INTERIM ADVICE NOTE 153/11

GUIDANCE ON THE ENVIRONMENTAL ASSESSMENT OF MATERIAL RESOURCES

SUMMARY
This Interim Advice Note provides initial guidance on the environmental assessment of impacts from the use of materials in road projects.

INSTRUCTIONS FOR USE
The guidance contained in this Interim Advice Note (IAN) is applicable to all Highways Agency new construction, improvement and maintenance projects. This guidance should be used when undertaking an environmental assessment of material resources in accordance with the principles set out in DMRB Volume 11.

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Executive Summary
The IAN has been prepared to provide interim guidance for those undertaking assessment of the impact and effects associated with the use of materials in new construction, improvement, and maintenance projects. It outlines the consideration of material resource use and waste as part of an environmental impact assessment process. It is intended to be used in the identification of impacts associated with materials resource use and waste arisings.

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Guidance on the Environmental Assessment of Materials

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Chapter 1 Introduction

This Interim Advice Note (IAN) introduces new guidance for the assessment of the environmental effects associated with materials. It outlines an approach for the consideration of material resource use and waste as part of statutory and non-statutory environmental impact assessment process for new construction, improvement and major maintenance.

1.1 Background

Article 3 of Council Directive 85/337/EEC (as amended) requires that effects of a project on material assets be identified and assessed. The structure of DMRB Volume 11 Environmental Assessment accounts for this with inclusion of Section 3, Part 6 Materials. This IAN provides initial guidance on what is to be considered under Part 6 of the assessment.

Whilst this IAN provides the latest and most up to date guidance available, it should be noted this is a developing area and in time it is expected that this guidance will be developed further to cover the full scope of assessment methodologies expected in DMRB Vol 11. Currently the IAN is limited in its ability to address all the principles of environmental assessment, as described in DMRB Volume 11 Section 2 due to a current lack of understanding and information on the impacts associated with materials. The intention is that prompted by on going research and learning from project experiences, subsequent guidance will be wider in scope.

However, this Standard will provide some clarity on what is expected in Section 3, Part 6 Materials, in the absence of full guidance.

1.2 Scope

The scope of the IAN covers the assessment of impacts of two main areas

- material resources and
- waste

It is to provide guidance for those assessing the impacts of materials including waste associated with Highways Agency new construction, improvement and maintenance projects whatever the scale of the project.

This guidance should be read in conjunction with other guidance in DMRB Vol 11, principally Sections 1 and 2, and Section 3 Parts 3, 6, and 11 as there are obvious interactions with these other subjects.

1.3 Purpose

The purpose of this Standard is to provide a framework for the environmental assessment of material resource use and waste (including both statutory and non-statutory environmental impact assessment). The information reported as a result of applying this Standard will inform the continued development of full guidance.

1.4 Mandatory Sections

Mandatory sections of this document are contained in boxes. The Service Provider must comply with these sections or obtain agreement to a Departure from Standard from the Overseeing Organisation via the HA's Departures Approval System (DAS).The remainder of the document contains advice and explanation, which is commended to users for consideration.

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1.5 Departure from Standards

Unless a departure has been agreed, the implementation of the processes described in this Standard must be applied to all network Areas and projects for which the HA is the highway authority. If it is not considered necessary for this Standard to be applied, approval for Departure from Standards must be obtained from the HA with the departure application clearly stating why this Standard should not be applied.

1.6 Implementation and Feedback

This Standard should be used forthwith on all projects for the assessment, design, construction, operation and maintenance of motorway and all-purpose trunk roads in England except where the procurement of works has reached a stage at which, in the opinion of the Overseeing Organisation, its use would result in significant additional expense or delay progress (in which case the decision must be recorded in accordance with the procedure required by the Overseeing Organisation).

It is anticipated that those applying this guidance will have experience and understanding of the materials and wastes associated with highways projects and the potential for improvements in material resource efficiency.

To ensure an integrated and co-ordinated approach to assessment, this Standard should be applied in alignment with the following Advice Notes:

- Interim Advice Note 125/09 Supplementary guidance for users of DMRB Volume 11 'Environmental Assessment'.
- Interim Advice Note 84/10, Highways Agency Environmental Information System.

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Chapter 2 Material Resources and Highways

Operating a strategic trunk road network involves a wide range of new construction, improvement and major maintenance projects which result in the consumption of large amounts of raw materials and generate the potential for large quantities of waste. The consumption of material resources and the management of waste give rise to environmental impacts that need to be managed and mitigated. In addition, the generation of waste generates additional project costs associated with disposal. The future emphasis on better value for money will mean projects will have to minimise waste via good project design.

2.1 Definition of Subject

For the purposes of this guidance, Materials are defined as comprising:

- The use of Material Resources; and
- The generation and management of Waste.

The direct energy associated with the operation of the network, such as the energy use from lighting, is not considered as part of this assessment guidance.

2.1.1 Material Resources

For the purposes of this Standard the definition of material resources encompasses the materials and construction products required for the construction, improvement and maintenance of the trunk road network. Material resources include primary raw materials such as aggregates and minerals, and manufactured construction products. Many material resources will originate off site, purchased as construction products, and some will arise on site such as excavated soils or recycled road planings.

The way the material resources are used throughout the process is known as the Material Resource Flow as is set out in Figure 1.

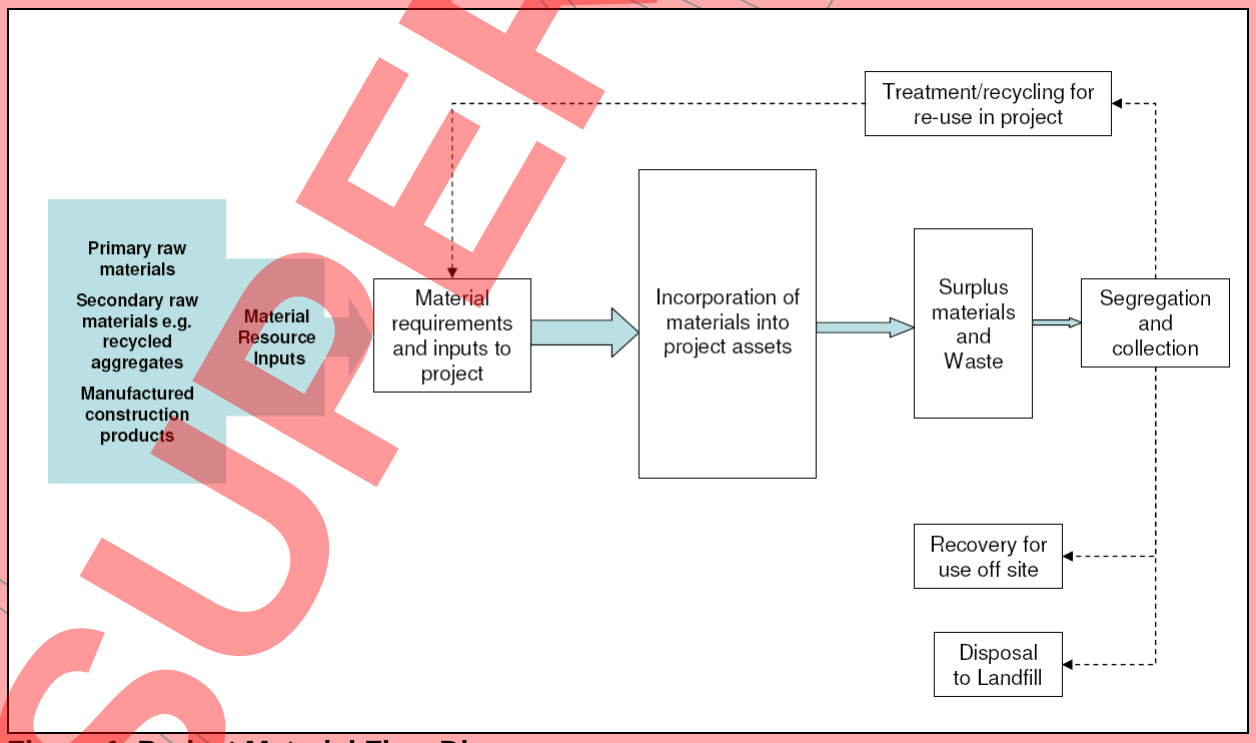


Figure 1. Project Material Flow Diagram

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The assessment of effects arisings from the use of materials considered by this IAN concentrates on 2 areas of the above process.

1. The use of primary/secondary/recycled/manufactured materials; and
2. The generation and management of waste.

Although the direct energy associated with the operation of the network is not considered as part of this assessment guidance, the embodied energy associated with the manufacture of materials and management of waste is considered as a potential impact.

2.1.2 Waste

While an understanding of 'waste' is critical to the assessment of impacts, it is not independently defined here as there is no definitive list of what is and is not waste. Whether or not a substance is discarded as waste - and when waste ceases to be waste - are matters that must be determined on the facts of the case, and the interpretation of the law is a matter for the Courts. It rests, in the first place, with the producer or holder of a substance to decide whether it is being discarded as waste. Therefore, a judgement of what is considered waste for the purposes of the assessment rests with the project in the first instance and should be identified at an early stage of the assessment process.

The Environment Agency is responsible, as a "competent authority", for the enforcement of waste management controls in England and Wales.

A project is likely to result in surplus material when Material Supply exceeds Material demand. Some surplus materials may be considered as waste and will fall under the relevant regulatory controls.

Surplus material and waste will arise from two sources:

- Existing site materials
  - e.g. concrete from demolition of existing structures, excavation of material from earthworks
- Materials brought on to site but not used for the original purpose
  - e.g. damages, off cuts, surplus

2.2 Key Issues, Impacts and Effects

Environmental impacts associated with material resources and waste occur at each stage of project's material flow cycle (Figure 1).

Materials use

For material resource use, ***the potential environmental effects are associated with the extraction and transport of primary raw materials, the manufacture of products, and their subsequent transport to and use on construction sites.*** Projects, such major new road construction projects, will consume large quantities of materials and hence may have permanent and direct effects on the environment. For example, effects will occur as a result of the depletion of natural resources and the embodied energy associated with the manufacture and transport of materials.

However many impacts occur off site and may possibly occur outside the UK. They include the depletion of non-renewable resources and the production of waste at the point of extraction and during manufacturing. It is outside the scope of this guidance to assess the environmental impacts associated with the extraction of raw materials and the manufacture of products. These stages of a product's or a material's life cycle are likely already to have been subject to environmental assessment. Instead this guidance concentrates on the

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assessment of the impacts and effects that will occur as a result of the use of primary, secondary and recycled raw materials and manufactured construction products on the project in question.

Waste

For surplus materials and waste, ***the potential environmental effects are associated with the production, movement, transport, processing, and disposal*** of arisings from sites. Major new road construction projects or large-scale maintenance schemes might result in large quantities of surplus materials and waste leading to effects on the available waste management infrastructure, for example. The basis of any assessment of the effects of waste will be to identify the quantities and type of waste firstly, and then try to establish the impacts.

2.2.1 Overlaps with other assessment subjects

The use of materials including the management of waste may also give rise to other impacts, which might include, for example, detrimental impacts on air quality and increased noise. Detailed guidance has been prepared for these subjects and included in DMRB Volume 11: Section 3 - Environmental Assessment Techniques. Hence, they are not considered within this IAN.

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Chapter 3 Assessment Process

3.1 Overview

This chapter describes a framework for the environmental assessment of material resources and waste. The framework is intended to be used at the planning and design stage of projects so that decision makers can identify the impacts of materials use early as possible so as to inform good design. The framework may be used at the start of a project or at the start of individual distinct stages within a project which entail both construction and maintenance activities.

Guidance is provided on the information required for the assessment, issues to be considered as part of the assessment and the mandatory reporting requirements. The mandatory reporting requirements are identified in Chapter 6.

The assessment process employs a question led approach, although it is not prescriptive or exhaustive and it may not be possible to answer all the questions for all projects. This allows a flexible approach to be employed tailored to the specific characteristics of each project.

3.1.1 Limitations

Whilst the guidance is founded on the philosophy of consequential assessment and proportionality it is still clearly a developing area. As yet it is not possible to provide detailed guidance on some aspects of the assessment process. namely significance of effect, that would normally be expected to be covered:

However, it is clear that progress can be made in identifying which impacts are permanent rather than temporary. Permanent impacts are likely to be significant in terms of their effect and so projects should as a minimum aim to identify these. Equally it is clear that identifying quantities of materials to be used and waste forecast to be produced provides the basis for assessment of magnitude of change.

It is envisaged that subsequent updates to this guidance will cover the above aspects in more detail as awareness is developed. This is not to stop projects from considering ways of reporting these aspects; indeed it would be advantageous to develop further thinking in these areas. Projects are reminded however when constructing such project based methodologies to get these agreed in advance by the Overseeing Organisation.

The assessment process is aligned with the assessment levels in DMRB Volume 11 Section 2, Part 1, and Chapter 2: Project Development and Environmental Impact Assessment Levels:

I. Scoping
II. Simple Assessment
III. Detailed Assessment

This alignment provides the detail necessary to meet the mandatory reporting requirements set out in Chapter 6.

The Assessment process is illustrated in Figure 2.

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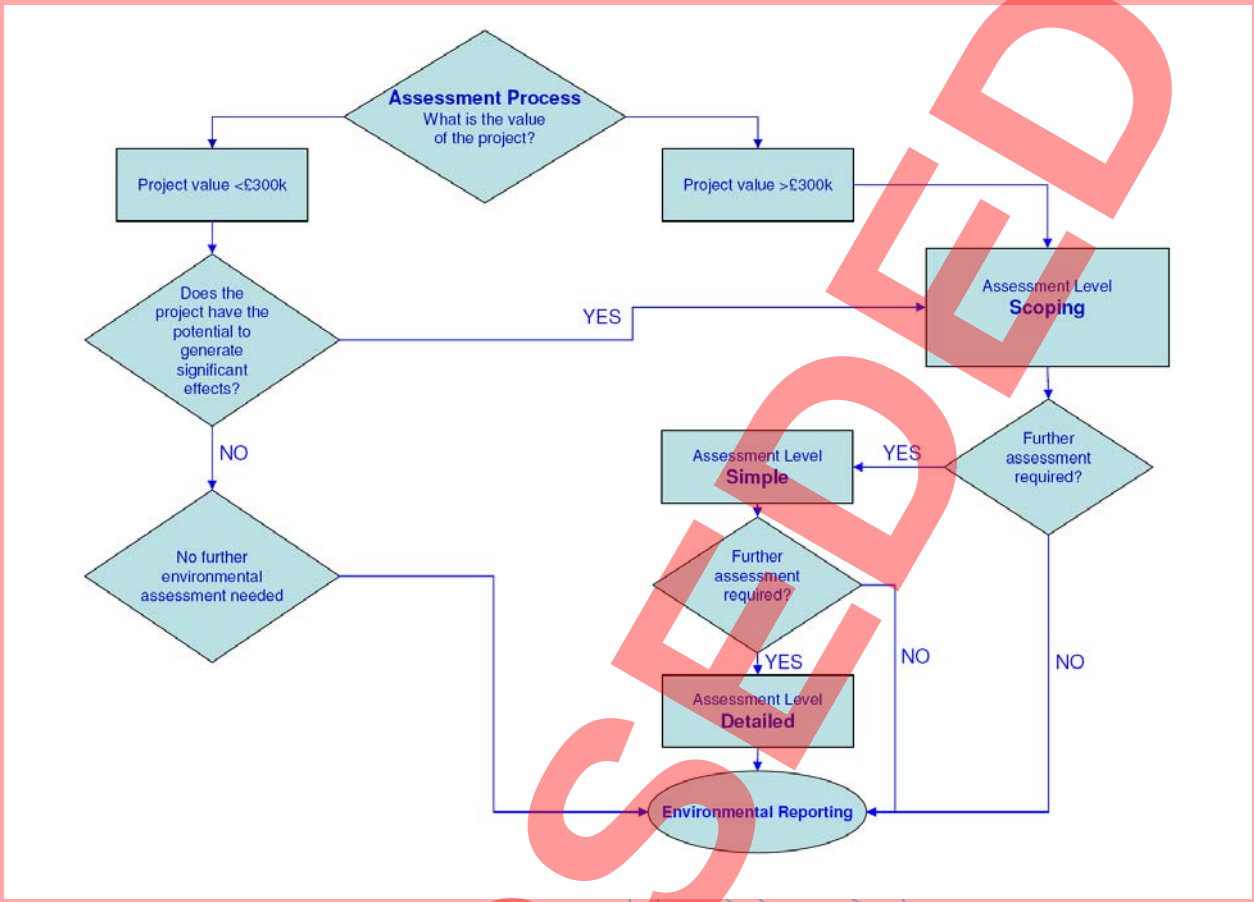


Figure 2. Assessment process determining the appropriate level of assessment

3.2 Description of the assessment process

3.2.1 Scoping Assessment

The first stage in understanding what the impacts might be is for projects to undertake a Scoping Assessment, the reporting of which is covered in Chapter 6.

One of the key principles underpinning the assessment methodology as set out in DMRB Vol 11 Section 2 is that of proportionality - allocating effort according to the potential for significant effects. This to a degree involves some judgement but won't be based on a structured method as required under Simple and Detailed levels of assessment.

On the basis of the principle of proportionality, the following is required of the Scoping Assessment:

- For projects with an estimated cost under £300,000 (excluding VAT but including the cost of labour, plant and materials, overheads and profit) it will be up to the project to decide if further assessment is necessary based upon the possibility of effects. This will involve identifying the major materials and wastes associated with the project and judging whether they have the potential to generate significant environmental effects. The decision must be recorded.
- For projects with an estimated cost greater than £300,000 it is assumed that the potential does exist for impacts and effects to take place. Therefore, an assessment of materials should be undertaken to at least the Simple level of assessment.

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The £300,000 cost threshold is that set by the Site Waste Management Plan Regulations (2008), which was based on cost benefit analysis undertaken by Defra to identify the financial threshold at which SWMPs were judged to be cost effective.

The Scoping Assessment should aim to identify the following:

- The materials to be used and wastes generated by the project that have the potential to generate significant environmental impacts. Significant environmental impacts are likely to arise from those materials which are used in the largest quantities, wastes which arise in the largest quantities, which have hazardous properties or comprise a large proportion of the value of the project;
- A definition of a set of receptors which the impacts will effect. This will be crucial to any subsequent assessment.
- The materials and wastes which have been identified as having potential to give rise to environmental impacts will be the areas that a simple or detailed assessment will subsequently consider;
- The method of assessment;
- The strategy for consulting on the assessment and who is to be consulted; and
- A recommendation about whether a Simple or Detailed level of assessment should be made.

Table 1 provides structure for identifying and summarising the materials and wastes that have the potential to generate significant environmental effects.

Table 1. Summary of materials and waste that have the potential to generate significant environmental effects

Project Activity	Material use and potential to generate significant effects	Potential waste arisings and potential to generate significant effects
Site remediation/ preparation/ earthworks	*Identify the materials to be used and an indication of whether they have the potential to generate significant environmental effects.*	*Identify the potential waste streams and an indication of whether they have the potential to generate significant environmental effects.*
Demolition (if applicable)		
Site construction		
Operation and maintenance of asset		

Outputs

The decision on whether or not it is necessary to proceed to either the Simple or Detailed Assessment level must be reported in accordance with the mandatory reporting requirements specified in Chapter 6.

3.3.2 Simple Assessment

The aim of Simple Assessment is identified in DMRB Volume 11 Section 2 Part 1. In summary, Simple Assessment should assemble data and information that is readily available to address potential effects identified at the Scoping level, to reach an understanding of the likely environmental effects to inform the final design or to reach an understanding of the likely environmental effects that identifies the need for Detailed Assessment.

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For the purposes of assessing the effects associated with materials use and waste the Simple Assessment is a qualitative exercise which should aim to identify the following:

- The materials required for the project and where information is available, the quantities;
- The anticipated waste arisings from the project, and where information is available, the quantities and type (e.g. hazardous);
- The impacts that will arise from the issues identified in the Scoping exercise in relation to materials and waste;
- The results of any consultation; and
- A conclusion about whether this level of assessment is sufficient to understand the effects of the project or whether Detailed Assessment is necessary.

The reporting requirements for the Simple level of assessment are covered in Chapter 6.

Data Collection
For the Simple assessment data is typically gathered from existing information, simple analysis and by consulting with statutory bodies, such as the Environment Agency. This information should be readily available for the project in question, or should easily be identified through desk based research.

Material resource use
Most projects will require primary raw materials and manufactured products. The type of data required for the Simple Assessment of materials resource use are summarised in Chapter 6 and a Simple Assessment reporting matrix is included in Annex 1.

Waste
The use of material resources is likely to result in the production of surplus materials and waste. The type of data required for the Simple Assessment of waste are summarised in Chapter 6 and a Simple Assessment reporting matrix is included in Annex 1.

Outputs

The findings of the Simple Assessment must be reported in accordance with the mandatory reporting requirements specified in Chapter 6. Where possible the report should identify the environmental impacts and the measures to mitigate the impacts. Where the environmental impacts cannot be identified further assessment is required and the effects carried forward to the Detailed Assessment level.

3.3.3 Detailed Assessment
The objective of the Detailed Assessment is to gain an in-depth appreciation of the environmental consequences of the project (both adverse and beneficial) to inform project decisions on whether the project proceeds in its proposed configuration, taking account of the key issues.

It is most likely to be used for complex capital maintenance, improvement and large new construction projects. However each project must be considered on its own merits.

The guidance in this Standard is not prescriptive or exhaustive in order to provide a flexible approach enabling those undertaking the assessment to tailor their approach to the specific characteristics of each project. The Detailed Assessment of material resource use and waste should utilise the data gathered at the Simple Assessment level and where necessary collate

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additional information to quantify the materials required for the project and to forecast the quantities and types of waste which will be produced.

For the purposes of assessing the effects associated with materials use and waste the Detailed Assessment is a quantitative exercise which should aim to identify and quantify the following:

- The types and quantities of materials required for the project;
- Details of the source/origin of materials, site-won materials to replace virgin materials, materials from secondary/recycled sources or virgin/non-renewable sources;
- The cut and fill balance;
- The types and quantities of forecast waste arisings from the project, including the identification of any forecast hazardous wastes;
- Surplus materials and waste falling under regulatory controls;
- Waste that requires storage on site prior to re-use, recycling or disposal;
- Waste to be pre-treated on site for re-use within the project;
- Wastes requiring treatment and/or disposal off site;
- The impacts that will arise from the issues identified in relation to materials and waste;
- A conclusion about the magnitude and nature of the impacts; and
- The identification of measures to mitigate the identified impacts.

The Detailed Assessment should as a minimum identify whether the impacts are positive/negative, permanent/temporary and direct/indirect. Permanent impacts are likely to be significant in terms of their effect and so projects should aim to identify these. Equally it is clear that identifying quantities of materials to be used and waste forecast to be produced provides the basis for an assessment of the magnitude of change.

It should also describe the receptors that are likely to be impacted upon, one of which may be relevant policies. Therefore an assessment should be made of how the use of materials conforms to the high level policy and strategy targets (both internal HA policies and external ones) influencing materials resource use.

The impacts of the waste forecast to be generated should be assessed in the context of the impacts on the waste management infrastructure (the receptor with regards to waste) identified as part of the data collection for the Simple Assessment and the legislation, policy and strategy targets (both internal HA policies and external ones) influencing waste management.

The reporting requirements for the Detailed level of assessment are covered in Chapter 6 and a Detailed Assessment reporting matrix is included in Annex 2.

Outputs
The Detailed Assessment should identify the significant impacts associated with materials resource use and waste for the project. Where significant impacts are identified, mitigation measures should be identified.

The findings of the Detailed Assessment must be reported in accordance with the mandatory reporting requirements specified in Chapter 6. The report should identify the significant environmental impacts and the measures to mitigate the impacts.

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Chapter 4 Management of Environmental Effects

It is important to note that the validity of the assessment forecasts are dependant on proper management of impacts and effects. Which is why projects should only include mitigation they know they can deliver and subsequently manage to fulfil their purpose. Assessments should describe how this process will be implemented. As such the reader is sign posted to guidance on the following:

- Site Waste Management Plans; and
- Civil Engineering Environment and Quality Award Scheme (CEEQUAL).

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Chapter 5 Monitoring and Evaluation

The management of environmental effects has not been detailed comprehensively within the scope of the IAN at this stage. However, the HA Environmental Information System (EnvIS) (IAN 84/10) provides a complementary tool by which information required in this IAN will be generated.

EnvIS consists of specific environmental data supplied by Service Providers, the HA and other bodies which is collated and displayed in the Highways Agency Geographical Information System (HAGIS). This data is used to assist in managing the environment, within and surrounding the trunk road network, and in the review and reporting of the environmental performance of both Service Providers and the HA. Further to this HA GDMS also provides a tool for HA staff and its Service Providers with geo-technical information including information on geo-technical assets and geological maps.

The environmental information covers seven topics, one of which is waste and material resources. For major projects, data on waste and material resources is entered at various stages in the project cycle, from Environmental Assessment/Statement Publication to As-built drawings. This allows a comparison between forecast and actual quantities. For network management, agents are required to submit waste and material resources information annually at the start of the financial year, including actual data for the previous year and forecast data for the forthcoming year.

The waste section of EnvIS was set up to be compatible with the forthcoming legislation on Site Waste Management Plans, so that it should be possible to use the same information for both.

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Chapter 6 Reporting of Assessments

This chapter of the Standard outlines the mandatory reporting requirements for each level of the assessment process. The key output is to report the impacts associated with materials resource use and waste and associated mitigation measures. The levels of reporting should provide a complete account of how material resource efficiency has been maximised throughout the project and how waste minimisation and the optimal use of surplus materials and waste have been prioritised.

6.1 Scoping Assessment

The Scoping Assessment should identify the estimated cost of the project (excluding VAT), which should include the cost of labour, plant and materials, overheads and profit. This can be demonstrated from existing costs for the project or from tender documents, for example. It should be clearly stated whether the Scoping Assessment has indicated whether the project should be subject to a Simple and Detailed Assessment or whether no further assessment is required. Projects with a value greater than £300,000 should always be taken to at least a Simple level of assessment.

In reporting the outputs, a summary of the proposed scheme including a description of the scheme work should be included alongside the following:

- The aspects of materials use and waste generation in the project that have the potential to generate environmental impacts. These will be the areas that a Simple or Detailed assessment will subsequently consider.
- A definition of the receptors that could be impacted upon.
- The areas that can be scoped out. This to a degree involves some judgement but won't be based on a structured method as required under Simple and Detailed levels of assessment.
- A recommendation about whether a simple or detailed level of assessment should be made.

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6.2 Simple Assessment

In reporting the outputs from the Simple Assessment the following project-specific information should be identified baseline information should be identified:

- Description of the current site and whether the project concerns construction, improvement or major maintenance;
- Information about construction methods and techniques (where this information is available at the time of assessment);
- Statutory requirements, such as the need for a Site Waste Management Plan and any other relevant legislation and statutory targets influencing materials resource use and waste management;
- The high level policy and strategy targets (both internal HA policies and external ones) influencing materials resource use and waste management;
- An assessment of the available waste management infrastructure, including:
    - Types of waste management facilities, including landfill sites, materials recovery facilities, transfer stations;
    - Locations of waste management facilities in relation to the site; and
    - Capacities of identified waste management facilities for each type of waste forecast to be produced.

The data on material resource use and waste should be reported using the Simple Assessment Reporting Matrix in Annex 1 (Tables A and B).

Where impacts identified at the Simple Assessment level can be addressed without the need for Detailed Assessment, the mitigation measures should be identified using the Mitigation Measures Matrix in Annex 3 (Table D).

6.3 Detailed Assessment

The main outputs from the Detailed Assessment are:

i. the identification of the environmental impacts associated with materials resource use and waste; and
ii. the measures which will be implemented to mitigate the impacts.

The impacts that have been identified should be reported using the Detailed Assessment Reporting Matrix in Annex 2 (Table C). For each of the impacts identified, a description of the impact should be included with a description of the nature and magnitude of the impact. Where relevant, reference should be made to the data collected for the Simple Assessment and any additional data collection, modelling or surveys undertaken as part of the Detailed Assessment. The conclusion reached should be accompanied by a statement justifying the decision.

Where impacts are identified at the Detailed Assessment level the mitigation measures should be identified using the Mitigation Measures Matrix in Annex 3 (Table D).

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6.4 Mitigation Measures

The mitigation measures developed to address the environmental impacts identified during the assessment process should be reported using the Mitigation Measures Matrix in Annex 3 (Table D).

The Matrix should identify:

- the impacts;
- the mitigation measures;
- a commentary on the likely effectiveness of this mitigation; and
- a description of how the measures will be implemented, measured and monitored (e.g. Contractor's design, method statements, EMP and SWMP)

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Chapter 7 Glossary of Terms

CEEQUAL	Civil Engineering Environmental Quality Assessment and Awards Scheme.
Construction and Demolition Waste	Waste arising from construction repair, maintenance and demolition of buildings and structures. Including brick, concrete, hardcore, subsoil, and topsoil, but can also contain quantities of timber, metals plastics and occasionally hazardous waste materials.
Controlled waste	Controlled waste refers to household, industrial and commercial waste as defined in Sections 75(4) to 75(7) of the Environmental Protection Act 1990.
Design Manual for Roads and Bridges (DMRB)	A set of documents that provide a comprehensive manual system which accommodates, within a set of loose-leaf volumes, all current standards, advice notes and other published documents relating to the design, assessment and operation of trunk roads (including motorways).
Disposal	Defined by Directive 2008/98/EC as any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy.
Environmental assessment	A non-statutory assessment of the environmental implications of a proposed project.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a decision to proceed can be made. Involves the collection and consideration of environmental information, which fulfils the assessment requirements of Directive 85/337/EEC, including the publication of an Environmental Statement.
Environmental Information System (EnvIS)	Consists of specific environmental data supplied by Service Providers, the HA and other bodies which is collated and displayed in the Highways Agency Geographical Information System (HAGIS). These data are used to assist managing the environment and in the review and reporting of the environmental performance of both Service Providers and the HA.
Environmental Management Plan (EMP)	A document (and corresponding supporting information) which sets out agreed procedures and standards for the implementation of identified management measures developed to address the adverse and beneficial environmental impacts arising from network management.
Environmental Product Declarations	Environmental Product Declarations provide quantified environmental data for a product from cradle to grave with pre-set categories of parameters standardised under the ISO14040 series of standards
Hazardous waste	Hazardous waste is defined in the Landfill Directive as: "*any waste which is listed within the Hazardous Waste List 94/904/EC*". Hazardous wastes include one or more 14 hazardous properties in the Hazardous Waste Directive *(91/689/EEC).*
Highways Agency Geotechnical Data Management System	Holds details of the HA geotechnical assets together with geotechnical maps, borehole details and specialist reports.
Highways Agency Geographical Information System	Geographical information system allowing users to view geographical data for a specific area of the UK.
Inert waste	Defined for the purposes of the Landfill Directive (article 2(e)). Inert waste means: *"waste that does not undergo any significant physical, chemical or biological transformations"*
Lean construction	Lean construction is concerned with the holistic pursuit of concurrent and continuous improvements in all dimensions of the built and natural environment: design, construction, activation, maintenance, salvaging, and recycling.
Life Cycle Assessment	The investigation and valuation of the environmental impacts of a given product or service caused or necessitated by its existence.
Manual of Contract Documents for Highways Works	Contains instructions for tendering and the preparation on contracts. Provides guidance on the bill of quantities, highway construction details and specification for highway works.
Materials Recovery Facility	A Materials Recovery Facility (MRF) is a specialised plant that receives, separates and prepares recyclable materials for marketing to end-user manufacturers.
Material resource	Material resources are physical substances which are used as building blocks for input into a production, manufacturing process and for the maintenance of already established operations and activities.
Non-hazardous waste	Non-hazardous wastes are materials that are not inert wastes and that are not on the Hazardous Waste List (*94/904/EC*).
Overseeing Organisation	The governmental or other body with statutory responsibility for the highway.
Recycling	Recycling involves processing waste materials into new products.

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Re-use	Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived;
Service Provider	A collective term used to describe both Designers and Network Management Agents. A third party contracted by the HA to undertake works as part of the implementation/management of the trunk road network.
Site Waste Management Plan	A tool for detailing the amount and type of waste that will be produced on a construction site and how it will be eliminated, reduced, re-used, recycled and disposed of and to help meet regulatory controls and reduce the costs of waste. Site Waste Management Plans are a mandatory requirement in England on projects worth more than £300,000.
Specification for Highways Works	Contained within the MCHW gives advice and guidance for the implementation of specifications.
Sustainable construction	The incorporation of the guiding principles of sustainable development into the construction proves.
Sustainable Consumption and Production	Sustainable Consumption and Production (SCP) is one of the four priority areas for UK action set out in the Sustainable Development Strategy. SCP is about achieving economic growth whilst respecting environmental limits, finding ways to minimise damage to the natural world and making use of the earth's resources in a sustainable way.
Sustainable Development	A widely-used and accepted international definition of sustainable development is: *"development which meets the needs of the present without compromising the ability of future generations to meet their own needs"* (Brundtland Commission)
Trunk Road Network	Incorporates all soft and hard features (man-made or natural) for which the HA is the highway authority.
Waste transfer station	A solid waste processing site where waste is transferred from one vehicle to another or for temporary storage until transferred to a permanent recycling or disposal site.
Waste hierarchy	The waste hierarchy lays down a priority order of what constitutes the best overall environmental option in waste legislation and policy.
Waste minimisation /prevention	Measures taken before a substance, material or product has become waste, that reduce the quantity of waste, the adverse impacts of the generated waste on the environment and human health or the content of harmful substances in materials and products;
Waste recovery	Waste 'recovery' refers to any of the operations provided for in Annex II B of Directive 2006/12/EC. The term encompasses the recycling, re-use and reclamation of waste materials.

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Annexes

Annex 1. Simple Assessment Reporting Matrix

The outputs from the Simple Assessment should be reported using Tables A and B. In addition, the report should include the information summarised in Chapter 6.

The report should identify the environmental impacts and either the measures to mitigate the impacts or the impacts that will be assessed during the Detailed Assessment.

Table A. Summary of data required for the Simple Assessment of materials resource use

Project Activity	Material resources required for the project	Quantities of material resources required	Additional information on material resources
Site remediation/ preparation/ earthworks	*Identify the materials to be used, e.g.:* • *Primary materials* • *Secondary/Recycled materials* • *Excavated materials* • *Manufactured products*	*Where information is available, identify the quantities of materials required.*	*For example:* • *Source/origin of materials* • *Cut and fill balance* • *Site-won materials to replace virgin materials* • *Secondary/recycled materials* • *Virgin/non-renewable sources*
Demolition (if applicable)			
Site construction			
Operation and maintenance of asset			

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Table B. Summary of data required for the Simple Assessment of waste arisings

Project Activity	Waste arisings from the project	Quantities of waste arisings	Additional information on waste arisings
Site remediation/ preparation/ earthworks	*Identify the anticipated waste arisings from the project, e.g.:* • *Surplus excavated materials* • *Contaminated soil* • *Construction wastes* • *Hazardous wastes*	*Where information is available, identify the quantities of wastes anticipated.*	*For example:* • *Waste falling under regulatory controls* • *Surplus excavated materials that exceed the cut and fill balance* • *Wastes that could be treated on site for re-use* • *Details of hazardous waste* • *On-site waste storage requirements, e.g. hazardous waste*
Demolition (if applicable)			
Site construction			
Operation and maintenance of asset			

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Annex 2 Detailed Assessment Reporting Matrix

The outputs from the Detailed Assessment should be reported using Table C. In addition, the report should include the information summarised in Chapter 6.

Table C Detailed Assessment Reporting Matrix

Project Activity	Potential impacts associated with material resources / waste arisings	Description of the impacts
Site remediation/ preparation	*Provide a brief summary of the impacts associated with:* • *Material use; and* • *Waste management.*	*Identify nature of impacts:* • *adverse/beneficial* • *permanent/temporary* • *direct/indirect* • *magnitude of change*
Demolition		
Site construction		
Operation and maintenance of asset		

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Annex 3 Mitigation Measures Reporting Matrix

Mitigation measures identified at the Simple and Detailed Assessment stages should be reported using Table D. In addition, the report should include the information summarised in Chapter 6.

Table D Mitigation Measures Reporting Matrix

Project Activity	Potential impacts associated with material resource use/ waste management	Description of mitigation measures	How the measures will be implemented, measured and monitored
Site remediation/ preparation	*Provide a brief summary of the impacts associated with:* • *Material use; and* • *Waste management.*	*Provide a description of the mitigation measures for each impact*	*Provide details of how the mitigation measures will be implemented, measured and monitored.*
Demolition			
Site construction			
Operation and maintenance of asset			

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Annex 4: Legislative and Policy Context

This Annex provides an overview of the legislative and policy context for the sustainable use of resources and the management of waste. The information is not exhaustive and further information on UK legislation can be found on http://www.opsi.gov.uk. In addition, guidance on environmental legislation and regulations, and how to comply with them, is provided by Netregs: http://www.netregs.gov.uk, a partnership between the UK environmental regulators: the Environment Agency in England and Wales, SEPA in Scotland and the Northern Ireland Environment Agency (NIEA) in Northern Ireland.

A4.1 Legislative and Policy Context

The management of material resources and waste is subject to a framework of legislative and policy instruments implemented within the European Union (EU) and the United Kingdom (UK). This legislative and policy framework primarily consists of:

- Overarching sustainable development strategy
- Legislative framework for environmental assessment
- Legislative and policy framework for material resources
- Legislative and policy framework for waste.

The primary legislative and policy instruments affecting the consideration of the environmental assessment of material resources and waste are outlined in the following sections.

A4.2 Legislative framework for environmental assessment

The legislation governing environmental impact assessment of highways is the:

- Highways Act 1980
- Highways (Assessment of Environmental Effects) Regulations 1999 as amended by the Highways (Environmental Impact Assessment) Regulations 2007

These instruments require that the characteristics of a project must be considered having regard to:

- The use of natural materials
- The production of waste
- Pollution and nuisances

A4.3 Legislative and Policy Framework for Waste

There is a considerable body of legislation and associated guidance relating to the management and disposal of waste in the UK. Much of this legislation has its origins in waste management legislation made at the European Union level.

The EU Waste Framework Directive provides the overarching legislative framework for the collection, transport, recovery and disposal of waste, and includes a common definition of waste. The Directive requires all Member States to take the necessary measures to ensure that waste is recovered or disposed of without endangering human health or causing harm to the environment and includes permitting, registration and inspection requirements. The Directive also requires Member States to take appropriate measures to encourage firstly, the prevention or reduction of waste production and its harmfulness and secondly the recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials, or the use of waste as a source of energy.

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There are a number of primary legislative instruments in the UK on waste listed below which enact a wide range of secondary legislation that governs the storage, collection, treatment and disposal of waste:

- The Control of Pollution Act 1974
- The Control of Pollution (Amendment) Act 1989
- Environmental Protection Act 1990 (EPA)
- The Environment Act 1995
- The Finance Act 1996
- Waste Minimisation Act 1998
- The Waste and Emissions Trading Act 2003
- The Clean Neighbourhoods and Environment Act 2005

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Annex 5: IAN 153/11 Guidance on The Environmental Assessment of Material Resources in English DBFO schemes

When used on the M25 DBFO Scheme, this IAN is to be amended as follows:

Para No.	Description
1.5	Delete “all network Areas and projects for which the HA is the highway authority” and insert “all DBFO projects”
1.6	Delete title and insert “**Alignment with Other Documents**” Delete the first paragraph
2.1.2	Delete “Material Supply exceeds Material” and insert “material supply exceeds material”
3.1.1	Delete “agreed in advance by the Overseeing Organisation” and insert “submitted in advance under the Review Procedure”
Chapter 5	Delete “Service Providers” and insert “service providers” at all occurrences
6.4	Delete “Contractor’s” and insert “contractor’s”
Chapter 7	Delete the entries for Design Manual for Roads and Bridges (DMRB), Environmental Management Plan (EMP), Manual of Contract Documents for Highway Works, Overseeing Organisation, Service Provider and Specification for Highway Works
Chapter 7 Environmental Information System (EnvIS)	Delete “Service Providers” and insert “service providers” at both occurrences

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When used on all other English DBFO Schemes, this IAN is to be amended as follows:

Para No.	Description
All occurrences	The Overseeing Organisation is the Department
All occurrences	All references to obtaining approval for/agreement to a Departure from Standard shall be deemed to be references to Alternative Proposals and submissions for their review in accordance with the Design and Certification Procedure.
1.5	Delete “all network Areas and projects for which the HA is the highway authority” and insert “all DBFO projects”
1.6	Delete title and insert “**Alignment with Other Documents**” Delete the first paragraph
2.1.2	Delete “Material Supply exceeds Material” and insert “material supply exceeds material”
3.1.1	Delete “agreed in advance by the Overseeing Organisation” and insert “submitted in advance under the Review Procedure”
Chapter 5	Delete “Service Providers” and insert “service providers” at each occurrence
6.4	Delete “Contractor’s” and insert “contractor’s”
Chapter 7	Delete the entries for Design Manual for Roads and Bridges (DMRB), Environmental Management Plan (EMP), Manual of Contract Documents for Highway Works, Overseeing Organisation, Service Provider and Specification for Highway Works
Chapter 7 Environmental Information System (EnvIS)	Delete “Service Providers” and insert “service providers” at both occurrences

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