
**VOLUME 10 ENVIRONMENTAL
DESIGN AND
MANAGEMENT
SECTION 0 ENVIRONMENTAL
OBJECTIVES**

PART 1

HA 86/01

PRINCIPLES AND GUIDANCE

SUMMARY

This Advice Note provides guidance for those engaged in the assessment, design, implementation and operation of new and existing highways. Specifically it describes a consistent system for defining and achieving the environmental objectives, both policy and route specific.

INSTRUCTIONS FOR USE

This is a new document to be incorporated into the manual.

1. Insert HA 86/01 into Volume 10, Section 0.
2. Archive this sheet as appropriate.

Note: A quarterly index with a full set of Volume Contents Pages is available separately from The Stationery Office Ltd.

THE HIGHWAYS AGENCY



**THE SCOTTISH EXECUTIVE DEVELOPMENT
DEPARTMENT**



**THE NATIONAL ASSEMBLY FOR WALES
CYNULLIAD CENEDLAETHOL CYMRU**



THE DEPARTMENT FOR REGIONAL DEVELOPMENT*

Principles and Guidance

* A Government Department in Northern Ireland

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REGISTRATION OF AMENDMENTS

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Contents

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1. Principles and Guidance for Use
2. Enquiries

1.1 This Advice Note is intended to provide guidance, and a methodology for those engaged in the assessment, design, construction, improvement, operation and maintenance of the existing and proposed highway network.

The technical standards, design guidance, and procedural requirements are covered in other documents and Advice Notes, which need to be used integrally with the processes described in this Section 1.

The methodology set out in this Section 1 of DMRB Volume 10, is intended to provide a consistent system for defining and achieving the environmental objectives, which may be policy, or route-specific objectives. The main aims of the system are as follows:

- To enable the design and implementation of capital maintenance and network improvements, taking full account of the need to protect, and where practicable enhance, the existing environment.
- To enable the environmental assessment and design of improvements utilising known data, and developing the options and design using a consistently-applied approach to the description of environmental features.
- To enable the designer to provide design data and performance requirements to contractors in a consistent format, to enable them to detail and implement the various environmental features such that they meet the stated objectives, in the short and long term.
- To enable constructed scheme or existing network data to be handed over to succeeding managing agents in a consistent format and content.
- To enable environmental data to be utilised in analysing its interaction with other technical data.

1.2 The Advice Note provides a framework and process for achieving the main aims set out above. As with the other sections of DMRB Volumes 10 and 11, the methodology relies on a high standard of professional expertise being applied in the various disciplines.

The need for consideration of environmental matters in their wider sense has driven the development of the methodology. It is therefore of paramount importance that the various professional disciplines required are interactive, with appropriate advice being sought, whether from engineers, landscape designers, planners, environmental scientists, ecologists or landscape managers.

By applying the co-ordinated multi-disciplinary teamwork approach, the overall environmental performance of the highway estate can be significantly improved over time.

The following Parts of the Advice Note, used in conjunction with other technical guidance, and best practice, provide the basic 'tools'.

It is intended for use by civil engineers, those undertaking studies, and environmental impact assessment, designers, contractors, scientists, and landscape managers.

1.3 The Advice Note is subdivided into a sequential series of Parts, all of which are inter-related. This paragraph summaries the content of each Part:

● **PART 1: Principles and General Guidance**

● **PART 2: Environmental 'Functions'**

The codes and descriptive text for the core Environmental Functions, enable users to attach objectives to the various features of the highway estate. This includes the ability, when appropriate, to ascribe highway and structural elements an environmental function that will inform its design and influence maintenance techniques.

● **PART 3: Landscape 'Elements'**

This Part provides codes and descriptive text, with guidance notes for the core Elements of the 'soft estate' such as grass, planting, wetland, hedges. It also contains provision for inclusion of 'hard' landscape features, such as decorative railings, feature paving materials, where these are there for specific landscape reasons.

● **PART 4: Environmental 'Elements'**

This Part relates to non-landscape features, enabling the description of such 'elements' as Noise Attenuation measures, Water Quality controls, Protected Species, and legislated elements such as Injurious Weeds and Pests. Many of these elements interact closely with landscape functions and elements.

It is not the intention, within the Environmental Database or Scheme Masterplan, to describe the technical details of the engineering content of, for instance, noise-reducing pavements. Their inclusion within this Advice Note is to enable a co-ordinated approach to provision and management of environmental measures.

● **PART 5: Planning & Policy Features**

This Part provides codes for the inclusion of various statutory designations (eg Conservation Area), Cultural Heritage Features, Rights of Way, and specific land uses.

This enables designers and network managers to take account of the relevant features as 'constraints' as an integral part of the design and/or operational process.

● **PART 6: Environmental Database Requirements**

The Highways Agency, through their Managing Agents (MA), are developing a Database, using the 'Functions' and 'Elements' system to record and update a consistent Environmental Asset inventory.

This Part describes the core requirements of the Database, and the methodology for its development and operation.

The requirements for MA's Landscape Management Plans are described in Part 8.

● **PART 7: Scheme Development, Implementation and Management**

This part illustrates how the 'Functions' and 'Elements' methodology are utilised and shown on plans for different purposes:

- Option Assessment (Stage 1)
- Scheme Design & Environmental Masterplans (Stages 2/3)
- Detailed Design & Contract Documentation
- Scheme/Network Handover Data
- Network Management

It is not a Design Guide or a manual for Environmental Assessment; these are adequately covered in associated guidance. This Part provides guidelines for applying and recording the assessment, design, and performance of environmental features. It contains scheme examples at the various stages, and illustrates the principal requirements for Masterplans.

● **PART 8: Contract Performance Requirements**

This Advice Note is not intended to replace existing or emerging model contract documentation. It may however, be referenced as a 'Core' performance requirement for many future Design, Construction and Network Management Contracts.

This part will therefore provide core text for the various procurement methods:

- Managing Agents: Core Environmental Duties
- D & B – Core Performance Requirements for 'Functions' and 'Elements'
- DBFO – Core Performance Requirements for 'Functions' and 'Elements'

This part, together with Parts 2, 3, 4, 5 and 6 in effect replaces the model text of various Annexes in Schedules 4 and 6 of the DBFO model. However, the relevant core text within Part 8 will need to be extended and adapted to suit scheme-or-network-specific requirements. It is therefore formatted to facilitate substitution; e.g. the core text for D & B within this part can be deleted and the scheme-specific requirements inserted within the actual contract documentation.

This part contains notes and guidance for compilers of environmental specifications.

● **PART 9: Glossary of Terms**

1.4 DEFINITION OF ENVIRONMENTAL OBJECTIVES

The guiding principles for England are set out in the Highways Agency's Environmental Strategic Plan. The key Environmental Objectives are described as follows:

● **Biodiversity**

To manage our network in a practical way which promotes the maintenance and enhancement of biodiversity – that is to say the variety of life. In particular we seek to manage our own estate so as to add to its existing value as a refuge and a linking feature for wildlife.

● **Air Emissions Management**

To take practical steps to minimise emissions. This includes appropriate highway designs to influence vehicle operation plus controls on the performance of contractors. In addition we seek to encourage our partners in the vehicle and construction industries to play their part in reducing emissions.

● **Noise Management**

To take practical steps to minimise noise and disturbance. This includes providing appropriate highway designs and making more use of noise reducing technologies. The Agency will also aim to increase the awareness of contractors about the importance on this issue. In addition we will encourage our partners in the vehicle, tyre and construction industries to play their part.

● **Waste Management**

To develop techniques to ensure that the Trunk Road network is managed in the most sustainable manner, conserving the existing resource, generating less waste and removing barriers that prevent or inhibit the use of secondary or waste materials.

● **Water Management**

To identify and implement practical steps to manage the drainage of our network; we aim to minimise the impact of traffic and of our maintenance operations on water courses, groundwater and flooding.

● **Landscape and Townscape**

Our objective is to respect the landscape character and quality of an area when designing new roads or improving existing roads. We will seek to enhance the integration of our network into rural areas using a combination of sensitive road alignment, earthworks, the use of appropriate materials and planting to minimise the adverse effects of trunk road traffic on the countryside.

● **Heritage**

To ensure that in the planning and resourcing of trunk road projects there is an appropriate response to any adverse effects on the historic environment and that the historic fabric of our landscape is respected.

Users in Scotland, Wales and Northern Ireland should consult with the Overseeing Organisations within those territories regarding their relevant environmental policies and objectives.

1.5 INTRODUCTION TO FUNCTIONS AND ELEMENTS

The wide diversity of landscape and biological features that affect the environment of highways demands a robust, objective, but flexible system for their classification, as well as a wide range of professional expertise for correct identification, interpretation, and management.

The 'Functions' and 'Elements' methodology originally developed for DBFO, has been adapted to enable its usage for all the purposes outlined in Part 1 Paragraph 1.1. Using this system enables environmental data to be recorded and developed in a consistent manner and linked through all stages of schemes from initial design through to construction requirements and management action plans.

The codes represent all the environmental objectives, apart from Air Quality, rather than just Landscape and Nature Conservation. Physical Environmental Features are subdivided for convenience into Landscape, Environmental, and Planning/Policy, although these elements form an integral part of the heading of 'Environment'.

It provides a 'tool' for users that, as long as the core requirements are followed, can be extended and adapted to suit specific needs. The Core Datasets and Codes described in Parts 2-5 are mandatory on all users on behalf of HA. This is essential to enable consistent data transfer and collation nationally.

The principle is that any additional detailed technical information required by designers, contractors, and managers is linked 'but stored' in separate associated databases/documents. Parts 6, 7, and 8 describe the processes by which this can be achieved.

The system relies on simplicity, in order to provide a readily-usable design and management tool. Additional data, whether as image or text files, can be attached by utilising the unique feature referencing system, and where appropriate, GIS technology via digital OS mapping.

1.6 CORE FUNCTIONS AND ELEMENTS

The principle is that each existing or proposed environmental feature on or adjacent to the highway will have both one or more 'Functions', and an 'Element' which describes its physical attributes or designation in statutory terms.

The basis of recording and showing these features is that they have an interaction with the highway i.e. if there are features that do not have an environmental function, or form a constraint upon the design or operation of the road, they would not be recorded.

All features (i.e. 'Elements') may have a multiple purpose and therefore can be ascribed more than one 'Function' eg a vertical barrier may be designed to achieve both Visual Screening and Noise Attenuation.

Likewise, the standard of maintenance applied to a grassed area may enhance Visual Amenity, and also have a Heritage Function relating to the setting of an adjacent Listed Building. Part 7 of this Advice Note provides illustrative examples of their usage.

Parts 2, 3, 4 and 5 provide descriptive text for the Functions and Elements. The extent to which any text is incorporated into documents and drawings will depend on the purpose. For example, at public consultation stage, some site-specific explanatory notes may be needed on the Masterplan, whilst for Contract Requirements the specific design requirements for each feature will need to be stated in the documents and cross-referenced to the Masterplan and descriptive text.

Feature	Primary Function	Secondary Function	Element
Planted Screen	Visual Screening (EFA)	Landscape Integration (EFB)	Linear Belts (LE2.4)
SSSI	Nature Conservation & Biodiversity (EFD)	-	Statutory Nature Conservation Designation (P1.1)
Reed Bed	Water Quality (EFH)	-	Water Pollution Control Measures (E2.1)
Painted Seating	Enhancing the Built Environment (EFC)	Visual Amenity (EFE)	Hard Landscape Feature (LE2.11)
Porous Asphalt Surface	Auditory Amenity (EFG)	-	Noise Reducing Surface (E1.1)

By utilising the multiplicity of the combinations, some of which are shown above, the user can succinctly describe all relevant features and their role in the highway and wider environment.

2. ENQUIRIES

All technical enquiries or comments on this Advice Note should be sent in writing as appropriate to:

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The Highways Agency
St Christopher House
Southwark Street
London SE1 0TE

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Divisional Director

Chief Road Engineer
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J HOWISON
Chief Road Engineer

Chief Highway Engineer
The National Assembly for Wales
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J R REES
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