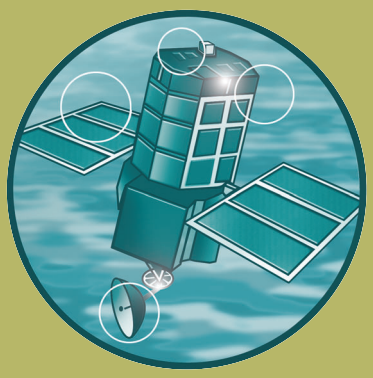
Joint Defra/EA Flood and Coastal Erosion Risk Management R&D Programme

Developing an evidence base for appraisal guidance
Task B2 Annex and appendices

R&D Project Record FD2019/PR5



Environment Agency

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Joint Defra/EA Flood and Coastal Erosion Risk Management R&D Programme

Developing an Evidence Base for Improving Appraisal Guidance

R&D Project Record FD2019/PR5 (Task B2)
Appendix B2

Produced: December 2006

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Statement of use: Task B2 Report supporting FD2019 Project Final Report

Dissemination status:Public

Keywords: flood and coastal erosion risk management, project appraisal, guidance

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www.defra.gov.uk/environ/fcd

Published by the Department for Environment, Food and Rural Affairs (March 2007. Printed on material that contains 100% recycled fibre for uncoated paper and 75% recycled fibre for coated paper.

PB Number: 12527 / 8

Executive summary

Aim of Task B2

Task B2 involves a review of the appraisal processes used in other fields (i.e. outside of flood and coastal erosion risk management). The aims of Task B2 are to:

- identify approaches used in other fields; and
- illustrate how the approaches used in other fields could be used or applied to flood and coastal erosion risk management.

Approach to Task B2

Task B2 overlaps with part of Task A1 by undertaking a review of the appraisal side of the guidance reviewed in Task A1. The questions to be asked when considering appraisal processes used in other fields are open (i.e. require a description/detailed response to be given); questions used when reviewing guidance (Task A1) and appraisals (Task B1) are closed (i.e. require a yes or no response). The aim of Task B2, however, is to identify how approaches used elsewhere could be used to inform approaches to appraisal for flood and coastal erosion risk management. Hence, a series of open questions is used.

As with Tasks A1 and B1, the questions are included in a proforma to ensure consistency between reviews undertaken by different members of the project team and comprehensiveness of all reviews.

Conclusions

A total of 34 appraisal processes have been reviewed, of which two are additional appraisal processes not reviewed in Task A1 as they are not accompanied by guidance.

Certain key characteristics from FCERM are recognised in the appraisal processes used in other fields. For example, the main appraisal method used is cost and benefit analysis (CBA). A common approach is to use an economic appraisal approach that is consistent with Treasury Green Book requirements. The majority of guidance documents make use of approaches that allow environmental goods and services to be valued in money terms, which provides systematic comparison and consistency between options in the decision-making process. Furthermore, economic appraisals provide a good method for identifying benefit and cost values of each option.

The level of detail within an appraisal varies according to the appraisal methodology used and how it is applied. Generally, an account of the stages within the methodology is given through the introduction and the inclusion of working examples.

Different levels of decision-making are dealt with by creating a tiered approach, for example, a four level structure of decision-making. The appraisal processes note that using a tiered approach helps to address uncertainty.

The typical baseline is the do-nothing option such that there is an absence of any measure of control or intervention, although many appraisal processes (particularly those developed by the Department for Transport) use do-minimum as the baseline. The do-minimum baseline is assessed by using information on current technologies and activities, using the business as usual projections and preventing the introduction of any new technologies to the level of service.

Uncertainty is dealt with in various ways through sensitivity analysis and scenario analysis, where low and high probability ratings are used and input data has to be tested for sensitivity, or by using expert judgement in combination with the sensitivity analysis. Around half of the appraisal processes incorporate climate change in some form or another in the project development.

The decision rules identified throughout the appraisal processes used in other fields are based on three aspects:

- choosing the least-cost and most cost-effective option;
- following high level government legislation; and
- achieving environmental benefits.

Distributional issues and vulnerability are commonly dealt with in the appraisal processes by incorporating socio-economic approaches. They are identified as being highly dependent on the type of appraisal being undertaken.

Although consultation was performed at a various stages in the different guidance documents, it is evident that stakeholder opinions are recognised as an integral component to the appraisal processes

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1. Introduction

1.1 Background to the study

FCDPAG 1 (MAFF 2001) defines Project Appraisal as: “the process of identifying and then evaluating options in order to select the one that most closely satisfies the defined project objectives. In the context of flood and coastal defence strategy and scheme appraisals these objectives include:

- reducing the risks to people and to the developed and natural environment from flooding and coastal erosion;
- identifying a solution that is technically sound and most fit for purpose;
- being environmentally acceptable and sustainable; and
- ensuring best value for money from a national perspective."

The approach to project appraisal in flood and coastal erosion risk management (FCERM) is based on this definition. However, the definition appears to focus on a comparison of defined options and does not *emphasise* the role of developing options through learning and feedback from the appraisal process, although the FCDPAG series does refer to the need to review options both during at the end of the appraisal process.

Making Space for Water (MSfW) clearly states the Government’s aim for flood and coastal risk management as: “to manage the risks from flooding and coastal erosion by employing an integrated portfolio of approaches which reflect both national and local priorities, so as:

- to reduce the threat to people and their property; and
- to deliver the greatest environmental, social and economic benefit, consistent with the Government’s sustainable development principles.”

It is clear that appraisals are therefore central to achieving and delivering the Government's aim.

This study, through reviewing and analysing existing appraisals and potential improvements, will provide a better understanding of the guidance that supports the appraisal process, how it can be improved to contribute to better decisions and be cost effective, in the quest to reduce risk and be consistent with sustainable development principles.

The study will need to be informed by other projects being carried out under the MSfW delivery programme such as “Identifying the barriers and incentive to the delivery of better environmental and social outcomes”, R&D projects such as “Evaluating a Multi-Criteria Analysis Methodology for Application to Flood Management and Coastal Defence Appraisal” and “Integrating Cost-benefit Analysis and Multi-Criteria Analysis of Flood and Coastal Defence Projects” (the Sugden Approach), and Foresight Scenarios.

1.2 Objectives of the study

The aim of the study as set out in the project specification is to:

- explore the potential for improvements to the existing project appraisal guidance (Defra 1999-2001) to reflect the findings of the Foresight Study (OST 2004) and the direction of travel identified in the Government's first response to the Making Space for Water (MSfW) consultation (Defra 2005).

The objective of the project is to:

- develop evidence that will allow Defra and the operating authorities to improve guidance and thus assist practitioners make better decisions.

1.3 Organisation of this report

This report sets out the evidence collected under Task B2 (appraisal processes used in other fields). The report is organised around the proforma used when reviewing the guidance documents (a blank version of the proforma is provided in Section 2 of this report) as follows:

- Section 2 provides an overview of the approach used in Task B2;
- Section 3 discusses specific aspects of the methodologies used in appraisal processes from other fields;
- Section 4 describes how the baseline is assessed;
- Section 5 sets out approaches to assessing uncertainty and undertaking sensitivity analysis;
- Section 6 covers discounting; and
- Section 7 considers how decisions are made.

1.4 Structure of the Final Report

This report forms one of five Task Reports which provide a summary of the results of each Task to inform the Final Report. Figure 1.1, overleaf, shows how these reports feed into the FR and draw on the evidence collected and reviewed during the study.

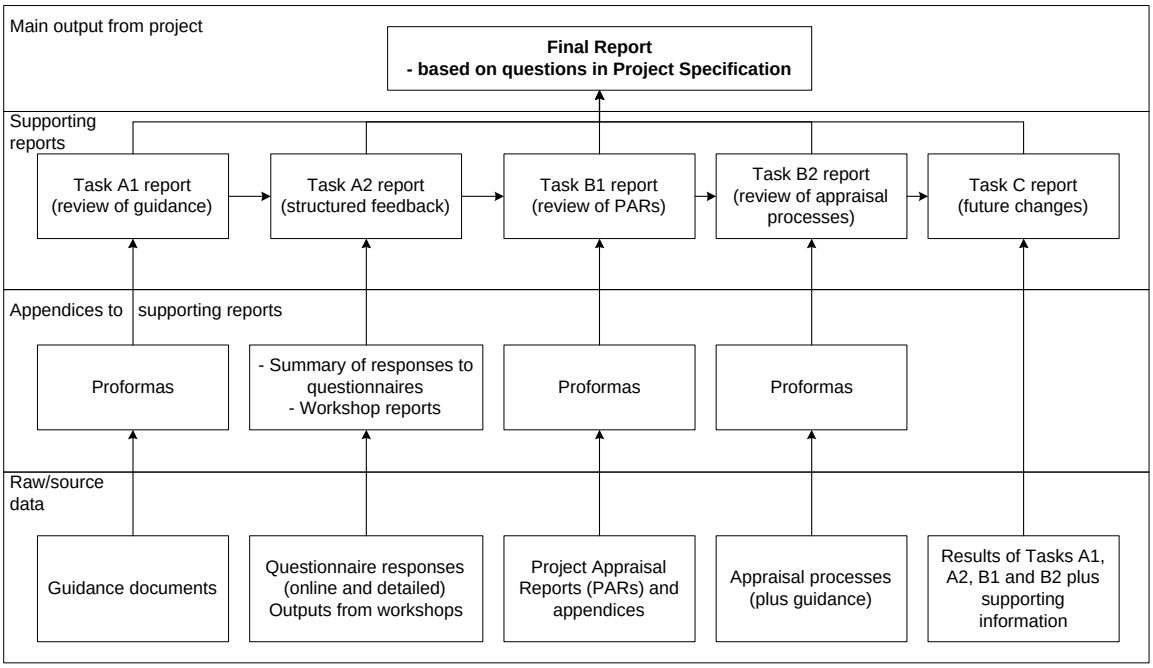

Figure 1.1 Structure of the outputs forming the Final Report

2. Approach to Task B2

2.1 Aims and objectives of Task B2

Task B2 involves a review of the appraisal processes used in other fields (i.e. outside of flood and coastal erosion risk management). The aims of Task B2 are to:

- identify approaches used in other fields; and
- illustrate how the approaches used in other fields could be used or applied to flood and coastal erosion risk management.

2.2 Approach to Task B2

Task B2 overlaps with part of Task A1 and involves an overview of approaches to options appraisal used in other fields. This will enable evidence to be collected on advantages and disadvantages of other appraisal methods. The aim is to identify approaches that could be applicable to flood and coastal erosion risk management and/or to highlight how current approaches could be extended or improved.

Task B2 includes a review of the appraisal side of the guidance reviewed in Task A1. The questions to be asked when considering appraisal processes used in other fields are open (i.e. require a description/detailed response to be given); questions used when reviewing guidance (Task A1) and appraisals (Task B1) are closed (i.e. require a yes or no response). This is because it is much easier to compare reviews when using closed questions. The aim of Task B2, however, is to identify how approaches used elsewhere could be used to inform approaches to appraisal for flood and coastal erosion risk management. Hence, a series of open questions is used.

As with Tasks A1 and B1, the questions are included in a proforma to ensure consistency between reviews undertaken by different members of the project team and comprehensiveness of all reviews. The proforma is reproduced as Table 2.1.

Table 2.1 Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	
What level of effort/resources is required?	
How does the appraisal process take account of different levels of decision-making?	
How are the different levels related (in terms of information, etc.)?	

Table 2.1 Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	Comments/description/ reference
Is the appropriate level of detail/resources for each level discussed? If so, how?	
How is consistency between different scales ensured?	
What is the baseline?	
How is the baseline assessed?	
How is uncertainty measured/recorded/taken into account?	
What time horizon is used for appraisals?	
How is optimism bias taken into account in the costs of options?	
What decision rules are used?	
How are the key issues in terms of the decision-making focused on in the appraisal?	
How is climate change taken into account?	
How are different scenarios accounted for?	
How is sensitivity analysis undertaken?	
Is guidance available (this will be known from the completed proforma from Task A1)?	
What action is taken/required to ensure consistency across different appraisals?	
Does the appraisal process take account of extreme/low probability events? If so, how?	
How are distributional issues/vulnerability of different groups taken into account?	
How are residual risks assessed and presented?	
When is consultation with local stakeholders/ communities to be undertaken?	
Does the appraisal process include any method for prioritisation? If so, how?	
Is post project evaluation undertaken (or has it for particular projects)?	

2.3 Appraisal processes reviewed

The appraisal processes to be reviewed include all of the non-FCERM guidance identified in Task A1, plus two additional appraisal processes for which guidance is not available. This gives a total of 34 appraisal processes. Table 2.2 identifies which of the appraisal processes have been reviewed to date. The Table also highlights where guidance is available and has been reviewed under Task A1.

Table 2.2 Appraisal processes identified and reviewed

Appraisal process	Guidance available and reviewed?
Collaborative Research Programme on River Basin Management Planning Economics 2005. Development of a methodology to determine cost-effectiveness of measures and combinations of measures for the Water Framework Directive (WFD).	No
Countryside Agency for Wales *et al*. 2004. Strategic Environmental Assessment and biodiversity: a guidance for practitioners.	Yes
Defra & EA 2005. Development of tools for the multi functional economic valuation of wetlands: economic valuation of multi-functional wetlands: methods and techniques, London: Defra, Flood Management Division.	No
Defra 2001. An economic analysis to inform the review of the objectives for particles air quality strategy, London: Defra.	Yes
Defra 2003. Use of multi-criteria analysis in air quality policy, prepared by Philips & Stock, November 2003.	Yes
Department for Transport 2003. Guidance on preparing an economic impact report, prepared by Steer Davies Gleave, London	Yes
Department for Transport 2001. A project appraisal framework for ports, London: DfT.	Yes
Department for Transport 2002. Economic assessment of road maintenance: QUADRO manual, London: DfT.	Yes
Department for Transport 2004. Economic assessment of road schemes: COBA11 manual, London: DfT.	Yes
Department for Transport 2004. TUBA Guidance, Mott MacDonald, Winchester: DfT.	Yes
Department for Transport 2005. Transport Analysis Guidance (TAG), ITEA Department for Transport, London: DfT.	Yes
Department for Transport nd. Multi modal transport appraisal investment, London: DfT.	Yes
Department for Transport nd-a. Major scheme appraisal in Local Transport Plans: Part 3, London: DfT.	Yes
Environment Agency nd. Guidance on economic appraisal in the Environment Agency, Bristol: EA.	Yes
Environment Agency 2003. Assessment of benefits for water quality and water resources schemes in the PR04 environment programme (Benefit Assessment Guidance, BAG), Part Two: Rivers and Groundwater.	Yes
European Chemicals Bureau 2003. Technical Guidance Document (chemical risk management), JRCA-Ispra (VA), Italy.	Yes
Federal Environment Agency 2004. Basic principles for selecting the most cost-effective combinations of measures for inclusion in the programme of measures as described in Article 11 of the Water Framework Directive (German Handbook), Berlin: Ecologic.	Yes
Görlach, B. & E. Interwies 2003. Economic assessment of groundwater protection: a survey of the literature, Berlin: Ecologic.	Yes
Highways Agency 2004. Short Project Appraisal Report guidance notes, Department for Transport, London: DfT.	Yes

Table 2.2 Appraisal processes identified and reviewed

Appraisal process	Guidance available and reviewed?
HR Wallingford 2006. Climate change impacts and adaptation – cross-regional research programme, Project C Water for Defra/Environment Agency.	Yes
HSE 2001. Reducing risks, protecting people, HSE's Decision-Making Process, Suffolk: HSE Books.	Yes
Institute of Public Health 2006. Health Impact Assessment: A short guide, Ireland.	Yes
Jacobs 2006. Guidance on the evidence required to justify disproportionate cost decisions under the Water Framework Directive, Project 3 for the Collaborative Research Project.	Yes
OST nd. Foresight Future Flooding Scotland.	Yes
Royal Institute of Technology 2003. Mining impacts on the freshwater environment: technical and managerial guidelines for catchment scale management (ERMITE), European Commission Fifth Framework Programme, Sweden.	Yes
RSPB 2002. Wise use of floodplains: guidance on options, EU-Life Environment Project.	Yes
Scottish Executive Development Department 2002. Economic assessment of road schemes in Scotland, The NESA manual 1, Edinburgh.	Yes
SEERAD 2002. Evaluating the economic impact of irrigation controls, prepared by Macaulay Land Use Research Institute and Cambridge University Farm Potato Agronomy Unit, Aberdeen.	Yes
SEPA 2000. Ponds, pools and lochans: guidance on good practice in the management and creation of small waterbodies in Scotland, Stirling.	Yes
SEPA 2000a. Watercourses in the community: a guide to sustainable watercourse management in the urban environment, Stirling.	Yes
SNIFFER *et al*. 2003. Identification and designation of Heavily Modified Water (HMWB) and Artificial Water Bodies (AWB), CIS Working Group 2.2, Copenhagen.	Yes
UKCIP 2003. Climate change adaptation, risk, uncertainty and decision-making, UKCIP Technical Report, May 2003.	Yes
UKCIP 2004. Strategic Environmental Assessment and climate change, Guidance for Practitioners.	Yes
Villa *et al*. 2002. Zoning Marine Protected Areas through Spatial Multiple-Criteria Analysis, in Conservation Biology, Vol.**16**/No.2, April 2002, pp515-526.	Yes

3. Methodologies

3.1 What appraisal methodology is used?

Throughout the appraisal processes the mainstream appraisal method used is cost and benefit analysis (CBA). CBA can be adjusted to suit different types of appraisal models, regardless of the standard and incremental cost-benefit ratios. Although the majority of documents rely exclusively on CBA, a combination of CBA with CEA or MCA has also been captured within the guidance documents. Those that use a combined approach include:

- Defra & EA (2005);
- Görlach & Interwies (2003);
- RSPB (2002); and
- Defra (2003).

In HR Wallingford (2006), an MCA approach is preferred for its ability to use descriptors such as scoring and weighting, and option performance is measured against objectives. The Benefits Assessment Guidance (Environment Agency 2003) uses ASTs in addition to CBA to record qualitative and quantitative information ensuring all benefits are presented in monetary values.

The structure of the CBA is further refined in DfT (2004); Scottish Executive Development Department (2002); and DfT (2004) such that they employ the willingness to pay method as the basis for estimating costs and benefits. This is an approach that is currently being investigated by Defra through research project 2018 (the Sugden approach).

The European Chemicals Bureau (2003) and Countryside Agency for Wales *et al*. (2004) appraisal processes differed from the others by adopting chemical risk assessments and Strategic Environmental Assessment methods respectively. They are, therefore, less relevant to Task B2 than many of the other appraisal processes (but are also reviewed as part of Task A1).

3.2 Similarities with FCERM appraisal processes

Certain key characteristics from the FCERM are recognised throughout the guidance documents. A common approach is to use an economic appraisal approach that is consistent with Treasury Green Book requirements. The majority of guidance documents make use of approaches that allow environmental goods and services to be valued in money terms, which provides systematic comparison and consistency between options in the decision-making process. Furthermore, economic appraisals provide a good method for identifying benefit and cost values of each option; a good example of such an approach is provided in the Guidance on Economic Appraisal in the Environment Agency. The DfT (2003 and 2004) appraisal processes have similarities with the proposed Sugden approach in that they use an appraisal process based on willingness to pay.

Documents that use a variety of different appraisal methods or combine methods, such as the Görlach & Interwies (2003), help in terms of making comparisons between widely differing options. This is because using a variety of appraisal methods helps an appraiser to explore the types of choices available and what they entail, as well as allowing the most appropriate appraisal method to be used according to the specifics of the project. There is also the potential to use more detailed approaches where there is greater uncertainty and/or where it is difficult to choose between two or more options.

Using an appraisal methodology that allows a wide range of options to be considered provides a means for testing the preferred strategies and incorporating the widely differing options into the decision-making process. The European Chemicals Bureau (2003) guidance states that having the ability to compare between options renders the appraisal accountable, transparent, and allows for the results to represent a broad range of information from which to base the final decisions.

However, few documents make a direct effort to include stakeholders in the project appraisal method. The involvement of stakeholders is only evident in documents which applied MCA, such as:

- HR Wallingford (2006);
- Defra (2003); and
- RSPB (2002).

3.3 The level of detail required

The level of detail varies according to the appraisal methodology used and how it is applied. Generally, an account of the stages within the methodology is given through the introduction and the inclusion of working examples. Good examples of this are seen in appraisal processes presented in the Collaborative Research Programme on River Basin Management Planning Economics (2005) guidance and Multi-Modal Transport Appraisal Investment (DfT nd).

The Federal Environment Agency (2004), UKCIP (2003), and Scottish Executive Development Department (2002) appraisal processes are divided into preliminary and detailed assessments when estimating costs and benefits. The information from one level feeds into the next such that the level of detail gradually increases. Each successive stage provides data to document and forecast the feasibility of a project or options. Furthermore, the HR Wallingford (2006), and the Collaborative Research Programme on River Basin Management Planning Economics (2005) documents note that the screening of options is important when a large range of options need to be taken into account. They recommend that screening should be incorporated in both the general and the detailed levels of data.

Additionally, high level government publications are typically used to ensure that the objectives and strategic priorities meet the required targets and are efficiently addressed. Numerous Department for Transport (2003, 2005, nd) and Defra & EA (2005) guidance documents comment that project objectives

have to ‘nest’ within those of the government, at local, regional and national levels.

3.4 Different levels of decision-making

Different levels of decision-making are dealt with by creating a tiered approach, for example, a four level structure of decision-making. One example of this is given in UKCIP (2003) which moves from systematic qualitative analysis through to semi-quantitative analysis to fully quantified approaches with monetary valuation, and finally down to the level at which decisions can be made. In contrast, DfT (2001), which also has a four level approach, starts with a scheme description, setting of objectives and processes and ends by defining the framework that feeds into the appraisal stage. Scottish Executive Development Department (2002) includes summary tables at each level. Appraisal processes set out in Defra (2003) and DfT (nd) follow the same stages of the CBA as defined in FCGPAG3.

The appraisal processes used in other fields note that using a tiered approach helps focus on addressing uncertainty. For example, SEERAD (2002) notes that it provides a useful staging post for analysis at the level of individual problems and across a variety of measures. The different levels of decision-making provide ways of insuring that there is a better flow of resources and that it is transferred down throughout the appraisal process.

3.5 Approaches to ensuring consistency

Three distinct methods are observed in the appraisal processes used in other fields for ensuring consistency:

- using data which is extracted from the same source (e.g. DfT 2001);
- having the same type of information for each stage (i.e. qualitative, quantitative, money values) (e.g. DfT 2002); and
- maintaining a formalised structure for data collection and analysis (e.g. DfT 2003).

Defra (2003) and UKCIP (2003) use a generic process for recording information collected during the appraisal process in a consistent manner and also to structure the appraisal process. Defra (2003) makes use of ASTs to summarise all the necessary steps and procedures to be included. Additionally, a ‘do-nothing’ option is included to ensure a level playing field for each option. UKCIP (2003) and DfT (2004) take uncertainty and risk into account at each appraisal stage by employing sensitivity analysis and a weighting system respectively. These approaches allow for the advantages and disadvantages of alternative options to be evaluated. Highways Agency (2004) adopts a more systematic framework for evaluating consistency. Each scheme must be approved by an appending officer. A final audit is then performed to assess whether the actual costs and benefits match those predicted.

3.6 Extreme/low probability events

The majority of guidance documents endorse the use of high and low targets/ flows to increase flexibility in the decision-making process (e.g. Royal Institute of Technology 2003). This is considered through the use of different scenarios in the DfT (2005) guidance (i.e. pessimistic (low growth), central and optimistic (high growth) scenarios).

Scottish Executive Development Department (2002) and DfT (2001) apply probabilities to quantified information to assess the impacts of extreme events. High and low probability events of data are built-into response curves and focus is placed on the performance of the economy and the price or availability of a commodity such as employment, household incomes and noise. These are then analysed to assess which one is the 'best' match for the objectives. In addition to this, contingencies are included in the costs estimates of the Highways Agency (2004) guidance to forecast any extreme changes to traffic, infrastructure or local forecasts. DfT (2003) assigns probability weights to its benefit cost ratios and sets them to very low and high levels.

4. The baseline

4.1 What is the baseline?

The typical baseline is the do-nothing option such that there is an absence of any measure of control or intervention. This is seen in:

- Environment Agency (2003);
- Defra (2001 and 2003);
- SEERAD (2002);
- Defra & EA (2005);
- Collaborative Research Programme on River Basin Management Planning Economics (2005); and
- DfT (2004).

Other appraisal processes use do-minimum as the baseline; this is used in many of the Department for Transport appraisal processes (DfT (2001), DfT (2002); DfT (2003); DfT (2004); DfT (nd); and DfT (2005)). Scottish Executive Development Department (2002) also uses do-minimum as the baseline.

4.2 How is the baseline assessed?

In conditions where the baseline is taken as do-nothing, the Defra & EA (2005) guidance states that it is assessed through '*an abandonment of the defences and a complete write-off of all the properties affected once a failure has occurred'.* Depending on the nature of the project, the data can be collated through means of census data as is shown in the SEERAD (2002) guidance, or by quantifying the natural background concentrations of pollutants in groundwater (Görlach & Interwies 2003).

However under the do-minimum option (as in DfT 2001), the baseline is assessed by using information on current technologies and activities, using the business as usual projections and preventing the introduction of any new technologies to the level of service. Do-minimum should be considered as one of the options being appraised as well as being the baseline.

5. Uncertainty and sensitivity

5.1 How is uncertainty taken into account?

Uncertainty is dealt with in various ways throughout the appraisal processes used in other fields. DfT (2002) and Defra & EA (2005) deal with uncertainty through sensitivity analysis and scenario analysis, where low and high probability ratings are used and input data has to be tested for sensitivity. UKCIP (2003) only assesses uncertainty through investigating different scenarios, where these are linked to the UKCIP climate change scenarios. The Collaborative Research Programme on River Basin Management Planning Economics (2005) appraisal process uses expert judgement in combination with the sensitivity analysis. The Federal Environment Agency (2004) guidance suggests that sensitivity analysis is used to '*investigate the extent to which the result of investigation may be altered by a slight change to one of the parameters'.* Only in the Royal Institute of Technology (2003) is uncertainty not taken into account; although it is recognised as having some merit and being a valuable component to cost analysis.

5.2 Climate change

About 50% of the guidance documents incorporated climate change in some form or another in the project development. For example, in UKCIP (2003) and UKCIP (2004), climate change is the main focus of the appraisal process. One of the stated aims of these guidance documents is to ensure that option appraisal takes full consideration of the potential implications of climate change. Likewise in the appraisal processes set out in DfT (2001 and 2005), where climate change is made a key indicator by including it into the Appraisal Summary Table and listing the level of greenhouse gas emissions as an appraisal objective.

Alternatively, climate change is taken into account by looking at future economic considerations. This is done in OST (nd) guidance by looking at flooding rates, land use, precipitation and sea level changes to help predict possible scenarios in future. Furthermore, the Collaborative Research Programme on River Basin Management Planning Economics (2005) captures climate change through the use of carbon tax in the cost analysis of environmental costs and benefits. HR Wallingford (2006) uses climate change as a driver behind its (water resource) supply-demand curves. The purpose of taking climate change into account is stated as being to help monitor and adapt projects such any negative impacts as a result of climate change could be described, predicted and assessed.

5.3 Sensitivity analysis

Sensitivity analysis focuses on how the appraisal will be affected by varying the projected values. It is addressed in the Collaborative Research Programme on River Basin Management Planning Economics (2005) guidance through a detailed analysis of the key issues, and identifying switching points. DfT (2004)

states that sensitivity tests should be carried out on '*variables which are both uncertain in the local context and likely to affect the COBA result significantly'.* The Benefits Assessment Guidance (Environment Agency 2003) performed sensitivity analysis on each benefit value calculated as a way of considering realistic changes to the input data. Overall sensitivity to non-use benefits is included by calculating the benefit-cost ratio with or without non-use benefits. Similarly, the Guidance on Economic Appraisal in the Environment Agency (Environment Agency nd) takes sensitivity analysis into account by varying the values assigned to uncertain variables or, alternatively, by calculating the degree of variation in a particular variable which would then reduce the net present value (NPV) to zero.

However, not all of the appraisal processes used in other fields take sensitivity analysis into account. For example, the Federal Environment Agency (2004) guidance only mentions sensitivity testing as one of the measures potentially affecting future effectiveness of projects.

5.4 Use of scenarios

HR Wallingford (2006) demonstrates differences in terms of how acceptable options may be under different scenarios. The scenarios used are linked to those developed in Foresight, with acceptability based on the likely attitudes under each scenario. Thus, under world markets, views are largely about capitalism and global expansion, whereas under global sustainability, attitudes are much more sympathetic to the environment. The appraisal process is used as a way of considering which options are viable and whether these options are feasible under all the different scenarios; i.e. whether new legislation, economic instruments would be required to make a particular option feasible.

Different approaches to using scenarios are identified throughout the guidance documents. On one hand, Federal Environment Agency (2004) uses scenarios as a more complex way of assessing trade-offs, and on the other in DfT (2003), DfT (2005) and Dft (nd), scenarios are only undertaken for do-minimum and do-something options. Furthermore, the DfT (2004) guidance employs scenarios as alternatives to the baseline.

The Collaborative Research Programme on River Basin Management Planning Economics (2005) assesses scenarios through the means of a tabular summary, which compares all the information from the appraisal, including effectiveness, uncertainty and non-quantifiable attributes.

6. Discounting

6.1 Time horizon

The typical time horizon depends on the type of project being appraised. Generally, if it is one related to FCERM then the time horizon is either 50 or 100 years. Comparable time horizons are found in:

- the Federal Environment Agency (2004); and
- Royal Institute of Technology (2003) guidance documents.

Otherwise, other typical examples of time horizon for full CBA include:

- the Benefits Assessment Guidance, OST (nd) and DfT (2003): 25 years (from year 0 to year 24);
- DfT (2004), HR Wallingford (2006), Scottish Executive Development Department (2002), DfT (2002), DfT (2004) and DfT (2005): 30 years;
- Highways Agency (2004): 60 years (stated as being a result of the size and complexity of road systems and parameters used for assessment).

6.2 Adjustments for risk and optimism bias

Few guidance documents make reference to risk adjustments or optimism bias. The following are some of the statements extracted from the documents.

The (DfT 2004) guidance notes:

'*the potential impact of benefit optimism bias should be tested through sensitivity and scenario testing. The size of the optimism bias adjustment required may reduce as project definition improves and/or as risks are identified and taken into account*'.

Furthermore, scheme costs in DfT (2004) are required to include all allowances for optimism bias. Optimism bias in Görlach & Interwies (2003) is mainly taken into account when valuing benefits, and is used to correct and value natural resources. The DfT (2002) guidance undertakes a risk assessment to better identify the required level for the optimism bias. The Highways Agency (2004) appraisal process includes an adjustment factor, which takes into account uncertainty to help reflect the optimism bias. The adjustment factor can be reduced if a risk assessment is undertaken.

7. Decision-making

7.1 Decision rules

The decision rules identified throughout the appraisal processes used in other fields are based on three aspects:

- choosing the least-cost and most cost-effective option;
- following high level government legislation; and
- achieving environmental benefits.

Federal Environment Agency (2004) aims to identify the most cost-efficient combinations of measures. The appraisal process bases this on a number of factors:

- probability of achieving targets within the time horizon;
- ecological effectiveness of the measures; and
- time scale at which effectiveness is achieved.

HR Wallingford (2006) ranked options in terms of cost, weighted score (based on the extent that the objectives are achieved), reliability (i.e. whether the option will deliver the predicted reduction in the water resource supply-demand deficit) and flexibility (i.e. the ability that the option can be modified in the future if necessary). This helps to group together all comparable options. The best performing options are then added to the 'best' combination of options in rank order until the target reduction in the water resource supply-demand deficit was achieved. A combination of options was required because the predicted water resource deficits could not be met by one option alone.

Environment Agency (2003), Scottish Executive Development Department (2002), DfT (2002), DfT (2004) and Defra & EA (2005) also determine the least-cost and most efficient sets of measures necessary to meet the project objectives.

The European Chemicals Bureau (2003) guidance notes that project appraisal schemes must abide by a set of high level Government publications. The current legislation is set out to help markets make better environmental decisions and changes. By realising regional and national objectives, the DfT (2002) guidance believes that problems could be reduced or removed, efficient distribution is ensured, and there is equity, affordability, financial sustainability, practicality and public acceptability of schemes. The DfT (2001) guidance on the other hand, believes that decisions are limited by current legislation, as a result, alternatives must be incorporated into schemes and consultation is required.

The decision rule in the Collaborative Research Programme on River Basin Management Planning Economics (2005) guidance is to apply greater effort and have more detailed approaches to water management issues and areas with

conflicts in terms of environmental, economic and social issues. OST (nd) and SEERAD (2002) choose to assess and identify the key controls necessary to achieve ecologically and economically sustainable flows for flooding patterns and crop farming respectively. Similarly, the Guidance on Economic Appraisal in the Environment Agency appraisal process aims to reduce flooding risks to an acceptable level at the same time as increasing environmental benefits.

7.2 Taking account of key issues

The appraisal processes used in other fields set criteria according to key issues to ensure that the appraisal is undertaken against these criteria. One way to take account of key issues is to focus on a series of descriptors from which performance against the objectives can be measured. The Federal Environment Agency (2004) appraisal process uses a series of tables/matrices to focus effort on the key issues. HR Wallingford (2006) uses scores and weights to compare options against the objectives, with reasons for assigning particular scores and weights recorded in summary tables. Cost, reliability and flexibility are considered alongside the weighted scores when ranking options. Additionally, the DfT (2004) guidance uses Appraisal Summary Tables to highlight key aspects of the appraisal.

On the other hand, Environment Agency (2003) focuses on spending more time on significant benefit areas. If uncertainties are too large, the DfT (2004) guidance model requests that additional data is collected and recorded. However, the Guidance on Economic Appraisal in the Environment Agency only looks at net present value and benefit-cost ratio values as key components to the appraisal scheme.

7.3 Distributional issues and vulnerability

Distributional issues and vulnerability are commonly dealt with in the appraisal processes by incorporating socio-economic approaches, which take into consideration all stakeholders and assess any discrepancy between them (Defra & EA 2005). The Collaborative Research Programme on River Basin Management Planning Economics (2005) guidance also states that distributional issues are based on economic and financial considerations, and the extent to which the polluter pays. The Multi-Modal Transport Appraisal Investment guidance (DfT nd) gives benefits to those on low incomes a higher weighting. Furthermore, the DfT (2003) guidance performs an audit to gage which are the vulnerability groups in the local economy; whilst DFT (nd-a) bases distributional issues on a willingness to pay approach. In addition, the DfT (2005) guidance performs a risk assessment on the cost benefit analysis to take into consideration different income groups. This is to help identify if an action is justifiable when benefits outweigh costs.

Distribution or vulnerability issues are highly dependent on the type of appraisal being undertaken. Görlach & Interwies (2003) does not base such issues on socio-economic grounds as such, but rather on geographical terms. For this

guidance, distribution and vulnerability issues are only related to pollution in terms of areas most likely to be affected, rather than targeting specific groups. DfT (2001) calculates the probability of high and low events and models the results into response curves.

7.4 Residual risk

The majority of appraisal processes used in other fields did not appear to calculate residual risk as part of project appraisal. There are however three exceptions:

- UKCIP (2003) highlights the necessity to identify the level of residual risk, and to acknowledge the residual risk;
- HR Wallingford (2006) calculates the overall weighted scores, which indicates the extent to which an option meets all the objectives. A score of less than 100% indicates that some residual risk exits; and
- in Defra & EA (2005), the residual risk represents the maximum amount a farm is willing to pay and still be able to cover input costs.

7.5 Consultation

In DfT (2001 & 2003), Defra (2003) and Scottish Executive Development Department (2002), consultation takes place at an early stage. In DfT (2003), consultation takes place at the first stage of project appraisal, such that the scheme preparation stage includes the opinions and information presented during the consultation. Alternatively, the Defra (2003) guidance takes a more thorough approach by conducting consultation at the beginning of every stage to ensure that stakeholders have a clear role to play. Thus, all assumptions are explicit and the appraisal is fully transparent. Defra (2003) and the Federal Environment Agency (2004) consider consultation an integral part of the appraisal process.

On the other hand, consultation with stakeholders in the Collaborative Research Programme on River Basin Management Planning Economics (2005) and in the European Chemicals Bureau (2003) is undertaken at a later stage, after the cost-effectiveness analysis was performed and the risk evaluation process. No consultation is performed in the Benefits Assessment Guidance (Environment Agency 2003), although the guidance notes that the identification of schemes did draw on complaints from Members of the Public on environmental conditions of rivers, lakes, etc. made in the past.

Although consultation was performed at a various stages in the different guidance documents, it is evident that stakeholder opinions are recognised as an integral component to the appraisal processes.

7.6 Approaches to prioritisation

HR Wallingford (2006) ranks options in order of performance against the key objectives. The 'best' options are selected to build up combinations which help to meet the required target. By using economic appraisal schemes such as the CBA, DfT (nd-a) uses a ranking criterion in order to deal with prioritisation. As a result, the guidance ranked options in order of performance against the key objectives. In the case of Defra & EA (2005), conservation values are given priority over other values.

7.7 Post project appraisal

Post project appraisal in the majority of cases is unknown.

Task B2 Report

Appendix 1

Completed proformas for Task B2
(review of appraisal processes used in other fields)

Appraisal process	Page
Collaborative Research Programme on River Basin Management Planning Economics 2005. Development of a methodology to determine cost-effectiveness of measures and combinations of measures for the Water Framework Directive (WFD)	3
Countryside Agency for Wales *et al*. 2004. Strategic Environmental Assessment and biodiversity: a guidance for practitioners	5
Defra 2001. An economic analysis to inform the review of the objectives for particles air quality strategy, London: Defra	7
Defra 2003. Use of multi-criteria analysis in air quality policy, prepared by Philips & Stock, November 2003	9
Defra & EA 2005. Development of tools for the multi functional economic valuation of wetlands: economic valuation of multi-functional wetlands: methods and techniques, London: Defra, Flood Management Division	11
Department for Transport 2001. A project appraisal framework for ports, London: DfT	13
Department for Transport 2002. Economic assessment of road maintenance: QUADRO manual, London: DfT	15
Department for Transport 2003. Guidance on preparing an economic impact report, prepared by Steer Davies Gleave, London: DfT	17
Department for Transport 2004. Economic assessment of road schemes: COBA11 manual, London: DfT	19
Department for Transport 2004. TUBA Guidance, Mott MacDonald, Winchester: DfT	23
Department for Transport 2005. Transport Analysis Guidance (TAG), ITEA Department for Transport, London: DfT	25
Department for Transport nd. Multi modal transport appraisal investment, London: DfT	27
Department for Transport nd-a. Major scheme appraisal in Local Transport Plans: Part 3, London: DfT	29
Environment Agency nd. Guidance on economic appraisal in the Environment Agency, Bristol: EA	31
Environment Agency 2003. Assessment of benefits for water quality and water resources schemes in the PR04 environment programme (Benefit Assessment Guidance, BAG), Part Two: Rivers and Groundwater, Bristol: EA	33
European Chemicals Bureau 2003. Technical Guidance Document (chemical risk management), JRCA-Ispra (VA), Italy	35
Federal Environment Agency 2004. Basic principles for selecting the most cost-effective combinations of measures for inclusion in the programme of measures as described in Article 11 of the Water Framework Directive (German Handbook), Berlin.	37
Görlach, B. & E. Interwies 2003. Economic assessment of groundwater protection: a survey of the literature, Berlin: Ecologic	39
Highways Agency 2004. Short Project Appraisal Report guidance notes, Department for Transport, London: DfT	41
HR Wallingford 2006. Climate change impacts and adaptation – cross-regional research programme, Project C Water for Defra/Environment Agency	43
HSE 2001. Reducing risks, protecting people, HSE's Decision-Making Process, Suffolk: HSE Books	46
Institute of Public Health 2006. Health Impact Assessment: A short guide, Ireland	48

Appraisal process Page

Jacobs 2006. Guidance on the evidence required to justify disproportionate cost decisions under the Water Framework Directive, Project 3 for the Collaborative Research Project 50

OST nd. Foresight Future Flooding Scotland 52

Royal Institute of Technology 2003. Mining impacts on the freshwater environment: technical and managerial guidelines for catchment scale management (ERMITE), European Commission Fifth Framework Programme, Sweden 54

RSPB 2002. Wise use of floodplains: guidance on options, EU-Life Environment Project, Sandy: RSPB 56

Scottish Executive Development Department 2002. Economic assessment of road schemes in Scotland, The NESA manual 1, Edinburgh 58

SEERAD 2002. Evaluating the economic impact of irrigation controls, prepared by Macaulay Land Use Research Institute and Cambridge University Farm Potato Agronomy Unit, Aberdeen 60

SEPA 2000. Ponds, pools and lochans: guidance on good practice in the management and creation of small waterbodies in Scotland, Stirling 62

SEPA 2000a. Watercourses in the community: a guide to sustainable watercourse management in the urban environment, Stirling 64

SNIFFER *et al*. 2003. Identification and designation of Heavily Modified Water (HMWB) and Artificial Water Bodies (AWB), CIS Working Group 2.2, Copenhagen 66

UKCIP 2003. Climate change adaptation, risk, uncertainty and decision-making, UKCIP Technical Report, May 2003 68

UKCIP 2004. Strategic Environmental Assessment and climate change, Guidance for Practitioners 70

Villa *et al*. 2002. Zoning Marine Protected Areas through Spatial Multiple-Criteria Analysis, in Conservation Biology, Vol.**16**/No.2, April 2002, pp515-526 72

The views and comments included in the proformas are those of the project team and not of Defra and/or the Environment Agency.

Review of: Development of a methodology to determine the cost effectiveness of measures and combinations of measures for the WFD

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CEA and calculating disproportionate costs (p.ii)
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	By enabling the development of cost effective measures for achieving alternative water quality status (p.i); ensuring all relevant costs are taken into account; and that there are consistencies across sectors (p.x)
What level of effort/resources is required?	Not known
How does the appraisal process take account of different levels of decision-making?	By using a staged approach in the methodology. These stages are useful staging posts for stakeholder interaction and analysis both at the level of individual problems and across all the measures (p.A_11)
How are the different levels related (in terms of information, etc.)?	There are screening out of measures that are less cost effective and likely to be of higher costs or not feasible p.A_3
Is the appropriate level of detail/resources for each level discussed? If so, how?	A detailed account of what all stages in the methodology involve is explained in the introduction (part A); additionally, working examples of pilot studies are also provided
How is consistency between different scales ensured?	The differences between local, sub-regional, regional and national scales have been separated into local/sub-regional components and regional/national components. This is done because certain types of costs will not be significant for each scale, it allows for the level of detail to be increased and more focus can be placed on addressing uncertainty (p.A_13,14)
What is the baseline?	The absence of any measures or control under the WFD (p.C_13), i.e. do nothing (p.A_12)
How is the baseline assessed?	By using information on current technologies and activities, using the business as usual projections, and including the changes to market trends
How is uncertainty measured/recorded/taken into account?	Uncertainty is dealt with in various ways: through sensitivity analysis, expert judgement, and a combination of expert judgement and sensitivity analysis (p.1_9)
What time horizon is used for appraisals?	6 yrs p.A_9
How is optimism bias taken into account in	Not known, although it is considered as a

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
the costs of options?	possible component (p.C_20)
What decision rules are used?	Apply greater effort and have more detailed approaches to water management issues and areas with conflicts in terms of environmental, economic and social issues (p.i)
How are the key issues in terms of the decision making focused on in the appraisal?	A tabular summary of all the possible CEA measures helps ensure that there is consistency in the decision-making stages (p.xi)
How is climate change taken into account?	It is captured through the use of carbon tax in the cost analysis of environmental costs and benefits (p.C_30)
How are different scenarios accounted for?	Through the means of a tabular summary which is used to compare all the information on costs, effectiveness, uncertainty and non-quantified attributes (p.xi)
How is sensitivity analysis undertaken?	Sensitivity analysis focuses on how the appraisal will be affected by varying the projected values and is addressed by a detailed analysis of the key issues, and identifying switching points (p.C_43)
Is guidance available (this will be known from the completed proforma from Task A1)?	
What action is taken/required to ensure consistency across different appraisals?	A tabular summary (p.xi)
Does the appraisal process take account of extreme/low probability events? If so, how?	p.B_21 part B effectiveness, type of probability distribution
How are distributional issues/vulnerability of different groups taken into account?	Distributional issues are based on economic and financial considerations, economic viability and the extent to which the polluter pays (p.A_2)
How are residual risks assessed and presented?	Not known
When is consultation with local stakeholders/ communities to be undertaken?	Consultation with stakeholders will be undertaken in conjunction with the cost-effectiveness analysis (p.A_8)
Does the appraisal process include any method for prioritisation? If so, how?	CEA provides a method for prioritising (p.A_16)
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners June 2004	**Comments/description/ reference**
What appraisal methodology is used?	
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Environmental impacts assessment aspects
What level of effort/resources is required?	Moderate to high
How does the appraisal process take account of different levels of decision-making?	Guidance includes different level of decision, from project to policy and plans
How are the different levels related (in terms of information, etc.)?	(Pg 8) From project SEA, great level of detail and narrowest range of options, to policy SEA, less detail, widest range of options;
Is the appropriate level of detail/resources for each level discussed? If so, how?	Limited information given
How is consistency between different scales ensured?	Toolkits proposed to assess relation between different levels, e.g. an external compatibility matrix can plot the strategic plan/action (normally as a whole) against other relevant (normally higher- and equal-level) strategic plans/actions (S 6.11; Pg 86)
What is the baseline?	Description of current environmental conditions and how these would be expected to change in the absence of the proposed plan.
How is the baseline assessed?	Based on data and consultation; qualitative and quantitative description (S 4.5; Pg 39)
How is uncertainty measured/recorded/taken into account?	Sensitivity analysis proposed as a toolkit
What time horizon is used for appraisals?	No information given
How is optimism bias taken into account in the costs of options?	No information given
What decision rules are used?	Different tools presented: MCA, Spatial analysis techniques, Land-use partitioning analysis, Integrated Habitat System, Network analysis etc (S 6)
How are the key issues in terms of the decision making focused on in the appraisal?	No information given
How is climate change taken into account?	Under baseline description, but not in great detail

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners** **June 2004**	**Comments/description/ reference**
How are different scenarios accounted for?	Scenario analysis as a toolkit for decision making (S 6)
How is sensitivity analysis undertaken?	S 6.7 (Pg 83) includes sensitivity analysis as a key tool used in identifying, predicting, evaluating and mitigating strategic-level impacts on biodiversity but refer the reader to another reference and does not explain it in detail.
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes
What action is taken/required to ensure consistency across different appraisals?	External compatibility matrix can plot the strategic plan/action (normally as a whole) against other relevant (normally higher- and equal-level) strategic plans/actions (S 6.11; Pg 86)
Does the appraisal process take account of extreme/low probability events? If so, how?	No; although probability of impacts is one of the criterion of the assessment
How are distributional issues/vulnerability of different groups taken into account?	Vulnerability analysis as a tool to assess impacts (S 6.9; Pg 84) but receptors are not just different groups but also flora and fauna, landscape, etc
How are residual risks assessed and presented?	Limited information given (residual impacts from mitigation)
When is consultation with local stakeholders/ communities to be undertaken?	Before decision is taken (S 4.10; Pg 51)
Does the appraisal process include any method for prioritisation? If so, how?	Limited information given
Is post project evaluation undertaken (or has it for particular projects)?	Limited information given

Review of an economic analysis to inform the review of the air quality strategy objectives for particles

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **An Economic Analysis to Inform the Review of the Air Quality Strategy Objectives for Particles**	**Comments/description/ reference**
What appraisal methodology is used?	Cost-benefit analysis
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Hardly any similarities; Valuation of health impacts for this report is based on dose-response data and valuation undertaken for other policy context but adapted to air quality context
What level of effort/resources is required?	High
How does the appraisal process take account of different levels of decision-making?	No account of different levels of decision making
How are the different levels related (in terms of information, etc.)?	N/a
Is the appropriate level of detail/resources for each level discussed? If so, how?	N/a
How is consistency between different scales ensured?	N/a
What is the baseline?	Business as usual - Baseline annual PM10 emission projections for 2010 and beyond, which incorporate the impact of currently agreed policy measures, are presented (Table 2.2.; Pg 19)
How is the baseline assessed?	Health impacts are assessed, based on dose-response data and other data e.g., daily deaths, hospital admissions for the treatment of respiratory diseases, etc.
How is uncertainty measured/recorded/taken into account?	Qualitative assessment of uncertainties and more specific sensitivity analysis undertaken (S 3.10; Pg 71)
What time horizon is used for appraisals?	Effects assessed up to 2110
How is optimism bias taken into account in the costs of options?	No
What decision rules are used?	No decision rule applied
How are the key issues in terms of the decision making focused on in the appraisal?	No mention of key issues
How is climate change taken into account?	No
How are different scenarios accounted for?	Different scenarios used to predict emissions and concentrations, e.g. transport scenarios to illustrate the cost effectiveness of a range of potential technological measures, population scenarios

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **An Economic Analysis to Inform the Review of the Air Quality Strategy Objectives for Particles**	**Comments/description/ reference**
How is sensitivity analysis undertaken?	Monte Carlo analysis on the total cost curve for reductions in PM10 emissions and sensitivity on discount rate of costs (S 3.10.2; Pg 73). For benefits: sensitivity analyses include some different populations and lengths of follow up, different reductions in mortality rate for the long-term effects and some different health effects (S 4.13; Pg 93).
Is guidance available (this will be known from the completed proforma from Task A1)?	No
What action is taken/required to ensure consistency across different appraisals?	N/a
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	Distributional issues not taken into account
How are residual risks assessed and presented?	No mention of residual risk
When is consultation with local stakeholders/ communities to be undertaken?	No consultation undertaken
Does the appraisal process include any method for prioritisation? If so, how?	No
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of: Use of Multi-Criteria Analysis in Air Quality Policy

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	Comparison between MCA and CBA
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Yes there are, similar assessment and developing project methodology
What level of effort/resources is required?	Minimal, use of the Green Book and the MCA Manual, as well as some periodical consultation exercises with participants
How does the appraisal process take account of different levels of decision-making?	It follows the stages of the CBA defined in the FCGPAG3 and the MCA stages from the MCA Manual
How are the different levels related (in terms of information, etc.)?	Each stage follows on from the previous stage with a comparison between the appraisals
Is the appropriate level of detail/resources for each level discussed? If so, how?	Lack of detail, however there is an worked example towards the end
How is consistency between different scales ensured?	Tables summarising all the necessary steps and procedures needed are included. Additionally, a 'do nothing' option ensures a level playing field for each model
What is the baseline?	Do Nothing option
How is the baseline assessed?	No statement on how it is assessed
How is uncertainty measured/recorded/taken into account?	There is no statement as to how this taken into account, just a brief description
What time horizon is used for appraisals?	None known
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Ensuring economic efficiency using threshold CBA
How are the key issues in terms of the decision making focused on in the appraisal?	They were closely linked since workshops were undertaken with participants to ensure only key information for appraisals and decision making was used
How is climate change taken into account?	It is one of the weighting criteria for the sensitivity analysis
How are different scenarios accounted for?	Scenarios are used in the sensitivity analysis
How is sensitivity analysis undertaken?	Sensitivity analysis is undertaken on the costs of each option to ensure robustness
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed in Task A1
What action is taken/required to ensure	Training was given to all those involved

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
consistency across different appraisals?	
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	Not taken into account
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Consultation takes place at the beginning of every stage
Does the appraisal process include any method for prioritisation? If so, how?	The budget ratio of all projects are organised in terms of their increment of benefit to increment of cost
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of: Economic Valuation of Multi-functional Wetlands: Methods and Techniques

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA, cost-effectiveness analysis and MCA
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Economic valuation of wetland goods and services; and maintenance of ecosystem functions through careful management decisions (p.6)
What level of effort/resources is required?	Defra PAG3, the 'Green Book', the Multi-Coloured Handbook, the EU WFD, and Making Space for Water
How does the appraisal process take account of different levels of decision-making?	Not known
How are the different levels related (in terms of information, etc.)?	Everything must be in line with the policies set out in the Treasury's 'Green Book' and the Government Strategy 'Making Space for Water'
Is the appropriate level of detail/resources for each level discussed? If so, how?	Each stage is described in detail on a chapter by chapter basis
How is consistency between different scales ensured?	Not known
What is the baseline?	The do-nothing option
How is the baseline assessed?	By assuming "an abandonment of the defences and a complete write-off of all the properties affected once a failure has occurred" (p.154)
How is uncertainty measured/recorded/taken into account?	Uncertainty is dealt with by using sensitivity analysis (p.96) and scenario analysis using five different scenarios (p.159)
What time horizon is used for appraisals?	10 years
How is optimism bias taken into account in the costs of options?	Not known, the paper recognises all areas of the cost-effectiveness analysis that may introduce bias but does not provide any information on how to take it into account
What decision rules are used?	To determine the least-cost, or more cost-effective, set of measures necessary to meet the water quality standards (p.6)
How are the key issues in terms of the decision making focused on in the appraisal?	Not known
How is climate change taken into account?	By incorporating hard and soft engineering defence maintenance managed realignment as one for the options p. 141;157
How are different scenarios accounted for?	Using scenario analysis, where they are all are compared with one another see Case Study C pp150-162

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
How is sensitivity analysis undertaken?	A range of estimates/parameters are used to represent different possible future scenarios (p.96)
Is guidance available (this will be known from the completed proforma from Task A1)?	No
What action is taken/required to ensure consistency across different appraisals?	Not known
Does the appraisal process take account of extreme/low probability events? If so, how?	Stage one of the analytical stage uses the Wetland Evaluation Technique which incorporates a probability rating (p.24)
How are distributional issues/vulnerability of different groups taken into account?	Stage 5 of the appraisal incorporates the existing socio-economic approaches, which take into consideration all stakeholders and distributional issues amongst these, p.23
How are residual risks assessed and presented?	It is assumed to be the returns to water and represents the maximum amount a farm is willing to pay and still be able to cover input costs p.82
When is consultation with local stakeholders/ communities to be undertaken?	Not known, although there definitely is a consultation stage
Does the appraisal process include any method for prioritisation? If so, how?	Conservation values are given priority over other values (p.18;108)
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of: A Project Appraisal Framework for Ports

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA is adjusted to suit different types of appraisal models
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	None
What level of effort/resources is required?	Not known
How does the appraisal process take account of different levels of decision-making?	There are 4 levels: scheme description; objectives and processes; framework; appraisal stage
How are the different levels related (in terms of information, etc.)?	Depending on the funds available for schemes, i.e. if the capital costs are in excess then the full stage of appraisal would not be necessary
Is the appropriate level of detail/resources for each level discussed? If so, how?	Not much detail is given on each individual stage as this would vary too much from scheme to scheme
How is consistency between different scales ensured?	Any information used comes from the same source (Environmental Assessment of Habitat Regulation), and this should maintain consistency and keep things simple
What is the baseline?	Do minimum
How is the baseline assessed?	Assessment of what could happen to the area if the scheme does not take place; take into account that no new investment would be permitted to keep the port in operation
How is uncertainty measured/recorded/taken into account?	There are sub-objectives which implies that there is an option available, but the probability of the option actually being used is unknown
What time horizon is used for appraisals?	Not known
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Decisions are limited by current legislation, alternatives must be incorporated into schemes, and consultation is required
How are the key issues in terms of the decision making focused on in the appraisal?	The key issues are an integral component of the decision making process
How is climate change taken into account?	Climate is a key indicator in the appraisal and this is incorporated by using CO_2 emissions data
How are different scenarios accounted for?	Not taken into account
How is sensitivity analysis undertaken?	Not taken into account
Is guidance available (this will be known from	Yes, but minimal guidance – reviewed in

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
the completed proforma from Task A1)?	Task A1
What action is taken/required to ensure consistency across different appraisals?	None known
Does the appraisal process take account of extreme/low probability events? If so, how?	Yes, mainly when considering models on the regeneration of ports. Quantifiable information especially in terms of high unemployment and low household incomes, and noise frequency/level is incorporated into the response curves
How are distributional issues/vulnerability of different groups taken into account?	See above
How are residual risks assessed and presented?	Risks are considered but there is no explanation as to how to assess and present it
When is consultation with local stakeholders/ communities to be undertaken?	At the early stage of decision making process
Does the appraisal process include any method for prioritisation? If so, how?	Not taken into account
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of Economic Assessment of Road Maintenance: QUADRO Manual

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Economic Assessment of Road Maintenance: QUADRO Manual	**Comments/description/ reference**
What appraisal methodology is used?	Looks for least-cost option, but allows benefits (non-monetised) to be included in decision-making (CBA)
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Linked to maintenance works, but is related to roadworks
What level of effort/resources is required?	Data has to be collected and processed to feed into AUQDRO program, but the program runs the scenarios, etc.
How does the appraisal process take account of different levels of decision-making?	Only in terms of whether there is are unit of work or more
How are the different levels related (in terms of information, etc.)?	Not relevant
Is the appropriate level of detail/resources for each level discussed? If so, how?	The QUADRO Manual sets out what information is required for validation purposes which gives an indication of the detail needed
How is consistency between different scales ensured?	Consistency between different projects is ensured by use of common approaches and the program's requirements
What is the baseline?	Do-minimum maintenance works (but not clearly specified)
How is the baseline assessed?	As one of the options being appraised
How is uncertainty measured/recorded/taken into account?	Low and high traffic growth scenarios are used and input data has to be tested for sensitivity
What time horizon is used for appraisals?	30 years
How is optimism bias taken into account in the costs of options?	The manual requires a risk assessment to be undertaken to better identify what level of optimism bias should be applied
What decision rules are used?	Least-cost option is preferred
How are the key issues in terms of the decision making focused on in the appraisal?	More time is to be spent on the most significant costs
How is climate change taken into account?	Not relevant (maintenance works of road schemes)
How are different scenarios accounted for?	Low and high traffic growth scenarios are run using the QUADRO program
How is sensitivity analysis undertaken?	Not specified, but requests sensitivity testing of input data
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes: QUADRO Manual is available online or for download

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Economic Assessment of Road Maintenance: QUADRO Manual	**Comments/description/ reference**
What action is taken/required to ensure consistency across different appraisals?	There are specific data requirements as they have to feed into the computer program. The guidance manual focuses on how to collect and calculate the required information
Does the appraisal process take account of extreme/low probability events? If so, how?	Not really, although road traffic accidents are included as are breakdown of vehicles (suing probabilities that such events would occur by road type)
How are distributional issues/vulnerability of different groups taken into account?	Not taken into account
How are residual risks assessed and presented?	Not known
When is consultation with local stakeholders/ communities to be undertaken?	Not known – not covered in the guidance
Does the appraisal process include any method for prioritisation? If so, how?	No – least-cost option is selected, but links to COBA Manual so may use same approach
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of: Guidance on Preparing an Economic Impact Report

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA to capture the economic impacts and benefits in the transport industry
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	None
What level of effort/resources is required?	Information is required on the employment statistics for each regeneration area (in order to assess how the economy operates and what levels of transport are needed for businesses), as well as land-use and transport models are needed
How does the appraisal process take account of different levels of decision-making?	Not taken into account
How are the different levels related (in terms of information, etc.)?	The initial process of data collection from each stage is based on qualitative information
Is the appropriate level of detail/resources for each level discussed? If so, how?	Information is given as to what type of data is required, but there is little detail on how to assess it and collect it
How is consistency between different scales ensured?	Having the same type of information for each stage (i.e. qualitative) maintains the structure of data collection and analysis
What is the baseline?	Do minimum
How is the baseline assessed?	This includes all the future changes known to happen to infrastructure and land-use, but does not include the proposed scheme. Do minimum is used as a reference point.
How is uncertainty measured/recorded/taken into account?	Where there is uncertainty in the data, ranges should be provided rather than single numeric outputs
What time horizon is used for appraisals?	Full CBA is undertaken within 25 to 30 years
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Schemes must lie entirely with a regeneration area (RA); or pass through a RA; begin or end at an RA while extending beyond it; be located close enough so that travel will be affected by a RA
How are the key issues in terms of the decision making focused on in the appraisal?	Not taken into account
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Scenarios only considered for do-minimum

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
How is sensitivity analysis undertaken?	Not taken into account
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes, but minimal guidance – reviewed in Task A1
What action is taken/required to ensure consistency across different appraisals?	Not taken into account in terms of the appraisals
Does the appraisal process take account of extreme/low probability events? If so, how?	Probability weights are assigned to travel and costs and accessibility to transport
How are distributional issues/vulnerability of different groups taken into account?	An audit is carried out to gage vulnerability groups especially in the local economy
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Consultation should be undertaken early at the first stage
Does the appraisal process include any method for prioritisation? If so, how?	Not taken into account
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of COBA

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: COBA	**Comments/description/ reference**
What appraisal methodology is used?	Cost-benefit analysis based on willingness to pay using market prices
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Similar to proposed Sugden approach
What level of effort/resources is required?	A computer program is used to calculate many of the costs and benefits, such that the main time/resources required is in obtaining data (some default data are also given). It is noted that 'Assessments should be progressive as the various stages of a scheme develop and as more information becomes available' (para 1.5, Vol 13, Part 3)
How does the appraisal process take account of different levels of decision-making?	There are no different levels as such, although different amounts of detail can be used
How are the different levels related (in terms of information, etc.)?	Not relevant
Is the appropriate level of detail/resources for each level discussed? If so, how?	Not relevant
How is consistency between different scales ensured?	Not relevant
What is the baseline?	Do-minimum forms the baseline and is the existing road network without modification (also termed do-nothing) (para 2.2, Vol 13, Part 1)
How is the baseline assessed?	The baseline includes consideration of increasing traffic growth in the future
How is uncertainty measured/recorded/taken into account?	It is recommended that the NPV be given to two significant figures (para 1.4, Vol 13, Part 3) The three main sources of uncertainty in COBA are identified (para 5.3, Vol 13, Part 3), requiring checks to be made and sensitivity tests to be carried out The outputs from COBA also have to be validated (Ch 11, Vole 13, Part 3)
What time horizon is used for appraisals?	A 30 year time horizon is used, with explanation given as to why a longer time period is not taken (para 5.1, Vol 13, Part 1)

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: COBA	**Comments/description/ reference**
How is optimism bias taken into account in the costs of options?	Capital cost optimism bias is to be assessed according to the guidance given in the MSA (Major Scheme Appraisal) (TAG unit 3.9.4). Para 6.20 (Vol 13, part 1) also notes that 'The potential impact of benefit optimism bias should be tested through sensitivity and scenario testing. The size of the optimism bias adjustment required may reduce as project definition improves and/or as risks are identified and taken into account'
What decision rules are used?	'The final result of a COBA analysis is expressed in terms of its 'Net Present Value' (NPV) and 'Benefit to Cost Ratio' (BCR)' (para 7.15, Vol 13, Part 2). 'When there is more than one 'Do-Something' option, an analysis of incremental BCRs is required. With limited funds available it is important to ensure that the best value for money is obtained from the expenditure. A procedure called incremental analysis should be carried out to ensure that while not only is the scheme economically justified, it also helps to maximise the benefits of the overall programme' (para 2.1, Vol 13, Part 3). Where the next higher option fails, the following option is considered against a lower cost option (e.g. A v B, B fails, so A v C)
How are the key issues in terms of the decision making focused on in the appraisal?	Appraisal Summary Tables are used to highlight key aspects of the appraisal
How is climate change taken into account?	Not relevant
How are different scenarios accounted for?	Low and high traffic growth scenarios are included (para 5.8, Vol 13, Part 3). It is also recommended that optimism bias be tested through scenario testing (para 6.20, Vol 13, Part 2)
How is sensitivity analysis undertaken?	Sensitivity tests are to be carried out on 'variables which are both uncertain in the local context and likely to affect the COBA result significantly' (para 5.4, Vol 13, Part 3). It is also noted that 'sensitivity tests are not costless to carry out and need to be considered carefully' (para 5.5)
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed under Task A1

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: COBA	**Comments/description/ reference**
What action is taken/required to ensure consistency across different appraisals?	The methodology is undertaken in a structured way to feed into the computer program. The outputs are also provided from the program in a series of summary tables. However, it is noted that COBA is only able to allocate the elements of the appraisal that the program calculates. There may be other significant costs and benefits that should be included in the decision making process (para 11.2, Vol 13, part 2). It also makes use of Appraisal Summary Tables (para 9.1, Vol 13, Part 3) 'One of the principal purposes of COBA is to provide a standard economic appraisal and a benchmark against which, if necessary, the sensitivity of returns to local variations can be measured. Where local data is both reliable and significantly different from national COBA values, it should be input to COBA and details of the local data should be supplied' (para 7.1, Vol 13, Part 3)
Does the appraisal process take account of extreme/low probability events? If so, how?	COBA can be used to estimate the costs of accidents
How are distributional issues/vulnerability of different groups taken into account?	The distribution of costs and benefits by group is recorded (Part 7, Vol 13). This allows who is obtaining the benefits/incurring the costs to be identified
How are residual risks assessed and presented?	Not covered
When is consultation with local stakeholders/ communities to be undertaken?	Consultation is included as a cost within the preparation of costs (para 7.3, Vol 13, Part 2). There is no mention of consultation while undertaking the appraisal

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: COBA	**Comments/description/ reference**
Does the appraisal process include any method for prioritisation? If so, how?	The trunk road programme budget is cash limited so it is not always possible to build every desirable scheme. Therefore, the best projects must be selected from the range of worthwhile schemes available. If the Government's objective was to maximise the economic benefits from the available funds the ratio of PVB to PVC, the benefit cost ratio (BCR), can be referred to, this indicates the scale of PVB in relation to cost. The possible use of BCRs to determine the relative merits of independent schemes means that all the economic benefits and disbenefits of a scheme should be estimated and not just those sufficient to ensure the 'Do-Something' option is preferred to the 'Do-Minimum' option (paras 1.2 and 1.3, Vol 13, Part 3) Prioritisation of which part of a scheme to build first is based on the NPV (para 4.8, Vol 13, Part 3), followed by consideration of the worth of each part of the strategy (para 4.10)
Is post project evaluation undertaken (or has it for particular projects)?	Not covered

Review of TUBA

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	Uses a willingness to pay methodology based on market prices
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	There are considerable similarities with the proposed Sugden approach
What level of effort/resources is required?	The approach is based on a computer model
How does the appraisal process take account of different levels of decision-making?	There are no different levels as such, but different types of transport, times, sectors, etc. are taken into account
How are the different levels related (in terms of information, etc.)?	Not relevant
Is the appropriate level of detail/resources for each level discussed? If so, how?	Not relevant
How is consistency between different scales ensured?	Not relevant
What is the baseline?	The do-nothing road network. It is not clear whether the baseline includes any works to keep the network in its current state (only mentioned in worked examples)
How is the baseline assessed?	The road network is modelled to determine traffic use at different times, by different types of vehicles, etc.
How is uncertainty measured/recorded/taken into account?	Sources of error from interpolation, extrapolation and the rule of a half are discussed and adjustments can be made, such as modelling additional years. Numerical integration is also included in TUBA to reduce uncertainty. The model also gives an error message if uncertainty is considered to be too large (with thresholds included)
What time horizon is used for appraisals?	Usually 30 years
How is optimism bias taken into account in the costs of options?	Scheme costs are required to include 'all allowances for optimism bias' (S5.3 of User Manual)
What decision rules are used?	The User Manual (S6.1.11) states that 'a summary of all monetised costs and benefits assessed by TUBA. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented may not provide a good measure of value for money and should not be used as a basis for decisions'

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
How are the key issues in terms of the decision making focused on in the appraisal?	The model requests key input data and requires additional data (e.g. for intermediate points) if uncertainties are too great
How is climate change taken into account?	Not relevant
How are different scenarios accounted for?	The approach uses scenarios as alternatives to the baseline
How is sensitivity analysis undertaken?	The guidance suggests using intermediate points within the model as a guide to whether benefit estimates are robust. There is also a sensitivity unit within the model that reports total user benefits as a percentage of costs and is used to test the sensitivity of the user benefits to the level of convergence in the transport model (S6.1.8 of the User Manual)
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed under Task A1
What action is taken/required to ensure consistency across different appraisals?	The model is used for all economic appraisals, but it does provide fully disaggregated results
Does the appraisal process take account of extreme/low probability events? If so, how?	Costs from accidents are excluded from TUBA and have to be added by the user
How are distributional issues/vulnerability of different groups taken into account?	The person types can be disaggregated to consider the value of time according to income. The spatial distribution of benefits is determined through disaggregation of zones within the road network
How are residual risks assessed and presented?	Not considered
When is consultation with local stakeholders/ communities to be undertaken?	Public consultation is included within the preparation and supervision costs
Does the appraisal process include any method for prioritisation? If so, how?	No method for prioritisation is included
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of Transport Analysis Guidance

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Transport Analysis Guidance	**Comments/description/ reference**
What appraisal methodology is used?	EIA and CBA (§1.8.5 TAG 2.1 p.12) and Net Present Value (§1.5.9 p. 5 TAG 2.7.1)
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Easily comprehensible, it enables a wide range of options to be considered, provides a means for testing preferred strategies or plans which take into account views of the public and transport providers (§1.1.3 & 1.1.4 TAG 1.2.2 p.1)
What level of effort/resources is required?	The Green Book, Appraisal and Evaluation in Central Government (§1.1 TAG 1. 1 p.1); two appraisal programs TUBA and COBA for the cost-benefit analysis; GIS modelling software for providing background information and displaying the information from the appraisal geographically; and specialist knowledge for modelling (§1.8.7 -1.8.10 TAG 2.1 p.12)
How does the appraisal process take account of different levels of decision-making?	The objectives of an appraisal must reflect government, local and regional strategic priorities and ensure targets and problems are efficiently addressed (Chapter 1 TAG 2.2)
How are the different levels related (in terms of information, etc.)?	All objectives must 'nest' within the central Government's five objectives (§1.4.3 p.5 TAG 2.2)
Is the appropriate level of detail/resources for each level discussed? If so, how?	Yes – each process of strategic objectives is discussed step by step covering why, how and what needs to be taken into account (Chapter 1 TAG 2.2)
How is consistency between different scales ensured?	Although consistency is acknowledged, no explanation is given §1.3.15 p.6 TAG 2.1
What is the baseline?	Do-minimum (TAG 2.1§ 1.4.5 p. 7)
How is the baseline assessed?	Do-minimum: used only when genuine committed changes are made to the existing schemes, if there are any expected trends in the level of service to be expected, and if there is no change to the level of service (§1.4.7 - 1.4.8 TAG 2.1 p. 7)
How is uncertainty measured/recorded/taken into account?	Uncertainty is taken into account in the estimation of costs and benefits (§1.8.1 p.7 TAG 2.7.1). However, there is no clear explanation as to how this is performed
What time horizon is used for appraisals?	30 years (§1.7.4.p.7 TAG 2.7.1)
How is optimism bias taken into account in the costs of options?	DfT is reviewing how to adjust for optimism bias and in the mean time, advice on appropriate values can be obtained from DfT or the Highways Agency (§1.8.4 p.8 TAG 2.7.1.)

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Transport Analysis Guidance	**Comments/description/ reference**
What decision rules are used?	To achieve local and regional objectives; to improve problems; ensure efficient distribution, equity, affordability, financial sustainability, practicality and public acceptability of transportation schemes (§1.1.2 p1 TAG 3.2)
How are the key issues in terms of the decision making focused on in the appraisal?	All scenarios are there to represent every possible alternative or outcome of a scheme
How is climate change taken into account?	A climate change indicator is taken into consideration in the Appraisal Summary Table of a transport model to provide a typical forecast for the whole year (§1.2.16 TAG 2.5 p.9). Furthermore, greenhouse gas emissions are listed as an example of an appraisal objective (TAG 3.3.5)
How are different scenarios accounted for?	Different scenarios are accounted for in the risk assessment and in adjustments for optimism bias
How is sensitivity analysis undertaken?	It is calculated as if performing a transport economics analysis where sensitivity is 'elasticity of demand' and is calculated mathematically using a supply and demand curve. It represents the percentage change in cost, assuming all other costs remain the same (§2.3.6 p.5 TAG 3.1.2)
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed in Task A1
What action is taken/required to ensure consistency across different appraisals?	Where all the factors affecting the forecasts of schemes, liaison with DfT is recommended to aggress with the relevant forecasting assumptions (§1.4.9 TAG 2.1 p. 7)
Does the appraisal process take account of extreme/low probability events? If so, how?	These are considered through the different scenarios: pessimistic (low growth), central and optimistic (high growth) scenarios
How are distributional issues/vulnerability of different groups taken into account?	Through performing a risk assessment in the cost benefit analysis, as this will take into consideration different income groups
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Ultimately it is up to individual Steering Groups to decide how to involve the public (§ 1.1.7 TAG 1.2.2 p. 2), however, consultation is advisable at an early stage (§1.5.1. TAG 2.1 p.8). Several recommended times to involve them are suggested in §1.5.3 TAG 2.1 p.8.
Does the appraisal process include any method for prioritisation? If so, how?	None known
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of: Multi Modal Transport Appraisal Investment

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA using present value of benefits and costs, net present value, and benefit cost ratio. However, willingness to pay methods are favoured over CBA, where the effects of a project are identified separately from groups which are defined by their economic role
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	None
What level of effort/resources is required?	Not known
How does the appraisal process take account of different levels of decision-making?	Decision making levels are the same as in conventional CBA
How are the different levels related (in terms of information, etc.)?	Each level is discussed in a separate section of the report
Is the appropriate level of detail/resources for each level discussed? If so, how?	Each section is very concise with some working examples included
How is consistency between different scales ensured?	To ensure consistency, a conversion unit has to be applied when using factor cost units or market price units of account in CBA. Thus, a correction factor has to be applied to any costs or benefits which were measured gross (when using factor cost) or net (if using market cost) of tax.
What is the baseline?	Do-minimum
How is the baseline assessed?	All the values in the appraisal calculation are to the power of 0 for the do-minimum scenario and 1 for the do-something scenario in order to facilitate comparison
How is uncertainty measured/recorded/taken into account?	Risk are valued using perceived costs of travel
What time horizon is used for appraisals?	Not known
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Willingness to pay is used to disaggregate between costs and benefits, particularly for financial and non-financial costs
How are the key issues in terms of the decision making focused on in the appraisal?	Since valuations of costs and benefits have been disaggregated, they can be related to individual decision-making criteria
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	There are only two scenarios, the do-

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
	minimum and the do-something scenario
How is sensitivity analysis undertaken?	Not taken into account
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed in Task A1
What action is taken/required to ensure consistency across different appraisals?	The appraisals followed the guidance from the *New Approach to Appraisal* Manual and the *COBA* Manual from the Department of Transport
Does the appraisal process take account of extreme/low probability events? If so, how?	Yes, the benefit cost ratios are set to a very low and high level
How are distributional issues/vulnerability of different groups taken into account?	In the case of low incomes, then benefits are given a higher weighting and vice versa
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	It was undertaken at the early stage to see how the appraisal methodology would be amended
Does the appraisal process include any method for prioritisation? If so, how?	The ranking criterion is applied through the use of benefit costs ratio
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of: Major Scheme Appraisal in Local Transport Plans

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA is adjusted to suit different types of appraisal models
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	None
What level of effort/resources is required?	Not known
How does the appraisal process take account of different levels of decision-making?	Yes, there are 4 levels which are: methodology and model structure, validation stage, forecasting stage, and the appraisal stage
How are the different levels related (in terms of information, etc.)?	They are not related, not all stages are necessarily required for each model
Is the appropriate level of detail/resources for each level discussed? If so, how?	There is a brief overview of what is needed, but no explanation as to how or why the stated principles should be applied
How is consistency between different scales ensured?	Use of a National Transport Model which provides growth factors in local models
What is the baseline?	Do minimum
How is the baseline assessed?	Do minimum should be validated on the base year and should include all the transport proposals for the forecast year
How is uncertainty measured/recorded/taken into account?	Not taken into account
What time horizon is used for appraisals?	Time horizons depends on the time of day, the appraisals are defined over two periods rush hour and non-working time
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Not known
How are the key issues in terms of the decision making focused on in the appraisal?	Not very clear
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Scenarios are only undertaken for do minimum and do something scenarios
How is sensitivity analysis undertaken?	Conventional sensitivity tests are undertaken for the results and assumptions, no statement as to how they are undertaken
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes, but minimal guidance – reviewed in Task A1
What action is taken/required to ensure	None known

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
consistency across different appraisals?	
Does the appraisal process take account of extreme/low probability events? If so, how?	Yes, in terms of forecasts of growth in demand, factors are incorporated in the calculations to test for low or high growth rates in traffic
How are distributional issues/vulnerability of different groups taken into account?	Willingness to pay
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Not taken into account
Does the appraisal process include any method for prioritisation? If so, how?	Hierarchy of decision stages is mentioned, but no explanation as to how
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of: Guidance on Economic Appraisal in the Environment Agency

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: European Chemical Bureau Technical guidance Document	**Comments/description/ reference**
What appraisal methodology is used?	CBA
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Option development and comparison is used as a means of finding the most suitable way of reducing flooding risks and ensuring that there are sufficient environmental benefits (p.2_23)
What level of effort/resources is required?	Key guidelines were used, such as "Economic Appraisal in Central Government" (The Green Book – HM Treasury); "Policy Appraisal and the Environment" (DoE); "Flood and Coastal Defence Project Appraisal Guidance Notes" (MAFF); "The Multi-Coloured Manual"
How does the appraisal process take account of different levels of decision-making?	Yes, under chapter 7 'Environmental Effects', several approaches with different applicabilities are discussed (p. 7_7 – 7_59)
How are the different levels related (in terms of information, etc.)?	Not known
Is the appropriate level of detail/resources for each level discussed? If so, how?	Yes, the resource requirements for each is discussed (chapter 7)
How is consistency between different scales ensured?	By adopting a rational and systematic framework for evaluating advantages and disadvantages of alternative options, and this is achieved through the CBA (p.1_5)
What is the baseline?	The conditions set under the do-nothing option (or the 'without' situation) (p.2-14)
How is the baseline assessed?	It is assessed by looking at existing requirements for water quality (p.2_15)
How is uncertainty measured/recorded/taken into account?	By using a systematic approach to the appraisal process using sensitivity analysis (p.2_23)
What time horizon is used for appraisals?	50 years (p.2_15)
How is optimism bias taken into account in the costs of options?	Not known
What decision rules are used?	Reduce flooding risks to an acceptable level and increase environmental benefits
How are the key issues in terms of the decision making focused on in the appraisal?	By using the NPV and B/C ratio (p.2_9)
How is climate change taken into account?	Not known
How are different scenarios accounted for?	Not known

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: European Chemical Bureau Technical guidance Document	**Comments/description/ reference**
How is sensitivity analysis undertaken?	By varying the values assigned to uncertain variables or alternatively, calculating the degree of variation in a particular variable would itself then reduce the NPV to zero (p.2_24)
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – see Task A1
What action is taken/required to ensure consistency across different appraisals?	A comparison table is used to see which criteria they match up against (p.7_9 – 7_11)
Does the appraisal process take account of extreme/low probability events? If so, how?	They are taken into account as irreversible effects and these are dealt with by choosing options which minimise the likelihood of the effect to a level considered as acceptable, or to eliminate any option early on that may have an irreversible effect (p.2_19)
How are distributional issues/vulnerability of different groups taken into account?	This is achieved thought the CBA where an action is justified if the benefit outweighs the costs (p.2_7)
How are residual risks assessed and presented?	Risks are compared against the benefits and any 'acceptable' or 'tolerable' risk criteria (p.2_23), however presentation method for these is unknown
When is consultation with local stakeholders/ communities to be undertaken?	Not known
Does the appraisal process include any method for prioritisation? If so, how?	Not known
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of: Benefits Assessment Guidance

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA using benefits transfer, but also uses ASTs to record qualitative and quantitative information alongside monetary estimates and does not require all benefits to be presented as money values
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	None
What level of effort/resources is required?	Appraisal process was designed to be completed in two days
How does the appraisal process take account of different levels of decision-making?	It doesn't - it was designed for use in 2005 Periodic Review where level was the same for all schemes
How are the different levels related (in terms of information, etc.)?	N/a
Is the appropriate level of detail/resources for each level discussed? If so, how?	N/a
How is consistency between different scales ensured?	N/a
What is the baseline?	Do-nothing (i.e. do not implement the scheme)
How is the baseline assessed?	Not assessed as such, but described briefly
How is uncertainty measured/recorded/taken into account?	Low, mid and high estimates are given for all numeric values. Reality checks are included to verify that calculations are 'reasonable'
What time horizon is used for appraisals?	25 years (year 0 to year 24)
How is optimism bias taken into account in the costs of options?	Costs were estimated by water companies and verified by Ofwat
What decision rules are used?	Threshold benefit-cost ratio was used to decide which schemes to promote
How are the key issues in terms of the decision making focused on in the appraisal?	They aren't -decision-making was done separately from appraisal, but effort is placed on spending more time on more significant benefit areas
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Not taken into account
How is sensitivity analysis undertaken?	Sensitivity analysis is undertaken on each benefit value calculated by considering realistic changes to the input data. Overall sensitivity to non-use benefits was included by calculating benefit-cost ratios with and without the non use benefits

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed in Task A1
What action is taken/required to ensure consistency across different appraisals?	Guidance is detailed step-by-step instructions. Training was given to all those who were going to use the guidance and an audit of completed appraisals was undertaken
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	Average willingness to pay values were used
How are residual risks assessed and presented?	Not relevant
When is consultation with local stakeholders/ communities to be undertaken?	No consultation was undertaken as par t of the appraisal process, although identification of schemes did draw on complaints, etc.
Does the appraisal process include any method for prioritisation? If so, how?	Not specifically, although the benefit-cost ratio was used to identify which schemes should be proposed for implementation (from highest bcr to lowest, including and excluding non-use benefits)
Is post project evaluation undertaken (or has it for particular projects)?	No

Review of European Chemical Bureau Technical Guidance Document

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: European Chemical Bureau Technical guidance Document	**Comments/description/ reference**
What appraisal methodology is used?	An appraisal methodology is not used as such, but rather a risk assessment on chemical emission exposures is employed
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	The ECB TGD is accountable, transparent, and the results provide a broad range of information from which to base the final decisions on health and safety
What level of effort/resources is required?	Resources include: availability of data from in vivo and in vitro studies on toxicity, carcinogenicity and mutagenicity; and computer tools or mathematical software for the various exposure models (Part I)
How does the appraisal process take account of different levels of decision-making?	The decision-making process focuses on optimising the Predicted Environmental Concentrations /Predicted No-Effect Concentrations (PEC/PNEC) and the Quantitative Structure Activity Relationship ratios (p.15 Sect. 3.3.2 Part III)
How are the different levels related (in terms of information, etc.)?	The PEC/PNEC ratios are mutually exclusive
Is the appropriate level of detail/resources for each level discussed? If so, how?	More information on the decision making tools are provided in chapter 2 (Part I) and 3 (Part II)
How is consistency between different scales ensured?	The level of consistency is dependent on the computer software models used which ultimately changes the evaluation process of the data (p.36, Sect. 4.7.2, Part III)
What is the baseline?	The year 1992 is taken as a baseline situation for carrying capacity or waste loads (p.323 Part II)
How is the baseline assessed?	1992 was the first recording of carrying capacity (p. 323 Part II)
How is uncertainty measured/recorded/taken into account?	Uncertainty is assessed using sensitivity analyses
What time horizon is used for appraisals?	Variable, time scale depends on the exposure tests and the detection time, i.e. can be any where in the range of 10 days to a month (p.52 Table 6 Part II)
How is optimism bias taken into account in the costs of options?	Not taken into account

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: European Chemical Bureau Technical guidance Document	**Comments/description/ reference**
What decision rules are used?	Risk assessments must abide by the following: Article 3(4) of Directive 93/67, Article 10 of Regulation 793/93 and Annex V of Regulation 1488/94 or Articles 10 and 11 of Directive 98/8 (Part II p. 7)
How are the key issues in terms of the decision making focused on in the appraisal?	Data evaluation focuses on toxicology, carcinogenic, and mutagenicity as these are the main components on which the risk assessments are based on
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Scenarios tend to cover both ends of the spectrum, either 100% removal or 100% deposit (p. 66 Part II Sect 2.3.7.2), and at a local and regional exposure level (p.71 Table 10 Part II)
How is sensitivity analysis undertaken?	No mention on how to perform sensitivity analysis
Is guidance available (this will be known from the completed proforma from Task A1)?	Guidance is available for risk assessment evaluation on chemical exposure
What action is taken/required to ensure consistency across different appraisals?	None taken
Does the appraisal process take account of extreme/low probability events? If so, how?	Not taken into account
How are distributional issues/vulnerability of different groups taken into account?	Discussion on the difference between vulnerable and non-vulnerable groups is included in the Risk Assessment report. However, there is no special consideration given to the vulnerable group as they are not considered to be the most at-risk group (i.e. the workforce) to exposure (p.46, Sect. 2.2.2.10 Part I)
How are residual risks assessed and presented?	None known
When is consultation with local stakeholders/ communities to be undertaken?	Consultation takes place after the risk evaluation process
Does the appraisal process include any method for prioritisation? If so, how?	No
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of German Handbook

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Basic principles for selecting the most cost-effective combinations of measures for inclusion in the programme of measures as described in Article 11 of the Water Framework Directive HANDBOOK**	**Comments/description/ reference**
What appraisal methodology is used?	Cost-effectiveness analysis
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	
What level of effort/resources is required?	Divided into a preliminary and detailed assessment when determining costs, but effectiveness side is likely to require a lot of data (although it is simplified)
How does the appraisal process take account of different levels of decision-making?	Combinations of measures are assessed and these are linked to whether measures need to be applied nationally, regionally or locally
How are the different levels related (in terms of information, etc.)?	The levels are related in terms of the magnitude of the problem and whether it would be more cost-effective to look at 'supra-regional coordination'
Is the appropriate level of detail/resources for each level discussed? If so, how?	Not specifically
How is consistency between different scales ensured?	The approach uses matrices, but the Handbook does note that it 'does not purport to provide instructions which must be followed to the letter, but instead represents a proposed methodology based on experiences in the preparation of programmes of measures and the requirements pertaining to the practical application thereof'' (S1.1, pg 2)
What is the baseline?	Baseline is the measures required to achieve good status
How is the baseline assessed?	Effectiveness of measures is determined in terms of simple ratings (e.g. + to +++), with interactions between measures also considered
How is uncertainty measured/recorded/taken into account?	Ranges of costs are proposed, with generic cost data supported by local information. The Handbook also suggests the use of sensitivity analysis to 'investigate the extent to which the result of the investigation may be altered by a slight change to one of the parameters' (pg 55)
What time horizon is used for appraisals?	The Handbook does not give a specified time horizon but does note that a time period of 'generally 50 or 100 years' is used (pg 54)

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Basic principles for selecting the most cost-effective combinations of measures for inclusion in the programme of measures as described in Article 11 of the Water Framework Directive HANDBOOK**	**Comments/description/ reference**
How is optimism bias taken into account in the costs of options?	Optimism bias is not considered
What decision rules are used?	The most cost-efficient combination(s) of measures is to be identified. This is based on a number of factors : Probability of target achievement by 2015, ecological effectiveness of the measure/instrument, time scale until effectiveness of the combination, direct costs and indirect economic costs' (pg 57)
How are the key issues in terms of the decision making focused on in the appraisal?	The Handbook proposes use of a series of tables/matrices that ensures that the key elements are focused on
How is climate change taken into account?	Climate change is not mentioned in the methodology, but is noted in one of the measures as potentially affecting future effectiveness
How are different scenarios accounted for?	Scenarios are considered as a more complex way of assessing trade-offs
How is sensitivity analysis undertaken?	As the impact of slight changes to one of the parameters
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes - reviewed
What action is taken/required to ensure consistency across different appraisals?	The approach follows a series of matrices and tables. Also, generic cost estimates are given for a range of different measures
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	Not taken into account
How are residual risks assessed and presented?	Not taken into account, although it is discussed for one of the measures
When is consultation with local stakeholders/ communities to be undertaken?	'Many of the considerations and assessments arising within this process should additionally be discussed within the context of participation by the general public in accordance with Article 14 of the Water Framework Directive in order, firstly, to improve the quality of the decisions, and secondly, to ensure acceptance of the chosen combination when it is implemented' (pg 25)
Does the appraisal process include any method for prioritisation? If so, how?	No
Is post project evaluation undertaken (or has it for particular projects)?	No – not known (but projects will not have been undertaken yet – RMBPs due 2009)

Review of: Economic Assessment of Groundwater Protection: A Survey of the Literature

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Option development and comparison is used as a means of finding the most suitable way of reducing flooding risks and ensuring that there are sufficient environmental benefits (p.2_23)
What level of effort/resources is required?	Key guidelines were used, such as "Economic Appraisal in Central Government" (The Green Book – HM Treasury); "Policy Appraisal and the Environment" (DoE); "Flood and Coastal Defence Project Appraisal Guidance Notes" (MAFF); "The Multi-Coloured Manual"
How does the appraisal process take account of different levels of decision-making?	Yes, under chapter 7 'Environmental Effects', several approaches with different applicabilities are discussed (p. 7_7 – 7_59)
How are the different levels related (in terms of information, etc.)?	Not known
Is the appropriate level of detail/resources for each level discussed? If so, how?	Yes, the resource requirements for each is discussed (chapter 7)
How is consistency between different scales ensured?	By adopting a rational and systematic framework for evaluating advantages and disadvantages of alternative options, and this is achieved through the CBA (p.1_5)
What is the baseline?	The conditions set under the do-nothing option (or the 'without' situation) (p.2-14)
How is the baseline assessed?	It is assessed by looking at existing requirements for water quality (p.2_15)
How is uncertainty measured/recorded/taken into account?	By using a systematic approach to the appraisal process using sensitivity analysis (p.2_23)
What time horizon is used for appraisals?	50 years (p.2_15)
How is optimism bias taken into account in the costs of options?	Not known
What decision rules are used?	Reduce flooding risks to an acceptable level and increase environmental benefits
How are the key issues in terms of the decision making focused on in the appraisal?	By using the NPV and B/C ratio (p.2_9)
How is climate change taken into account?	Not known
How are different scenarios accounted for?	Not known

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
How is sensitivity analysis undertaken?	By varying the values assigned to uncertain variables or alternatively, calculating the degree of variation in a particular variable would itself then reduce the NPV to zero (p.2_24)
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – see Task A1
What action is taken/required to ensure consistency across different appraisals?	A comparison table is used to see which criteria they match up against (p.7_9 – 7_11)
Does the appraisal process take account of extreme/low probability events? If so, how?	They are taken into account as irreversible effects and these are dealt with by choosing options which minimise the likelihood of the effect to a level considered as acceptable, or to eliminate any option early on that may have an irreversible effect (p.2_19)
How are distributional issues/vulnerability of different groups taken into account?	This is achieved thought the CBA where an action is justified if the benefit outweighs the costs (p.2_7)
How are residual risks assessed and presented?	Risks are compared against the benefits and any 'acceptable' or 'tolerable' risk criteria (p.2_23), however presentation method for these is unknown
When is consultation with local stakeholders/ communities to be undertaken?	Not known
Does the appraisal process include any method for prioritisation? If so, how?	Not known
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of Highways Agency PAR 3.3

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Highways Agency PAR 3.3	**Comments/description/ reference**
What appraisal methodology is used?	The guidance states that "the appraisal may be undertaken in different ways depending on the size and complexity of the scheme. Whichever method is adopted it must be consistent with the COBA methodology and parameters, and should be agreed at an early stage with the ACO" (Appraisal Certifying Officer) (p. 31 C17 full PAR)
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	The Highway Agency PAR provides good identification of benefit and cost values and risk management on social, economic and environmental aspects of sustainability
What level of effort/resources is required?	For the full PAR the use of computer program COBA/TUBA or JUICE is necessary (C17 – C21 p. 31 of the Full PAR)
How does the appraisal process take account of different levels of decision-making?	The PAR is divided into different levels to ease the decision-making process
How are the different levels related (in terms of information, etc.)?	Each successive stage provides data to document the development of a project (sect. 1.17 p.5 full PAR)
Is the appropriate level of detail/resources for each level discussed? If so, how?	Yes, an appendix is available for each of the levels as well as worksheets
How is consistency between different scales ensured?	Each Par procedure needs to be signed and approved by the Highway's Agency Project Sponsor, the Local Business Management Team (sect. 2.32 – 2.37 p. 13 of the short PAR, and sect 2.46 - 2.51 p. 17 of the Full PAR), and a final audit of the PAR is carried out to assess whether the actual costs and benefits match those predicted (sect. 1.13 p.6 full PAR)
What is the baseline?	The baseline is the previous PAR which was calculated in 2002
How is the baseline assessed?	Using a similar PAR
How is uncertainty measured/recorded/taken into account?	Use of contingencies in the costs estimates take into account uncertainties (C4 p.25)
What time horizon is used for appraisals?	60 years (Sect 1.2)
How is optimism bias taken into account in the costs of options?	An adjustment factor, which takes into account costs uncertainty, reflects the optimism bias, and this reduces if a risk assessment has been carried out (p.31 C5)
What decision rules are used?	Project costs determines the type of PAR employed

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Highways Agency PAR 3.3	**Comments/description/ reference**
How are the key issues in terms of the decision making focused on in the appraisal?	Decisions made from the appraisal need to be discussed and agreed by an ACO (Appraisal Certifying Officer) at an early stage
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Not taken into account
How is sensitivity analysis undertaken?	Not taken into account
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed in Task A1
What action is taken/required to ensure consistency across different appraisals?	Approval signatures from authoritative bodies are required at the end of key decision stages (p. 4 sect. 1.5)
Does the appraisal process take account of extreme/low probability events? If so, how?	Yes – contingencies are included into the cost estimates to forecast any extreme changes to traffic, infrastructure or local forecasts (C23 p.31 full PAR)
How are distributional issues/vulnerability of different groups taken into account?	Not taken into account
How are residual risks assessed and presented?	Risk allowance is assessed as an adjustment factor for optimism bias. They are presented as percentages of each preparation stage and then included as a mean risk rate in the cost calculation
When is consultation with local stakeholders/ communities to be undertaken?	Consultation takes place at the third stage of the PAR
Does the appraisal process include any method for prioritisation? If so, how?	None known
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of HR Wallingford (2006): Climate change and water

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	MCA (scoring and weighting) of options performance against objectives with cost-effectiveness analysis (CEA) used when building up combinations of options
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	None
What level of effort/resources is required?	Can be extensive, particularly where there is a large number of options to consider against a range of different objectives – screening becomes important
How does the appraisal process take account of different levels of decision-making?	It doesn't – different levels of decision making are not relevant
How are the different levels related (in terms of information, etc.)?	N/a
Is the appropriate level of detail/resources for each level discussed? If so, how?	N/a
How is consistency between different scales ensured?	N/a
What is the baseline?	Options are appraised against the extent that that meet objectives, therefore, there is no baseline as such (options are scored in terms of the percent that the meet the objective with 0% fixed as not meeting the objective at all and 100% fixed as fully meeting the objective)
How is the baseline assessed?	N/a
How is uncertainty measured/recorded/taken into account?	Low, mid and high estimates are used to indicate the extent that an option meets the objectives
What time horizon is used for appraisals?	Options are assessed over three timescales: 2020s, 2050s and 2080s
How is optimism bias taken into account in the costs of options?	Optimism bias is not taken into account
What decision rules are used?	Options are ranked in terms of cost, weighted score, reliability, flexibility, etc. This produces groups of options whose performance is similar. The 'best' performing options are selected first in a combination continuing down the rank order until the target is achieved (here this is reduction of the supply-demand deficit)

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
How are the key issues in terms of the decision making focused on in the appraisal?	Performance against objectives is assessed using scores and weights. Costs, reliability and flexibility are considered alongside the weighted score when ranking options
How is climate change taken into account?	Climate change is used as the driver behind the supply-demand deficits and, hence, the need for options to be implemented
How are different scenarios accounted for?	Foresight scenarios are used to determine different supply-demand deficits. There are also differences in terms of which options are acceptable under the different socio-economic scenarios. The appraisal process considers which are the 'best' options and then whether there is a need to ensure these options are feasible under all scenarios, e.g. by requiring new legislation, economic instruments, etc. to be introduced
How is sensitivity analysis undertaken?	The low, mid and high estimates of the scores are assessed alongside cost, etc. to see if the rank order changes. Weights are also changed to assess the effect on the rank order of the options
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed under Task A1
What action is taken/required to ensure consistency across different appraisals?	Scores of 0% and 100% are always fixed and all assumptions have to be recorded using ASTs. However, the appraisal allows different sets of objectives to be used (e.g. water company, Environment Agency) such that solutions are determined based on the specific requirements of the organisation that is responsible for implementation of options (including paying for them)
Does the appraisal process take account of extreme/low probability events? If so, how?	Not really, although the potential impact of different climate change scenarios is used to determine the target supply-demand deficits that are to be reduced by the selected combination of options
How are distributional issues/vulnerability of different groups taken into account?	They can be included as one of the objectives if required and thus explicitly included in the appraisal
How are residual risks assessed and presented?	The overall weighted score is calculated – this highlights the extent to which an option meets all of the objectives. A score of less than 100% indicates that there are some residual risks, but reporting what these residual risks are is not focused on in the appraisal process

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed:	**Comments/description/ reference**
When is consultation with local stakeholders/ communities to be undertaken?	This could be undertaken at a number of stages: when determining which objectives to appraise against, when identifying options, when scoring options, when weighting options of when ranking and selecting options. The process makes all of the assumptions explicit such that the appraisal is fully transparent
Does the appraisal process include any method for prioritisation? If so, how?	Options are ranked in order of performance against the key objectives, by cost, reliability, etc. Options are then grouped where they cannot be easily separated (e.g. using scatter graphs to show overlap between scores, costs). Options are then selected from the 'best' group first when building up combinations, only moving onto the second best group where additional options are required to meet the target
Is post project evaluation undertaken (or has it for particular projects)?	No – the appraisal process has only recently been finalised and reported under Project C of Defra's Climate Change Impacts and Adaptation Cross-Regional Research Programme

Review of Reducing risks, protecting people

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Reducing risks, protecting people HSE's decision-making process	**Comments/description/ reference**
What appraisal methodology is used?	Risk assessment based; includes CBA, CEA
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Risk related aspects and perception of risk
What level of effort/resources is required?	Moderate to high
How does the appraisal process take account of different levels of decision-making?	The document includes a step to aid the decision of whether the issue if a HSE's issue or not
How are the different levels related (in terms of information, etc.)?	Document notes the wish to avoid overlapping through demarcation agreements (between HSE and other Departments)
Is the appropriate level of detail/resources for each level discussed? If so, how?	No
How is consistency between different scales ensured?	Limited information
What is the baseline?	Risk characterisation (Pg 25: The framing of the issue may point to it being one where a decision on proportionality of action requires information on the risks. In such cases, we need to characterise the risk quantitatively and qualitatively, to describe how it arises and how it impacts on those affected and society at large. Such information is needed in order to inform later consideration of options for risk reduction)
How is the baseline assessed?	Risk characterisation (Pg 25) identifying the hazards associated with the risk issue, and then assessing the likelihood that harm will actually be experienced by a specified population and what the consequences would be.
How is uncertainty measured/recorded/taken into account?	Pg 28 describes sources of uncertainty and proposes approaches to deal with uncertainty, e.g. confidence limits, sensitivity analysis, modelling uncertainty but not in great detail. Moreover, it proposes the precautionary principles in the face of high scientific uncertainty,
What time horizon is used for appraisals?	
How is optimism bias taken into account in the costs of options?	No

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Reducing risks, protecting people HSE's decision-making process	**Comments/description/ reference**
What decision rules are used?	No particular decision rule applies as known in economic appraisal; the general framework is so-called tolerability of risk (Pg 41-42) which accommodates 3 criteria: utility based; equity based and technology based criterion.
How are the key issues in terms of the decision making focused on in the appraisal?	Limited information given
How is climate change taken into account?	No account of climate change
How are different scenarios accounted for?	Limited information given
How is sensitivity analysis undertaken?	Limited information given
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes (not guidance as such; document aims to explains the decision-making process in HSE rather than providing guidance to individual duty-holders on what they need to do)
What action is taken/required to ensure consistency across different appraisals?	Limited information
Does the appraisal process take account of extreme/low probability events? If so, how?	Inherent to risk assessment
How are distributional issues/vulnerability of different groups taken into account?	Equity based criterion included under the framework
How are residual risks assessed and presented?	Limited information given
When is consultation with local stakeholders/ communities to be undertaken?	Depends on nature of risk and distributional issues
Does the appraisal process include any method for prioritisation? If so, how?	Yes, there is a risk hierarchy that should apply
Is post project evaluation undertaken (or has it for particular projects)?	Limited information given although document included an stage (Stage 6: Evaluating the effectiveness of action) to assess progress after a 'suitable' interval

Review of Health Impact Assessment Guidance

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Health Impact Assessment Guidance March 2006,** **Institute of Public Health in Ireland**	**Comments/description/ reference**
What appraisal methodology is used?	Stepwise approach starting with screening of impacts, qualitative description but not monetary valuation suggested
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Hardly any; although the system of screening and reporting formats could be taken as examples of best practice
What level of effort/resources is required?	Moderate
How does the appraisal process take account of different levels of decision-making?	No specific account of different levels of appraisal
How are the different levels related (in terms of information, etc.)?	N/a
Is the appropriate level of detail/resources for each level discussed? If so, how?	N/a
How is consistency between different scales ensured?	N/a
What is the baseline?	The baseline refers to the profile of the population
How is the baseline assessed?	Socio-economic conditions, e.g. level of unemployment
How is uncertainty measured/recorded/taken into account?	Impacts can be categorised as 'unlikely'
What time horizon is used for appraisals?	No specific time-horizon but assessor should take account of latency of health impact under consideration
How is optimism bias taken into account in the costs of options?	No
What decision rules are used?	No decision rules suggested
How are the key issues in terms of the decision making focused on in the appraisal?	No specific mention of key issues
How is climate change taken into account?	N/a
How are different scenarios accounted for?	No account of different scenarios
How is sensitivity analysis undertaken?	No account of sensitivity
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes
What action is taken/required to ensure consistency across different appraisals?	No details given
Does the appraisal process take account of extreme/low probability events? If so, how?	No

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Health Impact Assessment Guidance March 2006,** **Institute of Public Health in Ireland**	**Comments/description/ reference**
How are distributional issues/vulnerability of different groups taken into account?	Assessor need to identify vulnerable groups and impacts from options on these
How are residual risks assessed and presented?	No details given
When is consultation with local stakeholders/ communities to be undertaken?	Early in the process, as part of the scoping, a steering group is recommended to consult with stakeholders about range of impacts
Does the appraisal process include any method for prioritisation? If so, how?	Not as such, but notes the need to identify priority health outcomes
Is post project evaluation undertaken (or has it for particular projects)?	Included and suggested in the Guidance

Review of Guidance on the evidence required to justify disproportionate cost decisions under the WFD

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Guidance on the evidence required to justify disproportionate cost decisions under the Water Framework Directive – Draft Guidance**	**Comments/description/ reference**
What appraisal methodology is used?	CBA, CEA (some form of MCA was proposed in the earlier stages of Guidance but uncertain whether this has been finally included)
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Typology of impacts (e.g. amenity, environmental). Some measures considered under guidance could have elements in common with FCD, e.g. re. morphological pressures
What level of effort/resources is required?	High (as learnt from completion of case studies)
How does the appraisal process take account of different levels of decision-making?	Yes, user can drop of the process depending on the evidence gathered and whether this is enough to reach a decision
How are the different levels related (in terms of information, etc.)?	Tiered approach; from qualitative to quantitative and monetary valuation
Is the appropriate level of detail/resources for each level discussed? If so, how?	Yes; screening questions and from general to detailed data gathering
How is consistency between different scales ensured?	One stage feeding into the next
What is the baseline?	Current situation; assessment of benefits against baseline
How is the baseline assessed?	Same typology of benefits apply
How is uncertainty measured/recorded/taken into account?	Lower, medium and upper bounds suggested. Value of information also given as a possibility
What time horizon is used for appraisals?	Uncertain
How is optimism bias taken into account in the costs of options?	No account of optimism bias
What decision rules are used?	CB ratios (CBA rule; CB ratio>1)
How are the key issues in terms of the decision making focused on in the appraisal?	Uncertain
How is climate change taken into account?	No explicit account of climate change
How are different scenarios accounted for?	No
How is sensitivity analysis undertaken?	Lower, medium and upper bounds suggested.
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes
What action is taken/required to ensure consistency across different appraisals?	None

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Guidance on the evidence required to justify disproportionate cost decisions under the Water Framework Directive – Draft Guidance**	**Comments/description/ reference**
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	Distributional analysis is part of the Guidance.
How are residual risks assessed and presented?	No account of residual risk
When is consultation with local stakeholders/ communities to be undertaken?	For data gathering
Does the appraisal process include any method for prioritisation? If so, how?	No
Is post project evaluation undertaken (or has it for particular projects)?	No

Review of: Foresight Future Flooding Scotland

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	Not known
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	The need to understand the patterns of flood processes in order to make better decisions in flood and coastal erosion risk management
What level of effort/resources is required?	SEPA-Planning Authority Protocol (SEPA, 2000). Scottish Planning Policy 7 (SPP 7) Planning and Flooding (Scottish Executive 2004); Flood Appraisal Handbook; Flood Studies Report; Indicative Floodplain Maps based on Synthetic Aperture Radar (SAR); Institute Hydrology Report 130
How does the appraisal process take account of different levels of decision-making?	Not known
How are the different levels related (in terms of information, etc.)?	Not known
Is the appropriate level of detail/resources for each level discussed? If so, how?	No
How is consistency between different scales ensured?	The different scales take into account differential inundation of floodplains, and this is based on a weighting system derived from the inundation patterns at eight different sites throughout Scotland (p.42)
What is the baseline?	Flooding records from 2003 (p.46)
How is the baseline assessed?	By using the present values and estimation i.e. 2003 (p.46)
How is uncertainty measured/recorded/taken into account?	Not known, but rather than using annual average damage values, national and local estimates of present and future losses are regarded as better approximations (p.49)
What time horizon is used for appraisals?	25 years (p.42)
How is optimism bias taken into account in the costs of options?	Not known
What decision rules are used?	Assessing the magnitude of flooding across Scotland; how flooding patterns operate; and assess future scenarios for years 2030 to 2100 (p.3)
How are the key issues in terms of the decision making focused on in the appraisal?	Not known
How is climate change taken into account?	By looking at future economic dimensions of flooding scenarios and taking into consideration land use, precipitation and sea level changes (p.14-16)
How are different scenarios accounted for?	Not known

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
How is sensitivity analysis undertaken?	Not known, although there is mention of a weighting system as a part of the sensitivity analysis to take into account differential inundation of flood plains over the time horizon (p.42)
Is guidance available (this will be known from the completed proforma from Task A1)?	See Task A1
What action is taken/required to ensure consistency across different appraisals?	Not known
Does the appraisal process take account of extreme/low probability events? If so, how?	Probability is subject to conditions set by SEPA (p.8), they take into account a range of 0.5% medium to high risk of flooding (p.8)
How are distributional issues/vulnerability of different groups taken into account?	Not known
How are residual risks assessed and presented?	Not known
When is consultation with local stakeholders/ communities to be undertaken?	Not known
Does the appraisal process include any method for prioritisation? If so, how?	Not known
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of: ERMITE – Economic Analysis of Mine Water Pollution Abatement on A Catchment Scale

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	Cost-efficiency (or benefit-maximisation) model
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	The guidance similarities with flood and coastal erosion risk management consists with helping to make better decisions for water quality standards
What level of effort/resources is required?	The main resources needed is data on the different water/pollution systems (including maximum and minimum concentration and pollutant levels) alongside with costs of abatement measures
How does the appraisal process take account of different levels of decision-making?	Not known if the guidance takes into account different levels of decision making
How are the different levels related (in terms of information, etc.)?	Not known
Is the appropriate level of detail/resources for each level discussed? If so, how?	Detail is provided in the appendices
How is consistency between different scales ensured?	Not known
What is the baseline?	The original composition of water systems (p.33)
How is the baseline assessed?	Not known
How is uncertainty measured/recorded/taken into account?	Uncertainty is not as yet included into the appraisal methodology, although it has been recognised as a valuable component of cost analysis
What time horizon is used for appraisals?	The base case is given a time horizon of 50 years, whilst other scenarios are given between 12.5 to 25 years (p.28)
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	There are two decision rules, the first one is choosing abatement that maximises net benefits, and second, that minimizes costs for achieving pre-specified water quality/pollutant load targets, by either law or political decisions (p.1; 3)
How are the key issues in terms of the decision making focused on in the appraisal?	To achieve mine waste site remediation and mine water pollution abatement efficiently such that water quality standards are reached on a catchment scale (p.2)
How is climate change taken into account?	Not taken into account

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
How are different scenarios accounted for?	Not known
How is sensitivity analysis undertaken?	Not taken into account
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – see task A1
What action is taken/required to ensure consistency across different appraisals?	Not known
Does the appraisal process take account of extreme/low probability events? If so, how?	The guidance recognises the need to include probability events. However, it does endorse the use of high and low environmental targets/objectives to increase flexibility in the decision making
How are distributional issues/vulnerability of different groups taken into account?	Not taken into account
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Not taken into account
Does the appraisal process include any method for prioritisation? If so, how?	The appraisal method formula incorporates first and second order conditions as a means of setting prioritisation standards (p.3-5)
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of: Wise Use of Floodplains – Guidance on Options Appraisal

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	CBA, by calculating standard incremental benefit cost ratio and calculation on non-market impacts; cost effectiveness criteria and MCA
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	There is an initial definition of the problem, then development of options, which are then compared between them to select the preferred option
What level of effort/resources is required?	To make informed decisions on the floodplains there needs to be: participation work with the local communities through organised workshops; GIS information for floodplain management; and consultancy research
How does the appraisal process take account of different levels of decision-making?	None known
How are the different levels related (in terms of information, etc.)?	N/a
Is the appropriate level of detail/resources for each level discussed? If so, how?	N/a
How is consistency between different scales ensured?	Not taken into account
What is the baseline?	'Business as usual'
How is the baseline assessed?	Not explained
How is uncertainty measured/recorded/taken into account?	Not explained
What time horizon is used for appraisals?	Not taken into account
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Refers to the Water Framework Directive
How are the key issues in terms of the decision making focused on in the appraisal?	Refers to the Water Framework Directive
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Baseline scenario is the only one taken into account
How is sensitivity analysis undertaken?	Not taken into account
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes, but minimal guidance – reviewed in Task A1
What action is taken/required to ensure consistency across different appraisals?	None known

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
Does the appraisal process take account of extreme/low probability events? If so, how?	Not taken into account
How are distributional issues/vulnerability of different groups taken into account?	Not known
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Throughout the project appraisal
Does the appraisal process include any method for prioritisation? If so, how?	None known
Is post project evaluation undertaken (or has it for particular projects)?	None known

Review of an Economic Assessment of Road Schemes in Scotland – the NESA Manual

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: The NESA Manual	**Comments/description/ reference**
What appraisal methodology is used?	Cost-benefit analysis using 'willingness to pay' approach
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Cost-benefit analysis using NESA provides a rational comparison of the available options and the consequences of these options
What level of effort/resources is required?	NESA software using a PC 386 processor with a minimum of 3Mb of hard disk and 8Mb RAM (paragraph 1.1 p.10-1-1)
How does the appraisal process take account of different levels of decision-making?	Each level is summarized into summary tables of expenditure and benefits in costs (p.10-18-9, and 10-18-11)
How are the different levels related (in terms of information, etc.)?	Each successive stage provides data to document and forecast the feasibility of a project
Is the appropriate level of detail/resources for each level discussed? If so, how?	This is covered in detailed in Part 10 of the guidance which reiterates the process and requirements for each level of the appraisal
How is consistency between different scales ensured?	The NESA model variables are split into two types, mandatory and optional variables, and thus mandatory variables are required for every single level of decision making (paragraph 3.7 p.10-3-2)
What is the baseline?	The do-minimum scheme (p.9-4-4)
How is the baseline assessed?	The do-minimum option does not include any scheme expenditure (p.9-4-2 paragraph 4-13)
How is uncertainty measured/recorded/taken into account?	Sensitivity analysis is used to test the variables used in the NESA model (chapter 2 p.4-2-1)
What time horizon is used for appraisals?	30 years
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Based on least cost option
How are the key issues in terms of the decision making focused on in the appraisal?	Not known
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Not known
How is sensitivity analysis undertaken?	There is no explanation on how to perform sensitivity analysis
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes – reviewed in Task A1

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: The NESA Manual	**Comments/description/ reference**
What action is taken/required to ensure consistency across different appraisals?	The guidance describes the data input steps required to run the NESA program in Part 10
Does the appraisal process take account of extreme/low probability events? If so, how?	The guidance looks at high and low traffic/economic scenarios by focusing on the performance of the economy and the price of a commodity (e.g. fuel) (paragraph 1.5 p.6-1-1)
How are distributional issues/vulnerability of different groups taken into account?	Not taken into account
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Public consultation is carried out during the scheme preparation stage (paragraph 8.4 p.6-8-2)
Does the appraisal process include any method for prioritisation? If so, how?	Based on approach in the NESA manual
Is post project evaluation undertaken (or has it for particular projects)?	Not known

Review of: Evaluating the Economic Impact of Irrigation Controls

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	Cost benefit analysis (p.84)
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	The guidance helps to understand what choices are involved in terms of irrigation and water supply for potato farming, and provides a rational comparison between different options
What level of effort/resources is required?	GIS (p.ii §8); 10 years of weather data from meteorological stations (p.iii §12); access to the British Potato Council census (p.5) and the June census and the IACS (p.11)
How does the appraisal process take account of different levels of decision-making?	The key aims are broken down into subsections which deal with ways of achieving better flow on a national scale and then on a local scale, and how resources could be put to better use
How are the different levels related (in terms of information, etc.)?	Not known
Is the appropriate level of detail/resources for each level discussed? If so, how?	Partly, each level is discussed under a separate chapter, however there is no real guidance as to how this could be repeated for another region/area
How is consistency between different scales ensured?	Not known
What is the baseline?	Data collected on 'natural' water flows and census information on farmers activities at the start of the appraisal process (p.9 sect.2.2.1, p.10 sect. 2.2.2)
How is the baseline assessed?	Census data
How is uncertainty measured/recorded/taken into account?	It is taken into account in the sensitivity analysis and it is taken assumed to respect the minimum levels expected (p.29)
What time horizon is used for appraisals?	10 years
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Identify and investigate the key controls to irrigation that are necessary to achieve ecologically and economically sustainable flows for potato farming (p.i §1)
How are the key issues in terms of the decision making focused on in the appraisal?	Abstraction controls on irrigation, catchment flow levels, growth and quality of corps, and economic effects of controls
How is climate change taken into account?	Climatic and water considerations are taken into account into the flow model on GIS

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
	layers but there is no specific consideration for climate change (p.11 §8)
How are different scenarios accounted for?	The GIS model is used as an investigative tool to simulate and examine potential scenario outcomes
How is sensitivity analysis undertaken?	Sensitivity is determined for spatial issues such as soil, irrigation, water availability and is then imported into GIS decision making systems
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes - See Task A1
What action is taken/required to ensure consistency across different appraisals?	Not known
Does the appraisal process take account of extreme/low probability events? If so, how?	With low, natural and minimum allowable flows (p.2)
How are distributional issues/vulnerability of different groups taken into account?	Not taken into account
How are residual risks assessed and presented?	Not taken into account
When is consultation with local stakeholders/ communities to be undertaken?	Not taken into account
Does the appraisal process include any method for prioritisation? If so, how?	Not known
Is post project evaluation undertaken (or has it for particular projects)?	None known

Proforma for Review of Ponds, Pools and Lochans

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Ponds, pools and lochans** **Guidance on good practice in the management and creation of small waterbodies in Scotland, June 2000**	**Comments/description/ reference**
What appraisal methodology is used?	Qualitative judgements also based on quantitative data when possible to assess value of ponds
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Hardly any
What level of effort/resources is required?	Varies (depending on project)
How does the appraisal process take account of different levels of decision-making?	No account of different levels of decision making
How are the different levels related (in terms of information, etc.)?	N/a
Is the appropriate level of detail/resources for each level discussed? If so, how?	N/a
How is consistency between different scales ensured?	N/a
What is the baseline?	No account of baseline as understood in flood and coastal defence, i.e. impacts from no taking action; but surveys are proposed to assess ecological and historical value before management decisions are made (Pg 11)
How is the baseline assessed?	Surveys proposed
How is uncertainty measured/recorded/taken into account?	No account of uncertainty
What time horizon is used for appraisals?	None
How is optimism bias taken into account in the costs of options?	No account of optimism bias
What decision rules are used?	No decision rules apply
How are the key issues in terms of the decision making focused on in the appraisal?	S 4.4, Box 2, provides a summary of some of the key points to take into account when managing ponds (Pg 22)
How is climate change taken into account?	No account of climate change
How are different scenarios accounted for?	Different scenarios are not accounted for
How is sensitivity analysis undertaken?	No sensitivity analysis undertaken
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes
What action is taken/required to ensure consistency across different appraisals?	None

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Ponds, pools and lochans** **Guidance on good practice in the management and creation of small waterbodies in Scotland, June 2000**	**Comments/description/ reference**
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	Distributional impacts not considered
How are residual risks assessed and presented?	Residual risk not considered
When is consultation with local stakeholders/ communities to be undertaken?	Consultation suggested before any project involving the creation of ponds and other wetlands is undertaken
Does the appraisal process include any method for prioritisation? If so, how?	Some prioritisation is proposed with regard to option selection but these are in very general terms, e.g. priority to pond creation over potentially damaging management (Pg 10)
Is post project evaluation undertaken (or has it for particular projects)?	Partly; for some options, such as SUDs, post-implementation appraisals as well as the potential for inclusion of corrective measures are suggested (Pg 56)

Review of Watercourses in the Community

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Watercourses in the Community A guide to sustainable watercourse management in the urban environment June 2000	**Comments/description/ reference**
What appraisal methodology is used?	No particular appraisal methodology proposed
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Flood risk is part of the management of urban watercourses
What level of effort/resources is required?	Moderate
How does the appraisal process take account of different levels of decision-making?	Actions for local authorities, developers, engineers, etc are described but unsure about linkaged
How are the different levels related (in terms of information, etc.)?	Limited information given
Is the appropriate level of detail/resources for each level discussed? If so, how?	No
How is consistency between different scales ensured?	Limited information given
What is the baseline?	Choice of baseline not described
How is the baseline assessed?	N/a
How is uncertainty measured/recorded/taken into account?	Uncertainty not addressed
What time horizon is used for appraisals?	None specified
How is optimism bias taken into account in the costs of options?	No account of optimism bias
What decision rules are used?	None
How are the key issues in terms of the decision making focused on in the appraisal?	Key thoughts listed for different stakeholders, i.e. local authorities, engineers, etc.
How is climate change taken into account?	No
How are different scenarios accounted for?	No scenario proposed
How is sensitivity analysis undertaken?	No sensitivity analysis proposed
Is guidance available (this will be known from the completed proforma from Task A1)?	Y
What action is taken/required to ensure consistency across different appraisals?	No action suggested
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	No account of distributional issues

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Watercourses in the Community A guide to sustainable watercourse management in the urban environment June 2000	**Comments/description/ reference**
How are residual risks assessed and presented?	No account of residual risk
When is consultation with local stakeholders/ communities to be undertaken?	Early in the process, to minimise conflict and obtain data (Pg 36)
Does the appraisal process include any method for prioritisation? If so, how?	No
Is post project evaluation undertaken (or has it for particular projects)?	No

Review of Guidance Document of Identification and Designation of Heavily Modified (HMWD) and Artificial Water Bodies (AWB)

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Guidance Document of Identification and Designation of Heavily Modified (HMWD) and Artificial Water Bodies (AWB), CIS Working Group 2.2** **UBA, SNIFFER et at (2003)**	**Comments/description/ reference**
What appraisal methodology is used?	No appraisal methodology as such; present a stepwise approach to identification of Heavily Modifies Water Bodies (HMWB) and artificial Water bodies (AWB) in line with WFD requirements
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Hardly any similarities
What level of effort/resources is required?	Moderate to high
How does the appraisal process take account of different levels of decision-making?	This process will have to feed into the development of River Basin Management Plans (RBMP)
How are the different levels related (in terms of information, etc.)?	Refer above
Is the appropriate level of detail/resources for each level discussed? If so, how?	Yes, detailed description of task under each step starting from preliminary screening towards designation
How is consistency between different scales ensured?	Stepwise approach, one step feeding into another
What is the baseline?	N/a
How is the baseline assessed?	N/a
How is uncertainty measured/recorded/taken into account?	No account of uncertainty
What time horizon is used for appraisals?	N/a
How is optimism bias taken into account in the costs of options?	N/a
What decision rules are used?	No decision rules given
How are the key issues in terms of the decision making focused on in the appraisal?	No key issues included
How is climate change taken into account?	No account of climate change
How are different scenarios accounted for?	No scenario development
How is sensitivity analysis undertaken?	N/a
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: **Guidance Document of Identification and Designation of Heavily Modified (HMWD) and Artificial Water Bodies (AWB), CIS Working Group 2.2** **UBA, SNIFFER et at (2003)**	**Comments/description/ reference**
What action is taken/required to ensure consistency across different appraisals?	N/a
Does the appraisal process take account of extreme/low probability events? If so, how?	N/a
How are distributional issues/vulnerability of different groups taken into account?	No account of distributional issues
How are residual risks assessed and presented?	N/a
When is consultation with local stakeholders/ communities to be undertaken?	The process should feed into the development of RBMP, which are to be consulted with stakeholders
Does the appraisal process include any method for prioritisation? If so, how?	No
Is post project evaluation undertaken (or has it for particular projects)?	No

Review of Climate Adaptation-Risk, Uncertainty and Decision-Making

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Climate Adaptation-Risk, Uncertainty and Decision-Making	**Comments/description/ reference**
What appraisal methodology is used?	Gives details on a wide range of appraisal methodologies (Appendix 3)
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	Covers need to take account of climate change and discusses flood risk management within the guidance
What level of effort/resources is required?	Varies according to methodology used. The guidance gives an indication of the level of effort/resources required by each methodology
How does the appraisal process take account of different levels of decision-making?	The appraisal process is tiered moving from systematic qualitative analysis through semi-quantitative analysis to fully quantified approaches with monetary valuation as appropriate
How are the different levels related (in terms of information, etc.)?	Information from one level feeds into the next and the level of detail increases
Is the appropriate level of detail/resources for each level discussed? If so, how?	The appropriate level of detail is discussed as that necessary to make a robust decision – if more information is needed the appraisal moves to the next level of detail
How is consistency between different scales ensured?	The process given is generic such that consistency is not really discussed. However, the process does emphasise the need for transparency
What is the baseline?	Not specifically discussed due to generic nature of process
How is the baseline assessed?	Not discussed
How is uncertainty measured/recorded/taken into account?	The focus of the process is on taking account of uncertainty and risk. Scenarios are proposed and a range of different methods for taking account of uncertainty is proposed, with details of when each may be most/least appropriate
What time horizon is used for appraisals?	Not given due to generic nature of process
How is optimism bias taken into account in the costs of options?	Not covered
What decision rules are used?	No specific decision rules are given, but a range of different ways of making a decision are discussed (e.g. hedging and flexing)
How are the key issues in terms of the decision making focused on in the appraisal?	Criteria are set according to the key issues and the appraisal is undertaken against these criteria

Proforma of questions for review of appraisals used in other fields (B2)

Appraisal process being reviewed: Climate Adaptation-Risk, Uncertainty and Decision-Making	**Comments/description/ reference**
How is climate change taken into account?	The inclusion of climate change is the main focus of the appraisal process, with the aim being to ensure that options appraisal takes full consideration of the potential implications of climate change
How are different scenarios accounted for?	The appraisal process highlights the role of scenarios in terms of climate change and uncertainty
How is sensitivity analysis undertaken?	Sensitivity analysis is discussed in terms of its importance with a range of different approaches by which it can be undertaken described
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes: Guidance can be downloaded from the UKCIP web-site (registration required)
What action is taken/required to ensure consistency across different appraisals?	A series of questions are used at each stage of the appraisal process to ensure that all appraisals consider the same questions and generate the same type of information
Does the appraisal process take account of extreme/low probability events? If so, how?	These can be included in scenarios, although this is not specifically discussed
How are distributional issues/vulnerability of different groups taken into account?	Equity issues are considered
How are residual risks assessed and presented?	The guidance highlights that it is necessary to identify the level of residual risk, and that an acceptable level of residual risk should be acknowledged
When is consultation with local stakeholders/ communities to be undertaken?	The appraisal process suggests that stakeholders be involved through the decision-making process
Does the appraisal process include any method for prioritisation? If so, how?	It is proposed to give high probability, high consequence events priority
Is post project evaluation undertaken (or has it for particular projects)?	A stage for monitoring, evaluation and review is included as a key stage in a circular, iterative appraisal process

Review of: Strategic Environmental Assessment and Climate Change: Guidance for Practitioners

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	SEA
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	The initial stage is to define the problem, then develop options for mitigating and adapting environmental plan from which the preferred option is then selected
What level of effort/resources is required?	Baseline data is based on information provided by the following organisations: Renewable Energy Statistics Database; OFGEM; UKCIP; ODPM; EA; BGS; Nature Conservation organisations; and DTI (p.4)
How does the appraisal process take account of different levels of decision-making?	Consultation is carried out during the development of alternative scenarios of the SEA
How are the different levels related (in terms of information, etc.)?	Not known
Is the appropriate level of detail/resources for each level discussed? If so, how?	No
How is consistency between different scales ensured?	Not known
What is the baseline?	No regret or low regret option (p.6)
How is the baseline assessed?	Not known
How is uncertainty measured/recorded/taken into account?	Reference is made to the UKCIP report for dealing with uncertainty and risks (p.8)
What time horizon is used for appraisals?	None known, but the guidance makes reference to the ODPM for the development of SEA processes
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Plan for future climate change and the surrounding issues i.e. greenhouse gas (p.3) and identify the key constraints likely to cause climate change (p.4)
How are the key issues in terms of the decision making focused on in the appraisal?	SEA strategies that focus on 'win-win' situations, where climate, energy efficiency and business targets are met. These are used as the preferred option (p.7). Additionally, project evaluation is performed to offset any possible adverse effects (p.3)
How is climate change taken into account?	Climate change is the main focus of the SEA process. It is taken into account by monitoring and adapting environmental plans to take climate change into consideration

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
How are different scenarios accounted for?	Not known
How is sensitivity analysis undertaken?	Not taken into account
Is guidance available (this will be known from the completed proforma from Task A1)?	Partly- see Task A1
What action is taken/required to ensure consistency across different appraisals?	Not known
Does the appraisal process take account of extreme/low probability events? If so, how?	This is part of the contingency planning process (p.7)
How are distributional issues/vulnerability of different groups taken into account?	Not known
How are residual risks assessed and presented?	Not known
When is consultation with local stakeholders/ communities to be undertaken?	Consultation with local stakeholders not taken into account; consultation is only performed with environmental authorities (p.3)
Does the appraisal process include any method for prioritisation? If so, how?	None known
Is post project evaluation undertaken (or has it for particular projects)?	Partly, the guidance mentions project evaluation to predict and propose measures which help reduce adverse effects (p.3)

Review of: Zoning Marine Protected Areas through Spatial Multiple-Criteria Analysis

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
What appraisal methodology is used?	MCA used to integrate contrasting priorities of the stakeholders; additionally, GIS techniques for land assessments and evaluation helped design the options.
What similarities are there with any existing aspects of flood and coastal erosion risk management appraisal processes?	There are some basic similarities, including conflicting interests of social and environmental costs and benefits; therefore it attempts to provide multi-functional schemes; the appraisal process depends on the consultation exercises.
What level of effort/resources is required?	Medium effort is required, there is a three stage process for successful marine protection, ongoing consultation exercises are required, and maps of the area need to be produced using GIS.
How does the appraisal process take account of different levels of decision-making?	Yes, it does identify and define the different levels of the decision-making process
How are the different levels related (in terms of information, etc.)?	The different levels from the decision making process are strategically defined to ensure all variables are taken into consideration
Is the appropriate level of detail/resources for each level discussed? If so, how?	Using a flowchart and a discussion of the processes behind the flowchart
How is consistency between different scales ensured?	The information is processed using GIS techniques; therefore, consistency is systematically done in accordance with the techniques used. Additionally, several models of each stage is produced to foster similar conditions every time
What is the baseline?	N/a
How is the baseline assessed?	N/a
How is uncertainty measured/recorded/taken into account?	Not taken into account
What time horizon is used for appraisals?	None known
How is optimism bias taken into account in the costs of options?	Not taken into account
What decision rules are used?	Spatial MCA guided decision-making
How are the key issues in terms of the decision making focused on in the appraisal?	They are predominantly focused on the appraisal process, as long as they also corresponds to stakeholders' feedback
How is climate change taken into account?	Not taken into account
How are different scenarios accounted for?	Different scenarios were paired to see how they rated in terms of conservation values

Proforma of questions for review of appraisals used in other fields (B2)	
Appraisal process being reviewed:	**Comments/description/ reference**
How is sensitivity analysis undertaken?	Sensitivity is only carried out on the most subjective components of the study
Is guidance available (this will be known from the completed proforma from Task A1)?	Yes, but minimal guidance – reviewed in Task A1
What action is taken/required to ensure consistency across different appraisals?	Step by step instruction so that costal conservation managers
Does the appraisal process take account of extreme/low probability events? If so, how?	No
How are distributional issues/vulnerability of different groups taken into account?	Vulnerable coastal areas are taken into account through zoning/ or buffering areas using the Spatial MCA techniques
How are residual risks assessed and presented?	Not relevant
When is consultation with local stakeholders/ communities to be undertaken?	Throughout the planning to the management stages
Does the appraisal process include any method for prioritisation? If so, how?	The SMCA includes priority weights which express the importance of each attribute in the scenarios
Is post project evaluation undertaken (or has it for particular projects)?	None known

PB 12527 / 8

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