<b>11.3.2b)</b>	Is there evidence that these measures have been implemented?  If No, score 0; if Yes, score 4		4

*This question can be scoped out only if there is genuinely no likelihood of any noise nuisance arising during the delivery of the works. Evidence should be provided in the form of an environmental assessment.*

Example measures could include the early development of bunds that help screen construction noise and later become part of the overall landscaping of the completed works, 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 appropriate work sites.

**✓ Evidence can be in the Contract Environmental Management Plan or other management plan documenting such measures, minutes of contract meetings or, in the absence of these, photographic evidence.**

<b>11.3.3</b>	Did the monitoring of noise levels assessed at Question 11.2.1b) demonstrate that acceptable noise levels were achieved throughout the delivery of the new works?  If No, score 0 If No, but corrective action successfully taken, score 3 If Yes in full, score 7		7
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**✓ Evidence could be noise monitoring records and methods statements.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
11.3.4 a)	Have baseline studies and predictions on vibration in the operation of the new works been carried out and have proposals been put forward for mitigating vibration?  If No, score 0 Baseline studies undertaken, score 1 And predictions developed, score 2 And proposals for mitigating vibration, score 4		4
11.3.4 b)	Have the proposals for mitigation for the operational stage been implemented in full as far as can be expected at completion of the new works?  If No, score 0. If Yes, score 4 No score here unless full points for a)		4

***This question can be scoped out only if there is genuinely no likelihood of any operational vibration nuisance. Evidence should be provided and is likely to be found in an environmental assessment of the operational section.***

Note that ‘implemented’ in question 11.3.1b) above must be assessed appropriately up to the point of the CEEQUAL assessment being done. If all mitigation measures are included in the scope of the contract 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 contract, not against a prediction of what is anticipated to be implemented in the long term.

Baseline vibration studies could be carried out on a work site that is near a railway line or major road, or any other situation where baseline vibration exists. Examples of these measures include the siting of plant on isolation foundations.

**✓ Evidence should be a written report on the results of the baseline studies and design drawings and/or specifications.**

11.3.5 a)	Have proposals been put forward in the design process for mitigating vibration during the delivery of a works order or group of works orders?  If No, score 0; if Yes, score 2		2
11.3.5 b)	Is there evidence that these measures have been implemented?  If No, score 0; if Yes, score 4		4

***This question can be scoped out only if there is genuinely no likelihood of any vibration nuisance arising during the delivery of the works. Evidence should be provided in the form of an environmental assessment.*** 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.

**✓ Evidence can be in the form of Contract Environmental Management Plan or other management plan documenting such measures, minutes of contract meetings or, in the absence of these, photographic evidence.**

		Contract Management	Delivery on the ground
11.3.6	Have vibration levels been monitored at appropriate intervals and locations throughout the delivery of works orders or groups of works orders and has corrective action been taken where necessary?  If No, score 0. If Yes, score 3		3

✓ **This question can be scoped out only if there is genuinely no likelihood of any vibration nuisance arising during the delivery of the works. Evidence should be provided in the form of an environmental assessment. Evidence could be vibration monitoring records and methods statements.**

11.3.7	Has any damage been caused to buildings and structures by vibration arising from the delivery of the contracted works?  If Yes, score 0; if No, score 4		4
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*This question can be scoped out only if there was genuinely no vibration caused by the works during the delivery stage.*

In other words, have there been any complaints or legal actions about physical *damage* caused by vibration?

✓ **Evidence should be a signed statement from the Contract Manager that the contract caused no vibration damage during contract delivery processes.**

## 11.4 Air pollution, including dust and odours

### *Guidance on air pollution during operation*

General guidance on air pollution during operation may be found in the *Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, 17 July 2007 available from DEFRA Publications.

In addition, information and central government advice to local authorities in the *Local Air Quality Management Regulations* (LAQM) can be found in the following documents, also available from DEFRA Publications:

- Policy guidance LAQM.PG(03), 2003 (Product code PB7516);
- Technical guidance LAQM.TG(03), 2003 (Product code PB7514): as updated by:
- Addendum to Local Air Quality Management Guidance LAQM.PGA(05) March 2005.

### *Guidance on air pollution during delivery of the contracted works*

The Greater London Authority, in partnership with the London Councils, has produced a guidance document, *The control of dust and emissions from construction and demolition: Best Practice Guidance* (Nov 2006), which provides appropriate guidance on the control of emissions from construction sites in London, but much of the advice is equally applicable to other locations.

Dust created by a variety of means, such as soil stripping, bulk excavation, vehicle movements, cutting and handling materials, can be a source of great nuisance to local neighbours and may adversely affect the health of people, wildlife and crops. Dust is a problem on most construction and many maintenance sites. Odours are less of a problem, but nevertheless can be very unpleasant when they do occur. Even low concentrations of dust can affect plant and fruit growth, especially if the dust is highly alkaline, such as limestone or cement. Construction or maintenance sites in agricultural areas therefore need to take particular care to prevent dust emissions, as do sites near sensitive habitats such as heathland or acid grassland.

Restricting works that may cause a high level of dust in certain weather conditions (for example, wind in a certain direction) may be one way to avoid potential problems. Once dust is airborne, however, it is difficult to stop it. The most effective strategy is therefore to prevent dust being generated in the first place. Careful design of contract delivery operations, including the location of stockpiles and batching plant, can reduce dust. Damping down, using either water or water with chemical additives or binders, is another established method to avoid dust pollution.

If dust-generating activities cannot be avoided, it may help to erect screens to act either as windbreaks or as dust screens. These can take the form of permeable or semi-permeable fences. Trees or shrubs planted early as part of site landscaping can also provide some screening, as can retention of existing vegetation.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>11.4.1a)</b>	Is there evidence that appropriate measures have been taken in the design process to minimise emissions during operation of the new works?  If No, score 0; if Yes, score 6	6	
<b>11.4.1b)</b>	Is there evidence that these measures have been implemented?  If No, score 0. If Yes, score 6 No score here if no score for a)		6
<b>11.4.1c)</b>	Is there evidence that appropriate measures have been taken in the design process to minimise adverse impacts on local air quality during the delivery of a works order or group of works orders?  If No, score 0. If Yes, score 4	4	

*Scope out 11.4.1 a) if there are no emissions of any kind resulting from the contracted once completed, for example maintenance of a flood defence bank, small bridge or canal embankment.*

*Scope out 11.4.1b) if there are no receptors affected either in the vicinity of the work site or along local transport routes.*

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.

**✓ Evidence for this would be found in design drawings and specifications.**

<b>11.4.2</b>	Is there evidence that appropriate measures have been taken to minimise dust emissions during the delivery of a works order or group of works orders?  If No, score 0; if Yes, score 3		3
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Example measures include damping down haul roads and siting of dust-producing operations away from neighbours.

**✓ Evidence could include identification of potential dust creating activities within contract planning and evidence of implementation of dust reduction measures. In the absence of a specific plan, other evidence is required to identify the range of measures taken and verify their implementation, for example, photographic evidence, site records, records of external monitoring.**

		Contract Management	Delivery on the ground
11.4.3	Is there evidence that appropriate measures have been taken, during delivery of a works order or group of works orders to minimise adverse impacts on local air quality?  If No, score 0; if Yes, score 3	3	

✓ These measures could be laid out in a dust and odour management plan or equivalent section in a CEMP or Integrated Contract Management Plan. In the absence of such a plan, other evidence is required to identify the range of measures taken and verify their implementation, for example, photographic evidence, site records, records of external monitoring. Evidence is required of appropriate selection of construction or maintenance plant and its regular maintenance to ensure emissions are kept within strict limits.

## 11.5 Light pollution

Light can have adverse effects on neighbours when it spills into surrounding buildings and/or is excessively bright. It can also be a waste of energy. Light sources that minimise spillage and illuminate only those areas that need it are likely to cause the least adverse effect on neighbours.

All lighting for any new works to be constructed under the contract, as well as all depot, compound and site lighting, should be designed to prevent spillage of light into neighbouring buildings and/or areas. Lighting of construction or maintenance work in particular 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.

*Note: The following two questions can be scoped out if there are no neighbours, sensitive wildlife habitats (not just protected species) or public recreation areas that might be affected by the contracted works.*

11.5.1 a)	Is there evidence that appropriate measures have been taken in the design process to prevent light spillage to neighbouring areas during operation of the completed new works?  If No, score 0; if Yes, score 3		3
11.5.1 b)	Is there evidence that these measures have been implemented?  If No, score 0. If Yes, score 3 No score here if no score for a)		3

*Scope out on works that involve no addition to the lighting for the operational phase of completed works.*

✓ Evidence for this would be found in design drawings and specifications.

11.5.2	Is there evidence that appropriate measures have been taken on all appropriate works orders to prevent nuisance light spillage to sensitive receptors into neighbouring areas during delivery of the works orders?  If No, score 0; if Yes, score as indicated		4
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These measures could be laid out as part of the Contract Environmental Management Plan or equivalent. There may be circumstances where light spillage can be seen as a positive impact because it improves the

security of the area, or where the nuisance has no negative impacts because the surrounding neighbours are industrial or commercial, and therefore not normally adversely affected by light spillage.

✓ **In the absence of a specific plan, other evidence is required to identify the measures taken and verify their implementation, for example, photographic evidence.**

## 11.6 Visual impact, and tidiness of the works

A common complaint about construction and maintenance work 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 depot or site that is visually less unpleasant but can also significantly reduce wastage. Regular clearance of litter makes sites look tidier and enhances a culture of environmental care amongst staff.

		Contract Management	Delivery on the ground
11.6.1	Is there evidence that measures have been taken to minimise the adverse visual impact arising from the delivery of individual works orders?  If No, score 0; if Yes, score 7		7

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.

✓ **These measures could be laid out as part of the Contract Environmental Management Plan 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.**

## 12. RELATIONS WITH THE LOCAL COMMUNITY AND OTHER STAKEHOLDERS

### 12.1 Basic Principles

Establishing and maintaining a positive dialogue with community stakeholders throughout the whole contract is more likely to result in a well-informed public, and will help to build a spirit of co-operation with the relevant authorities, agencies and local community. Ideally every item of new works within the contract would include a consultation stage when initial design ideas are being developed but it is fully recognised that this is unlikely to be possible on many term contracts and a contract-wide process will be more appropriate. Either approach should reduce delays during planning application, reduce the risk of environmental protest during site works, enhance contractor-community relations and provide greater acceptance of any completed works and the potential nuisance during construction operations.

Compared to ‘Effects on Neighbours’, which are dealt with in Section 11, this section deals with wider community issues. The scope of section 12.2 is community and stakeholder relations, implying a two-way dialogue, and a relationship that goes far beyond the immediate impact of individual schemes on its direct or adjacent neighbours. In terms of best practice, it is not a *requirement* to demonstrate that every piece of feedback has been incorporated into the contracted works but rather that each has been considered and then either incorporated or an appropriate explanation given to the originator.

**Who needs to be consulted?** – ‘The local community’ is taken to mean the following groups:

- neighbours who are close to but not adjacent to the contract’s work sites;
- local interest groups;
- the wider community – people, schools, businesses etc who may be affected by or have an interest in the contracted works.

**Liaison with statutory authorities and agencies** -Relevant authorities include:

- the local authority planning department;
- the local authority environmental health department;
- the local authority transport department;
- the EA, SEPA or NIEA or equivalents;
- Natural England, Scottish National Heritage or equivalents;
- English Heritage or its equivalents;
- water companies or equivalents.

**Liaison with Local Interest Groups** is explained in Section 12.2

**Liaison with the Wider Community**- Examples of the wider community could be:

- national or regional non-governmental organisations (NGOs);
- the local Wildlife Trust or other local environmental groups;
- local disability organisations.

		Contract Management	Delivery on the ground
12.1.1 NSO	Has a community consultation exercise been carried out and the results been passed to appropriate members of the contract team and, as and where appropriate, the results fed back to consultees?  If No, score 0; if Yes score 18		18

**This question should not normally be scoped out , as, even for a remote location with no immediate neighbourhood, there may be other stakeholder groups that ought to be consulted, such as parks and wildlife authorities, the Ramblers Association, Environment Agency etc.**

Ideally, consultation should be carried out early for *each stage* of the overall contract (for example, at planning stage, during design/specification and before delivery on the ground starts) but needs to be matched to the nature, scope and extent of the contracted works. A term contract for a series of minor road improvement schemes could require significant consultation for each works site. 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 contracted works. 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.

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.

✓ Evidence could be reports or minutes of meetings with appropriate groups that are carried out at appropriate stages of the contracted works. Evidence should also be provided to show how information from these exercises is then communicated to the contract team.

		Contract Management	Delivery on the ground
12.1.2 NSO	Has a member of the contract team been made responsible for ongoing community consultation?  If No, score 0; if Yes, score 6	6	

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

✓ Evidence could be in the form of a letter appointing someone to be responsible or it could be included in a Contract Management Plan. In either case responsibilities need to be defined.

## 12.2 Engagement with Relevant Local Groups

Examples of local interest groups with an interest in the environmental and social performance of a contract could include:

- Not-for-profit Non-Governmental Organisations (charities);
- Residents Associations;
- Chambers of Commerce;
- Local Agenda 21 groups or similar;
- Voluntary environmental groups (for example, the British Trust of Conservation Volunteers);
- Local wildlife trusts;
- Local recycling or waste exchange schemes.

12.2.1	Has a continuing community relations programme covering all relevant aspects of the contracted works been set up and delivered?  If No, score 0; if Yes, score 9	9	
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*This question can be scoped out in remote locations or on very small new works if the initial consultation has established that there are no interested parties. Assessors and Verifiers may also exceptionally consider scoping out this question if an initial community consultation exercise has concluded that the community were very pleased that the works were happening. The contract therefore cannot be deemed to*

*be sensitive and therefore does not require a continuing CR programme, just someone appointed to deal with queries and complaints as and when they arise.*

Whereas a community consultation exercise (Question 12.1.1) is a one-off event – even if carried out at each major stage of or for each major work element of a Term Contract – a community relations programme is an ongoing effort to maintain a dialogue with all community stakeholders throughout the contract processes.

A thorough and effective community relations programme should consider the following elements:

- the significant environmental impacts of the final works, perhaps (but not necessarily) evaluated by an environmental appraisal;
- the significant environmental impacts of the construction or maintenance works processes, perhaps (but not necessarily) evaluated by an environmental appraisal;
- transportation impacts, perhaps (but not necessarily) resulting from a transport appraisal;
- livelihood impacts of the construction or maintenance works processes;
- timing and programme of the works;
- employment and skill development opportunities during the contract and resulting from the final completed works, if appropriate.

An effective community relations programme should also manage the expectations of the consultees – consultation should not lead to unrealistic expectations of the contract and its outcomes.

**✓ Evidence needs to show a programme of community relations activities carried out. These could include leaflet drops, press releases, open evenings, websites, regular liaison group meetings, etc. However the programme is constructed, it needs to include two-way consultation (as described in 12.1.1.)**

		Contract Management	Delivery on the ground
12.2.2	Did the community relations programme include a mechanism for local interest groups to communicate with the contract team?  If No, score 0; if Yes, score 9	9	

*Scope out only if 12.2.1 has been scoped out or if there are genuinely no local interest groups to communicate with.*

**✓ Evidence needs to show these activities actually taking place and the relevant groups having been invited and/or taking part. This could be in the form of meeting minutes, correspondence, attendance lists etc.**

12.2.3	Have any partnership links been established with local groups (for example, donation of skills or surplus materials)?  If No, score 0; if Yes, score 13	13	
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For most term contracts, even in remote locations or on small new works, there is the potential to establish links with community groups, schools or other groups who could benefit from an exchange of skills or donation of materials.

**✓ Appropriate evidence needs to be provided to show the relationships formed.**

## 12.3 Effectiveness of the community relations programme

Aside from the nature of the community relations programme itself, it is also necessary to make some assessment of actions taken by the contract team as a result of listening to the responses obtained from the community.

Clearly, any community consultation is valid only if comments are taken into account and, where necessary or appropriate, changes are made to planned works to try to accommodate concerns raised at the consultation. At the least, a system should be in place, as part of the community consultation programme or on its own, whereby any comments or complaints are registered and any action taken as a result is recorded.

*This section can be scoped out if 12.2.1 has been scoped out.*

		Contract Management	Delivery on the ground
12.3.1	Has there been a mechanism to ensure that comments from the local community were recorded?  If No, score 0; if Yes, score 3	3	

✓ Evidence could be in the form of meeting minutes with liaison groups. A complaints procedure would also provide evidence, but the definition of a complaint may restrict what gets recorded.

12.3.3	Has the contract team assessed the responses from the community relations programme and taken appropriate action within the delivery of the contracted works?  If No, score 0 For assessing responses, score 5 For taking appropriate action, score 14	19	
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Note also that there is no intent with this question for changes that the contract team judge are needless or pointless to be made just to score the CEEQUAL points.

✓ Evidence would be any amendments to planned works 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, timing of noisy works), as well as the record of complaints or comments and what action was taken as a result.

## 12.4 Human environment, aesthetics and employment

There are two main impacts or implications of civil engineering work on the human environment: those on the end-users, any operational staff and others affected by the contracted works once completed, and those on the construction or maintenance workers. The end users and others affected are normally considered at the planning stage while construction or maintenance workers are protected by health & safety and welfare legislation, including the CDM Regulations.

However, an environmentally and socially responsible contract team should demonstrate that the needs of all people have been considered as an integral part of the contract processes. It is often easy to neglect the impacts on the human environment as not being engineering-driven, yet the solutions invariably are, or have an effect on our decisions.

By addressing human environmental issues at every stage, the contract team should be able to avoid expensive delays in the contract programmes due to last minute changes or dispute resolution, and should be able to foster good community relations.

Aesthetics and visual impact have not always been considered to be of prime importance to civil engineers, particularly if an architect is involved with the contracted works. However, with the methods of contract procurement currently being used, the role of civil engineers is expanding and the aesthetics of design is becoming more important to design engineers. In any event, civil engineers should be aware of aesthetic issues in design and use their influence to achieve environmentally sound completed works.

Please note that this section does not deal with effects on neighbours, as this is covered in Section 11.

### **Local employment**

The question in this section on encouraging local companies to work on the contract is a first step at starting to think more broadly about how the contracted works can have a positive impact on the local community from an economic perspective. It obviously also has associated environmental benefits such as reduced transport impacts.

### **User enjoyment**

The concept of how ‘enjoyable’ a structure is may not be considered to be applicable to civil engineering but more the province of architects and planners. However, design and construction engineers can have a significant input to this and should be encouraged to participate fully in shaping the contracted works to achieve what is sometimes called the ‘wow-factor’, generated by structures of high aesthetic value. This is however unlikely to a major consideration with the kind of work undertaken under Term Contracts unless it is about ensuring existing structures do not lose their ‘wow-factor’ through insensitive minor works or maintenance activities.

In this context, how enjoyable something is should not just apply to users. Almost any built structure can provide a ‘wow-factor’ or enjoyment to neighbours, visitors, passers-by – anyone who sees or experiences it – if it is designed to be aesthetically pleasing and add value beyond its actual function. The same can be said for a significant refurbishment of older structures that have fallen into disrepair. Conversely, any built structure that is not aesthetically pleasing, including badly-refurbished works, can become regarded as an eyesore and aesthetically unpleasant, however useful and necessary its function may be.

The assessment of these factors is necessarily subjective. The evidence of success for these factors must be at least by demonstration that best practice has been used in accordance with the ‘softer’ social standards as well as those for engineering.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>12.4.1</b>	Is there evidence that due consideration has been given, in the design of new works to wider social impacts of the completed new works on the human environment?  If No, score 0; if Yes, score 7	7	

***The question can be scoped out only on very small new works.***

There are three main issues to be considered for this question and Question 12.4.2:

- Social impacts *during construction or maintenance* on the workforce and on the local community, for example, facilities for the workforce, increased traffic, road closures and long diversions, congestion, influx of the workforce into the local community, and potential severance through the location of the works and arrangement for access to work sites, air pollution, noise, dust, nuisance;
- Social impacts on the local community as a result of the *existence of the completed work*, for example, severing communities (by road improvements), linking communities (bridge), increased traffic, greater mobility, improved services, increased employment;

- Social impacts on the users and/or occupiers of the completed work, which are influenced by its *design*.

✓ Evidence could include a formal social impact assessment, the human factors aspects of an environmental appraisal, records of wide-ranging stakeholder consultation or similar. Any evidence provided should demonstrate consideration of all three points listed above.

		Contract Management	Delivery on the ground
12.4.2	Is there evidence that potential impacts of the new work on the health and welfare of any occupants, users, neighbours and/or any operational staff have been considered, and the design or specification of the new works modified as a result?  If No, score 0; if Yes, score 7		7

*Can be scoped out on new works where there are no identifiable occupiers or users of completed works or users whose experience of the works they occupy or are near is likely to be unchanged as a result of the works.*

These measures must be beyond the legislation requirements of health and safety regulations such as CDM e.g. recommendations from a Health Impact Assessment.

Whilst health and safety plans do require consideration of the health of operators, this question is also looking for the less tangible health issues that do not come under the legal requirements of CDM. An example is the provision of natural light within buildings (such as covered wastewater treatment works), which will indirectly improve the well-being of operators. If the recommendations of a Health Impact Assessment (HIA) for the contracted works have been incorporated into the design, points can be awarded. Evidence could include the design brief, meeting minutes, and reports from assessments and/or consultation. A Health & Safety Plan and/or Health & Safety File prepared under the CDM Regulations that does not expressly also include future users and occupants of the completed work is not sufficient.

12.4.3	Is there evidence that the contract team has taken steps to <i>actively encourage</i> local firms to compete for work?  If No, score 0; if Yes, score 8	8	
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The transport impacts of construction and maintenance works as a whole can be significant. This includes workforce travel as well as the transport of materials and waste. By actively encouraging the use of local firms (as suppliers, sub-contractors etc) these impacts can be minimised from the outset.

Note: On contracts with more than one principal contractor it may be advisable to assess these separately.

The definition of 'local' in this context is dependent on the location and, occasionally, on the nature of the contracted works. In a remote area 'local' may be within the range of the nearest town or major settlement, whereas in a heavily built-up area it could be as close as being within the borough. For supply of specialist items or services to UK contracts, it may even 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.

✓ Evidence could be a copy of a local advert, specific wording in the suite of procurement documents or other evidence that tenders from local companies have been sought as a matter of priority. The mere fact that one or two suppliers happened to have been local cannot be considered as sufficient evidence.

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>12.4.4</b>	Is there evidence that consideration has been given to a high quality of design, (this includes 'user enjoyment' and additional facilities for the benefit of users) and that this has been fully achieved in the delivery of new works?  If No, score 0; if Yes, score 10		<b>10</b>

*Can be scoped out on new works where there are no identifiable occupiers, neighbours or users whose experience of the works they occupy or are near is likely to be unchanged as a result of the works.*

A key aspect that can affect what is often termed 'joy in use' is the detailed execution at the construction stage, which should continue into maintenance. Poor detailing can negate the best design by either adding a point of visual dysfunction or result in the contracted works being less user-friendly. Alternatively, positive changes during the construction or maintenance phase can improve 'joy in use'.

- ✓ **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 or maintenance stage, photographs or 'as complete' drawings which demonstrate how the design concept has been met or exceeded.**

<b>12.4.5</b>	Is there evidence that the needs of all different user groups have been considered and respected in the design solutions (for example, car drivers, cyclists, pedestrians, disabled people etc) and the specification achieved in the delivery of new works?  If No, score 0; if Yes, score 10		<b>10</b>
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*Can be scoped out on new works where there are no identifiable occupiers or users of the completed works or users whose experience of the works they occupy or are near is likely to be unchanged as a result of the works.*

For example, on a junction improvement, are all users given appropriate consideration within the design and construction phase and the correct balance struck between their various need, or are pedestrians expected to climb over bridges or descend into subterranean tunnels, and are cyclists expected to take a longer diversion to avoid a new road junction?

In terms of the needs of disabled people, 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 the completed works by people with disabilities.

- ✓ **Evidence would be in the design brief, design team meeting minutes, civic awards, code of construction or maintenance practice, Disability Discrimination Act audit etc.**

		<b>Contract Management</b>	<b>Delivery on the ground</b>
<b>12.4.6</b>	Is there evidence that the new works have been designed to be sympathetic to its human users and in scale with its surrounding environment?  If No, score 0; if Yes, score 6		6

*Can be scoped out on new works where there are no identifiable occupiers or users of the completed works or users whose experience of the works they occupy or are near is likely to be unchanged as a result of the works.*

For example, on improvements to a wastewater treatment plant are mess and office facilities placed as an afterthought in corners of buildings with no natural light or ventilation, or are buildings designed with these elements in mind to give external views and light, to help relaxation at break times?

An example of good practice is that in flood defence works it is now commonplace to design the scheme such that its purpose is effectively disguised, and all local people see are banks, brick-faced walls, footpaths and ramps, all in scale with, and woven into, the local landscape and buildings.

**✓ Evidence would include the contract management records, meeting minutes, drawings etc.**