

5 Overview of Assessment Process

5.1 Introduction

5.1.1 The aims of EIA are to:

- gather information about the environment of the study area and identify environmental constraints and opportunities associated with the area which may influence, or be affected by the proposed scheme;
- identify and assess potential environmental impacts; and
- identify and incorporate into scheme design and operation, features and measures to avoid or mitigate adverse impacts and enhance beneficial impacts.

5.1.2 This chapter outlines the general approach and methods used to carry out the assessments reported within this ES, with more detailed methodologies described in the respective chapters.

5.2 EIA Guidance

5.2.1 Annex E of Planning Advice Note (PAN) 58 'Environmental Impact Assessment' (Scottish Executive, 1999) relates to EIA of trunk road projects and refers to the Design Manual for Roads and Bridges (DMRB), first published in 1993 and subsequently amended and updated by the Highways Agency, The Scottish Executive Development Department, The National Assembly of Wales and the Department of the Environment for Northern Ireland.

5.2.2 DMRB sets out governmental guidance on the development of trunk road schemes including motorways and is applicable to the AWPR. Within the DMRB, Volume 11 specifically provides guidance on EIA, including the level of assessment required at key stages of development and the requirements for reporting the environmental effects of the proposed scheme.

5.2.3 DMRB specifies three levels of assessment, comprising Stage 1, Stage 2 and Stage 3. The objectives of each stage are identified in Table 5.1.

Table 5.1 – DMRB Stages of EIA

Stage	Objectives
Stage 1	Identification of environmental advantages, disadvantages and constraints associated with broadly defined route corridors.
Stage 2	Identification of the factors and effects to be taken into account in the selection of route options and in the identification of the environmental advantages, disadvantages and constraints associated with these routes.
Stage 3	Assessment to be undertaken in accordance with the requirements of Sections 20A and 55A of the Roads (Scotland) Act 1984 and EIA (Scotland) Regulations 1999 which implements EC Directive 85/337, with publication of an Environmental Statement or Environmental Assessment Report.

5.2.4 This ES presents the results of a Stage 3 EIA of the AWPR, which has been carried out as an integral and iterative element of the scheme design. The issues arising from this process have informed decisions throughout the development and design of the proposed scheme to date, as described in Chapter 4 (The Proposed Scheme).

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5.2.5 This Stage 3 EIA has also been supplemented by further relevant guidance, as detailed within each environmental chapter. In accordance with DMRB Volume 11, assessment has been undertaken of the following environmental parameters:

- Land Use;
- Geology, Contaminated Land and Groundwater;
- Hydrodynamics, Surface Water Quality and Hydrogeology (collectively referred to in this ES as 'Water Environment');
- Ecology and Nature Conservation;
- Landscape;
- Visual;
- Cultural Heritage;
- Air Quality;
- Traffic Noise and Vibration;
- Pedestrians, Cyclists, Equestrians and Community Effects;
- Vehicle Travellers;
- Disruption Due to Construction; and
- Policies and Plans.

5.3 Traffic Data

5.3.1 The traffic flows on the existing road network for 2005, and for the network in 2012 and 2027 (opening year and design year, respectively) were provided by MVA Consultants using the Aberdeen Sub Area Model Version 3B (ASAM 3B). ASAM 3B is a strategic traffic model covering Aberdeen and Aberdeenshire which was originally developed by MVA on behalf of the Scottish Executive.

5.3.2 Predictions of current and future traffic are necessary for the assessment of impacts on air quality, noise, vibration, water quality, community severance and vehicle travellers. ASAM 3B was used by MVA to prepare traffic forecasts for the 'Do Minimum' and 'Do Something' (with proposed scheme) scenarios, using a combination of expected land use changes and national traffic growth projections to forecast future year traffic levels.

5.4 General Methods of Assessment

5.4.1 The general approach to assessment is based on the determination of impact significance from a combination of the sensitivity of an identified receptor and the magnitude of potential impacts. This process is outlined below:

- identification of baseline conditions of the site and its environs, including the *sensitivity of receptors*, which may be affected by changes in the baseline conditions;
- consideration of the *magnitude of potential changes* to the environmental baseline;
- assessment of the *impact significance* taking into account sensitivity of receptors and magnitude of impact;
- identification of appropriate *mitigation measures*; and
- assessment of significance of *residual impacts* taking account of any mitigation measures.

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5.4.2 The above methodology could not be applied to the assessment of particular environmental parameters such as Policies and Plans. Alternative approaches were therefore developed as appropriate and are described and justified in the relevant chapter of the ES.

5.4.3 Further discussion of baseline conditions, potential impacts, mitigation and the definition of residual impacts is provided below.

Baseline Conditions

5.4.4 The assessment of impacts on each environmental parameter is undertaken in comparison to baseline conditions. Baseline conditions describe the existing environmental conditions at the site (and in the wider area as pertinent to the particular environmental parameter) including if/how this would be expected to change if the proposed scheme did not go ahead (i.e. the 'Do Minimum' scenario).

5.4.5 Field and desk-based survey to determine baseline conditions commenced in 2004 as part of environmental surveys carried out for the assessment of earlier route options (these included the current Northern Leg section). More recently, in 2006 and 2007, environmental surveys were extended to include the Southern Leg and Fastlink sections of the proposed scheme. Data were collected through site visits and field surveys, computer assisted modelling studies, and review of maps, data, records, information and reports.

5.4.6 Identification of baseline conditions has also been informed by extensive consultation with statutory, non-statutory bodies and with relevant community groups. The consultation process is reported in Chapter 6 (Scoping and Consultation).

Impact Assessment

5.4.7 Where practicable, the significance of impact was determined taking into account both the sensitivity and/or importance of receptors (as identified in the assessment of baseline conditions) and the magnitude of potential impact.

Sensitivity/Importance of Receptors

5.4.8 The sensitivity of the baseline conditions was assessed according to the relative importance of existing environmental features on or in the vicinity of the site (e.g. whether it is of national, regional or local importance), or by the sensitivity of receptors, which would potentially be affected by the development.

5.4.9 Criteria for the determination of sensitivity (as 'high', 'medium', or 'low') or of importance (e.g. 'international', 'national', 'regional' or 'authority area') were established based on prescribed guidance, legislation, statutory designation and/or professional judgment. The criteria for each environmental parameter are provided in the relevant chapter of the ES.

Magnitude of Impact

5.4.10 The magnitude of potential impacts (both positive and negative) on environmental baseline conditions was identified through detailed consideration of the development proposals, taking due cognisance of any legislative or policy standards or guidelines, and/or the following factors:

- the nature of the effect on the environment, e.g. whether the quality is enhanced or impaired;
- the scale or degree of change from the existing situation as a result of the impacts; and
- whether the effect is temporary, short or long term or permanent.

Significance of Impact

- 5.4.11 There is no accepted definition of what constitutes a significant impact, as it varies according to the environmental parameter under consideration and the context in which the assessment is made. However, in general, the significance of impact was determined as 'Negligible', 'Slight', 'Moderate' or 'Substantial' with reference to a matrix of the sensitivity of receptor and magnitude of potential impact. The matrices have been developed taking into account relevant legislation and guidance, and are included within each environmental parameter chapter. Any deviation from this approach is described in the appropriate chapter of the ES.
- 5.4.12 The matrices enable an initial assessment to be made of impact significance, which may then be modified if appropriate using professional judgement. Where this is necessary a justification is provided within the text.

Mitigation Measures

- 5.4.13 Planning Advice Note (PAN) 58: Environmental Impact Assessment (Scottish Executive, 1999) presents mitigation as a hierarchy of measures ranging from prevention of environmental effects by avoidance, to measures to offset any effects that cannot be remedied. The mitigation hierarchy is summarised in Table 5.2.

Table 5.2 – Mitigation Hierarchy (from PAN 58)

Level of Mitigation	Definition
Prevent	To prevent adverse environmental effects at source (e.g. building design or specification of construction equipment).
Reduce	If adverse effects cannot be prevented, steps taken to secure a reduction of impacts (e.g. minimisation of cause of impact at source, abatement on site and abatement at receptor).
Remedy/offset	When effects remain that cannot be prevented or reduced, they should be offset by remedial or compensatory action (e.g. provision of environmental improvements, opportunities for access and informal recreation, creation of alternative habitats and prior excavation of archaeological features).

- 5.4.14 Where possible, potential adverse environmental impacts of the proposed scheme have been prevented through an iterative approach to the design process, rather than relying on measures to mitigate the effects (e.g. incorporation of access arrangements for vehicles or pedestrians into the design).
- 5.4.15 Where complete prevention of potential impacts was not feasible, measures have been proposed to reduce impacts through abatement measures either at source, at the site (e.g. noise attenuation measures or visual screen planting and landscaping), or at the receptor (e.g. relocation of badger setts).
- 5.4.16 Where adverse effects cannot be prevented or reduced, consideration has been given to the specification of measures to be included in the Contract Documents that offset or, in certain circumstances, compensate for any damage. Some of these are necessarily provisional at this stage (i.e. they have been defined in principle) and will require further assessment and incorporation into scheme design or Contract Documents as the proposed scheme progresses.

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Residual Impacts

- 5.4.17 The assessment of residual impacts takes into account mitigation as specified in the ES, and the anticipated effect on reducing the potential impacts. Where there is any uncertainty as to whether a specific measure could be successfully implemented, or the precise details of mitigation cannot be defined at present (e.g. if the results of further investigations are required), this is stated, and the range of potential impacts with and without mitigation are defined.
- 5.4.18 Within the assessment of residual impacts, the level of significance for each effect was determined as far as practicable, using the same approach as for potential impacts.

5.5 Changes to Scheme Design

- 5.5.1 The assessment of impacts, the prediction of environmental effects and the mitigation measures are based on the proposed scheme design as of May 2007. This design and the associated mitigation measures will be refined and developed as a specimen design that will then be made available for reference by the party responsible for constructing the scheme, who will then be responsible for developing detailed designs for the scheme as part of the contract awarded. The detailed design may modify this specimen design and further modifications may also take place during construction of the works.
- 5.5.2 The design development process outlined above may result in some changes to the preliminary design assessed in this ES. Generally, the detailed design will seek to develop the preliminary design in a manner such that it has no material change to environmental impacts of the proposed scheme. However, opportunities may be identified to reduce the impact of the proposed scheme. Any detailed design development that would result in a significant adverse change to an identified environmental impact or a new significant impact, would be required to be published as an addendum to the ES for consultation and comment.

5.6 References

Highways Agency (1993, as amended). Design Manual for Roads and Bridges (DMRB).

Scottish Executive (1999). Planning Advice Note (PAN) 58: Environmental Impact Assessment.