

4 Environmental Impact Assessment Process and Method

4.1 Introduction

- 4.1.1 The Environmental Impact Assessment (EIA) Directive 85/337/EC has been in force since 1985 and applies to a wide range of defined public and private projects within the European Union member states. Under this legislation, the national authorities can decide whether or not an EIA is needed should the scheme fall under Annex I, II or III of the legislation.
- 4.1.2 The original EIA Directive has been amended three times and these amendments were codified by Directive 2011/92/EU. A review of the EIA Directive in 2014 led to an amended EIA Directive 2014/52/EU in 2014.
- 4.1.3 Under EC 2014/52/EU all road schemes other than those classed as Annex I fall under Annex II of the EIA Directive (except those classed as strictly maintenance projects). Projects listed under Annex II, of the EIA Directive must be assessed on a scheme specific basis or 'screened' to determine whether the scheme is a 'relevant project' and therefore subject to EIA. The thresholds for this are determined by legislation and guidance specific to each Member State.
- 4.1.4 The Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017 (Ref. 4.1) implements the Environmental Impact Assessment Directive 2014/52/EU Directive in Scotland in relation to construction projects for new roads and any improvement and maintenance projects for roads. The updated directive provides guidance on the topics to be included within an EIA, such as biodiversity, human health and landscape.
- 4.1.5 For road schemes, the main impacts on human health arise from changes in air quality, noise and from severance affecting pedestrian/cycling routes from new or realigned road infrastructure. Effects on human health from the scheme are therefore considered within Air Quality (Chapter 6), Noise & Vibration (Chapter 9) and People & Communities (Chapter 12) of the EIAR.
- 4.1.6 Climate change impacts, relating to greenhouse gases and flood risk are included in Chapter 6 Air Quality (Chapter 6) and Road Drainage and the Water Environment (Chapter 11).
- 4.1.7 Given that the scheme is for junction improvements in a rural environment, on the outskirts of Laurencekirk the requirement for an assessment of the impact of the scheme in relation to major accidents or disasters is not considered to result in significant effects or be relevant to the scheme. This topic has therefore been scoped out of any further assessment.

4.2 EIA Process

4.2.1 The requirement to carry out a statutory EIA only applies to certain projects that are deemed to exceed certain thresholds and are predicted to have a significant effect on the environment. The process for deciding whether it is necessary to carry out an EIA is called Screening.

4.2.2 The screening process involves a number of steps:

- Step 1: whether the project falls within Annex I or Annex II of the EIA Directive;
- Step 2: whether an Annex II project represents a 'relevant project';
- Step 3: the 'determination' for the purposes of the EIA Regulations; and
- Step 4: reporting the determination.

4.2.3 This scheme falls within Annex II of the Environmental Impact Assessment Directive 2014/52/EU as the area of the works exceeds 1 ha; therefore, a determination process must be followed.

4.2.4 The scheme has been subject to screening using the EIA Directive (85/337/EEC) Annex III criteria to determine whether a formal Environmental Impact Assessment is required under the Roads (Scotland) Act 1984. Screening using Annex III criteria, reference to consultations undertaken and review of available information has identified that a statutory EIA is required.

4.2.5 The Record of Determination (RoD), undertaken at Stage 2, stated that the project is likely to have significant effects on the environment.

4.2.6 The Stage 2 EAR was undertaken in April 2018 in accordance with Volume 11 of DMRB and subsequent updates in Interim Advice Note IAN 125/15. The Stage 2 EAR considered the following topics to determine whether significant effects on the environment were likely and what topics should be taken forward for assessment in the Environmental Impact Assessment Report:

- Air Quality
- Cultural Heritage
- Landscape and Visual
- Nature Conservation and Biodiversity
- Noise and Vibration
- Road Drainage and the Water Environment
- People and Communities
- Geology and Soils

- Materials
- Cumulative Effects

- 4.2.7 At stage 2 an environmental assessment of the scheme options was undertaken for each environmental topic to provide a comparison between the options and allow the identification of an environmentally preferred option.
- 4.2.8 Each environmental topic considered the options and produced a ranking to indicate which option is preferred for that particular topic. The preferred option was the one with the least expected environmental effects, with the worst option having the most expected environmental effects.
- 4.2.9 The environmental assessment of the options under consideration for the A90/A937 Laurencekirk Junction Improvement scheme found that Option 1A was the preferred option. This option was further developed and taken forward for assessment at Stage 3.
- 4.2.10 At this time, it was considered likely that, due to the scale of proposed scheme all topics were considered within the EIAR.

4.3 Environmental Assessment General Methodology

- 4.3.1 This section identifies the methodology used in undertaking this Environmental Impact Assessment, with particular reference to the selection of environmental issues and subsequent assessment of effect significance.
- 4.3.2 Environmental topics were selected, and appropriate methodologies identified through the EIAR and associated consultation.

Design Manual for Roads and Bridges

- 4.3.3 The general methodology and guidance for the Environmental Impact Assessment of the scheme is set out in the Design Manual for Roads and Bridges (DMRB) (1993 and amendments), with Volume 11 (Environmental Assessment) of the DMRB providing specific relevant guidance and a suite of assessment techniques for road schemes.
- 4.3.4 The DMRB provides a comprehensive manual system that accommodates all current design standards, advice notes and other published documents relating to the design, assessment and operation of trunk roads.
- 4.3.5 The Aims and Objectives of Environmental Assessment (DMRB, Volume 11, Part 1: HA 200/08) (Ref. 4.2) are identified in Volume 11, Part 2 of the DMRB. Volume 11 of the DMRB is currently being updated with Parts 1 and 2 having been updated in July 2019 and the environmental topic sections being updated October through to December 2019.

- 4.3.6 Following the updated guidance in July 2019, Volume 11, Section 2, Part 5 was withdrawn and superseded by Volume 11, Part 4 LA104 Environmental assessment and Monitoring. However, it was considered that this scheme had reached a point where the implementation of the new guidance was not feasible.
- 4.3.7 The introduction of the DMRB GG101 Section 1.3 states: Individual documents shall be implemented as soon as they are published in the DMRB except: ...2. where the contract has reached a stage that, in the opinion of the Overseeing Organisation, use of a new or revised document would result in significant additional expense or delay....
- 4.3.8 In addition, section 1.4 states: where the contract has reached a stage that, in the opinion of the Overseeing Organisation, use of a new or revised document would result in significant additional expense or delay, the decision whether to use a new or revised document shall be in accordance with the Overseeing Organisation's procedure.
- 4.3.9 In agreement with Transport Scotland, it was determined that the use of the old DMRB guidance was appropriate, given the progression of the scheme.

4.4 Structure of Technical Chapters

- 4.4.1 The likely significant environmental effects of the scheme have been assessed through this environmental process. Technical specialists have been responsible for ensuring that methods they use are appropriate and reflect best practice.
- 4.4.2 Each key environmental topic has been assigned a separate chapter in the EIAR (chapter 6 to 14). Whilst the generic structure and terminology applicable to these chapters is presented under the following headings, it should be noted that certain topics have required some alteration. Where this has occurred, full details are provided in the relevant chapter.

Introduction

- 4.4.3 The introduction provides a brief summary of what is considered in each chapter.

Policy and Legislative Background

- 4.4.4 Published standards, guidelines and policy are included in this section. Legislation is also identified where appropriate.

Methodology

- 4.4.5 The methods used in undertaking the technical study are outlined in this section with reference to published standards, guidelines and best practice. The study area for the topic under assessment is defined.

Baseline Conditions

- 4.4.6 In order to assess a project's environmental effects, an environmental baseline measure is required. To obtain this measure, existing environmental conditions at the site are determined through a series of desk top reviews, site surveys and through consultation with statutory authorities and interested parties. In the absence of the scheme, it is assumed that the baseline conditions will not significantly change.
- 4.4.7 Where guidance is available to determine the value of resources or sensitivity of receptors, this is outlined in this section to allow impacts to be quantified and significance of environmental effects to be determined. Where no guidance is available, professional judgement has been used.
- 4.4.8 DMRB HA 205/08 provides typical descriptors for assigning value to resources as shown in Table 4-1.

Table 4-1: Sensitivity Descriptors for Receptors

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

Impact Assessment

- 4.4.9 This section identifies the likely impacts resulting from the scheme, during construction and on completion, taking into account embedded mitigation in the form of the scheme design and use of best practice measures, such as pollution prevention measures. Impacts are defined as the predicted change or deviation in the baseline environment attributable to the scheme (independent of the sensitivity or value of the resources/receptors).
- 4.4.10 The magnitude of impact is defined in HA 205/08 and shown in Table 4-2.

Table 4-2: Assigning magnitude of impact

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

Mitigation

- 4.4.11 This section outlines mitigation measures to reduce environmental impacts, over and above the embedded or design mitigation.
- 4.4.12 One of the main aims of the environmental assessment process is to develop mitigation measures to offset, reduce or control the significant adverse impacts of a project. These measures can be implemented at the key design, construction and completion phases of the scheme.

Residual Effects

- 4.4.13 This section identifies the likely residual effects as a result of the scheme taking into account the proposed mitigation measures.
- 4.4.14 The significance of predicted effects has been determined by reference to effect criteria for each assessment topic, in accordance with DMRB Volume 11, Section 2, Part 5 Assessment and Management of Environmental Effects. Where the significance of effect is shown as being as one of two alternatives, a single description should be decided upon and a reasoned judgement for that level of significance chosen.

- 4.4.15 The greater the environmental sensitivity or value of the receptor or resource, and the greater the magnitude of impact, the more significant the effect. The significance categories are defined in Table 4-3 according to HA 205/08.

Table 4-3: Significance of Effect Categories

		Magnitude of impact				
		No Change	Negligible	Minor	Moderate	Major
Environmental Value (Sensitivity)	Very High	Neutral	Slight	Moderate/ Large	Large/ Very Large	Very Large
	High	Neutral	Slight	Slight/ Moderate	Moderate/ Large	Large/ Very Large
	Medium	Neutral	Neutral/ Slight	Slight	Moderate	Moderate/ Large
	Low	Neutral	Neutral/ Slight	Neutral/ Slight	Slight	Slight/ Moderate
	Negligible	Neutral	Neutral	Neutral/ Slight	Neutral/ Slight	Slight

Limitations

- 4.4.16 This section sets out any difficulties encountered during the assessment process or details any assumptions made.

Summary

- 4.4.17 This provides a summary of the main effects and/or benefits of the scheme.

4.5 Cumulative Effects

- 4.5.1 The Environmental Impact Assessment regulations require the assessment of cumulative effects. Chapter 15 considers interactions and cumulative effects in accordance with DMRB, Volume 11, Section 2, Part 5: Assessment and Management of Environmental Effects and Interim Advice Note 125/15 Supplementary guidance for users of DMRB Volume 11 'Environmental Assessment' (Ref 4.3).

- 4.5.2 Although the DMRB guidance was updated in July 2019, with Section 2, Part 5 being withdrawn and superseded by Volume 11, Part 4 LA104 Environmental assessment and monitoring, it was considered that the scheme had reached a point where the implementation of the new guidance was not feasible. With the agreement of Transport Scotland, it was determined that the old DMRB guidance was appropriate, given the progression of the scheme.

4.5.3 Cumulative effects comprise the combined effects of reasonably foreseeable human induced changes within a specific geographical area on receptors over a certain period of time and can be both direct and indirect. Assessment of the significance of cumulative effects needs to be undertaken in the context of the characteristics of the existing environment. Cumulative effects are:

- The combined effects of individual impacts, e.g. from noise, dust and visual effects from one development on a particular receptor; and/or
- Effects from several developments, which alone may be insignificant, but when considered together there could be a significant cumulative effect.

4.5.4 Cumulative effects are considered in more detail in Chapter 15.