A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010059

Applicant's Comments on Responses to Written Questions - Appendix B - DMRB Guidance

AFPF Rules 2010 Rule 8(1)(b)

Planning Act 2008

Infrastructure Planning (Examination Procedure) Rules 2010

January 2021

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

The A1 in Northumberland: Morpeth to Ellingham

Development Consent Order 20[xx]

Applicant's Comments on Responses to Written Questions - Appendix B - DMRB Guidance

Regulation Reference:	APFP Regulation 8(1)(b)
Planning Inspectorate Scheme Reference:	TR010059
Doc Reference:	7.11.2
Author:	A1 in Northumberland: Morpeth to Ellingham Project Team, Highways England

Version	Date	Status of Version
Rev 0	January 2021	Deadline 2

VOLUME 10 ENVIRONMENTAL DESIGN AND MANAGEMENT

SECTION 0 ENVIRONMENTAL OBJECTIVES

PART 2

HA 87/01

ENVIRONMENTAL FUNCTIONS

SUMMARY

This Advice Note describes how function codes are to be used in the design and management of Highways.

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

1. Insert HA 87/01 into Volume 10, Section 0.

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THE HIGHWAYS AGENCY

THE SCOTTISH EXECUTIVE DEVELOPMENT DEPARTMENT

THE NATIONAL ASSEMBLY FOR WALES
CYNULLIAD CENEDLAETHOL CYMRU

THE DEPARTMENT FOR REGIONAL DEVELOPMENT*

Environmental Functions

* A Government Department in Northern Ireland

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HA 87/01

ENVIRONMENTAL FUNCTIONS

Contents

1.0 INTRODUCTION

- The principal reason for the Function codes is that, in order to design and manage the highway network towards achieving the government's environmental objectives, we need to state the purpose of the various features, as well as their physical nature, ie. why they are there and what they are intended to achieve in environmental terms.
- Features may have multiple Functions, and in this case it is necessary to decide on the Primary and Secondary code to prioritise the design or maintenance of the feature (see Section 1 Part 6).
- The Function codes are also used to attach environmental objectives to engineering, and other built elements, that will influence their design and/or operational maintenance. This is explained in more detail in Parts 3 and 4.
- The core Functions are listed below, however, there may, on occasions be the need to add additional text for scheme-specific functions that are not adequately described in the 'core' text. The designer/manager will need to insert this supplementary information in the tender documentation or database.

Ref	Dataset	Core Data	As-and-When
EFA	Visual Screening	●	
EFB	Landscape Integration	●	
EFC	Enhancing the Built Environment	●	
EFD	Nature Conservation and Biodiversity	●	
EFE	Visual Amenity	●	
EFF	Heritage	●	
EFG	Auditory Amenity	●	
EFH	Water Quality	●	

CHAPTER 1 **VISUAL SCREENING (EFA)**

1.1 DEFINITION

- "Mitigation against adverse visual impacts by screening views of the Highway and associated infrastructure from properties and public viewpoints, including rights of way and public open space."

Planted Screen *Planting to provide Screening for residential property. It has also been extended down to the cutting to better integrate the earthworks into the landscape, and provide interest to road users; Secondary Function EFB*

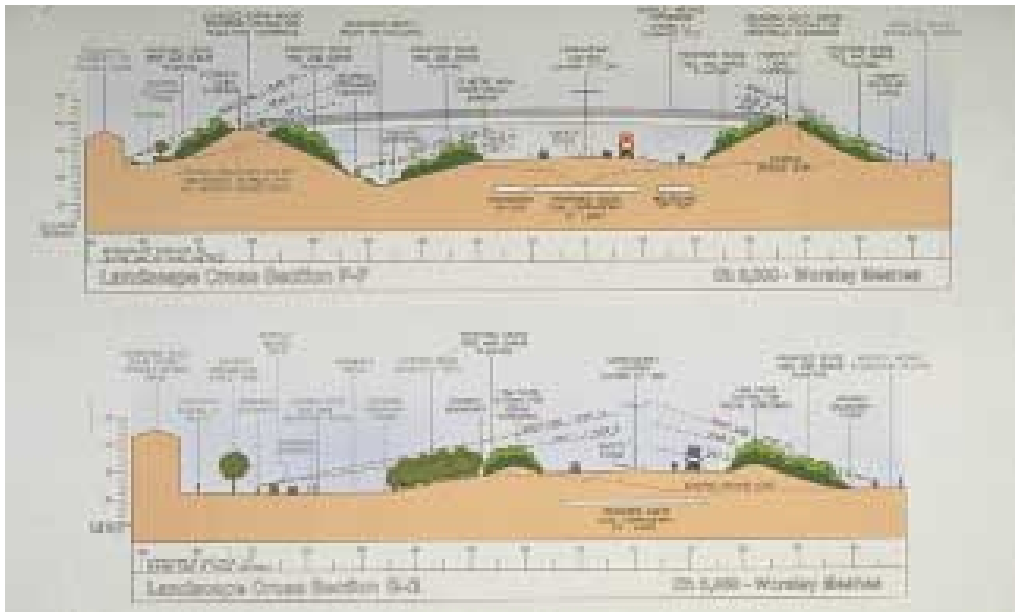
Earthwork Screen *Earthworks used as a screen where linear planting would unnecessarily cut off views of the surrounding landscape*

1.2 KEY NOTES

- May be achieved by planting, earthworks or structures.
- The screening element itself needs to be visually acceptable, and may require mitigation via EFE, EFC or EFB.
- Detailed scheme requirements to state planting or barrier height, density, evergreen content and where necessary, appropriate species or material/finishes, for the chosen Element.
- This Function will often be combined with requirements for Auditory Amenity, Visual Amenity and Enhancing the Built Environment.
- Highway structures may be adapted to achieve screening.

Colwyn Bay Concrete Wall *This retaining wall has been raised to provide screening and separation for the adjacent public areas, where space does not permit other measures; and a separate barrier on top of the wall would degrade the design concept and cause maintenance problems*

Tyne and Wear Metro Tree Screen *Woody vegetation used as a screen needs to be carefully chosen to provide the correct ultimate height and density. Trees alone will ultimately allow open views beneath the crowns*



Wigan Cross Section *A combination of mounding and planting in areas of significant impact provides the optimum combination and enhances visual amenity*

CHAPTER 2 **LANDSCAPE INTEGRATION (EFB)**

2.1 DEFINITION

- "Integrate the Highway with the character of the surrounding landscape by maintaining the matrix of local vegetation patterns, blending with local landform and softening views of the highway, its infrastructure and its traffic."

Landscape Integration *Sympathetic re-grading of adjacent land during construction helps to disguise the structural earthworks outline*

Landscape Integration *Less intrusive fencing and restoring appropriate edaphic conditions help to retain the upland grazing appearance of the extended verge*

2.2 KEY NOTES

- Off-site or accommodation measures may provide appropriate and effective solutions.
- Applicable to structures such as fences, walls, lighting, kerbs etc.
- Applicable to maintenance operations eg grass-cutting, hedge trimming.
- This Function will often be achieved in conjunction with Visual Amenity.

A1 (M) Gantries *Network control projects: The structures, sometimes combined with their flashing message signs, can be extremely obtrusive. Cable-routes also need assessment to avoid damage to established vegetation and grassland habitats*

A11 Tube Forest *This linear planting is not required for Screening, and also prevents Landscape Integration by imposing an artificial barrier and highlighting the highway boundary*

Green Bridge, Huddersfield

A55 Dunes *Specialist soil and vegetation restoration techniques may be specified to achieve a seamless interface with adjacent land and mask the highway boundary. Such areas will need ongoing management to achieve their objectives*

A17 Flat Landscape *The absence of boundary fences retains the road's relationship with the traditional landscape*

3.1 DEFINITION

- "Enhance the landscape and built elements of the highway with surrounding features, to reflect the scale, character and materials of the local townscape or community through which the highway passes.
- The needs and amenity of the public living/working in or utilising areas within or adjacent to the highway, including pedestrians, cyclists and those using public transport and local facilities."

Great West Road *The design and materials used for footways, boundaries and other infrastructure will play a key role in enhancing the amenity for residents and road users on the town approaches*

3.2 KEY NOTES

- Design and finishes of structures.
- Choice of furniture/paint colour.
- Hard landscape materials and design.
- Accessibility and public safety.
- Standards of maintenance.
- Interaction with EFE 'Visual Amenity'.
- 'Townscape' Appraisal Summary Table (AST) subheading for Multi-modal Studies recognises the impact of transport infrastructure on built-up areas.

Burghley House Gates *Maintenance standards need to reflect and integrate those used on adjacent properties*

Penmaenmawr Prom *Renewal of seaside promenade with modern amenities*

Gargrave Village *Sensitive design of parking provision and traffic calming will also upgrade the urban landscape*

Gargrave Traffic Calming *Safety schemes in villages need careful design to avoid intrusive features near residents' properties*

A12 Pebble Surfacing *Local character enhanced by treatment of public spaces and surfacing solutions for surplus pockets of highway land*

Doncaster *Ornamental plantings require increased maintenance resources but play an important role in diffusing the highway infrastructure's dominance*

Victoria Quays *Hard landscape and urban design skills blend the historic and modern features*

4.1 DEFINITION

- "Protect, manage and enhance the nature conservation value of the highway estate and integrate with and protect adjacent habitats and locations containing protected species, or other locally-important species or habitats."

River Crossing *River corridors affected by bridge crossings may require specific design measures to protect habitats, and also constraints on construction methods and/or maintenance techniques*

Wildlife Corridor *Wildlife Corridor*

4.2 KEY NOTES

- May apply to full range of soft landscape elements.
- This Function applies to survey work.
- Requires a positive Management Plan by Managing Agents.
- Relates to specific objectives eg impeded drainage, badger safety.
- Needs to be included in database and scheme requirements.
- Needs to take the relevant biodiversity action plan into account.
- Wildlife measures (see E3.2) need inspection to identify any repairs required.

Gorse *Intervention management may be needed to prevent encroachment of gorse and ruderal species in sensitive habitats*

Wildflowers *In addition to being both attractive and of nature conservation value, the encouragement of floristic diversity is also increasingly important to the public's perception of the roadside landscape*

Birdbox *Birdboxes located in appropriate locations may help to provide nesting sites*

Bridge Underside *Bats may roost under bridge decks and these should be inspected prior to maintenance operations*

5.1 DEFINITION

- "Maintain interest, variety and an acceptable visual appearance for both road users and adjacent public viewers by creating/maintaining views to the wider landscape, providing seasonal variation and creating a 'sense of place' via landmark features, either plant species, landform/geology, the design and materials used for structures and furniture, and the spatial arrangements."

Parkland Trees *The setting of mature trees near the highway is important for their health and providing interest for both the road user, and adjacent residents. Maintaining their long-term health and vigour, and avoiding root damage during nearby service excavations and construction requires close liaison with all relevant parties*

A451 Retaining Wall Relief *Structural finishes can provide a dramatic feature and are set off by amenity grass within the public open space nearby*

5.2 KEY NOTES

- Considering the interests and amenity for the surrounding public and road users may be important.
- Applies equally to maintenance methods/standards. A good design concept can be negated by inappropriate maintenance.

A11 Footbridge *Detailing the shape and finishes on the majority of structures, emphasises their dramatic effect, and can enhance the sense of arrival*

Tunnel Portal *Detailing the shape and finishes on the majority of structures, emphasises their dramatic effect, and can enhance the sense of arrival*

Rock Cutting *Exposed geology adds interest, acts as a landmark, and over time may develop biodiversity interest*

Colwyn Bay *Approach roads to urban centres are enhanced by bold planting, with pedestrian routes integrated*

Lighting *Lighting in rural areas can have adverse impacts on the landscape*

Newhall *Visual Amenity function achieved by the use of decorative finishes and surfaces*

Okehampton *Earthworks design is of primary importance for achieving a visually-acceptable corridor, particularly where planting to mask it would be inappropriate*

Noise Barrier *The primary function of barriers is normally Noise or Visual Screening, but they should also be designed to provide Visual Amenity*

6.1 DEFINITION

- "Conserve and enhance the physical nature and appearance and setting of existing features within and adjacent to the highway, where they are either afforded statutory protection, or make a material contribution to the quality and character of the local area."

Market Square *Traditional market squares and town centres are an essential part of the character of routes and their setting should not be dominated by highway furniture or inappropriate function design*

6.2 KEY NOTES

- May involve cultural heritage features and traditional built elements.
- Significant landscape character/features or vegetation.
- Maintaining adjacent soils/drainage type to protect historic habitats.
- Adjacent landform/geological features.
- Interaction with 'The Built Environment'.

Milestone *Milestones*

Traditional Metal Sign *Traditional Metal Sign*

Stone Wall *Traditional regional character to be retained or restored where practicable*

Ely Cathedral *Planting and verge maintenance enhance viewpoint*

Stamford *Conservation Areas merit careful consideration of pavement finishes, location of signage and paint colour*

Kew Trees *Traditional street trees such as these London Planes are a key element of urban heritage*

Steam Hammer *Britain's Industrial Heritage can be demonstrated by accentuating specific structures as landmarks*

Pevensey Archaeology

A1(M)

Conwy Bridges

Respect the changes in design through the centuries and improve the setting of unusual or historical features

7.1 DEFINITION

- "Reduce the adverse noise impact of highway traffic or construction on adjacent properties or publicly accessible areas by providing and maintaining measures to reduce noise pollution."

Noise Barrier *Textural finishes and transparent materials may reduce the visual impact*

Resurfacing *The use of quieter pavement surfacing is an example of an Environmental Function being achieved by an engineering element. However, other consequential environmental effects such as spray reduction, higher winter salting requirements, also need to be considered*

Noise Mound *Noise mounds can be overbearing near housing and may need their form softening with planting. Species density choice and ultimate heights should be designed to reduce, rather than emphasise, the perceived height and mass of the mound*

7.2 KEY NOTES

- Can be achieved by surfaces, earthworks or road alignment, fences.
- Contract may state maximum noise levels or minimum attenuation to be achieved.

8.1 DEFINITION

- "To provide and maintain appropriate measures to mitigate the impact on areas sensitive to flooding or hydrological changes, local water courses and groundwaters from construction works, run-off from the road and spillages."

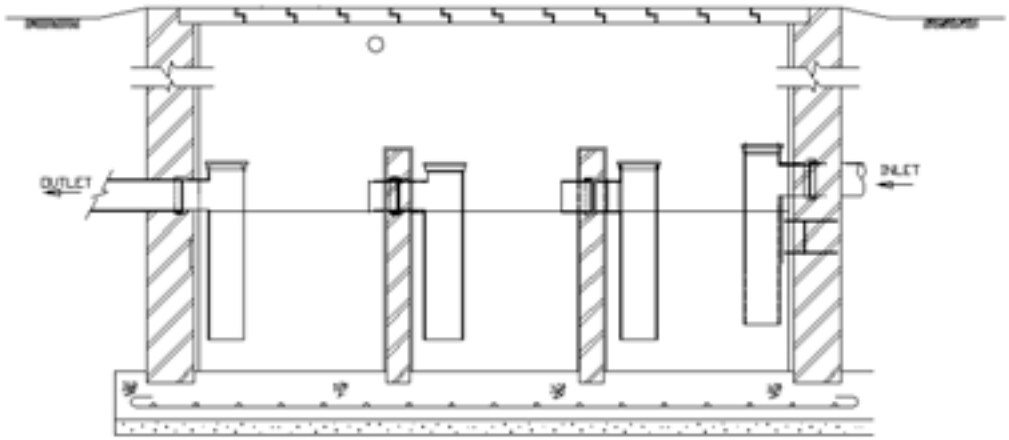
Water Quality Control *Earthworks design can enhance Landscape Integration of the water quality control features*

Water Quality Feature *Engineering feature designed to include an area of nature conservation interest*

8.2 KEY NOTES

- Groundwater protection zones and watercourse water quality data and objectives are needed.
- Early consultation with the relevant Regulatory Authorities should be undertaken.
- Pollution and flood control measures may have biodiversity and landscape mitigation functions provided that these are subservient to their primary protection role.
- Contract requirements should include indicative requirements for water mitigation measures and any alternatives offered should be demonstrated to be equivalent of these.
- Contract requirements should include conditions to be met during construction to prevent damage from flooding, disturbance to land drainage and pollution of watercourses from silt and erosion.

Conwy Tunnel *Temporary works design and construction constrained by the need to protect the marine environment*



Petrol Interceptor *Petrol interceptors can provide protection against surface oil and small scale oil and fuel spillages. They should only be considered for specific known high risk locations*

9. ENQUIRIES

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

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

M A GARNHAM
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Edinburgh EH6 6QQ

J HOWISON
Chief Road Engineer

Chief Highway Engineer
The National Assembly for Wales
Cynulliad Cenedlaethol Cymru
Crown Buildings
Cathays Park
Cardiff CF10 3NQ

J R REES
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Assistant Director of Engineering
Department for Regional Development
Roads Service
Clarence Court
10-18 Adelaide Street
Belfast BT2 8GB

D O'HAGAN
Assistant Director of Engineering

VOLUME 10 ENVIRONMENTAL DESIGN AND MANAGEMENT

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PART 3

HA 88/01

LANDSCAPE ELEMENTS

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This Advice Note describes the range of landscape element that form the major component of the Highways soft estate.

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HA 88/01

LANDSCAPE ELEMENTS

Contents

1.0 INTRODUCTION

- Within the overall environment of the highway and its surroundings there are many features that influence its design and maintenance. Of these the Landscape Elements cover the largest area of the soft estate. The Landscape Elements help to mitigate the adverse impacts of the highway, and thus require regular maintenance or inspection to achieve their longer-term objectives.
- The Landscape Elements are divided into broad classification types eg hedges, which are then subdivided again according to their detailed design or management needs, in conjunction with the stated Function.
- For scheme-specific purposes additional sub-types may be added to further define the requirements but without altering the numbering of the core elements. An example is given for amenity grass in Chapter 1.

Ref	Dataset	Core Data	As-and-When
LE1.1	Amenity Grass Areas	●	
LE1.2	Grassland with Bulbs	●	
LE1.3	Species Rich (or Conservation) Grassland	●	
LE1.4	Rock and Scree	●	
LE1.5	Heath and Moorland	●	
LE1.6	Open Grassland		●

LE2.1	Woodland	●	
LE2.2	Woodland Edge	●	
LE2.3	High Forest	●	
LE2.4	Linear Belts of Shrubs and Trees	●	
LE2.5	Shrubs with Intermittent Trees	●	
LE2.6	Shrubs	●	
LE2.7	Scattered Trees	●	
LE2.8	Scrub	●	

LE3.1	Amenity Tree and Shrub Planting	●	
LE3.2	Ornamental Shrubs	●	
LE3.3	Groundcover	●	
LE3.4	Climbers and Trailers	●	

LE4.1	Ornamental Species Hedges	●	
LE4.2	Native Species Hedges	●	
LE4.3	Native Species Hedgerows	●	
LE4.4	Native Hedgerows with Trees	●	

LE5.1	Individual Trees	●	

LE6.1	Water Bodies and Associated Plants	●	
LE6.2	Banks and Ditches		●
LE6.3	Reed Beds	●	
LE6.4	Marsh and Wet Grassland	●	
LE7	Hard Landscape Features		●

1.1 AMENITY GRASS AREAS (LE1.1)

- "Grass species appropriate to the location and intended maintenance regime, the sward of which shall be of even grade, and uniformally coloured to cover at least 95% of the relevant area, and contain maximum 10% herb species, and no scrub."
- Amenity grass areas shall be maintained with an appropriate number of cuts and edge-trimming where necessary, to provide a maximum height and appearance to suit the specific location. Site-specific requirements may be defined by the overseeing organisation as:
  - Low - 80-120 mm height, average 4-5 cuts
  - Medium - 50-80 mm height, average 7-8 cuts
  - High - 30-50 mm height, average 13-14 cuts

Wide Verge *Wide verge and footway edges cut 4-5 times/year on town approach*

A61 Central Reserve *Central reserve cut regularly to enhance the amenity value of the residential area*

1.1.1 KEY NOTES

- No need to define cutting regime on Scheme Masterplan.
- Maintenance may vary from time to time to suit budget.
- Specific requirements for cutting/edging to be defined.
- Herb Cover is overall average area at ground level.
- Where the Designer/Manager wishes to subdivide the coding of an Element to more specifically define requirements, this is achieved by adding a third digit, eg:
  - LE1.1 Amenity grass (regime not specified)
  - LE1.11 Low frequency
  - LE1.12 Medium frequency

In this way, the letters LE plus the first two digits define the 'core' Element.

1.2 GRASSLAND WITH BULBS (LE1.2)

- "Bulbs dispersed in naturalistic drifts covering 30-50% of the relevant area with grass and herb species covering the remainder of the area."

Bulbs

1.2.1 KEY NOTES

- Element may also apply to bulbs within woody vegetation eg bluebells, *colchicum*.
- Bulbs should be of native origin and appropriate to existing natural or semi-natural vegetation.
- Area extent to be that part planted with bulbs and thus needing varied maintenance, with the remaining area classified under the relevant element.

1.3 SPECIES RICH (OR CONSERVATION) GRASSLAND (LE1.3)

- "Grass and herb species appropriate to the location or as exists already on site with a species composition and diversity capable of being maintained by an average of one cut per year or less, or that through appropriate management will be encouraged to develop biodiversity interest over time."

Wildflowers *A range of native wildflowers encouraged to develop through design of soil type. Appropriate species choice to reflect the local area*

1.3.1 KEY NOTES

- Refer to the 'Landscape Management' and 'Nature Conservation' Advice Notes, and the 'Wildflower Handbook' for design, management and species choice advice.
- Designers and managers should develop specific plans to identify areas of land where diversity and nature conservation value may be enhanced through the application of cost-effective and practicable measures.
- These areas may also provide valuable habitats for fauna, and need to be considered in relation to Protected Species (Element E3.1) and Designated Areas (Elements P1.1, P1.2).

1.4 ROCK AND SCREE (LE1.4)

- "Rock and scree colonised by grass, herb and scrub species."

Rock and scree *Species interest may be enhanced by creation of ledges and pockets of nutrient-poor fine material*

Scrub and Tree Seedlings *Control of volunteer tree seedlings and scrub may be necessary to prevent encroachment over ground flora, and for safety reasons*

1.5 HEATH AND MOORLAND (LE1.5)

- "Grass, herb and scrub species appropriate to the heath or moorland location or as exist already on site with a species composition and diversity capable of being maintained by an average of one cut per year or less."

Thetford Heath *Locally indigenous flora encouraged into verges from adjacent heath by limiting routine maintenance*

Moorland *Heather moor and boundary deer fencing in the Scottish Highlands*

1.6 OPEN GRASSLAND (LE1.6)

- "Areas of grass and herb species appropriate to the soil conditions and location or as already exist on site.
- The sward shall cover at least 80% of the area and be managed where necessary to fulfil its stated Environmental Function.
- Where no Function is stated, the principles of EFB and EFD shall be deemed to apply.
- Where no Element is defined for Grassed Areas of the estate, LE1.6 is deemed to apply.
- The area shall contain not more than 10% scrub cover."

Grassland

1.6.1 KEY NOTES

- 'Function' will define whether intervention management is required eg 'Safety', full width cut for Amenity or Integration etc and defined in the handover/database.
- More than 10% scrub would trigger sub-division for LE2.6 or 2.7.
- This Element forms the largest area of the highway estate and it may not be appropriate to apply routine maintenance operations. However, the areas should be monitored for developing species interest, or colonisation by undesirable scrub/trees, and intervention management then undertaken to promote Nature Conservation and Biodiversity (EFD), or improve Landscape Integration (EFB).
- It is not intended that all areas of Open Grassland should be shown on Scheme Masterplans, or recorded within the Environmental Database. Areas will, however, need to be shown and recorded if they have a specific Function that differs from the core text description here and/or require monitoring or intervention management.
- Where the area has, or is intended for developing Nature Conservation interest, then the feature needs reclassification as either LE1.3 (Species Rich Grassland) or E3.1/E3.2 (Ecological Features).

2.1 WOODLAND (LE2.1)

- "Vegetation dominated by tree and shrub species appropriate to the location or as exist already on site with a species composition, age and structural diversity forming or clearly capable of forming identifiable tree, shrub and field layers."

Woodland *A 'woodland' will require adequate width for achieving satisfactory longer-term structure. Ground flora may be encouraged to develop as the canopy matures*

2.2 WOODLAND EDGE (LE2.2)

- "Vegetation dominated by tree and shrub species appropriate to the location or as exist already on site with a species composition, age and structural diversity forming or clearly capable of forming a stable and visually appropriate edge to the woodland."

Woodland Edge *Typical of many narrow planting belt, a diversity of species and structure can be achieved. In this case, the 'woodland' itself is outside the highway boundary, and the edge achieves Landscape Integration (EFB)*

2.3 HIGH FOREST (LE2.3)

- "Tree species appropriate to the location or as exist already on site with a species composition, age and structural diversity forming or clearly capable of forming layered forest."

Fleet Services *A climax vegetative cover, which can be found on older motorways and trunk roads, where shrub species and natural regeneration have not developed*

2.4 LINEAR BELTS OF TREES AND SHRUBS (LE2.4)

- "Tree and shrub species appropriate to the location or as exist already on site in linear belts too narrow to be considered woodland but more substantial than a hedgerow."

Central Reserve Planting *The central reserve planting, retained during dualling has been allowed to develop as far as safety and visibility constraints permit*

2.5 SHRUBS WITH INTERMITTENT TREES (LE2.5)

- "Shrubs and tree species appropriate to the location or as already exist on site with individual trees or groups of trees dispersed throughout the relevant area."

Shrubs with Trees *Occasional trees within a screen of shrub planting help to vary height and structure*

2.6 SHRUBS (LE2.6)

- "Shrub species appropriate to the location or as exist already on site."

Shrubs *Native shrub species used to soften and provide foraging habitat for birds and mammals. Tree species may colonise over time and intervention may be needed depending on the area's Function*

2.7 SCATTERED TREES (LE2.7)

- "Tree and shrub species appropriate to the location or as exist already on site appropriately dispersed and forming or capable of forming scattered groups."

2.8 SCRUB (LE2.8)

- "Vegetation generated by self-sown trees, and shrubs and which are desirable to meet the area's Function and are managed by appropriate techniques to encourage development of suitable conservation habitats or other landscape Elements in the longer-term, with a suitable % cover for the area."

Scrub

2.8.1 KEY NOTES

- Brambles and climbers may need to be regarded as scrub in visual or management terms.
- Function will define desirable species, % cover, and need for intervention management.
- Undesirable scrub to be classified as open grassland, ie performance needs control/removal.
- Long term element stated in Management Plan, where it is intended to convert scrub over time into structured planting such as woodland/woodland edge by enrichment planting or other techniques.
- Scrub may develop Nature Conservation interest as a habitat, and the Manager will need to balance this with any Visual Amenity (EFE)/Landscape Integration (EFB) objectives.

3.1 AMENITY TREE AND SHRUB PLANTING (LE3.1)

- "Areas of planting containing non-native tree species/cultivars, which may also include native trees and shrubs where appropriate, with a composition to meet the area's Function, and where the transition from rural to urban renders their use appropriate."

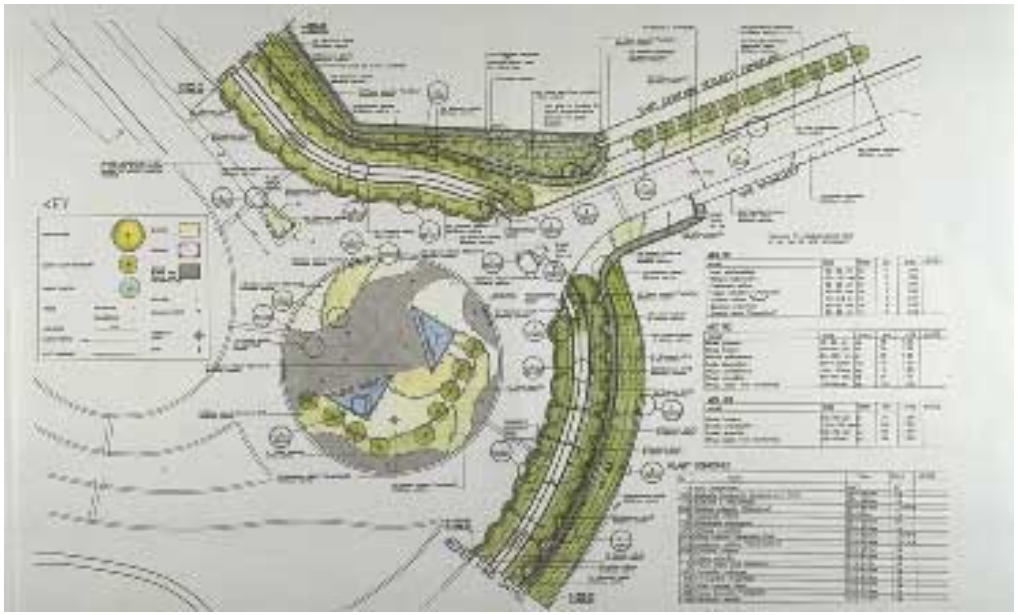
Urban Approach Corridor *Urban Approach Corridor*

3.1.1 KEY NOTES

- Driven by Functions.
- Use where amenity species incorporated as 'highlights' on the urban fringe or where urban tree planting is 'en-masse' rather than individual trees.
- Proportions and composition to be defined by designer.

3.2 ORNAMENTAL SHRUBS (LE3.2)

- "Ornamental shrub species appropriate to the location or as exist already on site."



Roundabout *Roundabouts often offer opportunities for landmark features, allied with hard landscape or public art*

Doncaster Ornamental Planting *Large-scale shrub planting may be incorporated as part of Scn. 278 works, to screen adjacent carparks*

3.3 GROUNDCOVER (LE3.3)

- "May include shrubs and/or herbaceous, normally maximum 600 mm in height, for visibility or safety/ personal security."

Groundcover *Formal treatments to urban interchanges*

3.4 CLIMBERS AND TRAILERS (LE3.4)

- "Climbing plants appropriate to the location or as exist on site."

Trailers *Structures and boundaries can be softened by trailers but access and maintenance problems need to be resolved at the design stage*

4.1 ORNAMENTAL SPECIES HEDGES (LE4.1)

- "Shrub or tree species appropriate to the location or as exist already on site trimmed to a constant width and height."

Ornamental hedge *Ornamental hedge provides a formal treatment with structural planting benefits*

4.2 NATIVE SPECIES HEDGES (LE4.2)

- "Shrub or tree species appropriate to the location or as exist already on site trimmed to a constant height and width appropriate to the location."

Native Hedge *Native hedge trimmed by landowner*

4.2.1 KEY NOTES

- Height of the hedge must be noted.
- Must be managed in accordance with the Hedgerow Regulations.
- Refer to the Truck Road Maintenance Manual (TRMM) for inspection and management of landowners' boundary hedges.

4.3 NATIVE SPECIES HEDGEROWS (LE4.3)

- "Shrub or tree species appropriate to the location or as exist already on site managed as informal hedgerows with cyclical laying where appropriate."

Native Hedgerows

4.4 NATIVE HEDGEROWS WITH TREES (LE4.4)

- "Shrub and occasional tree species appropriate to the location or as exist already on site with intermittent standard trees."

M50 Hedgerow

5.1 INDIVIDUAL TREES (LE5.1)

- "Tree species appropriate to the location or as exist already on site identifiable as individual trees separate from other woody vegetation."

Plane retained *Retained during construction*

Street Avenues *Street avenues require regular arborcultural inspection*

Tree roots/safety barriers *Even minor highway works can damage tree roots unless properly supervised with prior specialist input*

6.1 WATER BODIES AND ASSOCIATED PLANTS (LE6.1)

- "Open water areas, wetland species appropriate to the location or as exist already within the highway estate."

Waterbody

Wigan Plan

6.1.1 KEY NOTES

- Water features that have been designed entirely to promote Landscape or Nature Conservation interests.
- Water bodies required for Water Quality/Run-off control Functions, such as balancing ponds or treatment units, should be classified as one of the Water Elements as described in Chapter 2 of Part 4, Environmental Elements.

6.2 BANKS AND DITCHES (LE6.2)

- "Grass, herb and woody species appropriate to the location or as exist already on site with a species composition and diversity capable of being maintained by one cut per year or less."

M62 Humberside Drainage Channels *Open ditches for agricultural drainage within motorway boundary*

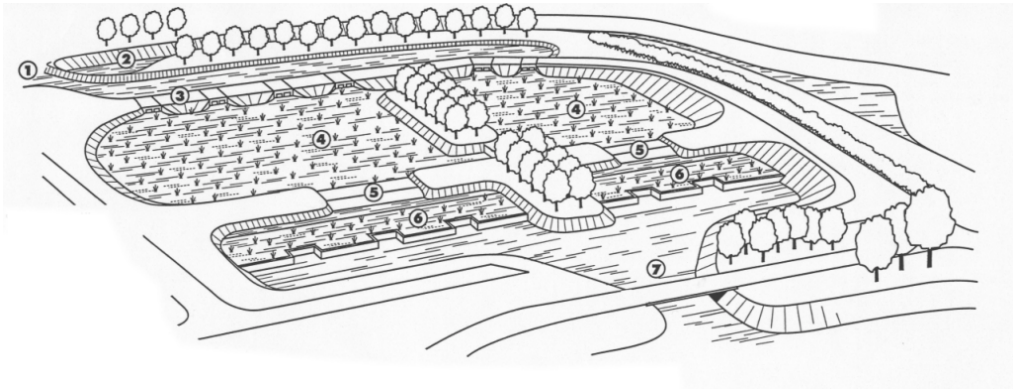
Drainage Ditch *Well-vegetated ditch sides may develop nature conservation interest and have advantages for pollution control, but maintenance will be primarily driven by its engineering/drainage function*

6.2.1 KEY NOTES

- This Element is used to describe vegetative features associated with open water courses, where a Secondary Function of Landscape Integration or Nature Conservation can be achieved by appropriate design and/or maintenance without prejudicing the capacity to hold or transport water.
- Cyclical clearance and ditch maintenance techniques may be adapted to retain an adequate proportion of bankside vegetation of conservation value.

6.3 REED BEDS (LE6.3)

- "Wetland species appropriate to the location or as exist already on site with reed species covering 85% - 100% of the relevant area, maintained to perform the stated Function (s)."



A5 Tamworth *May also be designed as pollution control measures*

Reeds *Vigorous growth may require periodic clearance*

6.3.1 KEY NOTES

- Environmental Function will determine species type and management.
- Often associated with water bodies.
- Where the Primary Function is Water Quality, such features should be classified under E2.1, and maintained as such.

6.4 MARSH AND WET GRASSLAND (LE6.4)

- "Grass and herb species appropriate to the location or as already exist on site within species composition and diversity capable of being maintained by the drainage regime at that location."

Marsh and wet grasslands *Impeded soil drainage can assist in developing valuable habitats for both fauna and flora*

CHAPTER 7 **HARD LANDSCAPE FEATURES (LE7)**

7.1 INTRODUCTION

- Environmental design of roads increasingly makes use of 'hard' elements, not only in urban settings, but to improve the appearance and integration of structures, paving and other highway features.
- These elements fall into two categories:

  A) Highway features required for engineering reasons that have also an Environmental Function, requiring consideration of their setting, form, and appearance. The designer/manager will, in these cases, attach the appropriate Function to the feature within the Contract Requirements/Database, and specify the required treatment.

  B) Landscape features that are not specifically required for the highway, but are incorporated to achieve Environmental Functions such as screening, visual amenity, landscape integration etc. These features are described by both a Function and a specific Element.
- Hard Landscape Elements are specific to a scheme or location and thus there are no 'core' codes. The scheme designer and network manager will therefore create their own series using the 7.1, 7.2….7.12 numerical codes, and drafting suitable headings and descriptive text.
- On certain parts of the network, such as London, Design Guides exist that will supplement or inform these codes.
- The following pages illustrate some examples of Hard Landscape Elements.

7.2 RAISED BEDS

- Planting in beds raised 450-750mm above surrounding levels by means of vertical or battened edges constructed of brick or other material appropriate to the local context.

Raised beds *These planters have no highway function, and are thus coded as EFC/LE7.2*

7.3 PAVEMENT SURFACES

Pavement surfaces *This pavement is a public highway, but due to its sensitive location adjacent to Listed Buildings, has a Heritage Function (EFF), which has resulted in the non-standard surfacing. It is not a Hard Landscape Element*

7.4 RAILINGS

- Ornamental railings to enclose areas of open space.
- Gates to be provided to match railings, where appropriate.
- All to have a painted or other protective finish.

Railings *These railings are for decorative and visual separation purposes, as the speed limit here does not require safety fencing*

7.5 PUBLIC OPEN SPACE AMENITIES

Open space amenities *Some of the features illustrated are hard landscape elements that are provided to enhance the built environment (Function EFC). The designer will need to compile specific text to describe the design requirements.*

7.6 SECURITY FENCING

- Fencing (and gates as necessary) designed to prevent or deter access, 1800-2000 mm in height.
- Design to be appropriate with local context and to have minimum possible visual impact.

Safety Fencing *In this instance, highway safety fencing has been designed to achieve its Landscape Integration Function EFB, thus utilises a departure from standard guidance*

7.7 REINFORCED EARTH WALLS

Earth walls *Reinforced, vegetated earth structures have been commonly used for improvements where landtake is limited. They are Engineering features but often also have an important Environmental Function and their ability to sustain suitable vegetation and be safely managed should be described in any Contract Performance Requirements*

7.7.1 KEY NOTES

- Designers need to specify their environmental performance very carefully, to avoid vegetative or structural failures. Further guidance is given in Section 3 of Volume 10.

7.8 CRIB WALLING

- Timber or concrete crib walling to act as an environmental feature and retaining wall.
- Height to be 6 m maximum.
- Highway face of wall to be planted and achieve 70% vegetative cover within 3 years.

Crib walling *In this example the wall itself is a structure with an environmental structure (EFE Visual Amenity). The planting is a separate Element (LE3.4) attached to the structure but has the same Function*

7.9 SEATING AND LITTER BINS

Doncaster seating *These are Landscape Elements provided to achieve their primary function of Enhancing the Built Environment (EFC) and painted to achieve their secondary function (EFE Visual Amenity)*

8. ENQUIRIES

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

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