Summary

The identification and appraisal of the environmental impacts of a proposal are important aspects of transport planning which should be considered from the earliest stages of a planning exercise.

The law requires Environmental Statements to be prepared for many projects and the guidance in this chapter should be seen as complementary to statutory planning guidance.

The process of assessing the environmental impacts of a proposal within STAG should have the following stages:

- Baseline information - collection of relevant background information;
- STAG Part 1 - to filter out unsuitable proposals by identifying any major adverse environmental impacts. The outcome is summarised in an Part 1 AST;
- STAG Part 2 - a more in-depth environmental assessment of those proposals which have passed through the Part 1 successfully, including the identification of appropriate mitigation measures. The outcome is summarised in an Part 2 AST.

The underlying fundamental principles are that planners should concentrate particularly on significant impacts and that both qualitative and quantitative measures may be used to determine significance, provided that these measures are understandable and robust. The sub-objectives against which proposals should be appraised are as follows:

- Noise and vibration;
- Air quality - (CO_2, PM_{10}, NO_2);
- Water quality, drainage and flood defence;
- Geological features;
- Biodiversity;
- Visual amenity;
- Agriculture and soils;
- Cultural heritage;
- Landscape.

The guidance in this chapter includes advice on environmental assessment at the strategic level. Readers should note the adoption of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. Whilst STAG guidance is in line with the spirit of the Directive, it has not yet been reviewed for its compliance with the implementing Scottish legislation. Updates to this aspect of STAG will be provided as those requirements become clear.

6. ENVIRONMENT

6.1 Introduction

6.1.1 This chapter provides guidance on assessing the environmental impacts of a transport proposal, whether this comprises a strategy, plan, programme or specific project. It provides guidance on the general process to be adopted and outlines the issues and methodologies relating to different topic areas. Environmental assessment is conducted to contribute to the appraisal of the transport proposal within the terms of the Executive's five criteria, one of which is the environment.

6.1.2 The process of assessing environmental impacts should be fully integrated with the development of the proposal and should therefore be applied at the strategic level,during option formulation and appraisal, and at the detailed project level. Early consideration of environmental issues should result in the development of proposals that avoid environmental constraints, or result in a reduced environmental impact and a lesser need for mitigation measures and their associated costs. It should also inform the consideration of alternatives and the choice between them.

6.1.3 The environmental impact assessment process has been enshrined in legislation at both European and UK level:

6.1.4 **Strategic Environmental Assessment (SEA):** The European Commission has recently adopted a Directive on the assessment of certain plans and programmes (Directive 2001/42/EC published on 21st July 2001). This was transposed in Scots Law through the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004. This introduces a requirement to undertake '**strategic'** environmental assessment of certain plans and programmes. The Executive plans to extend the scope of SEA to ensure all public sector plans, programmes and strategies, with significant environmental effects are considered under SEA. To achieve that commitment the Environmental Assessment (Scotland) Bill was introduced to the Scottish Parliament on 2nd March 2005.

6.1.5 **Project Environmental Impact Assessment (EIA)**: The European Commission Directive on Environmental Assessment (85/337/EEC) came into force in 1985 and has subsequently been amended by Directive 97/11/EC. The Directives set out a framework for environmental impact assessment which has been enacted in Scotland principally by means of the Environmental Impact Assessment (Scotland) Regulations 1999. These regulations cover specific development projects rather than strategies, plans or programmes.

6.1.6 A transport **plan** or **programme** requiring a STAG assessment may also require SEA, within the terms of the SEA Regulations. Similarly, a transport **project** may require STAG and also require EIA to be undertaken within the terms of the EIA Regulations. Planners should refer to the relevant legislation and Scottish Executive Circulars for guidance on legislative requirements for assessment.

6.1.7 There is a level of overlap between all of these processes. Duplication of effort can be avoided if the available guidance on SEA and EIA, as appropriate, is reviewed prior to undertaking the STAG assessment to ensure appropriate methodology and approach.

6.1.8 Until recently, EIAs of transport proposals tend to have been conducted on projects which have been fairly well defined (either at the outline planning stage or where detailed designs have been available). Examples have included road schemes, a railfreight terminal, a causeway and jetty improvements. This meant that consideration of alternatives has been limited to, for example, variations in alignment or design rather than considering different modal solutions to address the particular transport problem.

6.1.9 The EC Directive 97/11/EC has increased the emphasis on the consideration of alternatives and on the reason for the choice of preferred proposal. The approach to the environmental assessment of transport proposals, including, at the strategic level, plans, programmes and transport corridor studies, needs to reflect this by incorporating the consideration of environmental issues at the option appraisal stage, early in the decision making process. Such strategic assessments will increasingly be used to select transport options for further development and implementation.

6.2 Process

6.2.1 The assessment of environmental impacts within a STAG appraisal should follow the process outlined below (described in detail in §6.3 - §6.5):

- Baseline information - collection of relevant background information
- STAG Part 1 – to filter out unsuitable proposals by identifying any major adverse environmental impacts. The outcome is summarised in the Part 1 AST;
- STAG Part 2 – a more in-depth environmental assessment of those proposals which have passed through the Part 1 successfully, including the identification of appropriate mitigation measures. The outcome is summarised in the Part 2 AST.

6.2.2 Each stage in the process should be carefully documented. The AST is intended as a summary of the assessment which can aid decision making. In order to provide confidence about the objectivity of the assessment underlying this summary, worksheets or working papers should be prepared for each topic.

6.2.3 Throughout the process it will be important to consult with statutory bodies and special interest groups who may have a responsibility and/or interest in the environmental effects of transport proposals. Under the SEA Regulations, Responsible Authorities must consult with Consultation Authorities at certain reporting stages in the SEA's development. They may be called upon to give information and advice during the preparation of an assessment. The main areas of expertise of statutory bodies are set out in Table 6.1. In addition to statutory bodies, non-statutory local and national interest groups, community organisations

and individuals may also have an interest in the assessment of environmental effects.

6.2.4 The approach to each organisation may be different, as some will be principally information providers, while others have statutory functions to perform or simply hold opinions on particular topics. Local knowledge may raise issues of which the statutory bodies may not be aware (e.g. presence of protected species). It is good practice to develop a consultation strategy and protocol, at an early stage in the process, which should identify relevant consultees and the appropriate method of approach. Chapter 11 provides more information about methods of consultation and participation.

6.2.5 Note that for proposals also requiring SEA, there are specific reporting and consultation requirements. Further guidance on SEA is provided in: Scottish Statutory Instrument 2004 No 258 The Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004; and ODPM: A Practical Guide to the Strategic Environmental Assessment Directive.

Table 6.1: Environmental Consultation Bodies

Consultation body	Area of expertise
Scottish Natural Heritage (SNH) (Consultation Authority under SEA)	Natural heritage including wildlife, landscape and earth science interests, recreation and access.
Scottish Water	Exercising water and sewerage functions and having a duty to further the conservation and enhancement of natural beauty, flora and fauna and geological and physiological features of special interest.
Scottish Environment Protection Agency (SEPA) (Consultation Authority under SEA)	Control of pollution to land, air, sea and water; conservation; waste management and flooding risk.
Health and Safety Executive (HSE)	Hazardous installations, Control of Major Accident Hazard Regulations (COMAH) sites, licensed explosives factories, magazines and ports, licensed nuclear sites.
Historic Scotland (HS) (Consultation Authority under SEA)	Built heritage, including scheduled monuments and other archaeological sites/landscapes, listed buildings and conservation areas, historic gardens and designed landscapes
Scottish Executive Environment and Rural Affairs Department (SEERAD)	Air, waste and water interests, agricultural land and fisheries.
Planning authorities	Land use planning policies and proposals.

6.3 Baseline Information

6.3.1 Environmental baseline data is needed principally to assess the vulnerability of the study area to likely changes associated with transport or other proposals. Baseline data are required to inform both the Part 1 and Part 2 STAG appraisals. Baseline data collected for Part 1 will be generally limited to readily available existing information.

6.3.2 Impact assessment relies on reliable and readily available baseline information to give an indication of the significance of impacts. The topics for which more in-depth data are to be collected should be agreed between relevant parties following the Part 1 process.

6.3.3 The baseline information will not necessarily relate to the existing situation - in fact, when dealing with strategy-level proposals, a long lead time to implementation is normal and the baseline might therefore relate to a situation several years hence. There will therefore be a requirement to project the existing situation, against which impacts can then be assessed.

6.3.4 Collecting the information may involve, in the first instance, desk studies of existing records. Where information does not exist or is inadequate for the purposes of making accurate predictions about potential impacts, additional field surveys may need to be undertaken. Field surveys are less likely to be required where environmental assessment is being undertaken on a strategy, plan or programme rather than at project level, as the emphasis is likely to be on identification of relevant environmental issues and the broad scale of potential impacts rather than on accurate predictions.

6.3.5 The data collected should include that which relates to the indicators selected for the Appraisal Summary Table.

6.3.6 Baseline data should, as far as possible, be adequately documented and of known quality and updated at regular intervals in accordance with reliable procedures. Gaps and uncertainties in data should be identified.

6.3.7 The level of detail and quantification in which the baseline environment can be described will also vary depending on the nature of the proposal. Environmental descriptions for environmental assessments of strategies, plans and programmes will be less detailed than those for project-based assessments. The nature of the proposal and the sensitivity of the environment will determine the methods and level of survey.

6.3.8 The key environmental attributes of the study area should be summarised on the *Background Information* section of the Part 1 AST and updated for the Part 2 AST. This should draw attention to the particular qualities of the area, making reference to specially designated parts of the area and to known proposals for change. The AST also allows environmental problems to be identified, which could include, for example, references to areas of dereliction or locations suffering poor air quality.

6.4 STAG Part 1

6.4.1 The key purpose of the Part 1 assessment is to allow a comparison of alternative proposals, enabling those proposals which are unsuitable on environmental grounds to be filtered out at an early stage.

6.4.2 At the outset it is important to:

- Confirm the nature of the proposal including any alternatives under consideration;
- Identify if a SEA is required and related requirements;
- Identify the range of key likely effects on the environment;
- Identify the extent to which these effects need to be investigated;
- Identify methodologies to be employed;
- Define data availability and further data gathering required;
- Set the indicative thresholds and significance criteria to be used in evaluation of impacts;
- Identify broad mitigation measures;
- Agree the above with statutory bodies.

A summary of this information should be presented in the final STAG report (ref. Chapter 14).

6.5 STAG Part 2

6.5.1 The Part 2 appraisal requires an assessment of the environmental impact of a proposal against a number of topic headings. However, these issues will not be common to all assessments. The environmental impact assessment should focus on the significant beneficial and adverse impacts that may arise as a consequence of the proposal and related alternatives. Significant impacts may be defined as those which should be given due consideration in decision-making. Where an impact on a particular topic area is unlikely to be significant, the detailed assessment as reported in Part 2 ASTs may not be necessary. On the other hand if the scope of the assessment is too narrowly defined, significant issues may not be identified at the outset of the study and subsequent data collection and analysis may be inadequate. Issues which are significant at the project level (such as land take from a particular habitat of ecological value) may not be significant at the strategic level.

6.6 General Advice on Environmental Impact Assessment

6.6.1 The level of detail at which the assessment is conducted should be appropriate for the stage and type of proposal.

6.6.2 Various techniques may be employed to identify potential environmental impacts/issues:

- Use of environmental objectives - early identification of environmental objectives may allow particular topics to be identified to provide a focus for consideration of impacts. Such objectives ("external" objectives using the terminology introduced in Chapter 2) may be found in Development Plans or strategies prepared by planning authorities or other agencies and will generally be applicable at a wide area level. A proposal's planning objectives may include one or more which are focussed on environmental concerns;
- Involvement of experts - experts on the assessment team should set out their independent view of potential impacts based on their own knowledge and experience;
- The use of standard checklists - standard topic lists can be defined which set out, for each topic area, a description of the potential impacts, the geographical level of importance of the impact, the magnitude of the impact and the nature of the impact (e.g. short/long term, reversible/irreversible etc);
- Desk studies - a rapid search of published information (such as Development Plans) can identify areas of sensitivity and issues of environmental concern. Development Plans can also assist in identifying potential land use change and predicting future environmental conditions;
- Preliminary consultation with statutory, transport and land-use planners and official bodies with an interest in the likely environmental effects who may have specific knowledge of the locality or experience of considering the impacts of particular types of proposal on their area of expertise;
- Comparison with the impacts of other similar proposals, which may be revealed through literature surveys.
- Network analysis involving monitoring data, mathematical models, GIS, other mapping matrices and expert judgement.

6.6.3 At the strategic level, a useful approach will be to draw upon the above sources to identify environmental constraints and objectives affecting the study area. This can be used to set the scope for the initial stages of assessment and to guide development of the proposal. As more information becomes available about the emerging transport proposals, the scope of the assessment may need to be revisited – the nature of the proposal will be a key factor governing the range of potential effects on the environment.

6.6.4 Selected indicators used at the proposal development stage should also be capable of use in monitoring the performance of proposals following implementation.

6.6.5 Indicators that have been used to describe the baseline environmental and objectives of a plan, or programme can also be used for monitoring as part of the SEA process.

6.7 Impact Assessment Methodology (Part 2)

6.7.1 Environmental impacts may be classified in several ways. Normally this would be by topic and by the nature of the impact. It is also possible to classify impacts as

large scale (regional, national or even global) or local. Effects upon global and national issues and objectives are difficult to assess by using conventional EIA techniques at individual project level, but at a strategic level the use of more qualitative assessment techniques may be more appropriate. However hard data may be available to make detailed quantitative predictions and can be particularly useful where a proposal's effects are uncertain, close to a threshold, or cumulative. But quantification is not always practicable, and broad-based and qualitative predictions can be equally valid and appropriate.

6.7.2 The list below illustrates different scales of geographical impact, though it should be noted that some effects often apply at several different levels – for example, air quality can be an issue at all levels:

- Trans-national (climate change, greenhouse effect, ozone depletion, cross-border effects);
- National (non-renewable energy, air quality, biodiversity, cultural heritage, material assets);
- Regional (natural resources, landscape, water resources, ecology, waste, human health);
- Corridor (noise, pollution, soils and geology, flora and fauna, land use);
- Local (construction, severance, community, visual, noise).

6.7.3 For each topic, the area to be considered will have to be defined. The extent of this area will depend on a number of factors, including:

- The nature of the study (for example a multi-modal study may cover a sub-region or may cross regional or national boundaries);
- The form of the development (an airport study may be required to cover a large area to take account of the aircraft noise footprint);
- The topic being considered (water quality effects may be extensive whereas impacts on agricultural land would relate to immediate land take).
- The existence of neighbouring plans and/or plans for different sectors in the same area.

6.7.4 The spatial level of appraisal will, therefore, vary depending on the scale of the proposal and the topics being considered; this reflects the fact that the spatial extent of the effects being assessed can vary substantially, as discussed above.

6.7.5 The key areas of environmental effects to be considered in the appraisal of transport proposals include:

- Noise and vibration;
- Global air quality – carbon dioxide (CO_2);
- Local air quality - particulates (PM_{10});
- Local air quality – nitrogen dioxide (NO_2);
- Water quality, drainage and flood defence;

- Geology;
- Biodiversity;
- Landscape;
- Visual amenity;
- Agriculture and Soils; and
- Cultural heritage.

6.7.6 In general, these will apply to all transport proposals, though it is the role of the scoping exercise undertaken at Part 1 to identify their relevance to a particular proposal and to identify whether additional topics need to be covered. For example, a transport proposal to construct harbours or jetties or crossings of coastal inlets would be likely to require an assessment of impact on coastal processes, including changes to tidal activity, sedimentation and geomorphology as well as the impact on marine ecosystems. On the other hand, land take issues may be less important when STAG is being undertaken on a policy, plan or programme.

6.7.7 Note that for proposals requiring a SEA, the topics addressed must meet the statutory requirements set out in SEA Regulations

6.7.8 Each sub-objective may have a number of characteristics. For example, under the water quality sub-objective, one might have to consider chemical and biological water quality. Each characteristic will then have one or more criteria that can be assigned to it for measuring the effects of transport proposals. A criterion may be defined as a measurable quantity or quality and is usually related to an objective. For example, if one of the planning objectives is to protect existing woodlands, then a criterion might be used which measures the scale of woodland loss. At the project level this could be related to actual land take, whereas for a policy, plan or programme the criterion might need to be stated in terms of the overall quality of the woodland resource which may be affected. The key criteria and the measured effect upon them are to be reported and summarised in the AST.

6.7.9 Methods for predicting environmental effects and their magnitude are specific to the individual environmental topic and are a matter for expert consultants. For some topics, such as the assessment of impact on landscape character, qualitative techniques will be most appropriate. In other cases, such as the dispersion of emissions, the use of quantitative techniques will be possible. The use of quantitative techniques may offer a greater degree of consistency, but are not always available or appropriate. It is recognised however, that at the strategic level, qualitative techniques will be more appropriate because, for example, proposals will lack physical definition. Where qualitative techniques are used, the basis of terms employed must be explained and categorisations applied consistently. Numerical scoring or weighting of qualitative indicators should be avoided as it is inaccurate and misleading.

6.7.10 In considering the nature of impacts, the assessment will need to consider whether each is:

- Direct - arising as a result of the proposal itself (e.g. changes in traffic volumes leading to changes in emissions affecting properties adjacent to a new or improved road or rail link, or land take to construct new transport infrastructure);
- Indirect - arising from effects associated with measures required to accommodate the proposal (e.g. Land take for planting required to screen a new transport facility);
- Secondary/induced - arising from development induced by the proposal (e.g. additional traffic generated by new development attracted by improved transport infrastructure);
- Short, medium or long term - the duration of effects where short term may be less than one year, medium term one to five years and long term over five years;
- permanent or temporary - whether or not change is reversible or irreversible, given mitigation measures, or whether the effect is for a limited duration;
- Positive or negative - whether the effects are beneficial or detrimental to resources or receptors;
- Cumulative - arising from the combined effect of a number of effects (e.g. loss of woodland over the length of route of a new railway, impact of land loss, noise and visual intrusion on a property);
- Synergistic - a form of cumulative effect where the combined impact of several proposals may exceed the sum of their individual effects (e.g. several proposals which each encroach minimally on a wildlife site may together affect the site so much that its habitat value is lost).

6.7.11 The effects may relate both to the construction phase and the presence of the proposal once implemented. In relation to plans, impacts may occur in advance of the project construction e.g. blight. The assessment of effects should be made assuming that stated mitigation measures (see §6.9) are in place, if appropriate.

6.7.12 Climate, pollution and energy effects are normally deduced from traffic forecasts and measurements, whilst most remaining sub-objectives are impacted by physical modification of the environment (e.g. land take).

6.7.13 Environmental assessments of road proposals have considered the impacts of the proposal during construction and at year 1 and year 15 after construction. Year 15 is normally taken as the “assessment year” and the effects of the “do-minimum” and “with proposal” options are compared for that year. With the emphasis moving towards other modes of transport and strategic studies, it may not be appropriate to adopt such a rigid approach to operational impacts. Rather the assessors should consider:

- The nature of the proposal and its components;
- Those operational factors which influence the magnitude of environmental impacts and the point at which the greatest impacts are likely to occur;
- Whether timescales should relate to other key events or programmes such as the end date of a national/regional strategy or land use plan.

6.7.14 The level of accuracy of predicted impacts will reduce (and uncertainties increase) as the assessment looks further into the future. It will seldom be appropriate to consider impacts more than 20 years hence. Whichever year is adopted as the assessment year, it must be clearly stated and used consistently when assessing effects across the range of topic areas.

6.7.15 The guidance on the assessment of particular topics set out in later sections is intended to direct the reader to source material from which appropriate techniques may be selected, rather than to specify particular techniques in detail. This is because the selection of technique will need to take into account the nature of the plan, programme or project being assessed and the level of detail available for assessment purposes, particularly on the nature of outputs from any transport model which may be employed.

6.8 Evaluation of Impact Significance

6.8.1 The basis for the evaluation of impact significance must be clearly set out for each topic in worksheets or supporting documentation. In most cases, impact significance is a function of the two variables, impact magnitude and receptor sensitivity. For example, a small-scale proposal in an area of unremarkable landscape may not be significant in terms of landscape quality whereas the same proposal in a National Scenic Area may be evaluated as having a major impact. Small increases in noise levels may not be significant where noise levels are already high, but could be significant in a quiet rural village. The AST allows for specific sensitivities to be recorded in the 'qualitative' column and more information about these should be provided in worksheets.

6.8.2 In line with the approach in NAM and that of DfT, it is proposed that the seven point scale be adopted for assessing the predicted magnitude of impacts on each of the sub-criteria - the appropriate level should be recorded in a worksheet or in supporting documentation:

- Negative major;
- Negative moderate;
- Negative minor;
- Neutral;
- Positive minor;
- Positive moderate;
- Positive major.

6.8.3 At the strategic level, this assessment may need to be based entirely on qualitative information, with informed value judgements recorded in the 'qualitative' column of the AST. In some cases, the consideration of proposal options will be informed by the results of traffic models. Such models would allow a quantitative approach to be adopted to the assessment of effects on noise and air quality. Where this information is available, it should be recorded in the 'quantitative' column of the AST. At the project level, both 'qualitative' and 'quantitative' columns should be

completed. Those entries should provide a summary of the data included in worksheets and other supporting documentation.

6.8.4 Once the magnitudes of impacts have been identified, impacts must be evaluated so that their significance can be determined. It is proposed that significance should be recorded in the column carrying that heading in the AST, using a seven point scale as described in §5.3.10:

- No impact;
- Minor impact (positive/negative);
- Moderate impact (positive/negative);
- Major impact (positive/negative).

6.8.5 The significance of impacts may be evaluated by means of expert judgement by individuals or panels, or may relate specifically to published standards, for example in the case of air quality.

6.9 Mitigation measures

6.9.1 Mitigation measures are those measures considered necessary to prevent, reduce and where possible remedy or offset any significant adverse impacts on the environment. They should not be an afterthought, but integrated in the final proposal to ensure that the best environmental fit is achieved. Effects which cannot be mitigated should be acknowledged. Where an assessment identifies severe environmental impacts in the absence of mitigation, this suggests that an alternative option should be considered rather than seeking to mitigate an unacceptable proposal. At the strategic level, mitigation measures may have to be stated in generic terms which can then be used to guide the development of projects forming part of their implementation.

6.9.2 Mitigation measures can take many forms including:

Projects:

- Modal alternatives and measures to influence traffic flows (by means of policies such as road pricing or traffic control/management systems);
- Alternative indicative routes or sites (for nodal facilities);
- Alternative detailed design criteria for the source or receptor;
- Alternative construction methods;
- Remedial or compensatory action such as noise insulation or relocation of species.

Strategies, Plans and Programmes

- changes to the wording of the plan or plan alternative;
- the removal of the plan alternatives that are unsustainable or do not promote the objectives;

- the addition of new plan alternatives;
- devising new alternatives, possibly a combination of the best aspects of existing alternatives;
- identifying issues to be considered in environmental impact assessment of specific developments.

6.9.3 Where appropriate mitigation measures associated with a particular option can be identified, these should be stated and included as commitments in the assessment. At the strategic level the potential for mitigation measures should be acknowledged and taken into account as far as possible. At the project level, the design of mitigation measures may need to be specified in some detail and a commitment made to their implementation.

6.9.4 If the assessment of effects is to be made assuming stated mitigation measures are in place, it follows that there must be confidence that any measures identified are capable of being delivered and that they have a real prospect of success.

6.9.5 More extensive information on project-related mitigation is contained in *Mitigation Measures in Environmental Statements* DETR 1997.

6.10 The Appraisal Sub-Objectives

6.10.1 In this section, each of the environment sub-objectives against which appraisal is required is discussed in turn. The following items are considered:

- Issues;
- Sources of Information;
- Methods – strategic level;
- Methods – project level;
- Appraisal Summary Table;

6.10.2 The difference between *project* and *strategic* level should be understood as follows: project level appraisal will be appropriate where a proposal is sufficiently specific (in terms of its location, extent and design) that detailed judgements can be made about its environmental effects. An example might be a preferred alignment for a railway or for a road improvement. Strategic level appraisal will be appropriate for proposals where only outline information is available about their location, extent and design, or where concepts or broad options are being tested. Examples might include strategies, plans or programmes, including multi-modal studies (where a strategic level assessment can help to inform the option selection process), and assessments of local or regional transport strategies (where broad corridors for transport infrastructure may be identified, but specific routes have yet to be determined).

6.10.3 A Strategic level '*appraisal*' should not be confused with conducting an SEA. Guidance on the requirements for SEA is provided in Scottish Statutory Instrument 2004 No 258 The Environmental Assessment of Plans and Programmes (Scotland)

Regulations 2004; and ODPM: A Practical Guide to the Strategic Environmental Assessment Directive.

6.11 Noise and Vibration

Issues

6.11.1 Transport is a major source of noise. Noise exposure can have an adverse impact on human health and the perceived quality of life. Nuisance arising from noise exposure varies greatly between individuals, but generally at the community level there is a reasonable correlation between physical measurements of noise and nuisance response. However, people react differently to noise from different modes of transport and at the strategic level effects will be more difficult to quantify because the relationship between the key variables of source and receiver will be unclear.

Sources of Information

- Local authority Environmental Health Officers – existing noise levels and noise nuisances;
- Development Plans – noise constraint policies;
- Land use maps – location of receptors especially sensitive to noise e.g. schools, hospitals, aged persons homes, laboratories using sensitive instruments, heritage buildings, outdoor areas for quiet recreation;
- Census of Population – resident population in defined zones may be determined by aggregating Small Area Statistics;
- Field survey – ambient noise levels;
- *Calculation of Road Traffic Noise (CRTN)* – Department of Transport 1988;
- *Calculation of Railway Noise (CRN)* – Department of Transport 1995;
- Scottish Executive *Planning Advice Note 56 "Planning and Noise"*.

Methods – Part 1

6.11.2 This is likely to be a largely qualitative assessment at both strategic and project level, considering potential increases or decreases in noise levels arising from the proposals and approximate numbers of people or sensitive receptors exposed. This should be summarised in the Part 1 AST.

Methods – Part 2 Strategic Level

6.11.3 The method proposed in WebTAG 3.3.2 is recommended. This proposes use of outputs from a strategic transport model and average noise emission indicators, such as those in CRTN and CRN, to estimate noise emission levels in each of the model's zones in the 15th year of operation for the existing situation, a do-minimum strategy and the proposed strategy.

6.11.4 The area likely to be impacted by traffic noise is calculated by considering the length of the transport network in each zone and applying a standard impact corridor width (WebTAG 3.3.2 suggests 50m captures most of the population affected in urban/ suburban areas). Average zonal population densities are then applied to this area to forecast the numbers likely to be exposed to increases or decreases in traffic noise. Changes in the number of people likely to be annoyed by noise over the long term in each zone are then estimated for the do-minimum scenario and the proposed strategy. The total numbers of people experiencing an increase, a decrease or no change in noise levels can be estimated by summing the zonal figures, allowing noise nuisance comparison between strategies.

Methods – Part 2 Project Level

6.11.5 The method proposed WebTAG 3.3.2 is recommended. Noise contours for the existing situation, the do-minimum scenario and proposed scheme at year 15 should be generated along transport alignments using standard prediction methodologies (e.g. CRTN, CRN). The numbers of properties or the population within each band can be estimated and the relative annoyance responses calculated for long-term changes. More detailed data on individual properties can be provided if indicated.

Appraisal Summary Table

6.11.6 The Part 2 AST should illustrate the number of people experiencing a significant increase/decrease in noise levels.

6.11.7 For strategic and project level appraisal, the AST should summarise the relative annoyance responses and affected populations for the existing situation, a do-minimum scenario and the proposed scheme. At the strategic level, the change in the number of people annoyed over geographical zones may be an adequate proxy in the absence of more accurate information. Estimated populations affected by increases in noise of >3dBA can also be indicated on the AST. The qualitative assessment should relate to the subjective response to noise levels, noting for example, the presence of sensitive receptors such as hospitals, or if the scheme is introducing noise into a previously quiet area where traffic was not the dominant noise source.

6.11.8 At project level, the annoyance response summary should be based on modelled noise contour information.

6.11.9 Worksheets N1 and N2 in Appendix C may be used to assist in the assessment of a proposals impact in terms of noise and vibration.

6.12 Air Quality

Issues

6.12.1 Climate is strongly influenced by changes in the atmospheric concentrations of a number of gases that trap heat radiated from the earth's surface (the 'greenhouse effect'). Carbon dioxide has been singled out as the most important transport

induced greenhouse gas having a direct impact on global warming. Climate change is now widely recognised as a threat to the environment. In broad terms, the UK has committed itself to reduce emissions of key greenhouse gases by 12.5% from 1990 levels by 2010, though there are different targets for individual pollutants. Carbon dioxide (CO_2) emissions are taken as a proxy in STAG for global air quality.

6.12.2 Several air pollutants can cause specific local problems if they occur at high concentrations. Substances that potentially have impacts on human health, flora and fauna include CO, volatile organic compounds (VOCs), NO_2, and PM_{10} (particulate matter). At very short distances, heavy metals (e.g. lead and cadmium) may also be significant. Pollutant concentrations exceeding ambient air quality standards are normally only measured directly adjacent to roads and airports. The key pollutants to be considered in STAG are NO_2 and PM_{10} (of primary concern in terms of health), which together are taken to account for local air quality.

Sources of Information

- *Local Air Quality Management Guidance (general and technical guidance notes)* – DETR 1999;
- *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland* – DETR 2000;
- Local authority Environmental Health Officers – existing data on air quality issues;
- Scottish Executive Development Department databases - emission characteristics of traffic in terms of: speed, vehicle mix and flow at representative points on the trunk road network;
- Census of Population – resident population in defined zones may be determined by aggregating Small Area Statistics.

Methods – Part 1

6.12.3 This is likely to be a largely qualitative assessment at both strategic and project level, considering potential changes in air quality arising from the proposals and approximate numbers of people or sensitive receptors exposed. A description of how the proposal contributes towards reducing emissions of CO_2 and other pollutants and promotes better air quality is required for the Part 1 Appraisal.

Methods – Part 2 Strategic Level

6.12.4 At the strategic level, outputs from spatially coarse transport models are unlikely to be suitable for estimating the exposure of properties to levels of air pollution. It would be more appropriate to estimate the total emissions likely to be generated in the study area on a zonal basis and to relate this to the magnitude of changes in emissions and where these changes occur as described WebTAG 3.3.3 (1.5).

6.12.5 Total CO_2, PM_{10} and NO_2 emissions for road traffic can be calculated according to the method in DMRB 11.3.1.

Methods – Part 2 Project Level

6.12.6 An assessment of the change in roadside levels of PM_{10} and NO_2 is to be made for all affected routes using the method described in DMRB 11.3.1. Proposals for modes other than road traffic will have implications for road traffic on particular routes due to factors such as modal shift or the generation of additional traffic to transport nodes (stations, ports, transhipment points etc). The exposure of properties to this general change can be calculated by banding properties according to their distance from the road (0-50m, 50-100m, 100-150m, 150-200m) and using the distance weightings provided in Table 8 of DMRB 11.3.1.

6.12.7 To provide an estimate of the number of properties experiencing improvement or worsening in air quality over the entire scheme, the affected routes are divided into two groups – those where air quality would be improved (negative values) and those where it would be worse (positive values). The number of properties affected in each group is then calculated by summing over the four bands listed above and then aggregated for the area as a whole.

Appraisal Summary Table

6.12.8 Indicators to be used include the change in:

- CO_2 emissions (expressed in tonnes);
- the number of people/properties experiencing an increase/decrease in PM_{10} concentrations (micrograms/cubic metre);
- the number of people/properties experiencing an increase/decrease in NO_2 concentrations (micrograms/cubic metre);

6.12.9 An indication of the relative magnitude of emissions exposure using indices or distance bands should be provided. At the qualitative level the performance relative to the Air Quality Strategy for England, Scotland, Wales and Northern Ireland should be reported.

6.12.10 Worksheets A1 to A4 in Appendix C may be used to assist in the assessments required to appraise the air quality impacts of a proposal. Worksheet A4 is a supporting worksheet provided to address the wider reporting issues such as the performance of the proposal in relation to objectives or whether particular spatial and/or social groups are particularly affected. It may also be used to record the need for any mitigation or monitoring actions, uncertainty and the issue of significance.

6.13 Water Quality, Drainage and Flood Defence

Issues

6.13.1 Water quality is of critical importance to people, biodiversity, agriculture and recreation. The development and operation of new transport infrastructure has the potential to have a significant effect on water quality, for example through entrainment of sediments during construction or runoff containing pollutants once the proposal is in operation. Increases in shipping movements could increase the

risk of pollution or disturbance to marine or littoral environments. New structures may affect the capacity of flood plains or flood defences. EC Directive 2000/60/EC, the Water Framework Directive, is now implemented in Scotland. This stipulates future water protection mechanisms and quality criteria, and should be referred to within strategy / project objectives, as appropriate.

Sources of Information

- Scottish Environment Protection Agency (SEPA) – water quality (classification of river quality, coastal waters, lochs and estuaries);
- SEPA – groundwater vulnerability maps and policy statements;
- SEPA – *Groundwater Protection Policy for Scotland* (1997)
- Scottish Executive – *National Planning Policy Guideline 7 "Planning and Flooding"*
- Scottish Executive - *Scottish Planning Policy (SPP) 7 - Planning and Flooding (Consultation Draft)* (March 2003).
- Scottish Executive – *National Planning Policy Guideline 13 "Coastal Planning"*.

Methods – Strategic Level

6.13.2 A qualitative assessment needs to be made of the sensitivity of the water environment within the study area. This should take into account factors such as the quality of the resource, the scale at which it is important to policy makers, the rarity of the resource and whether it might be substitutable over time (see WebEBTAG 3.3.11 (1.2.7)). Assessing the quality of the resource may include factors such as fisheries and conservation value as well as water quality. Information about the nature of the proposal may then be used to make a qualitative assessment of the nature and likely magnitude of associated effects and the significance of the impact on the resource.

Methods – Project Level

6.13.3 The appraisal of water quality, drainage and flood defence requires the consideration of impacts in terms of the number and value of the affected watercourses, as well as undertaking a risk analysis to assess the overall beneficial or adverse impacts on the water environment. The process should use the SEPA River, Loch, Coastal Water and Estuary Classification Schemes and incorporate the agency's groundwater source protection classification as well as EC Freshwater Fisheries designations and other contemporary material considerations. An assessment should also be made of effects on floodplain capacity (if appropriate), and loss of floodplain capacity should be calculated and recorded. Impacts on the quality of run-off, and the risk of contamination to both surface water and groundwater should be assessed.

Appraisal Summary Table

6.13.4 The AST should record the risk to the water environment in qualitative terms based on an overall assessment of significance using a seven-point scale (see §6.8.4 and

WebTAG 3.3.11 (1.2.19)). Where proposals could result in deterioration in water quality this would be recorded as a negative effect. The AST can also include the names, uses and quality of affected surface and groundwater resources.

6.13.5 Worksheet W1 in Appendix C may be used to assist in the assessments required to complete the ASTs.

6.14 Geological Features

Issues

6.14.1 The underlying geology has played a fundamental role in determining the landscape character of Scotland. Transport proposals could have a direct impact on strata by imposing different loads, which could cause ground to collapse, by altering the hydrogeology or by burying or damaging important deposits or outcrops. Some geological or geomorphological features are of scientific interest and educational value. They may be designated as statutory Sites of Special Scientific Interest (SSSIs) or non-statutory Regionally Important Geological Sites (RIGS). Proposals could also prejudice the future working of important mineral reserves or have an indirect impact on resources through, for example, the demand for construction materials. Resource usage may be a key factor in selecting between options at the strategic level.

Sources of information

- British Geological Survey – survey information;
- Royal Society for Nature Conservation – Regionally Important Geological Sites (RIGS);
- Scottish Natural Heritage (SNH) – SSSI designations.

Methods – Strategic Level

6.14.2 At the strategic level, assessment will be restricted to identifying those sites of particular geological importance (designated sites) or significant mineral reserves and making a qualitative assessment of the degree to which the proposal may affect such sites.

Methods – Project Level

6.14.3 A more detailed assessment should be made of the significance of any designated site or significant mineral reserve which may be affected by the proposal, the proportion of the site which may be affected by it and the significance of this scale of effect.

Appraisal Summary Table

6.14.4 The AST should record numbers of each type of designated site or reserves affected by the proposal, e.g. 1 SSSI, 2 RIGS. The qualitative field should be used

to summarise the overall effect on each affected site. Assessment of strategic proposals may need to be reported in the qualitative field only.

6.14.5 Worksheet G1 in Appendix C may be used to assist in the assessment.

6.15 Biodiversity

Issues

6.15.1 Biodiversity, the richness of species, ecosystems and habitats, is now recognised as a key issue that underpins policy making in many countries. The development of transport infrastructure has a number of potential effects on biodiversity, including:

- Direct damage to important nature conservation sites or the habitats of protected species;
- Fragmentation or loss of habitats, thereby reducing species diversity and opening the way for the influx of other species;
- Creation of barriers to the movement and genetic interchange between populations;
- Disturbance of habitats and species due to factors such as noise, light pollution and contaminated run-off which may depress populations and reproduction in some flora and fauna.

6.15.2 The overall objective should be to maintain biodiversity in the study area, including wildlife habitats and species and to improve the status of rare and vulnerable species wherever possible. Transport proposals should therefore be designed:

- To avoid harmful development affecting protected habitats. All EU member countries have such areas and networks, for example, those established under the Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC) – the Natura 2000 sites, National Nature Reserves, Sites of Special Scientific Interest and regionally and locally designated sites;
- To avoid development in, or close to, unprotected but valuable and sensitive habitats (e.g. important bird areas);
- To avoid fragmentation of wildlife migration routes, e.g. by avoiding migration zones, or by mitigating the barrier effect by providing a tunnel or 'ecoduct' for wildlife;
- To adopt the “no net effect” principle, providing full compensation for lost biodiversity values where loss is unavoidable.

Sources of Information

- SNH – information on designated sites, Biodiversity Action Plans, protected species and a wide range of nature conservation issues;
- Scottish Wildlife Trust – information on habitats, species and reserves;
- Macaulay Land Use Research Institute - detailed land cover map and aerial photographs;

- Local Plans – location of Local Nature Reserves, Sites of Importance for Nature Conservation, Tree Preservation Orders etc.;
- Local Biodiversity Action Plans;
- Scottish Executive, *Planning Advice Note 60 "Planning for Natural Heritage"*;
- Ratcliffe D.A. (ed) (1997), *A Nature Conservation Review,* Cambridge University Press.
- Nature Conservancy Council (1990), *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit.*

Methods – Strategic Level

6.15.3 At the strategic level, the aim should be to undertake a broad appraisal of biodiversity, identifying in particular, the presence of designated sites in the study area – Special Areas of Conservation, Special Protection Areas, National Nature Reserves and Sites of Special Scientific Interest. Local designations, including sites protected by policies in development plans, should also be identified. The relative importance of parts of the study area should be evaluated with reference to the following factors (WebTAG 3.3.10 (1.2)):

- attribute/feature;
- scale at which it matters;
- importance;
- abundance/trend;
- substitution possibilities.

6.15.4 This evaluation may be undertaken at a broad-brush level based on desk study or initial site survey. Assessment of effects at this level may have to be based on an approximate indication of the scale of land take and the effect which this might have on the nature conservation importance of parts of the study area. Other alternatives are suggested in WebTAG 3.3.10.

Methods – Project Level

6.15.5 A more detailed assessment of the biodiversity of the area will be required where specific projects are proposed. This is likely to require a Phase 1 Habitat Survey, supplemented by specialist surveys of flora and fauna (particularly focussed on protected species suspected of being present). Evaluation of sites should be carried out according to the Ratcliffe criteria (DMRB 11.3.4 Annex VI). The impact of the proposal on particular sites can also be evaluated using these criteria, given information about the construction and operation of the proposal.

Appraisal Summary Table

6.15.6 The AST should record, and describe if necessary, all designated sites or reserves and the presence of rare and protected species affected by the proposal. The qualitative field should be used to summarise the distribution of impacts on each

affected site. Assessment of strategic proposals may need to be reported in the qualitative field only.

6.15.7 Worksheets B1 and B2 in Appendix C may be used to assist in the assessments.

6.16 Landscape

Issues

6.16.1 Scotland has a wide range of landscape types, many of which are highly valued and some being of national or international importance. The landscape contributes to the Scottish national identity and, while recognising that it is constantly evolving, it is clearly a resource of value to future generations. Valuable and visually sensitive landscapes, culturally interesting elements and patterns and natural areas are protected by designations. The designation of National Parks is one indication of landscape quality. SNH's landscape character assessment programme covers the whole of Scotland.

6.16.2 The visual appearance of linear transport infrastructure (both the infrastructure itself and the traffic it carries) can have a major impact on the existing landscape. Major highways and railways must have gentle, not sharp, curves and gradients. Consequently they often need long, high and visually dominant bridges, cuttings, embankments, etc., where rivers, mountains, valleys or other infrastructure have to be crossed. Therefore, sensitive visual (cultural and natural) elements and patterns, which are important at the small scale, cannot always be avoided and are easily damaged or fragmented. Changes to elements which are fundamental to the character of the landscape, such as the removal of field boundaries or vegetation or the introduction of alien materials, can affect the sense of place. Inappropriate routing may conflict with the natural grain of the land. The built environment and townscape character might also be affected.

6.16.3 At the strategic level, defining areas of different character and quality can be an important means of influencing the selection of modes and route corridors.

Sources of information

- SNH – information on designated landscapes (National Parks, National Scenic Areas, Natural Heritage Zones) and landscape character assessments;
- Planning authorities – information on Areas of Great Landscape Value, Regional Parks, Country Parks and other areas designated for planning purposes;
- National Trust for Scotland - details of landscapes held in trust for the benefit of the nation.
- Garden History Society for Scotland – information on historic and designed landscapes
- Historic Scotland – information on scheduled monuments (where setting can be an important issue)

Methods – Strategic Level

6.16.4 At strategic level, a broad assessment of landscape character and quality should be attempted and any specific designations identified. There are several methodologies available which take into account factors such as topography, land cover (vegetation) and historical/cultural associations to establish the character of a landscape. However, reference should first be made to landscape character assessments published by SNH prior to undertaking any more detailed assessment. In the absence of detailed project proposals it may only be possible to say whether the proposal may have a positive, neutral or negative impact on the landscape.

Methods – Project Level

6.16.5 A similar approach to that above may be adopted, though at a finer level of detail. Reference should initially be made to the landscape character assessments published by SNH. Thereafter a further subdivision of character areas should be made if appropriate to the scale and detail of the landscape and project proposals. A number of alternative approaches are available. DMRB 11.3.5 sets out a methodology that has been used over a long period, however this guidance is being updated in accordance with more recently published guidance. The most recent guidance is *'Landscape Character Assessment Guidance for England and Scotland'* (2002) published by Scottish Natural Heritage and the Countryside Agency. Landscape impacts would normally be assessed at Year 1 and the assessment year (see paragraph 6.7.12 *et seq*) – the latter to be recorded on the AST.

Appraisal Summary Table

6.16.6 The Part 2 AST should record, and describe impacts on the fabric and character of the landscape. For strategic assessments this will be an overall assessment, perhaps focusing on the areas most vulnerable to the type of change proposed. For project level assessments the impacts may be broken down to each character area. If necessary, all designated sites affected by the proposal, with their designations, should also be recorded. The qualitative field should be used to summarise the overall effect on each affected character area or designated site. Assessment of strategic proposals may have to be reported in the qualitative field only.

6.17 Visual Amenity

Issues

6.17.1 Transport proposals can have a significant impact on the quality of panoramas, specific views and the visual environment of sensitive receptors. This is particularly so where new infrastructure is introduced into an established scene, where the intensity of traffic movements increases or where new lighting is provided in formerly "dark" areas. Overlooking of existing private spaces from new or improved routes should also be taken into account, as this may be perceived by local residents as intrusive. Visual impacts are normally assessed for residential properties, but also from public buildings, including workplaces, recreational buildings and outdoor locations to which the public has access. In certain cases an improvement in views may result if, for example, the proposal results in the removal

of dereliction or a reduction in levels of traffic. In rural areas, particularly those popular for outdoor recreation, it will be important to identify key viewpoints and publicly accessible areas which might be affected by a proposal.

6.17.2 Where the proposal is of a strategic nature, the lack of detail about the physical (and visual) implications of the proposal will make assessments under this heading more difficult to carry out. Nevertheless the potential for impacts on key viewpoints (particularly where these are associated with protected landscapes or important heritage sites) would be worthy of record.

Sources of Information

- Development plans – the extent of existing and proposed developed areas and public spaces, policies relating to key views;
- Local authorities – the selection of key and representative viewpoints may be agreed with the relevant department(s)
- SNH – as with local authorities SNH may have concerns relating to particular locations
- Local maps and guides – key viewpoints.

Methods – Strategic Level

6.17.3 At the strategic level, impacts on views will be difficult to determine as the precise relationship between the proposal and receptors will be unclear. At best a subjective assessment may be made, drawing upon desk studies and map exercises to identify key views, which could potentially be affected by a proposal, and the sensitivity of receptors.

Methods – Project Level

6.17.4 There are well-developed methodologies for visual impact assessment. The current guidance in DMRB 11.3.5 is in the process of being updated to incorporate more recently published guidance on methodologies. This includes the recently revised *'Guidelines for Landscape and Visual Assessment'* (2001) published by the Landscape Institute and Institute for Environmental Management and Assessment. Visual impact would normally be predicted for Year 1 and the assessment year – the latter to be recorded on the AST.

Appraisal Summary Table

6.17.5 The qualitative field should be used to summarise the overall effect on the topic for both strategic and local proposals. Where sufficient detail is available an estimate of the number and type of affected locations should be made in the quantitative field, with potential magnitude and significance of impact recorded. This will be more possible at the project level than strategic.

6.18 Agriculture and Soils

Issues

6.18.1 The loss or severance of agricultural land by new transport infrastructure may affect the viability of farm holdings. This can be particularly important in marginal agricultural areas. Soils close to any new construction can be affected by pollution from runoff and aerial deposition. Construction can cause the loss of valuable agricultural soil, which even if kept and stored is likely to degrade in quality. If soil is taken from a site of nature conservation interest there is the possibility of losing valuable seed banks. Land that is contaminated with toxic and hazardous materials can pose a threat to human health and safety if disturbed. Alternative proposals may have quite different implications for land take.

Sources of Information

- Macaulay Land Use Research Institute - agricultural land classification maps;
- Scottish Executive Environment and Rural Affairs Department (SEERAD) – information on Environmentally Sensitive Areas;
- SEPA / local authorities – information on contaminated land.

Methods – Strategic Level

6.18.2 At the strategic level it would be sufficient to identify the relevant grades of agricultural land in the study area and to make a qualitative assessment of the likely scale of land take.

Methods – Project Level

6.18.3 For specific proposals, more detailed assessment of land quality is justified, especially where Class 1, 2 or 3_1 land is involved, in order to ensure that land take of the best quality land is minimised as far as possible. In addition, consultation with farmers and SEERAD should be carried out to enable an assessment of impact on the viability of individual holdings to be made (DMRB 11.3.6).

Appraisal Summary Table

6.18.4 The AST should record the extent of land take of Class 1, 2 and 3_1 land. The qualitative field should be used to summarise the overall effect on the topic.

6.18.5 Worksheets AG1 and AG2 in Appendix C may be used to assist in the assessments required to complete the ASTs.

6.19 Cultural Heritage

Issues

6.19.1 Today's landscape is the product of human activity over thousands of years. There is a rich variety of remains from every period – some in the form of buildings such as castles and great houses, others less obvious, such as field systems or buried

archaeological remains. Archaeological remains offer a tangible physical link with the past. They are often fragile and vulnerable to damage and care must be taken to ensure that they are not needlessly damaged or destroyed. In some parts of Scotland, extensive areas may be so influenced and characterised by archaeological features as to constitute archaeological landscapes – for example the West Mainland of Shetland, and the industrial landscapes of parts of Ayrshire and Lanarkshire.

6.19.2 Transport schemes also have the potential to impact on the built environment of our cities, towns and villages, which may contain historic buildings and conservation areas. Although modern buildings are susceptible to change, historic buildings and conservation areas are more vulnerable due to their historic value and more sensitive to deterioration in their surroundings.

6.19.3 Potential impacts of transport on the historic environment include:

- Physical impacts on buildings or on sites of archaeological interest or potential;
- Increased visual intrusion;
- Increases in noise, vibration, disturbance;
- Severance from other linked features;
- Changes in original landscapes and settings;
- Loss of amenity;
- Changes in conservation factors e.g. dewatering.

Sources of Information

- Royal Commission of Ancient and Historical Monuments of Scotland – database of monuments and listed buildings;
- Historic Scotland – advice on the protection and management of ancient monuments and historic buildings, holds inventory of gardens and designed landscapes;
- Council for Scottish Archaeology – information on sites of interest;
- Scottish Civic Trust– information on sites of interest;
- Garden History Society– information on sites of interest;
- Architectural Heritage Society– information on sites of interest;
- Scottish Executive – *National Planning Policy Guideline 5 "Planning and Archaeology"*;
- Scottish Executive – *National Planning Policy Guideline 18 "Planning and the Historic Environment"*;
- Scottish Office Environment Department – *Planning Advice Note 42 "Planning and Archaeology"*;
- Planning authorities – boundaries of Conservation Areas;
- Regional Archaeologists should be consulted regarding the existence, importance and sensitivity of archaeological sites and areas.

Methods – Strategic Level

6.19.4 At strategic level, it would be sufficient to identify the relevant heritage designations in the study area and to make a qualitative assessment of the likely impact of the proposal on the importance and integrity of the resource. These should be recorded in terms of their international, national, regional and local/other importance, so that a more balanced view can be taken of likely impacts . Where the level of detailed information permits, the proposal should be assessed in terms of the 7-point score (major negative to major positive). A strategic level assessment worksheet and guidance on the determination of assessment scores is provided in Appendix C.

Methods – Project Level

6.19.5 The project level assessment should be based on an appraisal of the character of the heritage components in the study area, including buildings, monuments and areas such as Conservation Areas and areas of archaeological importance. The appraisal of each of these components should consider their importance in terms of their intrinsic archaeological/historic value and in policy terms. Information about the construction of the proposal and its subsequent operation should enable an informed judgement to be made of the likely impact on these attributes caused by

land take or other indirect effects. A project level assessment worksheet and guidance on the determination of assessment scores is provided in Appendix C.

Appraisal Summary Table

6.19.6 The AST should record, and describe if necessary, all designated sites affected by the proposal, with their designations. The qualitative field should be used to summarise the overall effect on each affected site. Assessment of strategic proposals may need to be reported in the qualitative field only.