



2.0 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

2.1 INTRODUCTION

2.1.1 The purpose of an Environmental Impact Assessment (EIA) is to influence design and to ensure that mitigation measures are focussed on the more significant impacts. The process of assessing environmental impacts can be considered in a prescribed manner. The EIA will aim to identify and assess the potential environmental impacts likely to result from the proposed project. These impacts will be assessed both from a temporary, residual and cumulative viewpoint.

2.1.2 The EIA methodology is written in accordance with guidance from the DMRB Volume 11 Section 3, 'Environmental Assessment'. This statement also utilises the official guidance on reviewing Environmental Statements, prepared by Environmental Resources Management Limited, under a research contract with the Directorate General for Environment of the European Commission¹.

2.2 DETERMINATION OF IMPACT SIGNIFICANCE

2.2.1 Impact significance is determined as a function of the receptor's sensitivity (environmental value) and the magnitude of the impact (degree of change). The Environmental Statement (ES) will determine impact significance through:

- Assigning receptor sensitivity;
- Assigning impact magnitude;
- Assigning impact significance; and,
- Cumulative Impacts.

Assigning Receptor Sensitivity

2.2.2 The typical descriptors and criteria for the sensitivity of a receptor are listed below in Table 2.1 Determination of Receptor Sensitivity. The ES will present detailed sensitivity and magnitude tables for each chapter. In accordance with DMRB Volume 11, Section 2, Part 5, Tables 2.1 and 2.2 should be taken as examples of assigning sensitivity and magnitude respectively.

¹European Communities. 2001.

Available at: <http://ec.europa.eu/environment/eia/eia-guidelines/g-scoping-full-text.pdf> [].

Table 2.1 Determination of Receptor Sensitivity

Sensitivity	Typical Criteria Descriptors
Very High	Very high importance and rarity, international scale and very limited potential for substitution
High	High importance and rarity, national scale and limited potential for substitution
Medium	High or medium importance and rarity, regional scale, limited potential for substitution
Low	Low or medium importance and rarity, local scale
Negligible	Very low importance and rarity, local scale

Assigning Impact Magnitude

2.2.3 In accordance with DMRB Volume 11, Section 2, Part 5, the typical descriptors and criteria which define the impact magnitude are listed in Table 2.2 below.

Table 2.2 Determination of Impact Magnitude

Impact Magnitude	Typical Criteria Descriptors
Major	Loss of resource and/or quality and integrity of receptor, severe damage to key characteristics, features or elements
	Large scale or major improvement of receptor quality, extensive restoration or enhancement, major improvement of attribute quality.
Moderate	Loss of Resource, but not affecting integrity, partial loss of / damage to key characteristics, features or elements
	Benefit to or addition of key characteristics, features or elements. An improvement of attribute quality
Minor	Some measurable change in attributes, quality or vulnerability, minor loss of or alteration to one (possibly more) key characteristics, features or elements
	Minor benefit to or addition of one (possibly more) key characteristics, features or elements, some beneficial impact on attribute or reduced risk of a negative impact occurring
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements
	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No Change	No loss or alteration of characteristics, features or elements, no observable impact in either direction.

Assigning Impact Significance

2.2.4 Assigning impact significance relies on reasoned argument, professional judgement and the consideration of the various views, raised during the consultation process. Some assessment topics may have their predicted impacts compared with quantitative thresholds and scales in the determination of significance.



2.2.5 Assigning each impact to one of five significance categories enables different topic issues to be placed within the same scale, to facilitate the decision-making process. The five significance categories are illustrated in Table 2.3 below.

2.2.6 It is important to note that significance categories are negative (adverse) impacts unless otherwise stated as positive (beneficial).

Table 2.3 Impact Significance Categories

Significance	Typical Criteria Descriptors
Very Large	Only adverse impacts are normally assigned this level of significance, and represent key factors in decision-making process. These impacts are generally but not exclusively associated with sites or features of International, National or regional importance that are likely to suffer a most damaging impact and loss of integrity. A major change in a site or feature of local importance may also enter this category.
Large	These beneficial or adverse impacts are considered to be very important considerations. They are likely to be pertinent in the decision-making process.
Moderate	These beneficial or adverse impacts may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse impact on a particular resource or receptor.
Slight	These beneficial or adverse impacts may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project.
Neutral	No impacts or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

2.2.7 There are eight potential outcomes of the significance categories. Applying the formula, the greater the receptor sensitivity and the greater the impact magnitude, the more significant the impact. The determination of impact significance is summarised in Table 2.4 below.



Table 2.4 Determination of Impact Significance

		Impact Magnitude (Degree of Change)				
		No Change	Negligible	Minor	Moderate	Major
Receptor Sensitivity (Value)	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Mitigation

2.2.8 Mitigation of negative impacts associated with a project involves a combination of three approaches namely;

- Prevention: Prevention of negative effect at source – e.g. alignment in a cutting to prevent any visual impact from surrounding receptors.
- Reduction: Reduction of negative impacts that cannot be eliminated by prevention – e.g. environmental barriers in the form of mounds, fencing or tree planting to reduce the noise/visual impacts to acceptable levels.
- Offsetting: The provision of alternative or compensatory measures where appropriate and feasible e.g. the creation of new habitats to compensate for loss of habitat as a result of the proposals



3.0 CONSULTATION

3.1 INTRODUCTION

3.1.1 This chapter describes the consultation process which has taken place during the design process for the scheme. A list of all statutory consultees is provided within Table 3.2, with a summary of their key requirements and comments.

3.2 BACKGROUND

3.2.1 Several consultation exercises were undertaken during the development of the scheme to provide an opportunity for key statutory stakeholders to comment on the scheme and for the client to obtain on-going feedback, highlighting environmental issues and potential environmental impacts that should be considered in the EIA process.

3.2.2 The first scoping consultation with statutory bodies was undertaken in 2004. Due to the time lapse between the initial consultation and the production of the Environmental Assessment, additional rounds of consultation were undertaken in 2007 and 2009 providing an opportunity for key stakeholders to comment on the proposed scheme and highlight potential environmental impacts or issues that should be considered in the ES. The results of the statutory consultations are described below in Table 3.1. A copy of all consultation responses are provided in Appendix B.

Table 3.1: Summary of Key Scoping Responses

Stakeholder	Scoping Comment
SEPA	SEPA have a presumption against culverting of watercourses and any proposal to culvert would require an application to be made to SEPA for a licence for the culvert.
SNH	The proposal is unlikely to have any impact on any features of significant natural heritage importance.
Historic Scotland	The proposed realignment is unlikely to have any significant impact on the historic environment.

Initial consultation undertaken in 2004

3.2.3 The following key organisations were contacted by letter in 2004 by NAC and Royal Haskoning:

- Scottish Environment Protection Agency (SEPA);
- Scottish Natural Heritage (SNH); and
- Historic Scotland.

3.2.4 The initial consultation exercise was intended as scoping of the environmental opportunities and constraints that exist in The Den realignment footprint. The objectives were to:

- Highlight opportunities and benefits that arise from the provision of the scheme; and
- Identify at an early stage constraints that may hinder the development of the scheme.

Subsequent Consultations Undertaken in 2007 and 2009

- 3.2.5 Subsequent consultation with the statutory stakeholders was carried out in 2007 and 2009 to ensure that any new issues arising would be considered during the development of the scheme. These consultation rounds confirmed that no new issues were identified and no further difficulties were highlighted.

Public Consultation

- 3.2.6 The EIA process has been undertaken with the objective of recognising and respecting the views of all stakeholders and to make community value central to the scheme. Throughout the EIA process (2007-2011), consultation has been undertaken with the local community and all affected stakeholders. These consultations include the following:

- Individual householder meetings and sites visits – where individuals or groups have expressed particular concerns or issues every effort has been made to explore the issues with those concerned. This has included extensive investigations, meetings and discussions with the landowners and residents.

3.3 METHODOLOGY

- 3.3.1 Transport Scotland is considered to be the 'Planning Authority' as this improvement takes place within the trunk road. They have been consulted throughout the duration of the design process. North Ayrshire Council has also been consulted regularly on the project.

- 3.3.2 Before submitting a planning application, it is best practice for a developer to ask the planning authority for its formal opinion on the information to be supplied in the ES (a "Scoping Opinion"). This provision allows the developer to be clear about what the planning authority considers the potential effects of the development are likely to be and, therefore, the topics on which the ES should focus and which topics can be discounted.

- 3.3.3 The following statutory organisations have been consulted during the development of the project:

- Historic Scotland
- North Ayrshire Council
- Scottish Environmental Protection Agency (SEPA)
- Scottish Natural Heritage (SNH); and
- Sustrans

- 3.3.4 In addition to statutory consultation the following non-statutory bodies were consulted:

- British Geological Survey (BGS)
- Land owners
- Royal Society for the Protection of Birds (RSPB)
- West of Scotland Archaeology Service (WoSAS); and,
- Scottish Ornithologists Club (SOC)

- 3.3.5 Contact was first made with these consultees in 2004 with the intention being to scope the environmental opportunities and constraints that exist within The Den realignment footprint. The objectives were to:

- Highlight opportunities and benefits that arise from the provision of the scheme; and
- Identify at an early stage constraints that may hinder the development of the scheme.

3.3.6 This scoping exercise facilitated the identification of environmental constraints including noise, visual effects and landscape, at an early stage, thus informing design.

3.3.7 As part of this ES, and given the length of time since previous consultation, further consultation letters were sent out to statutory consultees on the 16th of September 2011. Consultation responses are included within Appendix B and summarised in Table 3.2.

3.3.8 Given the importance of consultation to the EIA process an extended consultation exercise was undertaken. The key aim of this process was to include relevant organisations and groups, who may be able to provide additional information.

Meetings

3.3.9 Two meetings dated 18th October 2011 and 20th December 2011 were undertaken between SEPA and Amey to communicate the scheme background and the proposed alterations to drainage along the section of the A737.

3.3.10 Consultation with landowners within the scheme extents was carried out 14th – 15th December 2011. Copies of the meetings minutes can be found within Appendix B Consultation.

3.4 KEY ISSUES RAISED BY CONSULTEES

3.4.1 Table 3.2 Consultation meetings, provides details of all meetings undertaken and the main issues discussed.

Letter Consultation

- 3.4.2 Further consultation letters were sent out to statutory consultees on the 16th September 2011. The consultation responses are summarised in Table 3.2. Consultation responses are included within Appendix B.
- 3.4.3 The following organisations failed to respond to the EIA consultation. It is therefore assumed they have no further comment to make at this stage.
- British Geological Survey (BGS)
 - Scottish Ornithologist Club
 - Royal Society for the Protection of Birds (RSPB).



Table 3.2 Summary of Consultees and Comments

Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
1 The Den	N/A	Letter	14/12/2011	No issues/concerns with the proposed scheme. Happy with proposed planting mitigation.	No action required
12 The Den	N/A	Meeting	10/05/2011	Owner indicated cars occasionally park on the area of hard-standing immediately outside Fernside house. The owner indicated an initial preference for a low boundary wall outside property. Owner advises that there is a problem with drainage in area – Fernside side garden floods easily. No initial objections link from the existing road and the turning head proposals.	No action required
27 The Den	N/A	Letter	14/12/2011	No further concerns or comments.	No action required
29 The Den	N/A	Meeting	10/05/2011	Owner expressed concern at proposed junction to The Den opposite Auchengree road. Also expressed concern that compared to the previous proposals more traffic leaving A737 would pass in front of their property. They were also concerned that cars may leave the A737 and park outside their property at night. Owner indicated a preference for existing design with staggered junction. Unhappy to lose land adjacent to Auchengree Road but agreed that it was of no use to them and that they would look to having it purchased by Transport Scotland.	Client informed
	N/A	Letter	14/12/2011	Issues with maintenance of pavements, pedestrian access between Fernside and The Graze, Clarification of Land Ownership and further details on informal path.	Client informed



Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
Meadowhead Farm	N/A	Meeting	15/12/2011	<p>After summarising the design Mrs Gilbert enquired about hedges to be used as boundary treatments. Requested hedges along the boundary wall at Maulside Lodge:</p> <p>Fly Tipping at Auchengree Road Why the Road can't go through the woodland</p> <p>Proposed Footpath to allow access from the road approaching Meadowhead Farm.</p> <p>Land Ownership discussions</p>	Client informed
Maulside Lodge	N/A	Meeting	10/05/2011	<p>Owner indicated no access requirements from Auchengree Road and no objection to closure of Auchengree Road/A737 junction.</p> <p>Owner has no objection to land take south of the A737 but would have objections to any further land take as this would render horse breeding business unviable on remaining land.</p> <p>Owner highlighted drainage issues in area – water from A737 floods adjacent fields. This area subsequently cannot be used by horses. An outfall had been led into the woodland area.</p>	No action required
West Muirhouse Farm	N/A	Meeting	10/05/2011	<p>Owner at present uses the Auchengree Road once a year to act as a return route when cutting silage in fields belonging to Nether Auchengree Farm. However he did not see this as a problem and could return back down Brownhill Road and then northwards to the proposed link back to The Den.</p>	No action required
Meikle Auchengree Farm	N/A	Meeting	10/05/2011	<p>Raised initial concerns over suggestion to close Auchengree Road due to:</p> <ul style="list-style-type: none"> • Reduce access for customers to business • This road is required for access during winter snow. <p>Owner owns land at the existing south turning head and is considering application for planning permission to build a house here.</p>	Client informed



Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
British Geological Survey (BGS)	N/A	Letter	No response received	No response received	No action required
Scottish Ornithologist Club (SOC)	N/A	Letter	No response received	No response received	No action required
Historic Scotland (HS)	Lily Linge	Letter	16/12/2003	HS has now considered this issue from our historic environment perspective and has concluded that, for that issue, the realignment proposed does not require formal EIA, we are content that it is unlikely to have any significant impact on the historic environment. However there may still be a requirement for some limited archaeological evaluation of the area of new land take required for the realignment, basically a standard archaeological sampling exercise followed by further recording if necessary.	Considered within Chapter 5 Cultural Heritage. Further consultation was sought from WoSAS in 2012.
	Robin Campbell	Letter	12/10/2011	Having reviewed the finalised design realignment of the A737 HS is content that it is unlikely significant adverse impacts on the site or setting of assets.	



Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
North Ayrshire Council (NAC)	Kristian Smith	Letter	18/01/2012	<p>Issues have not changed since the consultation response dated 25/02/09.</p> <p>Response received on 25/02/2009 states the following: It is considered that the level of assessment undertaken by you thus far is significant. It is agreed that the principle impacts are likely to be related to visual amenity and noise. There will also be temporary disruption, on various fronts, during the construction phase. As such we will refer to the policies contained within the adopted Local Plan.</p> <ul style="list-style-type: none"> • Policy TRA7 (R) – Strategic Road Network • Policy A1 – Non Conforming Uses Not Otherwise Provided for by Any Policy in the Local Plan. <p>Development Control Statement contains criteria for assessing all development proposals. In relation to the DCS the following areas would require assessment:</p> <ul style="list-style-type: none"> • Regard should be given to the visual effects of the development on the surrounding area and landscape. • Regard should be given to the level and effects of noise and vibration, smell, fumes or emissions • Consideration should also be given to any potential disturbance by way of vehicular or pedestrian traffic. • It should be sought to preserve and where possible replace any trees and hedgerows affected by the proposals. • In relation to neighbouring property regard should be taken of privacy. • Regard should be given to landscape features and the landscape character of the area. • Good practice advice, as set out in CIRIA's 'SUDS Manual', published in March 2007, should be incorporated into any surface water treatment proposals. 	Considered during design stage



Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
	Tom Birch	Letter	18/01/2012	<p>States that the principle impacts are likely to be related to visual amenity and noise, and temporary disruption during the construction phase.</p> <p>The proposals are in line with the Local Development Plan – Policy TRA7, Strategic Road Network and Policy A1 – Non Conforming Uses Not Otherwise Provided for by Any Policy in the Local Plan.</p> <p>The scheme provides improvements of the Trunk Road Network and Community benefits (providing a local road).</p> <p>Requires the surrounding area and landscape to be mitigated to reduce the visual impacts.</p> <p>Scheme design should consider footpath, cycle and other access arrangements.</p>	<p>Preserve the privacy and reduce nuisance for residents within scheme during construction.</p> <p>Contact NAC Contaminated Land Officer.</p> <p>Landscape planting should be incorporate landscape character of the area.</p> <p>Design proposals are to be re-evaluated.</p>
Scottish Environmental Protection Agency (SEPA) Water Team	Roy Izzard	Letter	16/02/2004	There will be no objection in principle to the proposal from SEPA. I am concerned about the proposals for culverts and for the carriageway drainage. In general SEPA will oppose any unwanted culverting of watercourse. SEPA welcomes the proposal to treat the run off from the completed carriageway via a suitably designed SUD system.	Considered and incorporated into design.
	Roy Izzard	Letter	07/09/2004	I can confirm that your summary is accurate and that SEPA will have no objection to the proposals as set out in your letter.	
	Roy Izzard	Letter	16/09/2011	Two forms of SUDS should be installed. Construction drainage should be kept separate from any SUDS. No objection in principle provided any waste generated is disposed of appropriately and the use of new culverts is avoided where possible. Further detail is within Table 3.2 Consultation Meetings.	



Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
	Water Team	Meeting	18/10/2011	<p>SEPA expressed concerns with the proposed ditch that was to be culverted. SEPA has a preference against culverting of watercourses and any proposal to culvert would require an application to be made to SEPA for a licence.</p> <p>Further issues with the design relating to road drainage outfalling into ditches and then being diverted through a treatment system.</p> <p>Expressed concerns with the septic waste passing into the attenuation basin. SEPA requires two levels of SUDS treatments prior to outfalling into the burn.</p> <p>Due to the made ground being Peat this raised concerns during construction as de-watering the excavations will be required, which will be classed as an abstraction. This water cannot be taken off site or dispersed through drainage. Further consultation is required.</p>	
		Meeting	20/10/2011	<p>SEPA was in general agreement with the revised drainage system. Licences under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) will be required to culvert the ditch below the new road, and for re-alignment of the ditch at Auchengree Road. All details must be confirmed with the local SEPA office prior to works commencing. All method statements regarding de-watering of excavations must be approved by the local SEPA office prior to works commencing.</p>	
Scottish Natural Heritage	David Lang	Letter	09/01/2004	<p>Having considered the maps and supplementary information...I can confirm that the project is unlikely to have an impact on any features of significant natural heritage importance. A small section of the new road appears to pass through land previously owned by Mr J Golder and SNH have previously granted aided hedgerow renovation and pond creation work in this area.</p>	Undertake bat and badger surveys prior to commencement of construction works. Mitigation measures will be developed depending on results of surveys.
	David Lang	Letter	14/01/2004	<p>I can confirm that no plantings or other works undertaken by Mr Golder with the assistance of a grant from SNH will be affected by the road realignment. In conclusion I can confirm that SNH has no concerns over the A737 realignment as proposed.</p>	



Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
	Graeme Walker	Letter	20/09/2011	<ul style="list-style-type: none"> The proposal will have no impacts on any specially protected natural heritage sites. We are unaware of any sites regularly used by specially protected wildlife that may be affected by the proposals. We would recommend prior to the commencement of any works that surveys are carried out to investigate the potential for the presence of badgers and bats. The development of mitigation measures for the above species will be dependent on the results of the above surveys. 	
Sustrans	Philip Kearney	Letter	25/10/2011	No comments relating to the proposed design.	No action required
Royal Society for the Protection of Birds (RSPB)	N/A	Letter	No response received	No response received	No action required
WoSAS	Martin O'Hare	Letter	16/11/2012	The first thing I would say is that historic maps show clear evidence of extractive industries and associated domestic accommodation during the 19th, and possibly also the 18th, centuries. Some of these features appear to lie directly on the route of the proposed re-alignment, and	Evaluation or monitoring has been recommended.



Organisation/Land Owner	Contact	Type of Consultation	Date of Response	Response	Action Required
		Letter		<p>are therefore likely to be affected by construction. Perhaps the most significant of these features is a range of buildings, likely to represent a miners' row or similar, which was shown on the 1st, 2nd and 3rd edition Ordnance Survey maps running north-south across the line of the proposed bypass in the area east of Meadowhead farm, on the western side of the road running to Langmuir of Auchengree (NGR 232684, 651375). Two rows of terraced dwellings were shown on the 1st edition, though only one was depicted on subsequent OS maps. Further terraces were shown immediately to the south of the proposed new road alignment, running parallel to the existing road line in the area east of no. 29, though these structures are located just outside the area that is likely to be directly affected by road re-alignment. While the upstanding superstructure of these terraces appear to have been removed, it is likely that elements associated with them will survive below ground level. Any sections that survive along the route of the proposed road re-alignment are likely to be wholly removed by construction work.</p> <p>In addition to the features identified above, I would note that much of the proposed new route runs through greenfield that does not appear to have been disturbed by previous development, and would therefore retain the potential to produce buried archaeological material. This may be addressed through evaluation or monitoring.</p>	