Manual for Development of Documents

Part 2 – Document layout and style

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Table of Contents

1. Introduction

This Manual for Development of Documents (MDD) is published by National Highways to give procedures, processes, instruction, and advice for the development of documents relating to the planning, preparation, design, construction, management, and demolition of highway works on the UK Overseeing Organisations' motorway and all-purpose trunk roads.

The documents referred to in this Manual are collectively called requirements and advice documents (RADs).

This Manual is made up of three parts:

- Part 1 Governance of document development
- Part 2 Document layout and style
- Part 3 Drafting rules

Different verb forms are used in this Manual to make a distinction between requirements and advice. Specifically:

- the verb 'must' indicates a legislative/regulatory requirement;
- the verb 'shall' indicates a requirement of the Overseeing Organisation;
- the verb 'should' indicates advice expressed as a recommendation;
- the verb 'may' indicates an advice expressed as a permissible approach;
- the verb 'can' or verbs expressed in the present tense other than 'must', 'shall', 'should' and 'may' are used to introduce notes, which provide a short clarification of a concept or statement of fact.

Publication of technical documents by other organisations is at their own prerogative and liability, and they need not seek consent for application of this Manual.

2. Scope

2.1 This Manual for Development of Documents (MDD) shall be followed by those responsible for the review, development, and publication of:

1. Design Manual for Roads and Bridges (DMRB) documents;
2. National Application Annexes (NAAs) to the documents contained in the DMRB;
3. Manual of Contract Documents for Highway Works (MCHW);
4. Chief Highway Engineer Memoranda (CHE Memos).

NOTE In this Manual, the above documents are collectively referred to as requirements and advice documents (RADs), except where specific reference is being made to a particular type of document. They represent a key component of the technical governance for highway works.

2.2 The information given in RADs shall be used for the Overseeing Organisations' motorway and all-purpose trunk roads in accordance with GG 101 "Introduction to the Design Manual for Roads and Bridges (DMRB)".

2.3 This Manual shall be followed by all those involved in the development of RADs within National Highways (see MDD part 1 for stakeholders and key responsibilities).

NOTE 1 Although National Highways generally provides the resources required for the publication of RADs, the documents that comprise the two main document sets, i.e. the DMRB and the MCHW, are produced in collaboration with the other Overseeing Organisations.

NOTE 2 This Manual does not cover technical matters, which are the responsibility of the technical author and the drafting team. Although primarily intended for the RADs, the principles contained in this Manual can be helpful in managing and drafting other technical documents.

2.3.1 Any other organisations who wish to adopt the principles and guidance of this Manual should take account of their own organisational needs.

2.4 Specialists responsible for cross-cutting disciplines such as health and safety, carbon management, sustainable development and good design, equality, diversity and inclusion, customer satisfaction, commercial aspects shall contact the National Highways' Technical Assurance and Governance Group (TSG) if they consider that changes or additions are required to this Manual.

3. Terms, definitions, and abbreviations

Terms and definitions

3.1 For the purpose of this Manual, the terms and definitions given in this section shall apply.

NOTE In addition to the terms given in this section, Annex 2A to MDD Part 3 provides definitions that are specific to legislation.

Advice

Optional provision conveying advice on a specific topic and helping the user understand how to fulfil the requirement.

Chief Highway Engineer Memoranda (National Highways only)

Means of providing internal information / communication / procedures in connection with the works on National Highways' motorway and all-purpose trunk road network.

Clause

Paragraph providing a requirement or a requirement and related advice.

Collaborative Authoring and Review System

Tool used for the authoring and review of DMRB and MCHW documents.

Construction Works

Everything that is constructed or results from construction operations in accordance with BS ISO 6707-1.

Constructor requirements

Requirements contained in the SHW both as core requirements (i.e. common across the Overseeing Organisations), Nationally Determined Requirements (i.e. those relevant to a specific Overseeing Organisation) and Work Specific Inputs.

NOTE 1 Constructor requirements will apply for every contract in which the associated objects, materials or activities are specified.

Content Specialist

Person supporting the delivering of high quality RADs fully in line with this Manual for the Development of Documents (MDD).

Design, Build, Finance and Operate (DBFO)

Delivery approach through which a single entity designs, builds, finances and operates a project for a specified period.

EU Directive

EU Directives are binding in terms of goals, but it is left up to the member states to decide what action they need to take to achieve those goals.

NOTE Directives require enabling legislation to transpose them into member state law.

EU Regulation

EU Regulations are conventional acts of a national legislature.

NOTE Regulations are directly applicable in that they do not need to be turned into national law; they are binding in their entirety and take immediate effect on a specific date.

European Standardisation Organisations (EOSs)

European Committee for Standardisation (CEN), European Committee for Electrotechnical Standardisation (CENELEC) or European Telecommunications Standards Institute (ETSI).

Group Manager

National Highways leader accountable for a programme often referred to as a portfolio, i.e. a structured collection of Projects.

Instructions for Specifier (IfS) document

Published form of a document showing both the constructor requirements and the specifier instructions.

Motorway and all-purpose trunk roads

Collective term to indicate those parts of the UK highway and road network for which one of the Overseeing Organisations is or acts on behalf of the highway or road authority.

NOTE Department for Infrastructure Northern Ireland also manages local roads and their application is dealt with through National Application Annexes in the DMRB.

National Highway Authority

National Highways operating under licence from the Department for Transport (DfT).

NOTE The term ‘National Highway Authority’ is for use specifically within the context of the Construction Products Regulation.

Overseeing Organisations

National Highways and the highways or roads authorities of Scotland, Wales and Northern Ireland and their successors.

NOTE The meaning of Overseeing Organisation is typically defined by the contract under which the works are procured.

Requirement

Provision conveying criteria to be fulfilled in order to comply with the document.

Requirements and Advice Documents (RADs)

Collective term for Design Manual for Roads and Bridges (DMRB) documents, National Application Annexes (NAAs) to the DMRB or Nationally Determined Requirements (NDRs) for MCHW, Specification for Highway Works (SHW), Instructions for Specifiers (IfS), Works Specific Inputs (WSI), Highways Construction Drawings (HCD), Chief Highway Engineer Memoranda (CHE Memos).

Safety Engineering and Standards (SES) Directorate

National Highways directorate providing professional and technical solutions to outward facing parts of the organisation.

NOTE Safety Engineering and Standards was formerly Professional and Technical Solutions (PTS) Directorate and NetServ.

Specification for Highways Works (SHW) document

Published form of a document only showing constructor requirements.

Technical Standards Group (TSG)

National Highways team responsible for the process of developing and publishing RADs.

NOTE TSG was formerly called Technical Assurance and Governance Group (TAGG).

Technical Author

Person responsible for sponsoring a RAD through the development process.

NOTE 1 Generally technical authors are employed by National Highways or one of the other Overseeing Organisations.

NOTE 2 The term “technical author” replaces the term “document owner”. Document ownership now resides with the TSC chair of the discipline relevant to the document under consideration.

NOTE 3 Technical authors can be supported by authoring teams including technical specialists in the Overseeing Organisations or from the supply chain.

Technical Standards Committee (TSC)

A committee formed to provide peer review, in order to guide and advise on the production and development of RADs.

NOTE Technical Standards Committees (TSCs) form an essential part of the governance process by which National Highways develops new and updates existing RADs. They are peer review / governance committees of invited members who represent various interested parties from National Highways, other governmental bodies and parts of the highways industry.

Technical Specialist

Person employed by the Overseeing Organisations or individual from a supplier firm providing specific technical support.

UK legislation

UK Regulations are conventional acts of a national legislature.

NOTE Regulations are directly applicable in that they do not need to be turned into national law; they are binding in their entirety and take immediate effect on a specific date.

United Kingdom Standardisation Organisations (UKSOs)

DBT Committee for Standardisation designates UK designated standards.

Works specific requirements

Works specific content to be used in conjunction with SHW constructor requirements for the particular scheme/project.

Works specification

Set of requirements dealing with the works, which can include requirements on geometry, constructor design, performance, activities, verification, documentation submission and limitations of construction activities.

NOTE Work specification consists of the SHW and the works specific requirements.

Abbreviations

DBT	Department for Business and Trade
CARS	Collaborative Authoring and Review System
CHE	Chief Highway Engineer
DBFO	Design, Build, Finance and Operate
DMRB	Design Manual for Roads and Bridges
EqIA	Equality Impact Assessment
IfS	Instructions for Specifier
MCHW	Manual of Contract Documents for Highway Works
MDD	Manual for Development of Documents
NAA	National Application Annex
NDR	Nationally Determined Requirement
NDS	Nationally Determined Section
NEC	New Engineering Contract
RAD	Requirements and advice document
SES	Safety Engineering and Standards
SHW	Specification for Highway Works
TSG	Technical Assurance and Governance Group
TPB	Technical Project Board
TSC	Technical Standards Committee (replacing TPB)
TSS	Traffic Systems and Signing

4. DMRB document layout

4.1 DMRB documents shall be drafted with the formatting instructions presented in this Section.

Structure of the DMRB suite

Volume structure and document codes

4.2 Documents shall be issued into the matrix of standards in Table 1.

NOTE The DMRB volume set follows a matrix structure, with asset life cycle and assets / specific subject areas on the two axes. The terms 'asset' comprises civil, structural and geotechnical assets, highway components and technology assets. 'Subject areas' include environment and traffic management. The matrix structure enables other document sets such as the MCHW, TSS Plans Registry and AMOR, to be incorporated in the future.

4.3 Documents shall be titled with a standard format:

[Document code] "[Specific title of the document]"

4.4 DMRB documents shall be issued using a document code to allow for their insertion into the volume structure of the DMRB suite illustrated in Table 1.

NOTE The DMRB is delivered digitally, thus the structure and coding system is supplemented by the use of meta-data and search functionality to support easy identification of requirements.

4.5 Document codes shall comprise a two-letter code generated by the combination of the discipline (code 1) and life-cycle stage (code 2) followed by a three-digit number depending on the discipline (see Table 1).

NOTE Examples of document codes include: CD 201 for design of pavements or TA 101 for appraisal of communications technology.

4.5.1 Technical authors should discuss the document numbers to be adopted within their team and agree them with the relevant Group Manager and TSG.

Table 1 **Matrix for technical standards**

		Discipline								
		G	**L**	**C** (Civil Engineering)					**T** (Technology)	
		General Principles & Scheme Governance	Sustainability & Environment	Road Layout	Pavement	Structures & Bridges	Drainage	Geotechnics	Control & Communications Technology	Road Lighting
Life-cycle stage		101 - 999	100 - 199	100 - 199	200 - 299	300 - 499	500 - 599	600 - 699	100 - 499	500 - 999
General Information	**G**									
Appraisal	**A**									
Design	**D**									
Contract preparation	**P**									
Construction	**C**									
Maintenance & Operation	**M**									
Inspection & Assessment	**S**									
Disposal	**Z**									

NOTE: General information covers topics that are not life-cycle specific such as health and safety, sustainability, quality management, customer service standards. Appraisal covers items of screening, scoping, assessing, and measuring assets prior to their design. Design covers the design element of the asset. Contract preparation covers documentation related to the specifier or compiler. Construction covers documentation related to the building of assets. Maintenance and operation covers the ongoing use and upkeep/repair of assets. Inspection and assessment covers ongoing checks and assessment of built assets. Disposal covers the end of life / removal arrangements for an asset.

Year of issue

4.6 The year of issue shall not be indicated in the title of the document.

4.7 The version number may be used to indicate the specific version of the document, (see 'Release Note' below).

4.8 Document maintenance reviews shall be completed in accordance with the requirements in MDD part 1.

NOTE DMRB documents are meant to be reviewed and updated frequently in response to the drivers and opportunities identified in Section 6 to MDD Part 1. In theory, a document can be updated more than once in a year and at least once every five years.

Structure of DMRB documents

4.9 DMRB documents shall be presented using single column format.

4.10 DMRB documents shall follow the structure given in Table 2.

NOTE The structure of DMRB documents is embedded into the Collaborative Authoring Review System (CARS).

Table 2 **Structure of DMRB documents**

Number format	Name	Permitted content	Type of element
Not numbered	**Title page** [1]	Text	**Preliminary informative** Element that identifies the document, introduces its content and provides relevant terms and definitions.
Not numbered	**Content page**	*Generated content*	
Not numbered	**Release note** [1]	Text	
Not numbered	**Foreword** [1]	Text	
Not numbered	**Introduction** [1]	Text	
Not numbered	**Abbreviations and symbols** [1]	Text	
Not numbered	**Terms and definitions** [1]	Text	
Section 1	**Scope** [2]	Text	**General normative** Element that describes the scope of the document or sets out provisions.
Section 2, 3, etc.	**<Title as relevant>** [2]	Text Figures Tables	**Technical normative** Element that sets out technical provisions.
Section [n-1]	**Normative references** [1]	Text	
Section [n]	**Informative references** [1]	Text	**Supplementary informative** Element that provides additional information intended to assist the understanding or use of the document.

Number format	Name	Permitted content	Type of element
Not numbered	**Notification**	Text	
Appendix A, B, etc.	**<Title as relevant>** [1]	Text Figures Tables	

Note 1 This section does not contain requirements, only general advisory information without the DMRB clause numbering system.

Note 2 This section contains the specific DMRB clause numbering system to present requirements and supporting advice.

Rules for each DMRB section

Title page

4.11 The title page shall comprise the following information (see Figure 1 as an example):

1. Discipline and life-cycle in the current document set
2. Code of the document
3. Title of the document
4. Reference to the previous DMRB or IAN documents if applicable ("formerly <**>")
5. Version number
6. Date of issue
7. Summary
8. Application by Overseeing Organisations
9. Feedback and Enquiries
10. Sentence at the bottom of the page.

Title of the document

4.12 The title of the document shall be in sentence case (i.e. only the first letter of the first word is capitalised).

Summary

4.13 The title page shall include a brief summary of the document contents.

4.14 The summary shall not include content that is not in the body of the document.

Application by Overseeing Organisations

4.15 Technical authors shall include the following text related to the application of DMRB documents (automated by CARS):

"Any specific requirements for Overseeing Organisations alternative or supplementary to those given in this document are given in National Application Annexes to this document".

Feedback and Enquiries

4.16 The technical author shall include the following text encouraging feedback and enquiries to be submitted (automated by CARS):

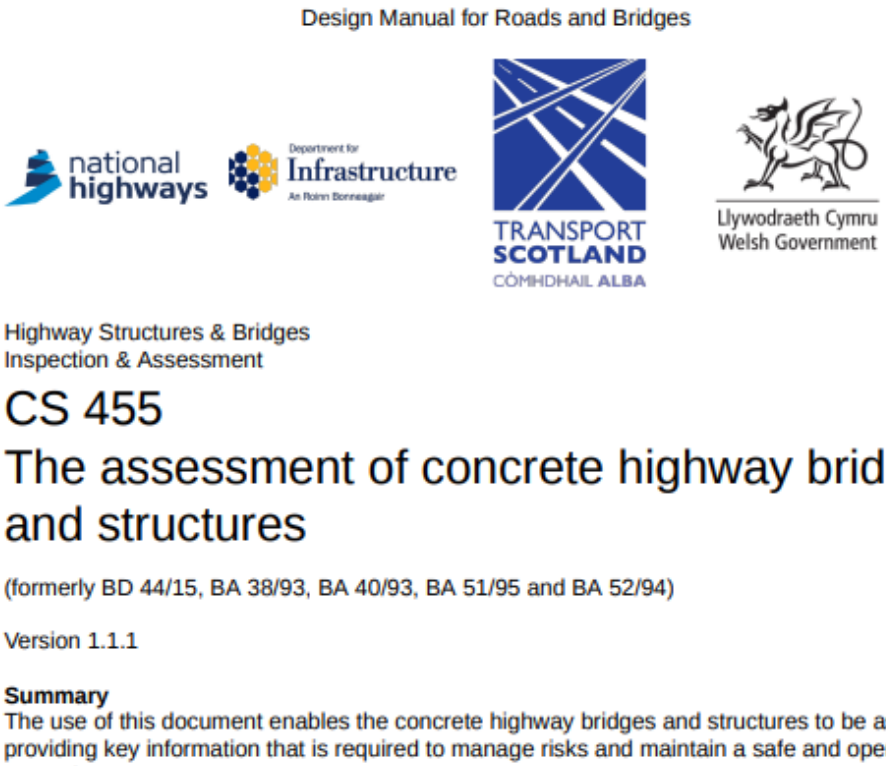
"Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated National Highways team. The online feedback form for all enquiries and feedback can be accessed at: www.standardsforhighways.co.uk/feedback.

Sentence at the bottom of the page

4.17 At the bottom of the title page the following sentence shall be introduced (automated by CARS):

"This is a controlled document."

Figure 1. Example of title page of DMRB documents


Design Manual for Roads and Bridges

national highways

Department for Infrastructure

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

Llywodraeth Cymru
Welsh Government

Highway Structures & Bridges
Inspection & Assessment

CS 455

The assessment of concrete highway bridges and structures

(formerly BD 44/15, BA 38/93, BA 40/93, BA 51/95 and BA 52/94)

Version 1.1.1

Summary
The use of this document enables the concrete highway bridges and structures to be assessed, providing key information that is required to manage risks and maintain a safe and operational network.

Feedback and Enquiries
Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated National Highways team. The online feedback form for all enquiries and feedback can be accessed at: www.standardsforhighways.co.uk/feedback.

This is a controlled document.

Contents page

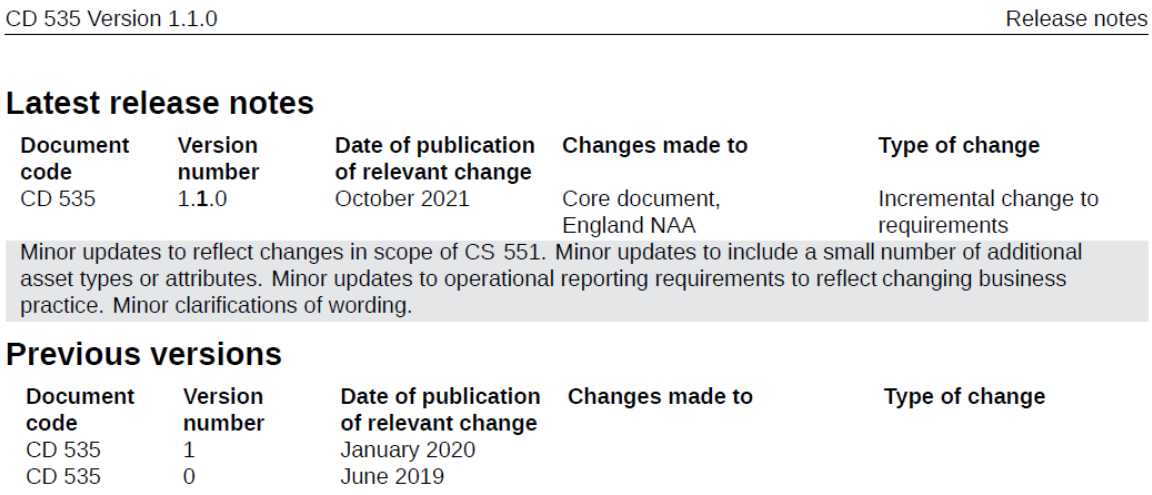
4.18 The contents page shall list the content of the DMRB document by Section and Appendix (automated by CARS).

Release note

4.19 The release note shall provide a summary of the first publication or list of amendments and details of the changes where it is a current published document.

NOTE: Release notes are automatically generated by CARS and presented in the published document as 'Latest release notes'. See Figure 2.

Figure 2. Example of release notes



CD 535 Version 1.1.0 Release notes

Latest release notes

Document code	Version number	Date of publication of relevant change	Changes made to	Type of change
CD 535	1.**1**.0	October 2021	Core document, England NAA	Incremental change to requirements

Minor updates to reflect changes in scope of CS 551. Minor updates to include a small number of additional asset types or attributes. Minor updates to operational reporting requirements to reflect changing business practice. Minor clarifications of wording.

Previous versions

Document code	Version number	Date of publication of relevant change	Changes made to	Type of change
CD 535	1	January 2020		
CD 535	0	June 2019		

4.20 To clarify that changes have been made to comply with the MDD rules for style and presentation, the following standard text shall be used for all DMRB documents published for the first time:

"[Code in the new DMRB document structure] *replaces* [Code in the current DMRB document structure]*. This full document has been written to make it compliant with the National Highways drafting rules."*

4.21 The release note shall briefly identify technical changes that have been made, without going into excessive detail.

4.22 The level of detail required to complete the release note shall depend on the type of revision being made to the DMRB document.

NOTE Some judgement is required from the technical author as to the level of detail which is appropriate to the particular document being developed.

4.23 The nature of changes made to a DMRB document shall be briefly presented.

NOTE The release note is not intended to be a change log of the document.

4.24 Details at clause level shall be avoided.

NOTE The reason for avoiding details at clause level is twofold:

1. *Making reference to specific clauses can cause confusion;*
2. *in the future, the introduction of new requirements in DMRB documents will change their number sequentially.*

4.25 The version number of DMRB documents shall be in the format 1.0.0.

NOTE: Version numbering is automatically generated by CARS and is based on the category of change as outlined in Section 8 of MDD part 1.

Any first-time document publication is published as 1.0.0. Subsequent document updates have a whole number for category A changes i.e. major updates or policy changes (so version 1.0.0 would become version 2.0.0). Updates to a requirement or advice (Categories B or C) have a 0.1.0 change to the version number (so version 1.0.0 would become 1.1.0). Updates to a note and/or spelling mistake (Category D) would have a 0.0.1 change (so version 1.0.0 would become 1.0.1).

Foreword

4.26 The foreword shall not contain requirements.

4.27 The foreword shall have only two sub-headings:

1. 'Publishing information',
2. 'Contractual and legal considerations'.

Publishing information

4.28 'Publishing information' shall contain the following standard text:

This document is published by National Highways.

This document supersedes [*****], which [is/are] withdrawn.

4.29 'Publishing information' may also clarify the link between the document and external publications such as EU, UK and national standards and regulations.

Contractual and legal considerations

4.30 'Contractual and legal considerations' shall contain the following standard text:

This document forms part of the works specification. It does not purport to include all the necessary provisions of a contract. Users are responsible for applying all appropriate documents applicable to their contract.

Introduction

4.31 The introduction shall not contain requirements.

4.32 The introduction shall provide specific information that sets the scene to the development or amendment of the document and the reasons prompting its preparation.

4.33 The introduction shall include the following standard sub-headings:

1. Background
2. Assumptions made
3. Mutual Recognition (optional)

4.33.1 Additional sub-headings may be introduced after the standard sub-headings.

Background

4.34 The background shall provide specific information on the content of the document.

NOTE The background is the appropriate place in which to refer to factors such as research, academic, social or legislative developments that might have influenced the development of the document, or specific benefits that the document provides for example in terms of safety, sustainability, economy, etc.

Assumptions made in the preparation of the DMRB (GG 101 only)

4.35 The following text shall be introduced in GG 101 Introduction to the Design Manual for Roads and Bridges only:

"Competence
The DMRB has been prepared for use by competent practitioners, typically qualified professionals able to work independently in relevant fields, who are expected to apply their own skill and judgement when making decisions involving the information that the DMRB contains.

Link with regulation and legislation
DMRB documents are not statutory or regulatory documents or training manuals; neither do they cover every point in exhaustive detail.

In general, the DMRB does not duplicate National, UK and European legislative requirements. Anyone engaged in works on or relating to the Overseeing Organisations' motorway and all-purpose trunk roads is assumed to understand and comply with the relevant legislation.

Link with the MCHW
The requirements and advice given in DMRB documents are provided on the basis that the works are constructed in accordance with the Manual of Contract Documents for Highway Works (MCHW)."

NOTE Often the requirement "must comply with the MCHW" is included in DMRB documents as a catch-all requirement designed to link the obligations of the designer under the DMRB to the MCHW. Including this assumption explicitly in documents makes the document notifiable. The last clause in the standard text above makes the link between the DMRB and the MCHW clear and avoids needless notification of documents.

Assumptions made in the preparation of this document

4.36 For DMRB documents other than GG 101 Introduction to the Design Manual for Roads and Bridges, the following standard text shall be used:

"The assumptions made in GG 101 [Ref. 1N] apply to this document."

4.37 After the standard text, the author shall state any assumptions over and above those forming part of GG 101 made during the preparation of the document and any residual risks known by the technical author to be passed on to users of the document, where relevant.

Mutual Recognition (optional)

4.38 'Mutual Recognition' shall be provided if the document specifies performance requirements for products or in other ways specifically limits the type of product.

NOTE Mutual Recognition ensures free movement of goods and services without the need to harmonise EU Member States' national legislation. Goods which are lawfully produced in one Member State cannot be banned from sale on the territory of another Member State, where they meet that Member State's performance requirements, even if they are produced to technical or quality specifications different from those applied to its own products. Mutual recognition also applies to non-harmonised goods - those that are not already covered by EU-wide legislation setting common requirements (e.g. in terms of safety or environmental performance) that all products of that type must meet before being placed on the EU market. It is a legal requirement that the Overseeing Organisation recognises and accepts goods and services that fall within the scope of the Mutual Recognition Regulation.

4.39 The following standard text shall be introduced in GG 101 only:

"Where there is a requirement in the Design Manual for Roads and Bridges for compliance with any part of a British Standard or other technical specification, that requirement may be met by compliance with:

- *A standard or code of practice of a national standards body or equivalent body of any EEA state or Turkey,*
- *Any international standard recognised for use as a standard or code of practice by any EEA state or Turkey,*
- *A technical specification recognised for use as a standard by a public authority of any EEA state or Turkey; Or,*
- *A European Technical Assessment issued in accordance with the procedure set out in regulation (EU) No. 305/2011.*

Provided that the relevant standard enables an equivalent level of performance and safety to be achieved to that provided for by the stated British Standard or technical specification."

4.40 The following text shall be inserted in DMRB documents other than GG 101, which provide product performance requirements, including requirements for testing and quality control, or which refer to other documents that give advice or requirements for products:

"Where there is a requirement in this document for compliance with any part of a "British Standard" or other technical specification, that requirement may be met by compliance with the Mutual Recognition clause in GG 101 "Introduction to the Design Manual for Roads and Bridges"

4.41 When technical authors require assistance in deciding if the standard text on 'Mutual Recognition' is appropriate, they shall discuss it with TSG.

4.42 When the Mutual Recognition clause is required, the technical author shall verify whether the document requires notification under the Technical Standards and Regulations Directive.

Abbreviations and symbols

4.43 The 'Abbreviations' table shall comprise a list of abbreviations and acronyms where these are used within the DMRB document.

4.44 The technical author shall not include abbreviations and acronyms used elsewhere within NEC or existing Overseeing Organisation contract documents.

NOTE Rules on style for abbreviations are given in Section 9.

4.45 The ‘Symbols’ table shall comprise a list of symbols and related definition where these are used within the DMRB document.

NOTE Rules on style for symbols are given in Section 9.

Terms and definitions

4.46 ‘Terms and definitions’ shall comprise an alphabetically ordered list of defined terms used in the DMRB document.

NOTE Rules on style for terms and definitions are given in Section 9

4.46.1 Definitions may be followed by notes, for example to clarify the source of the definition (see “Duplication of terms and definitions from external documents”) or to provide relevant explanation.

4.47 Defined terms shall be kept to the minimum to reduce the risks of conflict with other Overseeing Organisation documents, external documents (including legislation) and procurement contract terms.

4.48 All terms shall be in accordance with BS 6100.

4.49 Where the term is not provided in BS 6100, it shall be defined in the terms and definitions section of the RAD.

4.50 All International System of Units, their derivatives and their notation shall be in accordance with BS EN ISO 80000.

4.51 A space shall be inserted between a number and a unit of measurement e.g., 30 mph not 30mph in accordance with the International System of Units (SI).

4.52 Units not recognised by the International System of Units shall be written in full each time they are used.

Consistency in terms and definitions provided by DMRB documents

4.53 Consistent terms and definitions shall be provided within each discipline.

4.54 Technical authors within the same group shall discuss and agree on the appropriate terms and definitions to be used to support consistency and ease of understanding by users.

[DRAFTING NOTE: In the future CARS will facilitate the identification of inconsistencies in the use of terms and definitions, thus supporting the work of technical authors.]

4.55 Content specialists shall liaise with technical authors to recommend changes in order to enhance consistency in terminology.

Duplication of terms and definitions from external documents

4.56 Where a term duplicates one defined in other external documents, the source of the definition shall be clarified in a note using the following expression:

NOTE Definition from [source of the definition].

NOTE An example is provided in the table below:

Term	Definition
Relevant project	A project for constructing or improving a highway where the area of the completed works together with any area occupied during the period of construction or improvement by requisite apparatus, equipment, machinery, materials, plant, spoil heaps or other such facilities exceeds 1 hectare or where any such area is situated in whole or in part in a sensitive area. NOTE Definition from Section 105A of the Highways Act 1980 (as amended).

Section 1 Scope

4.57 The structure of Section 1 Scope shall follow the clause numbering system based around requirements and advice presented in Section 10.

4.58 The two standard sub-headings ‘Aspects covered’ and ‘Implementation’, shall be used in all DMRB documents.

4.58.1 Additional sub-headings may be introduced after the standard sub-headings.

Aspects covered

4.59 Section 1 ‘Scope’ of GG 101 shall define the scope of the DMRB as a whole.

4.60 Section 1 ‘Scope’ of DMRB documents other than GG 101 shall define without ambiguity the scope of application of the document, aspects covered and those not covered where appropriate.

Implementation

4.61 Implementation requirements for documents other than GG 101 shall be as follows:

“This document shall be implemented forthwith on all schemes involving **[text depending on the topic of the document]** *on the Overseeing Organisations’ motorway and all-purpose trunk roads according to the implementation requirements of GG 101 [Ref. 1N].”*

4.62 Where the decision is made that the document is required to be implemented immediately, the following clause shall be included in the scope section of the document

“The requirements of this document shall be applied immediately to all schemes and projects due to ***(reasons to be added),*** *in accordance with the implementation requirements of GG 101”.*

NOTE: Reasons why implementation of a document is required immediately include legislative changes and urgent safety items.

4.62.1 Additional implementation requirements may be introduced.

Use of GG 101 (DMRB documents other than GG 101)

4.63 The following standard text shall be included in all DMRB documents.

"The requirements contained in GG 101 [Ref. X] shall be followed in respect of activities covered by this document."

Implementation (GG 101 only)

4.64 The following standard text shall be included in GG 101.

"Individual documents shall be implemented in accordance with any implementation requirements in a particular DMRB document.

NOTE Failure to implement a document that addresses statutory or legislative obligations can place the Overseeing Organisation at risk of legal action or consequence.

Where there are no specific implementation requirements in a particular DMRB document, the document shall be implemented immediately after publication except:

where the contract has reached a stage that, in the opinion of the Overseeing Organisation, use of a new or revised document would result in significant additional expense or delay;

where an existing contract has terms which apply specifically to the implementation of new requirements.

Where the contract has reached a stage that, in the opinion of the Overseeing Organisation, use of a new or revised document would result in significant additional expense or delay, the decision whether to use a new or revised document shall be recorded in accordance with the Overseeing Organisation's procedure."

Health and safety (GG 101 only)

4.65 The following standard text shall be included in GG 101.

"Where undertaking any activity that does or can have an impact on safety, either directly or indirectly, for any of the populations on the Overseeing Organisations' motorway and all-purpose trunk roads, risk assessment and management shall be carried out in accordance with the legislation and the procedures set out by the Overseeing Organisation."

Equality, diversity, and inclusion (GG 101 only)

4.66 The following standard text shall be included in GG 101.

"Where undertaking any activity that can have an impact, either directly or indirectly, on people with protected characteristics, an equality impact assessment (EqIA) screening shall be carried out to determine the applicability of a full EqIA.

Where the EqIA screening indicates that a full EqIA is needed, an EqIA shall be carried out.

Where EqIA indicates that people with protected characteristics can be disadvantaged or put at additional risk, solutions to mitigate that impact shall be proposed.

Consultation and engagement with affected people and groups should be carried out to identify solutions or mitigation."

DBFO contracts (GG 101 only)

4.67 The following text shall be included in GG 101 in order to deal with the potential unwanted transfer of risks from the DBFO Company back to the Overseeing Organisation when setting up DBFO Contracts.

"Where the role of Overseeing Organisation has been delegated, the delegated authority shall assume all of the risks, responsibilities and duties of the Overseeing Organisation to the extent defined by the contract and permitted under National, UK and EU Legislation.

NOTE Delegated authorities can include contractual vehicles such as DBFO (Design, Build Finance and Operate) and NRTS (National Roads Telecommunications Services) contracts."

NOTE The specific text on DBFO devolves the agreement of procedural changes embedded in the Overseeing Organisation's technical documents to the Department's Nominees/ Department's Representatives.

Sections 2, 3 etc.

4.68 The heading of Sections 2, 3, etc. shall reflect their content.

4.69 The structure of Sections 2, 3, etc. shall follow the clause numbering system based around requirements and advice presented in detail in Section 10.

Section [N-1] – Normative references

4.70 The list of normative references shall be introduced as follows:

"The following documents, in whole or in part, are normative references for this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies."

4.71 The 'Normative references' section shall be numbered to immediately follow the preceding section.

4.72 The technical author shall identify the normative references using the [Ref x.N] within the document to create numbered lists.

NOTE Rules on normative references are provided in Section 9.

Section [N] – Informative references

4.73 The technical author shall identify the informative references using the [Ref x.I] within the document to create numbered lists.

NOTE Rules on informative references are provided in Section 9.

Notification

4.74 Any document submitted for notification to the European Commission shall include the following text:

"This document was notified in draft to the European Commission in accordance with Technical Standards and Regulations Directive 2015/1535/EU".

NOTE Refer to Section 16 to MDD Part 1 for further detail on the notification process.

Appendix

4.75 The inclusion of Appendices in DMRB documents shall be dictated by the nature of the document but shall be kept to a minimum.

4.76 Appendices shall be only informative and shall not contain requirements.

4.77 Appendices shall be used where advisory information is necessary within the document, but does not fit naturally in the main text and its inclusion within the main text would reduce the users' understanding of the document or detract from the natural flow of information being provided.

4.78 Appendices shall not be used as a repository for old information.

4.79 Appendices shall appear in the order in which they are cited in the text and shall be designated by a heading comprising the word "Appendix" followed by a capital letter designating its serial order, beginning with "A", i.e.

4.80 Headings to the sections in Appendices shall be numbered sequentially, e.g. A, B, C, etc., and shall be followed by a relevant title.

4.81 Appendices shall not follow the numbering system of the sections in the main text to provide freedom to technical authors to include different types of advisory information, from worked examples to background information.

4.82 Sections and sub-sections in appendices shall be numbered sequentially, e.g. A1, A1.1, A1.1.1 as relevant.

4.83 Clauses in appendices shall not be numbered.

4.84 Equations, tables and figures in appendices shall be numbered sequentially, with the words 'Equation', 'Table' and 'Figure' followed by capital letter designating its serial order and a number.

NOTE Examples of the numbering system of equations, tables and figures in Appendices are: Figure A.1, Figure A.2, Figure A.3; Table B.1, Table B.2, Table B.3; Equation F.1, Equation F.2, Equation F.3.

5. MCHW document layout

5.1 SHW and IfS documents shall be drafted with the formatting instructions presented in this Section.

Volume titles

5.2 MCHW documents shall be titled with a standard format: [Document code] "[Specific title of the document]".

5.3 The specific title of the document shall be in the format "XXX: Specification for Highway Works" or "XXX: Instructions for Specifiers".

5.4 The title of the WSI related to specific SHW sections shall be generated automatically from the specifier tool.

NOTE An example of the title for the WSI is presented in Table 3:

Table 3 **Example of WSI title**

SHW	**WSI automatically generated title**
C.C. 200 Road pavements: bituminous bound materials	
1. Hot Rolled Asphalt Surface Course (Performance-Related Design Mixtures)	
1.1… 1.2… 1.3 The HRA Performance Related surface course shall also meet the performance characteristics stated in <<Ref to WSI>>. 1.4…	WSI C.C. 200: Hot Rolled Asphalt Surface Course (Performance-Related Design Mixtures) 1.3. [Specifier adds performance characteristics]

5.5 The specific title of the document shall be in sentence case (i.e. only the first letter of the first word is capitalised).

Document codes

5.6 SHW documents shall be issued using a document code to allow for their insertion into the volume structure under the life-cycle stage "C".

5.7 IfS documents shall have the same number as their SHW counterparts, allowing for their insertion into the volume structure under the life-cycle stage "P".

NOTE For the matrix of standards, see Table 1.

5.8 The SHW, IfS and specifier tool (and therefore the creation of the WSI) shall be hosted by CARS.

5.9 Document codes shall comprise a two-letter code generated by the combination of the discipline (code 1) and life-cycle stage (code 2) followed by a three-digit number depending on the discipline.

5.9.1 Technical authors should discuss the document numbers to be adopted within their team and agree them with the relevant Group Manager and TSG.

NOTE Examples of document codes and titles include: CC 370 Concrete: Specification for Highway Works or LC 151 Landscape and Ecology: Instructions for Specifiers.

Structure of MCHW documents

5.10 MCHW documents shall be presented using a single column format.

5.11 MCHW documents shall follow the structure given in Table 4.

Table 4 **Structure of MCHW documents**

Number format	Name	Permitted Content	Type of element
Not numbered	Title Page [1]	Text	Preliminary Informative
Not numbered	Content page	Generated content	
Not numbered	Release notes [1]	Text	
Not numbered	Foreword	Text	
Not numbered	Introduction	Text	
Section 1, 2, 3	<title as relevant> [2]	Text, figures, tables	Technical Normative
Note 1: This section does not contain requirements, only general advisory information without the MCHW numbering layout. Note 2: This section contains the clause numbering system to present requirements.			

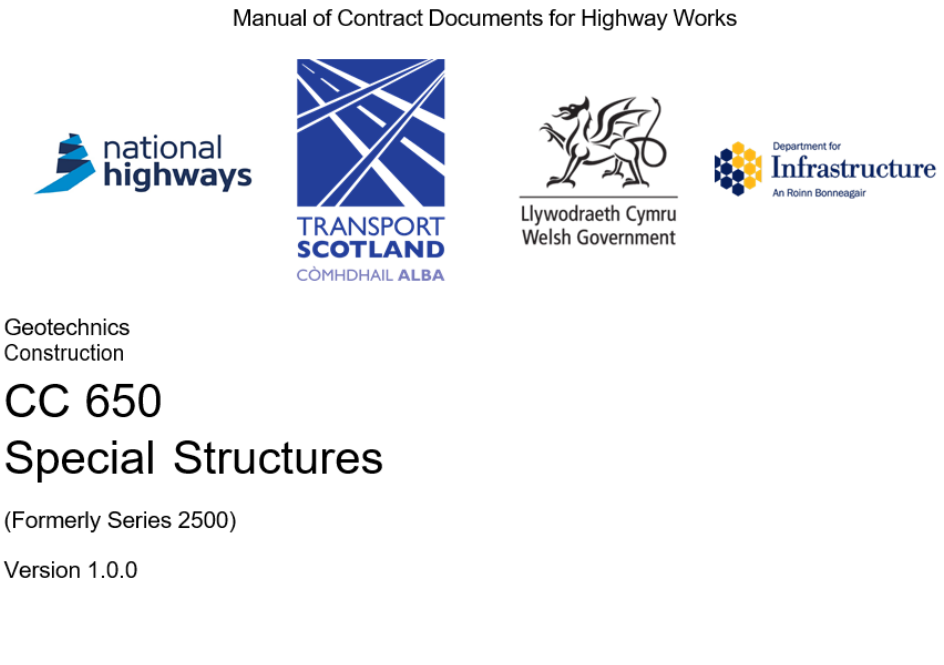
Title page

5.12 The title page shall comprise the following information (see Figure 3 as an example):

1. Discipline and life-cycle in the current document set;

2. Code of the document;
3. Title of the document;
4. Reference to previous MCHW documents if applicable ("formerly <**>");
5. Version number;
6. Date of issue / updates;
7. Application by Overseeing Organisation;
8. Feedback and Enquiries;
9. Sentence at the bottom of the page.

Figure 3. Example title page



Version number

5.13 The version number shall be in the format 1.0.0.

NOTE: Version numbering is automatically generated by CARS and is based on the category of change as outlined in Section 8 of MDD part 1.

Any first-time document publication is published as 1.0.0. Subsequent document updates have a whole number for category A changes i.e. major updates or policy changes (so version 1.0.0 would become version 2.0.0). Updates to a requirement or advice (Categories B or C) have a 0.1.0 change to the version number (so version 1.0.0 would become 1.1.0). Updates to a note and/or spelling mistake (Category D) would have a 0.0.1 change (so version 1.0.0 would become 1.0.1).

Date of issue / updates

5.14 The updates made to the document shall be flagged.

NOTE: Release notes are automatically generated by CARS and presented in the published document as 'Latest release notes'. See Figure 4.

Figure 4. Example of release notes

CD 535 Version 1.1.0 Release notes

Latest release notes

Document code	Version number	Date of publication of relevant change	Changes made to	Type of change
CD 535	1.**1**.0	October 2021	Core document, England NAA	Incremental change to requirements
Minor updates to reflect changes in scope of CS 551. Minor updates to include a small number of additional asset types or attributes. Minor updates to operational reporting requirements to reflect changing business practice. Minor clarifications of wording.				

Previous versions

Document code	Version number	Date of publication of relevant change	Changes made to	Type of change
CD 535	1	January 2020		
CD 535	0	June 2019		

Application by Overseeing Organisations

5.15 The following text related to the application of MCHW documents shall be included: "Any nationally determined requirements for the Overseeing Organisations supplementary to those given in this document are provided in (TBC)".

[DRAFTING NOTE: Rules on presentation of national variations are under development and will be provided soon].

Feedback and Enquiries

5.16 The following text shall be included: "Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated National Highways team. The online feedback form for all enquiries and feedback can be accessed at www.standardsforhighways.co.uk/feedback.

Sentence at the bottom of the page

5.17 At the bottom of the title page the following sentence shall be included: "This is a controlled document".

Contents pages

5.18 The contents page shall list the content of the MCHW document (i.e. the section numbers, titles and page numbers).

NOTE: Contents page are automatically generated by CARS.

Release notes

5.19 The release note shall provide a list of amendments and details of the changes to the current published document.

NOTE: Release notes are automatically generated by CARS and presented in the published document as 'Latest release notes'. See Figure 4.

Foreword

5.20 The foreword shall not contain requirements.

5.21 The foreword shall have the following sub-headings:

1. 'Publishing information'
2. 'Contractual and legal considerations'

Publishing information

5.22 'Publishing information' shall contain the following standard text: "This document is published by National Highways. This document supersedes [*****], which [is/are] withdrawn."

5.22.1 'Publishing information' may also clarify the link between the document and external publications such as EU, UK and national standards and regulations.

Contractual and legal considerations

5.23 'Contractual and legal considerations' shall contain the following standard text: "This document forms part of the works specification. It does not purport to include all the necessary provisions of a contract. Users are responsible for applying all appropriate documents applicable to their contract."

Introduction to SHW documents

5.24 The Introduction to SHW documents shall not contain requirements.

5.25 The Introduction shall have the following sub-headings:

1. Assumptions made in the preparation of xxxx
2. Mutual Recognition
3. Additional sub-headings as relevant

5.25.1 Additional sub-headings may be introduced after the standard sub-headings.

Assumptions made in the preparation of <xxx> (Introductory document(s) for the SHW)

5.26 The following text shall be introduced in the introductory document(s) for the SHW [DRAFTING NOTE: This text may be subject to change based on the work to be undertaken on Series 100]:

Competence: The SHW has been prepared for use by competent practitioners, typically qualified professionals able to work independently in relevant fields, who are expected to apply their own skill and judgement when making decisions involving the information that the SHW contains.

Link with regulation and legislation: SHW documents are not statutory or regulatory documents or training manuals; neither do they cover every point in exhaustive detail. In general, the SHW does not duplicate National, UK and European legislative requirements. Anyone engaged in works on or relating to the Overseeing Organisations' motorway and all-purpose trunk roads should understand and comply with the relevant legislation.

Link with the DMRB: The requirements given in SHW documents are provided on the basis that the works are designed in accordance with the Design Manual for Roads and Bridges (DMRB) design documents.

Assumptions made in the preparation of this document

5.27 For SHW documents other than the introductory document(s) of the SHW [DRAFTING NOTE: Please assume this to be existing Series 100], the following standard text shall be used: "The assumptions made in xxx apply to this document."

Mutual Recognition

5.28 The following text shall be introduced in the introductory document(s) for the SHW: "Where there is a requirement in the Specification for Highways Works for compliance with any part of a British Standard or other technical specification, that requirement may be met by compliance with:

A standard or code of practice of a national standards body or equivalent body of any EEA state or Turkey,
Any international standard recognised for use as a standard or code of practice by any EEA state or Turkey,
A technical specification recognised for use as a standard by a public authority of any EEA state or Turkey; Or,
A European Technical Assessment issued in accordance with the procedure set out in regulation (EU) No. 305/2011;

provided that the relevant standard enables an equivalent level of performance and safety to be achieved to that provided for by the stated British Standard or technical specification."

Introduction to IfS documents

5.29 The Introduction to IfS documents shall not contain requirements.

5.30 The introduction shall include the following sub-headings:

1. Assumptions made in the preparation of xxxx;
2. Mutual Recognition;
3. Additional sub-headings as relevant.

Assumptions made in the preparation of <xxx> (Introductory document for the IfS)

5.31 The following text shall be introduced in the introductory document for the IfS [DRAFTING NOTE: This text may be subject to change based on the work to be undertaken on Series NG 000]:

Competence: The IfS has been prepared for use by competent practitioners, typically qualified professionals able to work independently in relevant fields, who are expected to apply their own skill and judgement when making decisions involving the information that the IfS contains.

Link with regulation and legislation: IfS documents are not statutory or regulatory documents or training manuals; neither do they cover every point in exhaustive detail. In general, the IfS does not duplicate National, UK and European legislative requirements. Anyone engaged in works on or relating to the Overseeing Organisations' motorway and all-purpose trunk roads should understand and comply with the relevant legislation.

Link with the DMRB: The instructions given in IfS documents are provided on the basis that the works are designed in accordance with the Design Manual for Roads and Bridges (DMRB) design documents.

Link with the SHW: The SHW requirements contained in IfS documents are provided to the specifier for information only to aid the development of the work specific inputs.

Assumptions made in the preparation of this document

5.32 For IfS documents other than the introductory document of the IfS, the following standard text shall be used: "The assumptions made in xxx apply to this document."

Mutual Recognition

5.33 The following text shall be introduced in the introductory document(s) for the SHW: "Where there is a requirement in the Specification for Highways Works for compliance with any part of a British Standard or other technical specification, that requirement may be met by compliance with:

A standard or code of practice of a national standards body or equivalent body of any EEA state or Turkey,
Any international standard recognised for use as a standard or code of practice by any EEA state or Turkey,

A technical specification recognised for use as a standard by a public authority of any EEA state or Turkey; Or,
A European Technical Assessment issued in accordance with the procedure set out in regulation (EU) No. 305/2011;

provided that the relevant standard enables an equivalent level of performance and safety to be achieved to that provided for by the stated British Standard or technical specification."

Sections 1, 2, 3 etc. for SHW and IfS documents

5.34 The title of sections (with the exception of section titles of introductory documents) shall either refer to:

1. a physical object, material, defined area of the site or activity; or
2. a collective term for objects, materials, defined areas of the site or activities.

NOTE For example a collective term for "vehicle restraint systems" and "pedestrian restraint systems" is "road restraint systems".

5.35 Sections shall be organised such that all requirements within that section apply to the physical object, material, defined area, activity or collective term that is the subject of the title.

NOTE For example where the subject of the section is an object, such as a brick, all the requirements within the section apply to bricks. Furthermore, if a brick is presented in the works graphical information and the section is referenced, all the requirements of the section would apply to that brick.

5.36 Sections shall be organised such that it is possible to map each section to the works graphical information developed at project/scheme level.

NOTE Organising sections in this way allows a clear mapping between the works graphical information and the information in the MCHW.

5.37 The numbering system shall follow the rules set out in section 11 for style of clauses.

Sample schedules for WSI

5.38 Sample schedules shall be provided to enable works specific inputs to be presented to the constructor in a consistent way.

NOTE 1 Schedules are not required for every works specific input nor are provided in the IfS for all cases.

NOTE 2 Schedules set out to the specifier the layout that works specific inputs are to be delivered to the constructor. The specifier is ultimately responsible for developing an appropriate schedule.

[DRAFTING NOTE: This will be further explored during the discovery phase of the development of the specifier tool]

5.39 Sample schedules shall be developed such that there is a clear link between the schedule itself and the specifier instructions.

5.40 The sample schedules will form the basis of the WSI and the specifier tool.

Style and format

[DRAFTING NOTE: To be further explored when developing the specifier tool]

5.41 Sample schedules shall include a title in the following format: "Schedule X" where X is a sequential letter, i.e "A, B, C etc.".

5.42 Schedules shall be presented in a tabular format.

NOTE Figure 5 provides a potential final presentation of sample schedules for works specific inputs.

Figure 5. Potential final presentation of sample schedules for works specific inputs

Schedule A

Graphical reference	Design traffic (CV/lane/day)	Site category	Investigatory level	Min PSV/Max AAV	Permitted pavement option
*	(5.1)	(5.1)	(5.1)	(5.1)	[b]
*	(5.1)	(5.1)	(5.1)	(5.1)	[b]

* defining location of object/material/area in question
[b] reference to Schedule B

Schedule B

	Pavement option	[a]	Pavement option	[a]
	Material ref.	**Thickness (mm)**	**Material ref**	**Thickness (mm)**
Surface Treatment	[d]	(6.2)	[d]	(6.2)
Surface course	[d]	(6.2)	[d]	(6.2)
Binder Course	[d]	(6.2)	[d]	(6.2)

[a] reference to Schedule A
[d] reference to Schedule D

5.43 Column and row headings shall not include the words "shall", "should", "may", "include" or "insert".

5.44 A sample schedule shall include references to specifier instructions.

5.44.1 A sample schedule may include references to the graphical information and/or to other schedules, see for example Figure 5.

5.45 References to a specifier instruction number shall be in the format (SIx.x).

5.46 References to graphical information shall be made using "*" symbol.

5.46.1 Additional information other than requirements may be given in footnotes to the table.

5.47 References to another schedule shall be made using a lowercase letter in superscript.

5.47.1 Additional information may be given in footnotes to the table.

6. NAA document layout (DMRB)

Name

6.1 Name and abbreviation for National Application Annexes shall be as indicated in Table 5.

Table 5 **Name and abbreviation for NAAs**

Name	Abbreviation
England National Application Annex	E
Northern Ireland National Application Annex	NI
Scotland National Application Annex	S
Wales National Application Annex	W

Structure of NAA documents

6.2 NAAs shall be drafted using single column format.

6.3 NAAs shall follow the structure set out in Table 6.

Table 6 **Structure of National Application Annexes**

Number format	Name	Permitted content	Type of element
Not numbered	**Title page** [1]	Text	**Preliminary informative** Element that identifies the document, introduces its content and provides relevant terms and definitions.
Not numbered	**Content page**	*Generated content*	
Not numbered	**Release note** [1]	Text	
Not numbered	**Foreword** [1]	Text	
Not numbered	**Introduction** [1]	Text	
Not numbered	**Abbreviation and symbols**	Text	
Not numbered	**Terms and definitions** [1]	Text	
Section 1, 2, etc. [2]	**<Title as relevant>** [3]	Text Figures Tables	**Technical normative** Element that sets out technical provisions.
Section (n-1) [2]	**Normative references** [1]	Text	
Section (n) [2]	**Informative references** [1]	Text	**Supplementary informative** Element that provides additional information intended to assist the understanding or use of the document.

Number format	Name	Permitted content	Type of element
Appendix A, B, etc. [2]	**<Title as relevant>** [1]	Text Figures Tables	

Note 1 This section does not contain requirements, only general advisory information without the NAA clause numbering system.

Note 2 Sections and appendices are introduced by the abbreviation of the Overseeing Organisation (see Table 5) followed by the number.

Note 3 This section contains the specific NAA clause numbering system to present requirements and supporting advice.

Rules for NAA sections

Title page

6.4 The title page shall comprise the following information:

1. Discipline and life-cycle in the current document set
2. England / Northern Ireland / Scotland / Wales National Application Annex with the new code of the related DMRB document
3. Title of the related DMRB document
4. Version number
5. Date of issue
6. Summary
7. Feedback and Enquiries
8. Sentence at the bottom of the page.

NOTE The layout of NAAs is the same as DMRB documents.

Title of the document

6.5 The title of the document shall be in sentence case (i.e. only the first letter of the first word is capitalised).

Summary

6.6 The title page shall include a brief summary of the document contents, which starts with the following standard sentence:

This National Application Annex sets out the [Overseeing Organisation's name] specific requirements on [*****]

6.7 The summary shall not include content that is not in the body of the document.

Feedback and Enquiries

6.8 The technical author shall include the text provided in Table 7 to encourage feedback and enquiries to be submitted:

Table 7 **Text for feedback and enquiries for individual Overseeing Organisations**

Overseeing Organisation	Specific text for feedback and enquiries
England	Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated National Highways team. The online feedback form for all enquiries and feedback can be accessed at: www.standardsforhighways.co.uk/feedback.
Northern Ireland	*Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated team in the Department for Infrastructure, Northern Ireland. The email address for all enquiries and feedback is:* dcu@infrastructure-ni.gov.uk
Scotland	*Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated Transport Scotland team. The email address for all enquiries and feedback is:* TSStandardsBranch@transport.gov.scot
Wales	*Users of this document are encouraged to raise any enquiries and/or provide feedback on the content and usage of this document to the dedicated Wesh Government team. The email address for all enquiries and feedback is:* Standards_Feedback_and_Enquiries@gov.wales

Sentence at the bottom of the page

6.9 At the bottom of the title page the following sentence shall be introduced:

"This is a controlled document."

Contents page

6.10 The 'Contents page' shall follow the same rules of DMRB documents.

Release note

6.11 The 'Release note' shall follow the same rules of DMRB documents.

Foreword

6.12 The Foreword shall not contain requirements.

6.13 The Foreword shall have only two sub-headings:

1. 'Publishing information',
2. 'Contractual and legal considerations'.

Publishing information

6.14 'Publishing information' shall contain the standard text given in Table 8:

Table 8 **Text for publishing information**

Overseeing Organisation	Specific text for feedback and enquiries
England	This document is published by National Highways. This document supersedes [*****], which is withdrawn.
Northern Ireland	*This document is published by National Highways on behalf of the Department for Infrastructure, Northern Ireland.* *This document supersedes [*****], which is withdrawn.*
Scotland	*This document is published by National Highways on behalf of Transport Scotland.* *This document supersedes [*****], which is withdrawn.*
Wales	*This document is published by National Highways on behalf of Welsh Government.* *This document supersedes [*****], which is withdrawn*.

6.15 'Publishing information' may also clarify the link between the document and external publications such as EU, UK and national standards and regulations.

Contractual and legal considerations

6.16 'Contractual and legal considerations' shall contain the standard text used for DMRB documents.

Introduction

6.17 The Introduction shall not contain requirements.

6.18 The Introduction shall provide specific information that sets the scene to the development or amendment of the document and the reasons prompting its preparation.

6.19 The Introduction shall include the following standard sub-headings:

1. Background;
2. Assumptions made in the preparation of the document;
3. Mutual Recognition (optional).

6.19.1 Additional sub-headings may be introduced after the standard sub-headings.

Background

6.20 The Background shall provide specific information on the content of the document.

NOTE The Background is the appropriate place in which to refer to factors such as research, academic, social or legislative developments that might have influenced the development of the document.

6.21 The Background shall start with the following standard sentence:

This National Application Annex gives the [Overseeing Organisation's name]-specific requirements for [***]

Assumptions made in the preparation of this document

6.22 The following standard text shall be used:

The assumptions made in GG 101 [Ref. 1N] apply to this document.

6.23 After the standard text, the author shall state any assumptions over and above those forming part of GG 101 made during the preparation of the document and any residual risks known by the technical author to be passed on to users of the document, where relevant.

Mutual Recognition (optional)

6.24 'Mutual Recognition' shall be provided if the document specifies performance requirements for products or in other ways specifically limits the type of product.

Abbreviations and symbols

6.25 'Abbreviations and symbols' section shall follow the same rules of DMRB documents.

6.25.1 Abbreviations and symbols should not duplicate the content of the abbreviations and symbols defined in the main document.

6.26 New abbreviations and symbols introduced in the NAA shall be defined

Terms and definitions

6.27 'Terms and definitions' section shall follow the same rules of DMRB documents.

6.27.1 Terms and definitions should not duplicate the content of the terms and definitions defined in the main document.

6.28 New abbreviations and symbols introduced in the NAA shall be defined.

Sections 1, 2, 3 etc.

6.29 Each section shall be numbered with a prefix reflecting the abbreviation of the Overseeing Organisation (see Table 5) followed by sequential numbers starting from 1.

6.30 The heading of the section shall reflect its content.

6.31 Where the content of a section refers to content in the related DMRB document, the same wording shall be used in the title of the section to facilitate retrieval of information.

6.32 The structure of Sections 1, 2, 3, etc. shall follow the clause numbering system based around requirements and advice presented in detail in Section 10 with the addition of the prefix to requirements and advice numbers reflecting the abbreviation of the Overseeing Organisation (see Table 5).

NOTE An example is section number is E/8 for England, S/2 for Scotland, NI/7 for Northern Ireland, W/5 for Wales.

Section [N-1] – Normative references

6.33 The 'Normative references' section shall follow the same rules of DMRB documents.

Section [N] – Informative references

6.34 The 'Informative references' section shall follow the same rules of DMRB documents.

Appendix

6.35 The Appendices shall follow the same rules of DMRB documents.

Cross-references between NAA and DMRB clauses

Linking DMRB clauses to the NAA

6.36 The general link between requirements or advice contained in DMRB documents and those contained in the related NAA shall be made by introducing the general standard paragraph on 'Application by Overseeing Organisations' in the cover page.

6.36.1 The link between specific DMRB clauses and the related NAAs should be established in notes using the following fixed expression:

NOTE [Specific topic] is provided in the National Application Annexes.

6.37 Technical authors shall review final drafts to make sure that all cross-references have been introduced.

Complementary sections to the DMRB document

6.38 Where a section is introduced in a NAA to provide complementary requirements and/or advice to those provided in a DMRB document, the title of the section shall comprise (i) the topic treated as stated in the DMRB document and (ii) the reference to the requirement it refers to (see Table 9).

Table 9 **Example of complementary section**

<table>
<tr><th>Text in the DMRB document</th><th>Text in NAA</th></tr>
<tr>
<td>
2. Surface course material options
2.1. The specific requirements for surface course material options of the Overseeing Organisations shall apply.
3. Aggregate selection
Polished Stone Value (PSV) and Aggregate Abrasion Value (AAV)
3.1. Coarse aggregates or chippings shall undergo Polished Stone Value (PSV) testing in accordance with BS EN 1097-8 [Ref. 5] to determine the resistance to polishing under the action of traffic.
NOTE 1 An alternative measure of performance in an asphalt mixture can be determined by the Friction after Polishing test (BS EN 12697-49) [Ref. 11], which is currently used for research purposes only.
</td>
<td>
NI/1 Surface course material options (HD 36, 2.1)
Choice of surfacing
NI/1.1 Surface course materials shall be selected from MCHW1 [Ref. 3.N] using the permitted options provided in Tables NI/1.1a, NI/1.1b and NI/1.1c for different construction types.
Table NI/1.1a: Permitted pavement surface course materials for new and maintenance construction (flexible and flexible composite construction)
<table>
<tr><th></th><th></th><th></th><th></th><th>Use without restriction</th><th>Departure required</th></tr>
<tr><td rowspan="2">New construction or major maintenance?</td><td rowspan="2">Yes</td><td rowspan="2">High speed? (85%ile above 65 km/h)</td><td>Yes</td><td>clause 924 high friction surfacing
clause 942 thin surface course system
clause 910 hot rolled asphalt</td><td>clause 938 porous asphalt [1]</td></tr>
<tr><td>No</td><td>clause 924 high friction surfacing
clause 942 thin surface course system
clause 910 hot rolled asphalt coated macadam</td><td>clause 938 porous asphalt [1]
Generic SMA</td></tr>
</table>
</td>
</tr>
</table>

Complementary requirements and advice in the NAA

6.39 Complementary requirements and advice to those provided in a DMRB document shall be linked to the DMRB clauses by introducing a sub-heading with relevant title and the DMRB clause number in brackets (see Table 10 as an example).

Table 10 **Example of complementary requirements**

Text in the DMRB document	Text in NAA
Identifying 'relevant' projects for screening 2.3. Projects shall be assessed to identify if they are 'relevant' and require screening. NOTE 1 The definition of a 'relevant' project varies between the EIA Regulations applicable to each country in the UK. NOTE 2 Consistent criteria among the Overseeing Organisations of whether a project is 'relevant' comprise: • a project that exceeds 1 hectare • a project that is situated in whole or in part in a sensitive area (the definition of 'sensitive area' varies between Overseeing Organisations) 2.4. Where projects are not deemed to be 'relevant', a record shall be made of the decision. 2.4.1. Projects should identify the likely significance of any environmental effects arising from an Annex II project that falls outside of the criteria for a 'relevant project' on a case-by-case basis. NOTE 1 An Annex II project under the EIA Directive can fall outside the criteria for a 'relevant' project, but still have the potential to cause significant environmental effects (direct or indirect), for example, a project located adjacent to a sensitive area. 2.5. Where assessing maintenance projects, the specific requirements of the Overseeing Organisations shall apply. NOTE 1 Maintenance projects are not covered by the EIA Regulations. 2.6. The division of a large project into small projects to avoid the need to undertake an EIA shall not be accepted. NOTE 1 The division of projects to avoid the need to undertake EIA is unlawful and opens the project up to a risk of challenge.	HE/1 Highways Act 1980 (as amended): Specific Screening Procedures **'Relevant' projects ([DMRB code], 2.3)** HE/1.1 Section 105A of the Highways Act 1980 (as amended) must be followed to determine whether or not projects are 'relevant' and require screening. NOTE 1 Section 105A of the Highways Act 1980 (as amended) provides thresholds for project area and sensitive areas (see Terms and Definitions) in order to determine whether or not projects are 'relevant'. NOTE 2 The definition of 'relevant' project refers to construction or improvement projects and excludes maintenance projects (see Terms and Definitions). HE/1.1.2 When considering traffic management in the calculation of the project area, only the actual proportion of traffic management occupied by requisite apparatus, equipment, machinery, materials, plant, spoil heaps or other such facilities, should be taken into account. HE/1.2 All 'relevant' projects shall be screened for EIA in line with the procedure set out in Section 2 to XX. NOTE 1 For the purposes of the Highways Act 1980 (as amended), Highways England is the Competent Authority responsible for issuing screening opinions. **Maintenance projects ([DMRB code], 2.5)** HE/1.3 Screening for EIA shall not be undertaken for maintenance projects (see separate requirements for renewal projects). NOTE 1 The reasoning behind the exclusion of maintenance projects from the consideration of 'relevant' projects is that such projects are never likely to generate the possibility of significant environmental effects. HE/1.3.2 A proportionate level of assessment should be undertaken for maintenance projects to ensure any pertinent issues are identified and addressed. HE/1.3.3 Best practice, sensitive programming and good construction environmental management may be used to assess maintenance projects

Supplementary sections, requirements and advice to the DMRB document

6.40 Where a NAA provides supplementary sections, requirements and/or advice, the heading of the section shall comprise the topic treated and the following text in brackets:

(additional to [document code of the DMRB document])

Alternative requirements to the DMRB document

6.41 Where a NAA clause replaces a clause contained in a DMRB document, the following text shall be used followed by the specific requirement of the Overseeing Organisation:

"[Document code of the DMRB document], [specific clause in the DMRB document] shall not apply."

7. NDR layout (MCHW)

Name

7.1 Name and abbreviation for Nationally Determined Requirements shall be as indicated in Table 11.

Table 11 **Name and abbreviation for NDRs**

Name	Abbreviation
England Nationally Determined Requirement	E
Northern Ireland Nationally Determined Requirement	NI
Scotland Nationally Determined Requirement	S
Wales Nationally Determined Requirement	W

Authoring Nationally Determined Requirements (NDRs) and National Determined Sections (NDSs)

7.2 The lead author shall ensure that the authors from different Overseeing Organisations have the rights to access and author the NDRs and NDSs.

NOTE Future enhancement is to restrict access to requirement / section level.

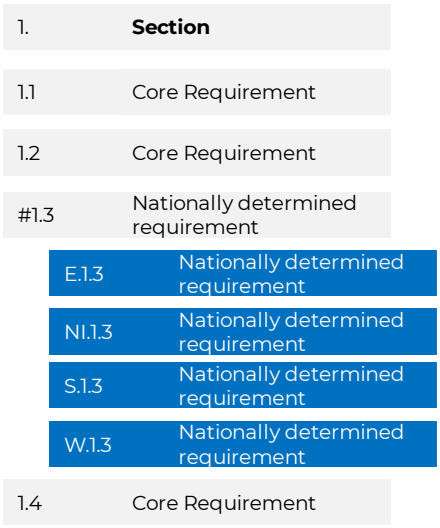
7.3 Background commentary shall be provided for NDRs.

Nationally Determined Requirements (NDRs)

7.4 Nationally Determined Requirements (NDRs) shall be authored 'in-line' and kept together with core requirements in CARS, see Figure 6.

NOTE This approach supports visibility and encourages harmonization of requirements across the Overseeing Organisations.

Figure 6. Authoring Nationally determined requirements



7.5 Where needed, an NDR shall be created for each Overseeing Organisation.

7.6 If an Overseeing Organisation does not have country-specific content, the NDR shall be as follows: “No nationally determined requirement is provided”.

Nationally Determined Sections (NDSs)

7.7 Where needed, an NDS shall be created for each Overseeing Organisation, see Figure 7.

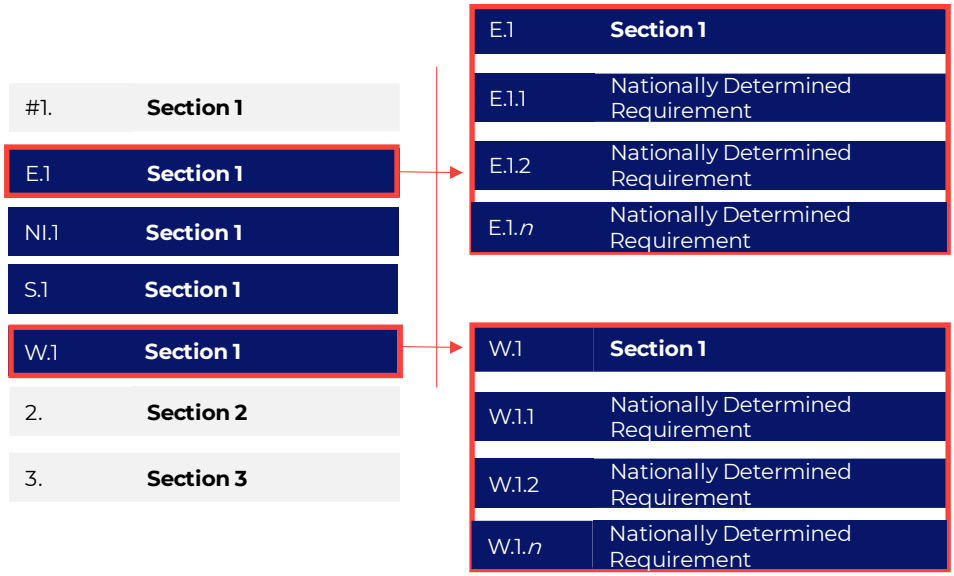
7.8 Where the Overseeing Organisations wish to cover different topics, multiple NDSs shall be introduced.

7.9 All content in an NDS shall relate to the same subject across the four Overseeing Organisations.

7.10 Titles of NDSs related to the same subject shall be consistent.

7.11 Where an Overseeing Organisation does not have content for an NDS, the NDS shall only contain the following sentence: “No nationally determined requirements are provided”.

Figure 7. Authoring nationally determined sections (NDSs)



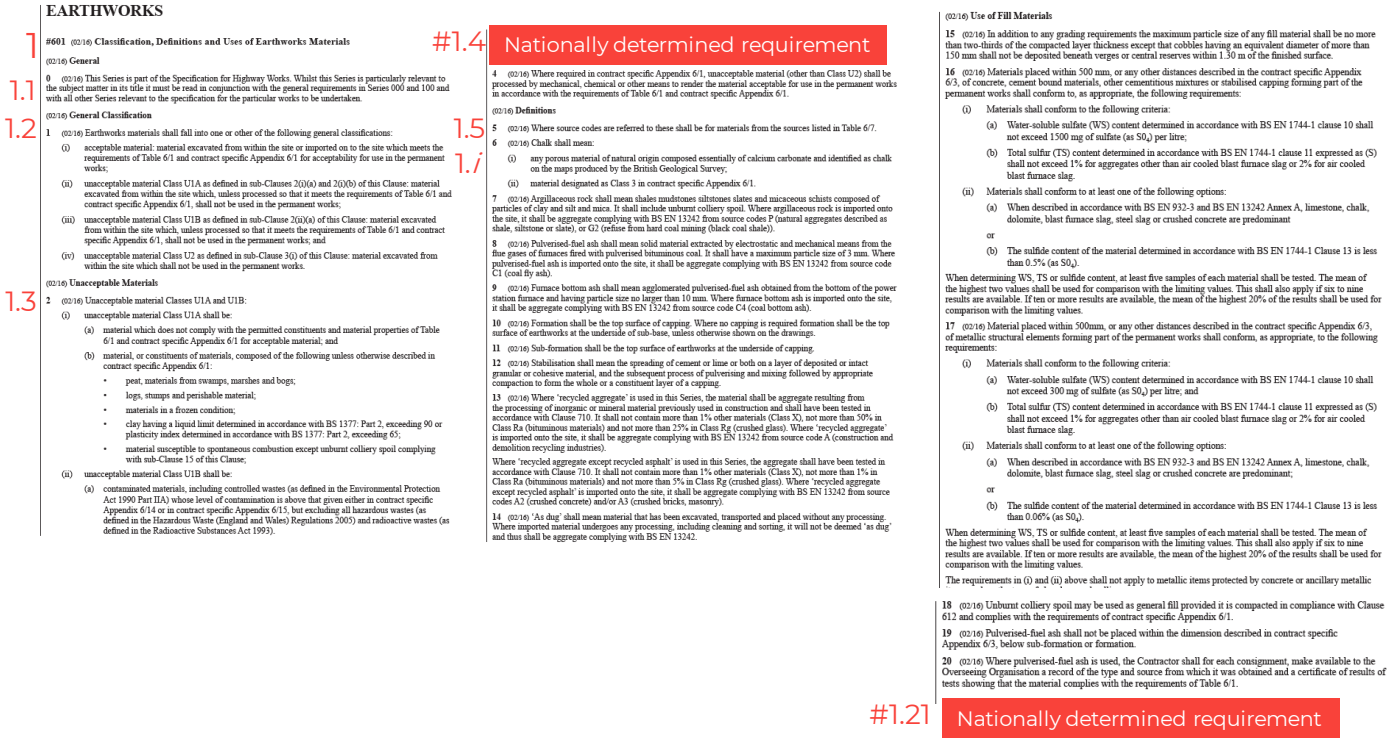
7.12 Metadata shall be associated with NDRs.

NOTE This gives the options to publish NDRs either in NAAs or within the main text thus publishing country-specific documents, see Figures 8 and 9 for an example.

[DRAFTING NOTE: The style of published MCHW documents is under discussion and will be confirmed in due course. For any queries, please contact TSG]

Figure 8. NDRs provided in separate NAAs

Main text



EARTHWORKS

1 #601 (02/16) **Classification, Definitions and Uses of Earthworks Materials**

(02/16) **General**

1.1 0 (02/16) This Series is part of the Specification for Highway Works. Whilst this Series is particularly relevant to the subject matter in its title it must be read in conjunction with the general requirements in Series 000 and 100 and with all other Series relevant to the specification for the particular works to be undertaken.

(02/16) **General Classification**

1.2 1 (02/16) Earthworks materials shall fall into one or other of the following general classifications:

(i) acceptable material: material excavated from within the site or imported on to the site which meets the requirements of Table 6/1 and contract specific Appendix 6/1 for acceptability for use in the permanent works;

(ii) unacceptable material Class U1A as defined in sub-Clauses 2(i)(a) and 2(i)(b) of this Clause: material excavated from within the site which, unless processed so that it meets the requirements of Table 6/1 and contract specific Appendix 6/1, shall not be used in the permanent works;

(iii) unacceptable material Class U1B as defined in sub-Clause 2(ii)(a) of this Clause: material excavated from within the site which, unless processed so that it meets the requirements of Table 6/1 and contract specific Appendix 6/1, shall not be used in the permanent works; and

(iv) unacceptable material Class U2 as defined in sub-Clause 3(j) of this Clause: material excavated from within the site which shall not be used in the permanent works.

(02/16) **Unacceptable Materials**

1.3 2 (02/16) Unacceptable material Classes U1A and U1B:

(i) unacceptable material Class U1A shall be:

(a) material which does not comply with the permitted constituents and material properties of Table 6/1 and contract specific Appendix 6/1 for acceptable material; and

(b) material, or constituents of materials, composed of the following unless otherwise described in contract specific Appendix 6/1:

- peat, materials from swamps, marshes and bogs;
- logs, stumps and perishable material;
- materials in a frozen condition;
- clay having a liquid limit determined in accordance with BS 1377: Part 2, exceeding 90 or plasticity index determined in accordance with BS 1377: Part 2, exceeding 65;
- material susceptible to spontaneous combustion except unburnt colliery spoil complying with sub-Clause 15 of this Clause;

(ii) unacceptable material Class U1B shall be:

(a) contaminated materials, including controlled wastes (as defined in the Environmental Protection Act 1990 Part IIA) whose level of contamination is above that given either in contract specific Appendix 6/14 or in contract specific Appendix 6/15, but excluding all hazardous wastes (as defined in the Hazardous Waste (England and Wales) Regulations 2005) and radioactive wastes (as defined in the Radioactive Substances Act 1993).

#1.4 Nationally determined requirement

4 (02/16) Where required in contract specific Appendix 6/1, unacceptable material (other than Class U2) shall be processed by mechanical, chemical or other means to render the material acceptable for use in the permanent works in accordance with the requirements of Table 6/1 and contract specific Appendix 6/1.

(02/16) **Definitions**

1.5 5 (02/16) Where source codes are referred to these shall be for materials from the sources listed in Table 6/7.

1.7 6 (02/16) Chalk shall mean:

(i) any porous material of natural origin composed essentially of calcium carbonate and identified as chalk on the maps produced by the British Geological Survey;

(ii) material designated as Class 3 in contract specific Appendix 6/1.

7 (02/16) Argillaceous rock shall mean shales mudstones siltstones slates and micaceous schists composed of particles of clay and silt and mica. It shall include unburnt colliery spoil. Where argillaceous rock is imported onto the site, it shall be aggregate complying with BS EN 13242 from source codes P (natural aggregates described as shale, siltstone or slate), or G2 (refuse from hard coal mining (black coal shale)).

8 (02/16) Pulverised-fuel ash shall mean solid material extracted by electrostatic and mechanical means from the fine gases of furnaces fired with pulverised bituminous coal. It shall have a maximum particle size of 3 mm. Where pulverised-fuel ash is imported onto the site, it shall be aggregate complying with BS EN 13242 from source code C1 (coal fly ash).

9 (02/16) Furnace bottom ash shall mean agglomerated pulverised-fuel ash obtained from the bottom of the power station furnace and having particle size no larger than 10 mm. Where furnace bottom ash is imported onto the site, it shall be aggregate complying with BS EN 13242 from source code C4 (coal bottom ash).

10 (02/16) Formation shall be the top surface of capping. Where no capping is required formation shall be the top surface of earthworks at the underside of sub-base, unless otherwise shown on the drawings.

11 (02/16) Sub-formation shall be the top surface of earthworks at the underside of capping.

12 (02/16) Stabilisation shall mean the spreading of cement or lime or both on a layer of deposited or intact granular or cohesive material, and the subsequent process of pulverising and mixing followed by appropriate compaction to form the whole or a constituent layer of a capping.

13 (02/16) Where 'recycled aggregate' is used in this Series, the material shall be aggregate resulting from the processing of inorganic or mineral material previously used in construction and shall have been tested in accordance with Clause 710. It shall not contain more than 1% other materials (Class X), not more than 50% in Class Ra (bituminous materials) and not more than 25% in Class Rg (crushed glass). Where 'recycled aggregate' is imported onto the site, it shall be aggregate complying with BS EN 13242 from source code A (construction and demolition recycling industries).

Where 'recycled aggregate except recycled asphalt' is used in this Series, the aggregate shall have been tested in accordance with Clause 710. It shall not contain more than 1% other materials (Class X), not more than 1% in Class Ra (bituminous materials) and not more than 5% in Class Rg (crushed glass). Where 'recycled aggregate except recycled asphalt' is imported onto the site, it shall be aggregate complying with BS EN 13242 from source codes A2 (crushed concrete) and/or A3 (crushed bricks, masonry).

14 (02/16) 'As dug' shall mean material that has been excavated, transported and placed without any processing. Where imported material undergoes any processing, including cleaning and sorting, it will not be deemed 'as dug' and thus shall be aggregate complying with BS EN 13242.

(02/16) **Use of Fill Materials**

15 (02/16) In addition to any grading requirements the maximum particle size of any fill material shall be no more than two-thirds of the compacted layer thickness except that cobbles having an equivalent diameter of more than 150 mm shall not be deposited beneath verges or central reserves within 1.30 m of the finished surface.

16 (02/16) Materials placed within 500 mm, or any other distances described in the contract specific Appendix 6/3, of concrete, cement bound materials, other cementitious mixtures or stabilised capping forming part of the permanent works shall conform to, as appropriate, the following requirements:

(i) Materials shall conform to the following criteria:

(a) Water-soluble sulfate (WS) content determined in accordance with BS EN 1744-1 clause 10 shall not exceed 1500 mg of sulfate (as SO_4) per litre;

(b) Total sulfur (TS) content determined in accordance with BS EN 1744-1 clause 11 expressed as (S) shall not exceed 1% for aggregates other than air cooled blast furnace slag or 2% for air cooled blast furnace slag.

(ii) Materials shall conform to at least one of the following options:

(a) When described in accordance with BS EN 932-3 and BS EN 13242 Annex A, limestone, chalk, dolomite, blast furnace slag, steel slag or crushed concrete are predominant

or

(b) The sulfide content of the material determined in accordance with BS EN 1744-1 Clause 13 is less than 0.5% (as SO_4).

When determining WS, TS or sulfide content, at least five samples of each material shall be tested. The mean of the highest two values shall be used for comparison with the limiting values. This shall also apply if six to nine results are available. If ten or more results are available, the mean of the highest 20% of the results shall be used for comparison with the limiting values.

17 (02/16) Material placed within 500mm, or any other distances described in the contract specific Appendix 6/3, of metallic structural elements forming part of the permanent works shall conform, as appropriate, to the following requirements:

(i) Materials shall conform to the following criteria:

(a) Water-soluble sulfate (WS) content determined in accordance with BS EN 1744-1 clause 10 shall not exceed 300 mg of sulfate (as SO_4) per litre; and

(b) Total sulfur (TS) content determined in accordance with BS EN 1744-1 clause 11 expressed as (S) shall not exceed 1% for aggregates other than air cooled blast furnace slag or 2% for air cooled blast furnace slag.

(ii) Materials shall conform to at least one of the following options:

(a) When described in accordance with BS EN 932-3 and BS EN 13242 Annex A, limestone, chalk, dolomite, blast furnace slag, steel slag or crushed concrete are predominant;

or

(b) The sulfide content of the material determined in accordance with BS EN 1744-1 Clause 13 is less than 0.06% (as SO_4).

When determining WS, TS or sulfide content, at least five samples of each material shall be tested. The mean of the highest two values shall be used for comparison with the limiting values. This shall also apply if six to nine results are available. If ten or more results are available, the mean of the highest 20% of the results shall be used for comparison with the limiting values.

The requirements in (i) and (ii) above shall not apply to metallic items protected by concrete or ancillary metallic

18 (02/16) Unburnt colliery spoil may be used as general fill provided it is compacted in compliance with Clause 612 and complies with the requirements of contract specific Appendix 6/1.

19 (02/16) Pulverised-fuel ash shall not be placed within the dimension described in contract specific Appendix 6/3, below sub-formation or formation.

20 (02/16) Where pulverised-fuel ash is used, the Contractor shall for each consignment, make available to the Overseeing Organisation a record of the type and source from which it was obtained and a certificate of results of tests showing that the material complies with the requirements of Table 6/1.

#1.21 Nationally determined requirement

National Application Annexes

England NAA
E.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Hazardous Waste England and Wales Regulations 2005

E1.21 No nationally determined requirement is provided.

Wales
W.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Hazardous Waste England and Wales Regulations 2005

W1.21 Where stated in contract specific appendix 6/1, permissible options for fill materials shall include slate or other argillaceous materials as stated.

Scotland
S.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Special Waste Scotland Regulations 2004

S.21 No nationally determined requirement is provided.

Northern Ireland
NI.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Hazardous Waste Regulations Norther Ireland 2005

NI.21 No nationally determined requirement is provided.

Figure 9. NDRs provided in the main text (country-specific documents)

E.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Hazardous Waste England and Wales Regulations 2005 **OR**

W.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Hazardous Waste England and Wales Regulations 2005 **OR**

S.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Special Waste Scotland Regulations 2004 **OR**

NI.1.4 Unacceptable material Class U2 shall be hazardous waste (as defined in the Hazardous Waste Regulations Norther Ireland 2005

Main text

EARTHWORKS

1 **#601** (02/16) **Classification, Definitions and Uses of Earthworks Materials**

(02/16) **General**

1.1 0 (02/16) This Series is part of the Specification for Highway Works. Whilst this Series is particularly relevant to the subject matter in its title it must be read in conjunction with the general requirements in Series 000 and 100 and with all other Series relevant to the specification for the particular works to be undertaken.

(02/16) **General Classification**

1.2 1 (02/16) Earthworks materials shall fall into one or other of the following general classifications:

(i) acceptable material: material excavated from within the site or imported on to the site which meets the requirements of Table 6/1 and contract specific Appendix 6/1 for acceptability for use in the permanent works;

(ii) unacceptable material Class U1A as defined in sub-Clauses 2(i)(a) and 2(i)(b) of this Clause: material excavated from within the site which, unless processed so that it meets the requirements of Table 6/1 and contract specific Appendix 6/1, shall not be used in the permanent works;

(iii) unacceptable material Class U1B as defined in sub-Clause 2(ii)(a) of this Clause: material excavated from within the site which, unless processed so that it meets the requirements of Table 6/1 and contract specific Appendix 6/1, shall not be used in the permanent works; and

(iv) unacceptable material Class U2 as defined in sub-Clause 3(i) of this Clause: material excavated from within the site which shall not be used in the permanent works.

(02/16) **Unacceptable Materials**

1.3 2 (02/16) Unacceptable material Classes U1A and U1B:

(i) unacceptable material Class U1A shall be:

(a) material which does not comply with the permitted constituents and material properties of Table 6/1 and contract specific Appendix 6/1 for acceptable material; and

(b) material, or constituents of materials, composed of the following unless otherwise described in contract specific Appendix 6/1:

- peat, materials from swamps, marshes and bogs;
- logs, stumps and perishable material;
- materials in a frozen condition;
- clay having a liquid limit determined in accordance with BS 1377: Part 2, exceeding 90 or plasticity index determined in accordance with BS 1377: Part 2, exceeding 65;
- material susceptible to spontaneous combustion except unburnt colliery spoil complying with sub-Clause 15 of this Clause;

(ii) unacceptable material Class U1B shall be:

(a) contaminated materials, including controlled wastes (as defined in the Environmental Protection Act 1990 Part IIA) whose level of contamination is above that given either in contract specific Appendix 6/14 or in contract specific Appendix 6/15, but excluding all hazardous wastes (as defined in the Hazardous Waste (England and Wales) Regulations 2005) and radioactive wastes (as defined in the Radioactive Substances Act 1993).

#1.4 Nationally determined requirement

4 (02/16) Where required in contract specific Appendix 6/1, unacceptable material (other than Class U2) shall be processed by mechanical, chemical or other means to render the material acceptable for use in the permanent works in accordance with the requirements of Table 6/1 and contract specific Appendix 6/1.

(02/16) **Definitions**

1.5 5 (02/16) Where source codes are referred to these shall be for materials from the sources listed in Table 6/7.

1.7 6 (02/16) Chalk shall mean:

(i) any porous material of natural origin composed essentially of calcium carbonate and identified as chalk on the maps produced by the British Geological Survey;

(ii) material designated as Class 3 in contract specific Appendix 6/1.

7 (02/16) Argillaceous rock shall mean shales mudstones siltstones slates and micaceous schists composed of particles of clay and silt and mica. It shall include unburnt colliery spoil. Where argillaceous rock is imported onto the site, it shall be aggregate complying with BS EN 13242 from source codes P (natural aggregates described as shale, siltstone or slate), or G2 (refuse from hard coal mining (black coal shale)).

8 (02/16) Pulverised-fuel ash shall mean solid material extracted by electrostatic and mechanical means from the flue gases of furnaces fired with pulverised bituminous coal. It shall have a maximum particle size of 3 mm. Where pulverised-fuel ash is imported onto the site, it shall be aggregate complying with BS EN 13242 from source code C1 (coal fly ash).

9 (02/16) Furnace bottom ash shall mean agglomerated pulverised-fuel ash obtained from the bottom of the power station furnace and having particle size no larger than 10 mm. Where furnace bottom ash is imported onto the site, it shall be aggregate complying with BS EN 13242 from source code C4 (coal bottom ash).

10 (02/16) Formation shall be the top surface of capping. Where no capping is required formation shall be the top surface of earthworks at the underside of sub-base, unless otherwise shown on the drawings.

11 (02/16) Sub-formation shall be the top surface of earthworks at the underside of capping.

12 (02/16) Stabilisation shall mean the spreading of cement or lime or both on a layer of deposited or intact granular or cohesive material, and the subsequent process of pulverising and mixing followed by appropriate compaction to form the whole or a constituent layer of a capping.

13 (02/16) Where 'recycled aggregate' is used in this Series, the material shall be aggregate resulting from the processing of inorganic or mineral material previously used in construction and shall have been tested in accordance with Clause 710. It shall not contain more than 1% other materials (Class X), not more than 50% in Class Ra (bituminous materials) and not more than 25% in Class Rg (crushed glass). Where 'recycled aggregate' is imported onto the site, it shall be aggregate complying with BS EN 13242 from source code A (construction and demolition recycling industries).

Where 'recycled aggregate except recycled asphalt' is used in this Series, the aggregate shall have been tested in accordance with Clause 710. It shall not contain more than 1% other materials (Class X), not more than 1% in Class Ra (bituminous materials) and not more than 5% in Class Rg (crushed glass). Where 'recycled aggregate except recycled asphalt' is imported onto the site, it shall be aggregate complying with BS EN 13242 from source codes A2 (crushed concrete) and/or A3 (crushed bricks, masonry).

14 (02/16) 'As dug' shall mean material that has been excavated, transported and placed without any processing. Where imported material undergoes any processing, including cleaning and sorting, it will not be deemed 'as dug' and thus shall be aggregate complying with BS EN 13242.

(02/16) **Use of Fill Materials**

15 (02/16) In addition to any grading requirements the maximum particle size of any fill material shall be no more than two-thirds of the compacted layer thickness except that cobbles having an equivalent diameter of more than 150 mm shall not be deposited beneath verges or central reserves within 1.30 m of the finished surface.

16 (02/16) Materials placed within 500 mm, or any other distances described in the contract specific Appendix 6/3, of concrete, cement bound materials, other cementitious mixtures or stabilised capping forming part of the permanent works shall conform to, as appropriate, the following requirements:

(i) Materials shall conform to the following criteria:

(a) Water-soluble sulfate (WS) content determined in accordance with BS EN 1744-1 clause 10 shall not exceed 1500 mg of sulfate (as SO_4) per litre;

(b) Total sulfur (TS) content determined in accordance with BS EN 1744-1 clause 11 expressed as (S) shall not exceed 1% for aggregates other than air cooled blast furnace slag or 2% for air cooled blast furnace slag.

(ii) Materials shall conform to at least one of the following options:

(a) When described in accordance with BS EN 932-3 and BS EN 13242 Annex A, limestone, chalk, dolomite, blast furnace slag, steel slag or crushed concrete are predominant

or

(b) The sulfide content of the material determined in accordance with BS EN 1744-1 Clause 13 is less than 0.5% (as SO_4).

When determining WS, TS or sulfide content, at least five samples of each material shall be tested. The mean of the highest two values shall be used for comparison with the limiting values. This shall also apply if six to nine results are available. If ten or more results are available, the mean of the highest 20% of the results shall be used for comparison with the limiting values.

17 (02/16) Material placed within 500mm, or any other distances described in the contract specific Appendix 6/3, of metallic structural elements forming part of the permanent works shall conform, as appropriate, to the following requirements:

(i) Materials shall conform to the following criteria:

(a) Water-soluble sulfate (WS) content determined in accordance with BS EN 1744-1 clause 10 shall not exceed 300 mg of sulfate (as SO_4) per litre; and

(b) Total sulfur (TS) content determined in accordance with BS EN 1744-1 clause 11 expressed as (S) shall not exceed 1% for aggregates other than air cooled blast furnace slag or 2% for air cooled blast furnace slag.

(ii) Materials shall conform to at least one of the following options:

(a) When described in accordance with BS EN 932-3 and BS EN 13242 Annex A, limestone, chalk, dolomite, blast furnace slag, steel slag or crushed concrete are predominant;

or

(b) The sulfide content of the material determined in accordance with BS EN 1744-1 Clause 13 is less than 0.06% (as SO_4).

When determining WS, TS or sulfide content, at least five samples of each material shall be tested. The mean of the highest two values shall be used for comparison with the limiting values. This shall also apply if six to nine results are available. If ten or more results are available, the mean of the highest 20% of the results shall be used for comparison with the limiting values.

The requirements in (i) and (ii) above shall not apply to metallic items protected by concrete or ancillary metallic

18 (02/16) Unburnt colliery spoil may be used as general fill provided it is compacted in compliance with Clause 612 and complies with the requirements of contract specific Appendix 6/1.

19 (02/16) Pulverised-fuel ash shall not be placed within the dimension described in contract specific Appendix 6/3, below sub-formation or formation.

20 (02/16) Where pulverised-fuel ash is used, the Contractor shall for each consignment, make available to the Overseeing Organisation a record of the type and source from which it was obtained and a certificate of results of tests showing that the material complies with the requirements of Table 6/1.

#1.21 Nationally determined requirement

E.21 No nationally determined requirement is provided. **OR**

W.21 Where stated in contract specific appendix 6/1, permissible options for fill materials shall include slate or other argillaceous materials as stated. **OR**

S.21 No nationally determined requirement is provided. **OR**

NI.21 No nationally determined requirement is provided.

8. CHE Memos document layout

8.1 Technical authors shall use the following link for the layout of a CHE Memo.
SHARE link to CHE Memo template:
http://share/Share/llisapi.dll?func=ll&objId=82341472&objAction=browse

8.2 Notes to technical authors shall be in italics and square brackets**.**

[DRAFTING NOTE: The layout of CHE Memos is under review, for any queries please ask TSG]

9. Style of basic elements

9.1 The content of this section shall apply to all RADs.

9.2 Text and figures must be presented in such a way that the content is accessible in accordance with the Accessibility Regulations (Public Sector Bodies (Websites and Mobile Applications) (No. 2) Accessibility Regulations 2018).

NOTE As National Highways is a government funded organisation the Technical Standards Enterprise System (TSES) applications (e.g. CARS, Standards for Highways website) and associated outputs, including DMRB and MCHW documents, needs to be accessible. The following MDD rules on style and format support accessibility:

- clause text as clear/plain English as possible (MDD Part 3)
- italics not used (see Emphasis below)
- block capitals not used (see Capital letters below)
- figures readable and understandable in greyscale; when colours are needed, they are presented with both the colour and the textual description of the colour (see Use of colour below)
- text in figures with the right font size
- alternative text provided to all figures either with a description of the figure or offering support from an Overseeing Organisation's specialist (see Alternative text below.

9.3 Text and figures shall be presented in such a way that the content is clearly readable.

Text style

Size

9.4 Text shall be in Liberation Sans font for PDF versions and a Sans Serif font for HTML versions.

9.5 The font sizes shall be chosen for comprehension and shall be in accordance with GG 184, with a minimum font size of 12 points in the final document.

Capital letters

9.6 Capital letters shall be used for the following:

1. for proper nouns (for example, Scotland);
2. for abbreviations (for example, ULS, AIP, TAA);
3. to refer to a specific numbered section, figure, equation or table (for example, Section 3, Table 3.1, etc);
4. to refer to the Overseeing Organisation, as defined in GG 101;
5. to refer to a role that is defined to have a specific meaning for the document (e.g. Geotechnical Advisor as defined in CD 622);
6. to refer to the title of a specific document that is defined in the DMRB (e.g. Approval in Principle defined in BD 2).

9.6.1 Capitalisation should not be used for common terms, even if these are defined in Terms and definitions (e.g. assessment, half-joint, motorway).

NOTE: Refer also to ‘Defined terms’ below.

9.7 Titles, headings, subheadings and captions should use sentence case (e.g. Assessment of steel highway bridges).

NOTE: For the formatting of lists, refer to “Lists”.

Emphasis

9.8 Emphasis to requirements shall be applied by appropriate use of verb forms.

9.9 Bold, italics, underlining and black boxes shall not be used.

Abbreviations

9.10 Abbreviations and acronyms shall be avoided.

9.11 If a term only occurs a few times in the text, it shall be spelt it out in full on each occasion.

9.12 Where abbreviations have to be used (e.g. where a lengthy term occurs repeatedly throughout a document), they shall be explained the first time they are encountered.

9.13 Acronyms that are habitually used only in their abbreviated form e.g. http, DVD, CD, EU, shall be used as such to avoid confusing users if written in full.

9.14 The expanded definitions of abbreviations should follow the normal rules for capitalisation (see “Capital letters”).

9.15 In the table of abbreviations, the first word of each expanded term shall start with a capital letter, for example: ULS - Ultimate limit state.

Figures

General

9.16 Where figures are introduced, they shall complement and be consistent with the main text to aid in the comprehension of requirements or guidance.

NOTE The term “figures” comprises charts, flowcharts, illustrative layout, plan and section views, photographs.

9.16.1 Information contained in the main text may be duplicated on a figure where it will assist in comprehension of the requirement or advice.

9.17 Wherever possible, requirements and/or advice shall not be conveyed purely through figures.

NOTE 1 In principles rules are to be conveyed in the main text as it helps with clarity and supports machine readability.

NOTE 2 There can be cases where figures are most suitable to convey rules including: graphs, where the value to be extracted is given by the combination of multiple variables; flowcharts, where the boxes identify the activities to be undertaken and their relationships; indicative layouts, where dimensions are identified.

9.18 If a rule is conveyed through a figure, it shall be unambiguous with a clear distinction between mandatory and advisory components as relevant.

9.19 Figures shall be consistent with the requirements of GG 184 Specification for the use of Computer Aided Design and the guidance given in BS 8888 Technical product documentation and specification, unless otherwise stated in the MDD.

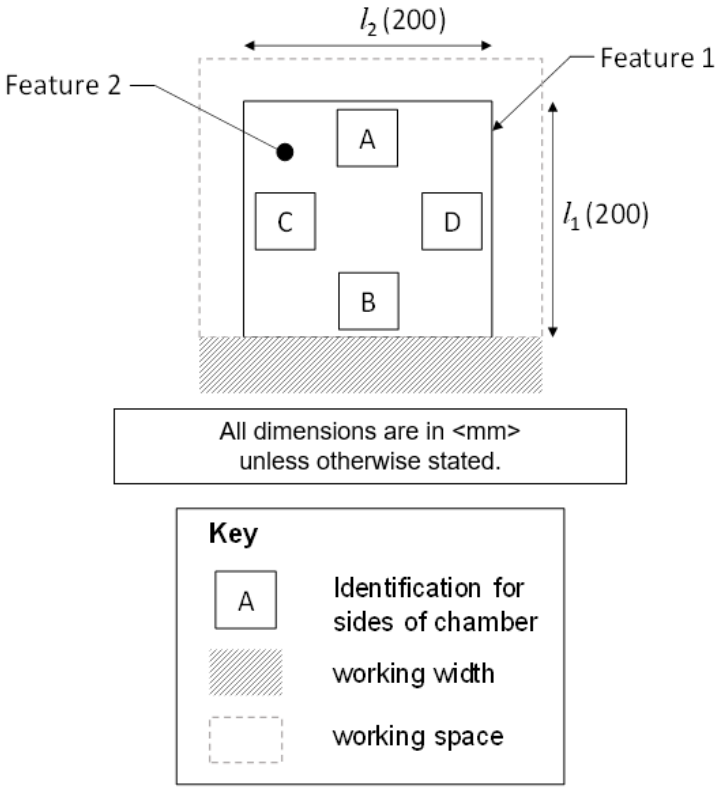
Coverage: general rules

9.20 Figures shall only contain (see Figure 10 for an example):

a) graphical representation;
b) non-graphical content covering (where needed): features; dimensions; a note to the figure about the dimensions; and the key.

NOTE For further details on “features” see below.

Figure 10. Example of a figure



9.20.1 Any object with multiple sections, elevation or plan that would be easier to understand with a 3D model may have a 3D model created with 2D views (typically plans and sections).

NOTE 1 3D models help visualize space requirements as well as support interference checks, whilst improving figure efficiency and accuracy.

NOTE 2 BS 8888 provides guidance of application of lines and views for use in drawings.

9.21 The rules for presentation of line types, line weights and colours, hatching and shading given in section 4 to GG 184 shall be followed.

Coverage: features

9.22 The terms used to indicate the features that are provided on figures shall be consistent with the associated DMRB and SHW terminology.

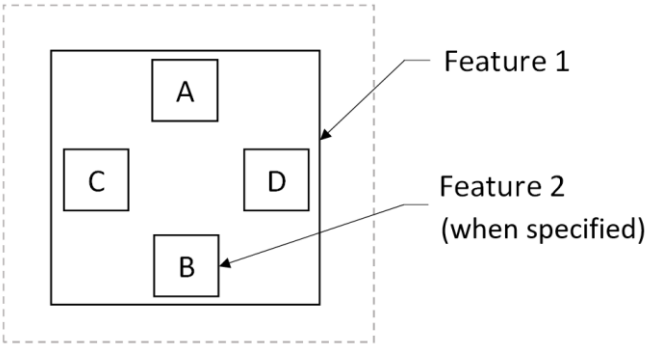
NOTE 1 A feature is any object, element, material etc. incorporated into the design, specification, or contract.

NOTE 2 This approach supports the “mapping to objects” principle and helps establish a direct link between DMRB and SHW content and relevant figures.

9.23 For features that are not always in place or can be required in specific circumstances, the term shall be followed by “when specified”, see **Error! R eference source not found.**.

9.24 In such a case, SHW figures shall also be accompanied by an explicit statement in the specifier’s instructions that tells the compiler when the “feature” is to be specified.

Figure 11. Presentation of features not always in place



9.25 Guidance in BS 8888 and rules for presentation of text given in section 4 of GG 184 shall be followed unless otherwise specified in this section.

9.26 Sentence case shall be used for text on figures (see **Error! Reference source n ot found.** for an example).

NOTE This requirement does not follow the recommendation given in GG 184, which recommend the use of upper case for text in CAD drawings.

Coverage: dimensions

9.27 All dimensions shall be identifiable using appropriate symbols following ISO 80000-3 rules, unless other symbols are preferable when covering specific dimensions relevant to a document..

NOTE 1 This helps identification of dimensions for departure purposes and support future parametrisation.

NOTE 2 The main symbols used in drawings from ISO 80000-3 are given in Table 12.

Table 12 **Main symbols used in drawings from ISO 80000-3**

Name	**Symbols**
Diameter	*d, D*
Height	*h, H*
Length	*l, L*
Radial distance	r_Q, ρ
Radius	*r, R*
Radius of curvature	ρ
Thickness	*d,* δ
Nominal diameter	*DN*
Nominal length	*LN*

9.28 Various dimensions related to the same symbol, for example *l*, shall be differentiated with descriptor indices, e.g. l_1, l_2, l_3, and not, for instance, A, B, C, etc. or a, b, c, etc.

9.29 The rules for dimensions given in section 4 to GG 184 shall be followed.

9.30 All dimensions shall be provided in the International System of Units (SI) or commonly accepted derivatives such as mm (millimetres).

9.31 The following statement shall be introduced below the figure and above the key (where it exists) and the caption (see Figure 10):

*All dimensions are in <**> unless stated otherwise.*

NOTE The ** is to be replaced with the appropriate International System of Units (SI) or commonly accepted derivatives such as mm (millimetres).

9.32 Dimensions shall be presented in figures following the rules given in Table 13 and shown in Figure 12.

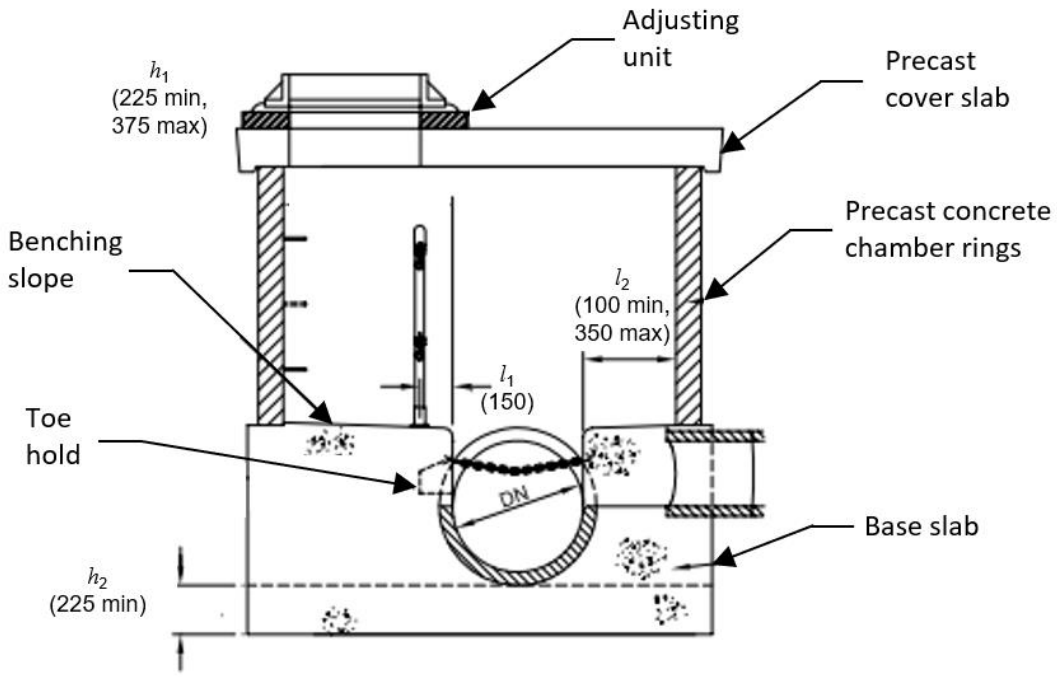
9.33 Variable dimensions shall be presented as minimum values, maximum values, or ranges of values (i.e. minimum and maximum values).

Table 13 **Presentation of dimensions on drawings**

Category	**Conditions**	**Example of presentation of dimensions on figures – see also Figure 12**
Fixed dimension	Symbol followed by number in brackets	l_1 (150)

Variable dimension – minimum value, no maximum	Symbol followed by number and ‘min’ in brackets	h_2 (225 min)
Variable dimension – maximum value, no minimum	Symbol followed by number and ‘max’ in brackets	h_* (300 max)
Variable dimension – range of values	Symbol followed by number, ‘min’, ‘;’, number, ‘max’ in brackets	h_1 (225 min, 375 max)

Figure 12. Presentation of fixed and variable dimensions



9.34 Units shall be presented consistently within rules in the main text and figures.

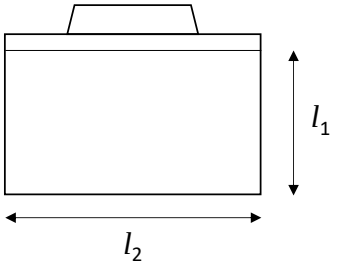
9.35 For DMRB figures, if a description of a dimension is needed, this shall be provided in the requirement’s notes to the figure (Figure 13).

Figure 13. Description to dimensions

3.2 Type x chambers shall be in accordance with the layout shown in Figure 3.2.

NOTE 1 l_1 represents the distance from <**> to <***>.

NOTE 2 l_2 is measured from <**> to <***>.



Coverage: drawing scale

9.36 Figures included in the DMRB or the SHW shall not be scaled from.

NOTE 1 The publishing of the documents to the website cannot guarantee the scale of the figure will be maintained.

NOTE 2 When physically printed, the scale of the figure cannot be guaranteed.

Coverage: key to figures

9.37 The key to a figure shall only contain patterns and any graphical symbol used in the figure that needs explanation (see Figure 10).

9.38 The key to a figure shall be provided before the figure caption.

Coverage: specific rules for figures in the SHW

9.39 Figures in the SHW shall cover content that does not need design input, but is expected to be used by constructors without any change.

NOTE: The figures in the SHW will become part of the contract and will be contract figures.

Text in figures and in technical drawings

9.40 All text contained in figures shall be capable of being enlarged without distortion for assistive technology reading.

9.41 The general rules for Text style given above shall be followed.

Location

9.42 Figures shall be included near to the text from which they are referenced.

9.42.1 Where figures interrupt the reading of the document (apart from SHW figures), they may be placed in an appendix.

NOTE SHW figures cannot be placed in an appendix, only in the main text.

9.43 Figures placed in appendices shall be cross referenced within the main text.

Presentation

9.44 Figures shall be presented in A4, either portrait or landscape.

Quality

9.45 All figures shall be clear and comprehensible when viewed in the final document.

9.46 The minimum resolution of all types of figures shall be 300 dpi.

9.46.1 The amount of white space around a figure should be kept to a minimum, as CARS treats the whole image (including white spaces) as the image when setting the layout.

Document control and submission for archiving purposes

9.47 The file format of figures for the purposes of archiving shall be as indicated in GG 184 appendix E unless specifically required in this section.

9.48 Open formats as identified in GG 184 shall be used for figures in the DMRB and SHW.

NOTE Figures for the DMRB and SHW can be shared on the website for use by the supply chain to create works graphical information.

Document control and submission for archiving purposes

9.49 The original file format for figures drafted by National Highways shall be stored in the governance folders in SharePoint.

9.49.1 The naming convention should be the document code, figure number, figure title and month/date of creation.

NOTE 1 Providing the original figures separately ensures that they are available for document control purposes and future iterations of the document.

NOTE 2 DMRB figures and drawings will be stored in the DMRB folders here: https://highways.sharepoint.com/sites/UpdateoftheMCHWtrainingmaterials/DMRB/Forms/AllItems.aspx

NOTE 3 MCHW figures and drawings will be stored in the MCHW folders here: https://highways.sharepoint.com/sites/UpdateoftheMCHWtrainingmaterials/MCHW/Forms/AllItems.aspx

Use of colour

9.50 Figures shall be readable and understandable in greyscale.

NOTE The use of colour can inhibit readability when using black and white printers or to colour blind.

9.51 Colour shall not be used to differentiate between data sets or convey specific information in technical drawings and figures for equality, diversity, and inclusion reasons.

9.51.1 Patterns should be used rather than colours to differentiate between data sets.

NOTE The following link is a free colour blind simulator that shows what someone with colour blindness would see: http://colororacle.org.

Numbering system

9.52 The reference number for a figure shall be shown directly above them.

9.53 Figures shall be numbered by reference to the requirement or advice they support and shall be followed by a caption.

NOTE 1 An example of figure associated to requirement provided in 3.5 is: Figure 3.5

NOTE 2 An example of figure associated to advice provided in 4.6.2 is: Figure 4.6.2

9.54 Where a figure is attached to a NOTE, the reference shall be made to the number of the related requirement or advice followed by "N".

NOTE Examples of figures attached to notes are: Figure 3.5N; Figure 8.3.1N2 (where related to NOTE 2); etc.

9.55 Where there are multiple figures associated to a requirement or advice, the number shall be followed by sequential letters.

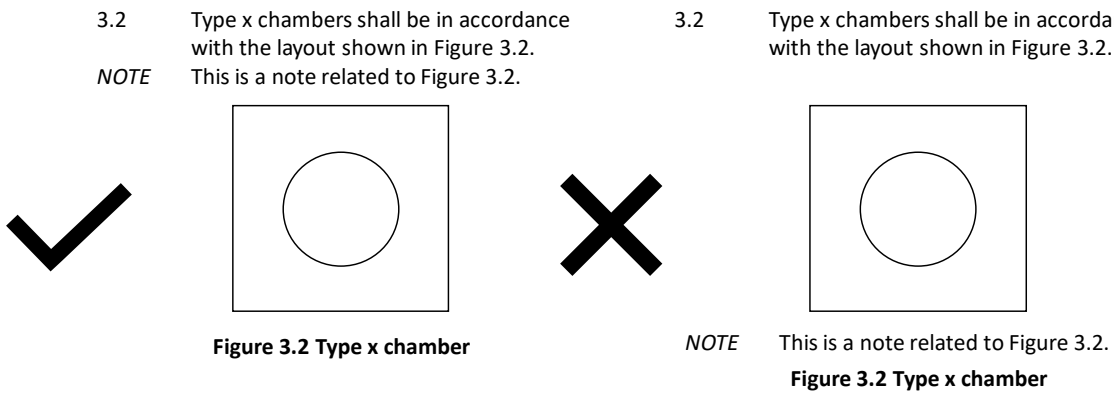
NOTE An example of multiple figures associated to a requirement provided in 3.5 is: Figure 3.5a; Figure 3.5b; etc.

Notes to figures

9.56 Notes to supplement DMRB figures shall be included in the main document as notes below the clause that refers to the figure (see Figure 14).

NOTE Notes are for example references made to other drawings, standards, or any statement of fact not classified as requirement or advice.

Figure 14. : **Correct and wrong presentation of notes**



Specific requirements for graphs

9.57 Graph axes shall show the axis title or symbol, scale and units.

9.58 Axis titles shall be in sentence case, bold text and rotated parallel to the axis.

9.59 A graph key shall be used where there is more than one variable.

9.59.1 The graph key may be either placed within the area of the graph or beneath the graph.

9.59.2 Backgrounds should be white or clear.

9.59.3 The use of secondary axes should be avoided.

Specific requirements for flowcharts

9.60 The text contained in flowcharts shall be identifiable using a reference number.

9.61 The shapes and meanings of flowcharts shall be in accordance with ISO 5807.

NOTE 1 Flowcharts are typically used to make the flow of information, decisions and outputs easier to understand and enhance navigation.

NOTE 2 Basic symbols are presented in Table 14:

Table 14 **Basic symbols for flowcharts**

Symbol	Name	Function
	Start / end	An oval represents a start or an end point
	Arrow	A line is a connector that shows relationships between the representative shapes
	Input / output	A parallelogram represents input or output
	Process	A rectangle represents a process
	Decision	A diamond indicates a decision

9.62 Routes after a Decision diamond (see Table 14) shall be clearly displayed using e.g. yes-no arrows.

9.62.1 Flowcharts may be used to make the flow of information, decisions and outputs easier to understand and enhance navigation.

9.63 Flowcharts shall flow from top to bottom and left to right.

9.64 Shape background fills shall be white or clear.

Specific requirements for sketches

9.65 Sketches shall be presented in high contrast, with text, lines and symbols in accordance with the guidance in BS 8888 and requirements of GG 184.

9.66 Shading of elements shall be kept to a minimum.

9.67 Background fill shall be white or clear.

Specific requirements for photographs

9.68 All documents shall be issued under the open government licence.

9.69 The copyright for all photographs that are intended to be published shall be owned by National Highways.

9.70 If National Highways does not own the copyright then written permission from the copyright holder shall be obtained on the understanding that the photograph will be released under the open government licence.

NOTE Using images without permission will likely result in expensive copyright claims against National Highways and the reissue of the document without the offending image(s).

9.70.1 Photographs represent a large data burden for a document, and the use of photographs should be assessed to establish the degree of file bloat that the photograph(s) cause.

Alternative text

9.71 Alternative text (also called alt-text) shall be added to figures following the rules detailed below.

NOTE 1 Alt-text is essential to support accessibility of figures contained in DMRB and MCHW documents. People with low vision cannot see an image well enough to understand what it is. Alt-text can also help those who are neurodivergent, e.g. due to dyslexia, dyspraxia, ADHD, autism.

NOTE 2 Alternative text is different from a figure caption. The aim is not to explain the image itself, instead what the information is trying to convey.

[DRAFTING NOTE: Considering the distinction between (i) informative-only figures and (ii) more complex figures like those defining requirements not covered in text, (for example graphs, flowcharts and illustrative layouts), in general it can be difficult to comprehensively provide all information needed to use a complex figure in the alt-text. An incremental approach will be taken to make figures contained in RADs accessible.

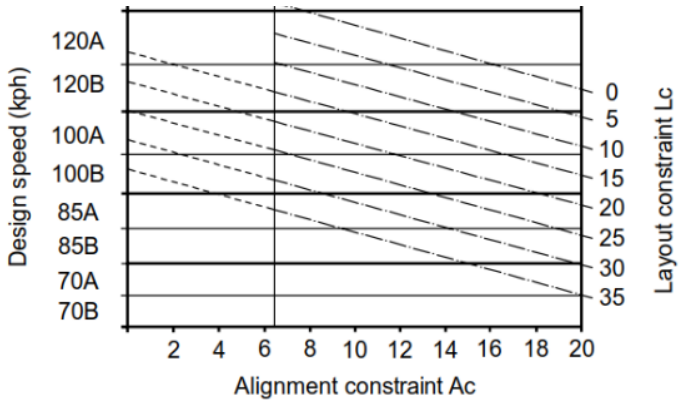
In the short term, for complex figures a short description shall be included followed by a standard phrase to contact a relevant SES specialist to ask any queries. In the medium term, figures will be explored in conjunction with developments on API work. Additional hidden textual requirements may need to be provided for complex figures to support both alt-text readers and machine readability.]

9.72 Alt-text shall be short (fewer than 125 characters) and descriptive.

NOTE 1 Screen-reading tools typically stop reading alt-text over 125 characters.

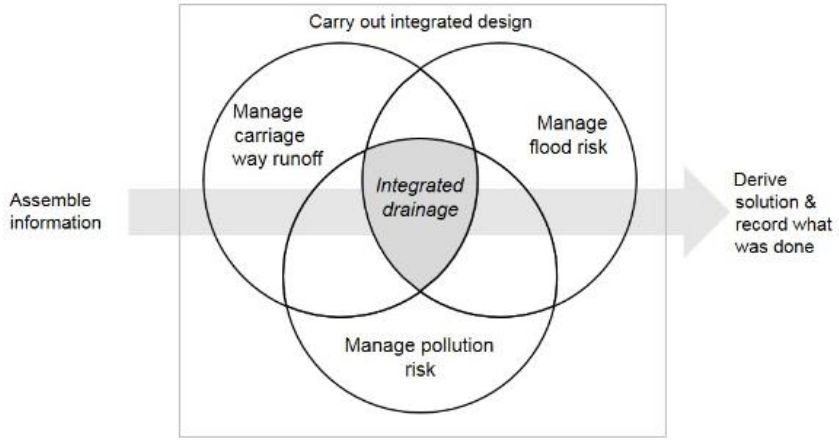
NOTE 2 A typical pattern for alt-text relevant to a graph: <Information provided> <scope> based on <variables>. Example related to Figure 15: <Design speed bands> <for rural roads> based on <alignment and layout constraints>.

Figure 15. Example of graph



NOTE 3 A typical pattern for alt-text relevant to a diagram: <Type of chart> showing <information provided>. Example related to Figure 16: <Venn diagram> showing < three overlapping areas to be managed in order to deliver integrated drainage, i.e. carriageway runoff; flood risk; pollution risk>.

Figure 16. Example of diagram



9.73 For figures that are informative only (decorative or fully described by text nearby), specific alt-text shall not be included.

9.74 For all figures other than those informative only, a short alternative text shall be included using CARS functionality followed by the standard phrase:

"Please use the standards feedback process for more information on the content of this figure".

9.75 For figures other than those informative only, technical authors shall assess whether the information provided in the figure needs to be provided in the main text too.

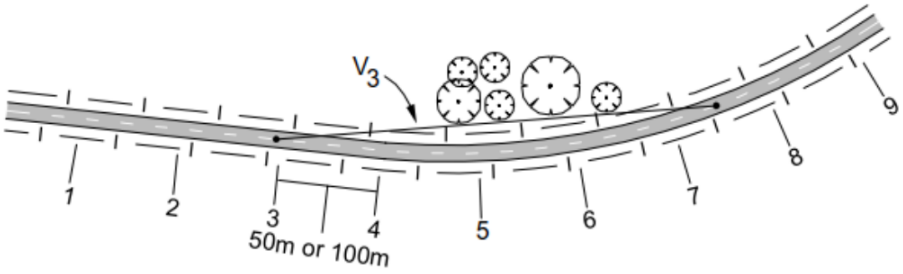
NOTE As an example, the illustrative layout in Figure 17 covers a variety of aspects (i.e. nine areas on the road, a variable dimension for such areas, a non-identified distance V3), which ought to be explained to all users in the main text, not just those with low visibility. Once this issue is addressed, a potential alt-text is:

"Curved road showing a sight distance identified at a random location. Please use the standard feedback process for more information on the content of this figure."

Figure 17. Example of illustrative layout

2.8 Sight distance shall be the true sight distance available at any location, including any sight distance available across verges and outside of the highway boundary or across embankment slopes or adjoining land, as shown in Figure 2.8.

Figure 2.8 Measurement of harmonic mean visibility



Footnotes

9.76 Footnotes shall not be used.

Lists

9.77 Lists shall be provided to display sequences of options or information in a way that aids understanding and ease of reference.

9.78 Lists shall be numbered.

NOTE A numbered list does not imply a hierarchy in the items provided, but it is helpful to identify specific items in a list.

Multilevel lists

9.79 In a list of items, each item shall be preceded by an Arabic number followed by a single closing parenthesis, e.g. "1), 2), 3)".

9.80 If further subdivision of an item is necessary, each subdivided item shall be preceded by a lower-case letter followed by a single closing parenthesis, e.g. "a), b), c)".

List format

9.81 Lists shall be introduced by a statement that makes it clear whether the items in the list are alternative items or items to be simultaneously satisfied, followed by a colon.

9.81.1 The use of terms such as "all of the following:", "any of the following:" "none of the following:" may be used to introduce the list and to improve clarity.

9.82 Each list item shall begin with a lower-case letter and end with a semicolon, apart from the last item, which shall end with a full-stop.

9.82.1 The word “and,” or “or,” may be included after the penultimate item in the list to further improve the clarity.

NOTE Example of a list:

Technical authors shall apply all of the following:

1) the requirements on the drafting process provided in Section X;

2) the rules for selecting the appropriate document type as illustrated in Section Y; and,

3) the appropriate document layout as illustrated in Section Z.

9.82.2 Lists that comprise separate, grammatically-complete statements should be reformatted as distinct clauses.

NOTE Example of reformatting of grammatically complete statements:

INCORRECT TEXT: The following general principles shall apply.

1) For a document that is withdrawn and superseded by another document of the same type, a different type within the same series or a different series, the withdrawal is implicit in the CHE sign off at publication stage.

2) For documents that are not being replaced as above, a note in the Volume Contents Pages and Alpha-Numeric Index (Volume 0 Part 1) is appropriate to show that the document has been withdrawn, whether there is a new document that supersedes it and whether that replacement is accepted by all the other Overseeing Organisations.

CORRECT TEXT:

1.1 For a document that is withdrawn and superseded by another document of the same type, the withdrawal shall be implicit in the CHE sign off at publication stage.

1.2 For documents that are not being replaced by another document of the same type, a note in the Volume Contents Pages and Alpha-Numeric Index (Volume 0 Part 1) shall be used to show that the document has been withdrawn.

Numbers, numerical values and equations

Numbers and numerical values

9.83 Unless otherwise required by the common technical language of the EU or the relevant EN, ISO 80000-2 shall apply.

9.84 Non-decimal numbers shall be expressed using commas to distinguish, thousands.

9.85 Decimal numbers shall be expressed to decimal places which provide a sufficient level of precision for the technical parameter under consideration.

9.86 Decimal numbers less than one shall be preceded by a zero.

NOTE Example of a decimal number less than one: 0.001.

9.87 The International System of Units (SI) as set out in ISO 80000 and IEC 80000 shall be used and the units in which any value is expressed shall be indicated.

9.88 Units shall be presented consistently throughout the document and not used interchangeably, i.e., combinations of 10 m and 10 metres.

9.89 Mathematical formulae shall express relationship between physical properties in a clear and concise way.

9.89.1 Variables and constants should be explained in connection with the formulae, unless they appear in the section 'Symbols'.

Numbering system of equations

9.90 Formulae shall be introduced by the word 'Equation' and shall be numbered by reference to the requirement or advice they support.

NOTE An example of equation associated to a requirement provided in 3.5 is: Equation 3.5
An example of equation associated to advice provided in 4.6.2 is: Equation 4.6.2

9.91 Where there are multiple formulae associated to a requirement or advice, the number shall be followed by sequential letters.

NOTE An example of multiple equations associated to a requirement provided in 3.5 is: Equation 3.5a; Equation 3.5b; etc.
An example of multiple equations associated to advice provided in 4.6.2 is: Equation 4.6.2a; Equation 4.6.2b; etc.

Caption to equations

9.92 Captions shall be introduced for each numbered equation.

NOTE Captions to equations are introduced to store relevant metadata into the National Highways' Technical Standards Enterprise System.

Symbols underneath equations

9.93 When introducing symbols after equations, the following structure shall be followed.

2.1 The energy shall be calculated using Equation 2.1:

Equation 2.1: Energy as a function of mass

$$E = mc^2$$

where:	
E	*is the energy*
m	*is the mass*
c	*is the speed of light in a vacuum*

References

Overview

9.94 The terms normative reference and informative reference shall be used for reference sections.

9.95 The terms ‘Bibliography’, ‘Further Reading’ shall not be used for reference sections.

9.96 Reference sections shall list all documents that have to be referred to for the correct application of the document in either the normative or informative references sections depending on the status of the reference document.

9.97 The referencing of a document in the body of a RAD shall be consistent with its listing as normative or informative in the references list.

9.98 Technical authors shall clarify in the main text of the document how the referenced documents should be treated by the user by using the appropriate verb forms.

NOTE Detailed guidance on references can be found in section 5 of MDD, part 3 Drafting rules.

Normative references

9.99 Normative references shall be given where necessary to aid the user of the document being drafted.

9.100 Normative references shall not include the following:

1. referenced documents which are only cited in an informative manner;
2. referenced documents which have served as knowledge resources in the preparation of the document but are not indispensable for the application of the document.

NOTE Providing normative references only where necessary to aid the user of the document reduces the volume of text that has to be submitted with the document when it will be notified to the European Commission (EC).

Informative references

9.101 The informative status of informative reference shall be made clear by the way in which they are referred to in the text.

NOTE Informative references provide additional information intended to assist the understanding or use of the RAD.

9.102 Where informative reference to websites is needed, this shall be limited to websites of reputable organisations that are unlikely to change or disappear.

Symbols

9.103 Unless there is a need to list symbols in a specific order to reflect technical criteria, all symbols should be listed in alphabetical order in the following sequence:

1. upper case Latin letter followed by lower case Latin letter (A, a, B, b, etc.);

2. letters without indices preceding letters with indices, and with letter indices preceding numerical ones (B, b, C, Cn, C3, d, dext, dint, d1, etc.);
3. Greek letters following Latin letters (Z, z, A, α, B, β, …, Λ, λ, etc.);
4. any other special symbols.

9.104 Subscripts to symbols shall not be in italic.

Tables

General principles

9.105 Tables shall be used to make information easier to understand.

Location

9.106 Tables shall be included near to the text from which they are referenced.

9.106.1 Where tables interrupt the reading of the document, they should be placed in an appendix.

9.107 Technical authors shall ensure that tables placed in appendices are cross referenced within the main text where needed.

Numbering system

9.108 The number of tables shall be included immediately above them.

9.109 Tables shall be numbered by reference to the requirement or advice they support and shall be followed by a caption.

NOTE An example of table associated to a requirement provided in 3.5 is: Table 3.5
An example of table associated to advice provided in 4.6.2 is: Table 4.6.2

9.110 Where a table is attached to a NOTE, the reference shall be made to the number of the related requirement or advice followed by “N”.

9.111 Where there are multiple tables associated to a requirement or advice, the number shall be followed by sequential letters.

NOTE An example of multiple tables associated to a requirement provided in 3.5 is: Table 3.5a; Table 3.5b; etc.

9.112 Where tables carry over more than one page, the number and title shall be repeated at the head of page, followed by “continued”.

Notes to tables

9.113 The use of notes to supplement tables shall be kept to a minimum.

9.113.1 Notes to supplement tables should be used where including the information within the table or figure is impractical.

9.114 Notes to tables shall be located immediately below the table concerned, preceded by the word “Note”.

NOTE Notes to tables are treated independently from notes integrated in the main text, which instead are indicated with capital letters (NOTE).

9.115 Where several notes occur in the same table, they shall be numbered consecutively i.e. Note 1, Note 2 etc., with the use of superscript reference numbers to identify where in the table the notes apply.

9.116 Where general notes to tables apply, it shall be made clear that they are general notes.

9.117 Notes to tables shall not contain any requirements other than those necessary to interpret the table.

Terms and definitions

Use of terms

9.118 Regardless the type of document, the same term shall be used throughout each document or series of associated documents to designate a given concept.

9.118.1 The use of an alternative term (synonym) for a concept already defined should be avoided and, as far as possible, only one meaning should be attributed to each term chosen.

Defined terms

9.119 Documents shall limit the number of defined terms and each one used shall be defined in the document.

NOTE Defined contractual terms are words that have a specific meaning within the document and were typically identified by the use of capital initials.

9.120 Legislatively defined terms shall be used correctly.

9.121 Terms which conflict with defined terms already used in the Overseeing Organisation's contracts shall be avoided.

9.122 To comply with EU product legislation which aims to harmonise technical language throughout the EU, requirements shall be drafted applying the terms in EU product legislation and applying the terms used in the following types of standard as appropriate:

1. European Standards (ENs).
2. British Standards adopted as ENs.
3. Harmonised Standards (hENs).

9.123 Words and phrases having particular meanings in relation to EU legislation shall be used only with the meaning described in the legislation to avoid confusion and the potential for misunderstanding that could lead to documents not being used in the manner intended.

NOTE For example, because "standards" is a defined term in EU legislation, National Highways has moved away from the convention of referring to its technical documents as "Standards".

Drafting definitions

9.124 Before a definition is established, technical authors shall ascertain whether the definition exists in another document that is available to users and therefore likely to be already known and understood and which can be reproduced.

9.125 Where a defined term does exist elsewhere, reference shall be made to the source document from which it is reproduced.

9.126 Technical authors shall not assume that the definition they provide will take precedence, and shall not include definitions that conflict with:

1. Legislation.
2. Overseeing Organisations' forms of contract.
3. National, European and International standards.
4. Other Overseeing Organisation documents in the public domain.

10. Style of DMRB clauses

General principles

10.1 Technical authors shall develop a set of core requirements and supporting advice drafted according to the rules given in this section and in Section 9.

10.2 DMRB documents shall be drafted using the Collaborative Authoring and Review System (CARS), which supports the clause numbering system presented in this section.

Clause numbering system

10.3 The numbering system presented in Table 15 shall be adopted to make a clear distinction between requirements and advice.

Table 15 **Clause numbering system for DMRB documents**

Format	Number format	Example
X. Section	1-level number	**6. Key Stage 1: Initial review of project**
Sub-heading 1	No number	**Statement of Intent**
Sub-heading 2	No number	**General features**
X.X Requirement	2-level number	6.1 The format of the Statement of Intent given in Appendix B shall be used.
NOTE Advice (factual statement)	No number but associated with requirement	NOTE The Statement of Intent is typically a brief document and for many projects takes the form of a letter.
X.X.X Advice (recommended or permissible method for fulfilling requirement)	3-level number associated with requirement	6.1.1 The Statement of Intent should form part of any Commissioning Report.
NOTE Advice (factual statement)	No number but associated with advice	NOTE [*******]

Sections

10.4 Sections shall be the highest level of subdivision and shall have a numbered heading, i.e. 1-level number.

10.5 Section 1 of DMRB documents shall be called ‘Scope’; all the subsequent sections shall group related material under generic headings as appropriate to the topic presented, and shall be numbered sequentially (i.e. Section 2, 3, etc.).

Sub-headings

10.6 Sub-headings shall be provided to group linked requirements under a specific section and shall not be numbered.

10.6.1 Two levels of sub-headings may be introduced (see Table 15).

Requirements

10.7 Requirements shall be numbered sequentially with a primary 2-level system of numbering, i.e. 5.2, 7.3, etc.

10.8 Technical authors shall apply the categories of requirements indicated in Table 16 and related verb forms.

Table 16 **Categories of requirements and related verbal forms**

Sub-category	Source	Status	Verb form
Legislative requirement Legislative/statutory requirements set out in regulations at international/ European/national level.	External provision not developed by the Overseeing Organisations.	To be met in all cases – departures not permitted	Must
Performance-based requirement These should be written as general, high level requirements: e.g. *the design of support shall prevent*…, *the gantry shall be designed such that*…, *the wall shall be constructed such that*…, etc.	Requirement of the Overseeing Organisations.	Subject to departure	Shall
Method requirement Specific (method) requirement: e.g. *the design of the support shall be undertaken using*…, etc.	Requirement of the Overseeing Organisations.	Subject to departure	Shall

10.9 A clear distinction shall be made between legislative requirements and Overseeing Organisations' requirements by using appropriate verbal forms and providing them into separate clauses.

NOTE Making a clear distinction between legislative requirements and Overseeing Organisations' requirements helps the reader identify requirements where departure is permitted and those where it is not.

10.10 Deviation to the requirements of the Overseeing Organisation shall be permitted through the departures process.

NOTE Deviations are not allowed to statutory requirements.

10.11 Where the technical author wants to clarify that a departure to a requirement of the Overseeing Organisation is not allowed, that shall be stated into a note as follows: "NOTE Departure from [Requirement] is not permitted as [reason]".

NOTE Stating when a departure is not permitted helps reduce unacceptable departures. This can be relevant for example when mentioning a standard (or method/approach) which is referred by a

regulation in an "exclusive" way, i.e. the only way to meet its requirements is to comply with that specific standard (or method/approach). In such a case, the technical author can require the use of that standard (or method/approach) and clarify that departures are not accepted. It can also be useful to state the reason for not accepting a departure as it helps readers in understanding the background and take more informed decisions.

10.12 Where a legislative requirement is introduced, it shall be accompanied by the related legislative reference.

NOTE Refer to Section 9 for specific instructions on how to make reference to legislation.

10.13 Incorrect use of verb forms for requirements shall be avoided.

NOTE Examples of incorrect use of verb forms for requirements include:

1. "Must" as an alternative to "shall". This will avoid confusion between external statutory obligations and specific requirements of the Overseeing Organisation.
2. "Will" as an alternative to "shall"
3. "May not" instead of "shall not" as "may" is the verbal form for advice
4. It is required / it requires
5. To be used / applied / considered / etc.

Advice

10.14 Advice shall be associated to a specific requirement.

10.15 Advice shall be numbered sequentially with a secondary 3-level system of numbering, e.g. 5.2.1, 7.3.1, etc.

10.16 Technical authors shall apply the categories of advice indicated in Table 17 and related verb forms.

Table 17 **Categories of advice and related verb forms**

Sub-category	Verb form
Recommendation Recommendation clauses provide advice for how a requirement should be satisfied. A recommendation indicates that, among several different options, one is recommended as particularly suitable without mentioning or excluding others. A recommendation is different from a requirement insofar as it offers the possibility to do something different from what has been recommended without asking for a departure, provided that an appropriate justification is recorded. GG 101 provides the requirements for design justification.	Should
Permissible option or approach Permission clauses provide clarity that specific options are permitted, when satisfying a requirement.	May

Sub-category	Verb form
Clarification of a concept or statement of fact This is presented as either a NOTE or commentary in an annex.	Can Verb expressed in the present tense

10.16.1 In addition to giving recommendation clauses (which, according to GG 101 would require a justification to be recorded if the recommendation is not applied), documents may give more specific requirements for the recording or processing of justifications.

NOTE: Specifying additional requirements for the recording of justifications can provide the Overseeing Organisation with more control over the way that selected aspects are carried out. An example would be: "Where method X is not used, the proposed method shall be subject to the Technical Approval process in accordance with BD 2 and recorded in the AIP document for the design." This type of requirement can enable key design decisions to be identified and the risks controlled using a process that is appropriate for the specific discipline.

10.17 Incorrect use of verb forms for advice shall be avoided.

NOTE Examples of incorrect use of verb forms for advice include:

3. *"Could" or "can" as an alternative to "may";*
4. *"Should" or "may" when clarifying concepts or providing statements of fact;*
5. *It is strongly recommended that / It is recommended.*

Specific information on notes and examples

10.18 Notes shall be presented as short sentences, which provide information assisting users in understanding and contextualising a specific requirement.

10.18.1 Longer passages of supplementary information should be placed in an appendix.

10.19 Notes shall not be used to convey requirements, recommendations and permissible options or approaches, and shall not contain the verb forms must, shall, should or may.

10.20 A note shall be preceded by the word "NOTE" in upper case.

10.21 Notes shall be placed immediately after the requirement or advice which they refer to and do not require numbering, unless more than one applies to the same clause. In such a case, the numbering shall be NOTE 1, NOTE 2, etc.

10.22 When provided in the main text, examples shall be presented as notes, thus preceded by the word "NOTE" in upper case.

10.22.1 Examples may be provided in the main text or in an appendix depending on the length.

11. Style of MCHW clauses: General

General principles

11.1 MCHW clauses shall be developed according to the general rules given in Section 9 for all basic elements, and the specific rules given in this section.

11.2 MCHW documents shall be drafted using the Collaborative Authoring and Review System (CARS).

Specific rules on figures

11.3 Figures shall be in accordance with the rules in Section 9.

Specific rules on references

11.4 All reference documents shall be checked for currency and applicability.

11.5 The words used for individual internal and external references shall be consistent across the SHW documents and the document sections.

11.6 Where compliance with a product standard is required, compliance with the testing standard shall not be specified.

NOTE The testing standards are usually normative references in the product standard, therefore there is no need to specify both, only the product standard.

Specific rules on terms and definitions

[DRAFTING NOTE: A list of high level terms and definitions to be used will be developed and shared for consistency and clarity].

11.7 Terms used shall be consistent with BS 6100 and ISO 80000 (all parts).

NOTE 1 BS 6100 is a dictionary of terms made up of several documents. Two of the historical documents in BS 6100 have been replaced by BS ISO 6707-1 and BS ISO 6707-2.

NOTE 2 In general there is not a need to define terms to be used across a document in the SHW. Elements (objects and materials) are generally identified by the requirements associated with them.

11.8 Where there is a need for the use of a defined term which applies across the SHW document set, TSG shall be contacted.

11.9 Requirements shall not have the sole purpose of providing the definition of a term.

NOTE For example the following requirement is not permitted: "The back of the wall shall be defined as the face of the wall furthest from the carriageway".

11.9.1 Where there is a need to define a term to clarify a particular requirement, the definition should be written as part of the requirement.

NOTE For example a requirement could be written as "The back of the wall shall be 100mm from the drainage layer, where the back of the wall is the face of the wall furthest from the carriageway."

Clause numbering system for SHW documents

11.10 The numbering system presented in Figure 18 shall be used to present content in SHW documents.

Figure 18. Numbering system for SHW documents

Format	Example	Number Format
X Section	6 Vehicle Restraint Systems	1-level number
Sub-heading	**Testing**	No number
Sub-heading 2	**Testing of finishes**	No number
X.X Constructor Requirement	6.1 The working width class shall be as stated in the works specific inputs	2-level number

NOTE There is no 3-level number for SHW documents because there is no advice provided.

Constructor requirements

11.11 Constructor requirements shall be numbered sequentially with a two-level system of numbering, i.e. 5.2, 7.3 etc.

NOTE Refer to section 12 for more information on constructor requirements.

Clause numbering system for IfS documents

11.12 The numbering system presented in Figure 19 shall be used to present the IfS documents and make a clear distinction between specifier instructions and constructor requirements, the latter presented for information only.

Figure 19. Numbering system for IfS documents

Format	Example	Number Format
X Section	6 Vehicle Restraint Systems	1-level number
Sub-heading	**Testing**	No number
Sub-heading 2	**Testing of finishes**	No number
X.X Constructor Requirement	6.1 The working width class and impact severity level shall be as stated in the works specific inputs	2-level number
SI X.X Specifier Instruction or SI X.Xa Specifier Instruction SI X.Xb Specifier Instruction SI X.Xc Specifier Instruction	SI 6.1a Insert [W1, W2, W3 or W4] to represent the working width class. SI 6.1b Insert [A or B] to represent the impact severity level.	2-level number (plus lower-case letter where more than one instruction is associated with a constructor requirement)

11.13 The IfS document shall follow the same structure as SHW documents with the additional, specific content represented by the specifier instructions.

Specifier instructions

11.14 Each specifier instruction shall be associated with the constructor requirement that includes a reference to the works specific inputs.

11.14.1 More than one specifier instruction may be associated with a constructor requirement.

NOTE Refer to section 13 for more information on specifier instructions.

11.15 For one specifier instruction associated to a constructor requirement, the clause numbering shall be as follows: SI.<number of the associated constructor requirement>.

NOTE For example: SI.5.1, SI.6.3, etc.

11.16 For multiple specifier instructions associated to the same constructor requirement, the clause numbering as shall be as follows: SI.<number of the associated constructor requirement><a,b,etc.>.

NOTE For example: SI.5.1a, SI.5.1b, SI.5.1b, SI.6.3, etc.

Sections

11.17 Sections shall be the highest level of subdivision.

11.18 Sections shall have a numbered heading, i.e. 1-level number.

NOTE Sections set out the scope of the requirements under that section. See section 5 for more information.

Referencing between sections

11.19 References to requirements within the same document shall be via the use of the section title and the section number in the following format: <section title> (<section number>).

11.20 References to requirements in a different document within the SHW shall be via the use of section titles, the section number and the document number in the following format: <section title> (<document number>.<section number>).

11.20.1 Discussions with the authors of the referenced document should be undertaken to ensure that requirements are grouped in such a way that they can be referenced.

11.21 One of the standard formats given in Table 18 shall be used to reference between sections, where <section reference> is to include both the document number and section number if required.

Table 18 **Standard formats for referencing**

X.X	The requirements for <section title>(<section reference>) shall apply <text or blank>.

X.X	<text> shall be <section title>(<section reference>) or <section title>(<section reference>) <text or blank>.

11.21.1 The first standard format should be used where a section inherits requirements from another section, see Table 19.

Table 19 **Examples of the use of standard format for referencing**

2.3	The requirements for Road restraint systems (9) shall apply.
5.8	The requirements for Placing and compaction (CC 700.8) shall apply to the placing and compaction of bituminous mixtures.

11.21.2 The second standard format should be used where more than one option, each with its own associated requirements, is presented to the constructor.

11.21.3 The second standard format may be extended if there are more than two sections presented as options, see Table 20.

Table 20 **Example of multiple options presented through standards referencing**

5.8	Access steps shall be Paving slab access steps (5), Brick access steps (6) or Concrete access steps (7).

Sub-headings

11.22 Sub-headings shall be provided to group linked requirements under a specific section.

NOTE Sub-headings do not define the scope of requirements under that sub-section in the same way as section titles.

11.22.1 Sub-headings may be used to aid the user in navigating the document.

11.23 Sub-headings shall not be numbered.

11.23.1 Two levels of sub-headings may be introduced (see Figure 19).

12. Style of MCHW clauses: Constructor requirements in the SHW

General

Basic rules

12.1 Constructor requirements shall provide a default set of requirements on construction.

12.1.1 Construction requirements may include graphical information, which have illustrative purpose only.

NOTE Some drawings in the existing Volume 3 "Standard details" can sit in the constructor requirements.

12.2 Construction requirements shall be drafted in a form that gives contractual instruction to the constructor only.

NOTE There are only two parties to the contract: the contract employer (or client) and the Constructor (Contractor). Contractual ambiguity is costly to the contract employer.

12.3 All requirements shall be able to be complied with safely.

NOTE For health and safety matters, see Table 1 in MDD Part 3.

12.4 Construction requirements shall be drafted in a form that does not limit the application of the SHW and gives freedom to the specifier to apply the SHW content to what is needed for a specific work.

NOTE An example of limitation of the application of the SHW is when reference is made to the Strategic Road Network (SRN), which has no contractual or statutory basis. Doing so does not allow the application of the SHW to the other roads the contract is let for.

12.5 Where scope statements that try to define what the requirements apply to are considered necessary (generally for very limited cases), TSG shall be contacted for advice on suitable formats.

12.6 Construction requirements contained in the SHW shall not be repeated in other parts of the MCHW.

12.7 A clear distinction shall be made between product and installation (workmanship) requirements.

NOTE See below on how to specify product and installation (workmanship) requirements.

12.8 Sections shall be structured such that it is clear which verification requirements apply to which works requirements.

12.9 Works requirements and verification requirements shall cover both the product as it arrives on site and the installed product.

12.10 Requirements shall not contradict those contained in introductory documents replacing Series 100.

Verb forms

12.11 The categories of requirements indicated in Table 21 and related verbal forms shall be applied to constructor requirements.

Table 21 **Categories of constructor requirements and related verbal forms**

Sub-category	Source	Status	Verb form
Legislative requirement Requirements that are to be passed onto the constructor in order to fulfil legislative/statutory requirements on the Overseeing Organisation, set out in regulations at international/European/national level.	External provision not developed by the Overseeing Organisations.	To be specified in all cases - exclusion through departures not permitted.	Must
Performance-based requirement: written as general, high level requirements: e.g. "the joint shall be constructed such that it is watertight."	Requirement of the Overseeing Organisations	Requires a departure to exclude requirement from works specification if associated object/material/activity is specified.	Shall
Method-based requirement: specific (method) requirement: e.g. "the joint shall be installed in one continuous length".			

12.12 Incorrect use of verb forms for requirements shall be avoided.

NOTE 1 Examples of incorrect use of verb forms for requirements include:

1. *"must" as an alternative to "shall". This will create confusion between external statutory obligations and specific requirements of the Overseeing Organisation;*
2. *"will as an alternative to "shall";*
3. *"may" cannot be used in any requirements as it is an ambiguous term, requirements in the SHW need to be determinant;*
4. *"should" cannot be used in any requirements as it is an ambiguous term, requirements in the SHW need to be determinant;*
5. *"may not" instead of "shall not", as "may" is the verbal form for advice;*
6. *"should not" cannot be used, as "should" is the verbal form for advice;*
7. *it is required/ it requires; and,*
8. *to be used/applied/considered/etc.*

NOTE 2 Whilst, in DMRB design documents, advice (with the use of the "may" and "should" verb forms) is permitted, the SHW performs a different function. Advice is useful to help users weigh up the pros and cons of different design choices whereas the SHW does not provide design requirements.

Where alternative options / requirements are presented in the SHW, then any option is acceptable unless the works specific input constrains this choice.

12.13 A clear distinction shall be made between legislative requirements and the Overseeing Organisation's requirements by using appropriate verbal forms and dividing them into separate requirements.

NOTE Making a clear distinction between legislative requirements and Overseeing Organisations' requirements helps the reader identify requirements where departure is permitted and those where it is not.

12.14 Where a legislative requirement is introduced, it shall be accompanied by the related legislative reference.

NOTE Refer to Section 5 of MDD, Part 3 on how to limit reference to or duplication of legislation, and in general how to make reference to legislation.

Product / supplier / manufacturer neutrality

12.15 To avoid that the design of the procurement artificially narrows the competition by favouring an economic operator in breach of the Public Procurement Directive, the constructor requirements must not set out requirements for or naming a particular product, supplier or manufacturer.

NOTE EU, UK and national legislation prevents the Overseeing Organisations from requiring the use of particular construction products or supplier or manufacturer within contracts.

12.16 To avoid that the design of the procurement artificially narrows the competition by favouring an economic operator in breach of the Public Procurement Directive, the constructor requirements must not set out requirements for a particular Product Acceptance Scheme to be used.

NOTE 1 For requirements on Product Acceptance Schemes, see existing Clause 104.

NOTE 2 CARES and HAPAS are examples of particular Product Acceptance Schemes.

NOTE 3 There is a standard format for referring to Product Acceptance Schemes.

12.17 The phrase "HAPAs or equivalent" shall not be included in the constructor requirements; instead, reference shall be made to the "product acceptance scheme".

Working with contracts

12.18 The constructor requirements shall be contract neutral.

NOTE For contract neutrality, see Section 5 in MDD, Part 3.

12.19 The constructor requirements shall not contain requirements which can conflict with other parts of contract or which attempt to rewrite parts of a contract.

NOTE Specifications containing the constructor requirements are likely to act as the "Works Information" or "Scope" of a contract. Requirements which conflict with other parts of a contract can cause contractual risk to the Overseeing Organisation.

12.19.1 Asking for information to be submitted as part of the tender should be minimised to avoid contractual issues.

12.20 The constructor requirements shall not set requirements / obligations on the Overseeing Organisation.

NOTE 1 See Section 5 in MDD, Part 3 on how to refer to the Overseeing Organisations and expressions to avoid.

NOTE 2 For technical approval of highway structures, see CG 300.

NOTE 3 The SHW can be used in situations where there is no need for Overseeing Organisation representatives or the availability of representatives is limited. Requirements on Overseeing Organisation's representatives to conduct inspections etc. can conflict with the contract in these cases.

12.21 The constructor requirements shall not refer to the use of departures.

NOTE 1 For example the phrase "unless a departure has been sought" is not permitted.

NOTE 2 Referencing departures can risk contradictions between the departure process and the contractual change control process.

12.22 The constructor requirements shall not refer to the design drawings or the design model.

NOTE 1 Referencing design drawings or models can risk contradicting the delivery model for the particular scheme.

NOTE 2 Referencing to design drawings or models should be done so through the WSI.

Specifying product requirements

12.23 It shall be determined whether an external standard is available which covers each object, material or activity is to be included in the SHW.

Harmonised standards

12.24 Where an object or material to be specified is covered by a harmonised standard, the constructor requirements shall require that the object or material is to be compliant with the harmonised standard.

NOTE 1 Harmonised standards (hENs) are given their status by their citation in the Official Journal of The European Union (OJEU).

NOTE 2 Many standards with the prefix EN are not harmonised.

NOTE 3 A summary of harmonised standards mandated under Construction Product Regulation is provided at https://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/construction-products_en

NOTE 4 Lists of harmonised standards mandated under other directives (including the Low Voltage Directive) are available on the EU website.

NOTE 5 National Highways has a subscription service with the British Standards Institution (BSI) and IHS. National Highways' staff can require access to subscriptions to British and European standards by contacting the standards_enquiries inbox.

12.25 The constructor requirements shall not specify additional requirements on the object or material beyond the essential characteristics or the purchaser options permitted by the standard.

NOTE 1 Essential characteristics of a construction product are those characteristics that have been identified as being necessary to deliver some or all aspects of the “basic requirements for construction works” for that product. The list of essential characteristics for each product can be found in the relevant harmonised standard.

NOTE 2 Including additional requirements can risk contravening CPR, see also MDD Part 3, Annex 2A.

12.25.1 Where an object or material is covered by a harmonised standard, the constructor requirements may include requirements on installation.

12.26 Requirements on installation shall not contradict the installation methodology set out in any relevant product's installation information or any installation requirements in the harmonised standard.

NOTE Including contradictory or different installation requirements can risk contravening CPR with consequent impact on manufacturer's warranties. See MDD part 3 annex 2A.

12.27 Where the constructor requirements specify that an object or material is to comply with a harmonised standard, the relevant product performance requirements shall be specified for all essential characteristics.

NOTE For any essential characteristics where product performance requirements are not stated at the time the order is placed, the manufacturer is at liberty to provide a product with reduced or untested physical properties for this aspect - No Performance Declared (NPD). This can lead to performance for this aspect being subject to a special level of performance in the harmonised standard, which is below even the lowest selectable class or level.

12.27.1 The constructor requirements may specify that essential characteristics are to be as stated in the Works Specific Inputs.

12.28 For construction products covered by harmonised standards, the constructor requirements shall not require the submission of documentation in addition to the Declaration of Performance, unless the documentation is about safety information and installation instructions.

NOTE For information on the requirement to submit the Declaration of Performance, see existing Series 100].

European Assessment Documents

12.29 Where a product or material to be specified is covered by a European Assessment Document (EAD), the constructor requirements shall require that the product or material meets the essential characteristics given in the EAD.

NOTE The European Technical Approval Document will contain a list of essential characteristics.

Non-harmonised standards

12.30 When an object, material or activity to be specified is not covered by a national standard but it is covered by a non-harmonised standard, the benefits of specifying compliance with that standard shall be assessed.

12.30.1 The constructor requirements should specify compliance with that standard unless there is justifiable evidence not to.

NOTE A standard approach across the industry can lead to efficiencies in the supply chain.

12.30.2 Where the constructor requirements require a non-harmonised standard, a Product Certification Scheme should also be required where such a scheme exists.

12.30.3 Tests and calculations may be specified as an alternative to a product certification scheme where no such scheme exists.

Not covered by external standards

12.31 Where an object, material or activity is not covered by a standard, the benefits of requiring that the product is certified by a product acceptance scheme shall be assessed.

12.31.1 The constructor requirements should specify that the product is certificated by a product acceptance scheme where such a scheme exists.

NOTE In the UK certificates include British Board of Agrément Certificates, Roads and Bridges Certificates, Pavement Testing Services (PTS) certificate, HAPAS certificates or CARES certificate.

Specifying installation (workmanship) requirements

12.32 Installation (workmanship) and product requirements shall be organised so that it is possible to make a clear distinction between them.

NOTE 1 With a few exceptions, product legislation, product standards, product certification and acceptance do not apply to the installed product, only to the product as it arrives on site.

NOTE 2 Making a clear distinction between installation (workmanship) and product requirements allows a clear specification of verification requirements, see below.

12.33 Where there are requirements for workmanship and work-specific demonstrations and trials prior to the works, these shall be described fully, with hold points to allow for the scrutiny and approval by the Overseeing Organisation.

Specifying verification requirements

12.34 Verification requirements shall be organised so that it is possible to distinguish between acceptance criteria for products coming to site (at the gate) and contract compliance verification.

NOTE This allows to distinguish between applying additional acceptance criteria to products, which for hEN products is not permitted, and verification that the works have been completed / installed correctly, which can be done by the Overseeing Organisations for all works.

12.35 All verification testing requirements currently contained in Table NG 1/1 which are still considered by the technical author to be a necessary part of the specification should be transferred into the verification requirements of their subject area specification documents.

NOTE 1 Series NG 100 Table NG 1/1: Typical Testing Details will be deleted, as will appendices 1/5 and 1/6 which were edited by the Compiler to produce the contract-specific testing schedules.

NOTE 2 If the verification requirements are not transferred, then they will no longer form part of the standard specification.

NOTE 3 See below example of product verification:

1. *Certification shall be supplied to demonstrate that the widgets comply with BS EN 98765 and the specification.*

NOTE 4 See below examples of requirements which allow installation verification:

1. *The manufacturer's instructions shall be submitted.*
2. *Records of the air temperature at the time of installation of widgets shall be submitted.*
3. *Records of the alignment check shall be submitted.*

NOTE 5 See below examples of installation verification:

1. *The alignment of widgets shall be checked withing 24 hours of installation.*
2. *Strength testing of the installed widgets shall be undertaken in accordance with the following: (...)*

Specifying performance requirements and method-based requirements

General considerations

12.36 Technical authors shall seek to reduce the number of method-based requirements and increase the number of performance-based requirements.

12.37 Requirements for products shall, wherever possible, be set out as performance criteria.

12.38 For each object or material, the feasibility and desirability of using performance and / or method requirements shall be assessed.

NOTE 1 A non-exhaustive list of advantages and disadvantages in using performance-based requirements and methods requirements is provided in MDD part 3 Annex 2B.

NOTE 2 See specific rules for product and installation/workmanship requirements provided below.

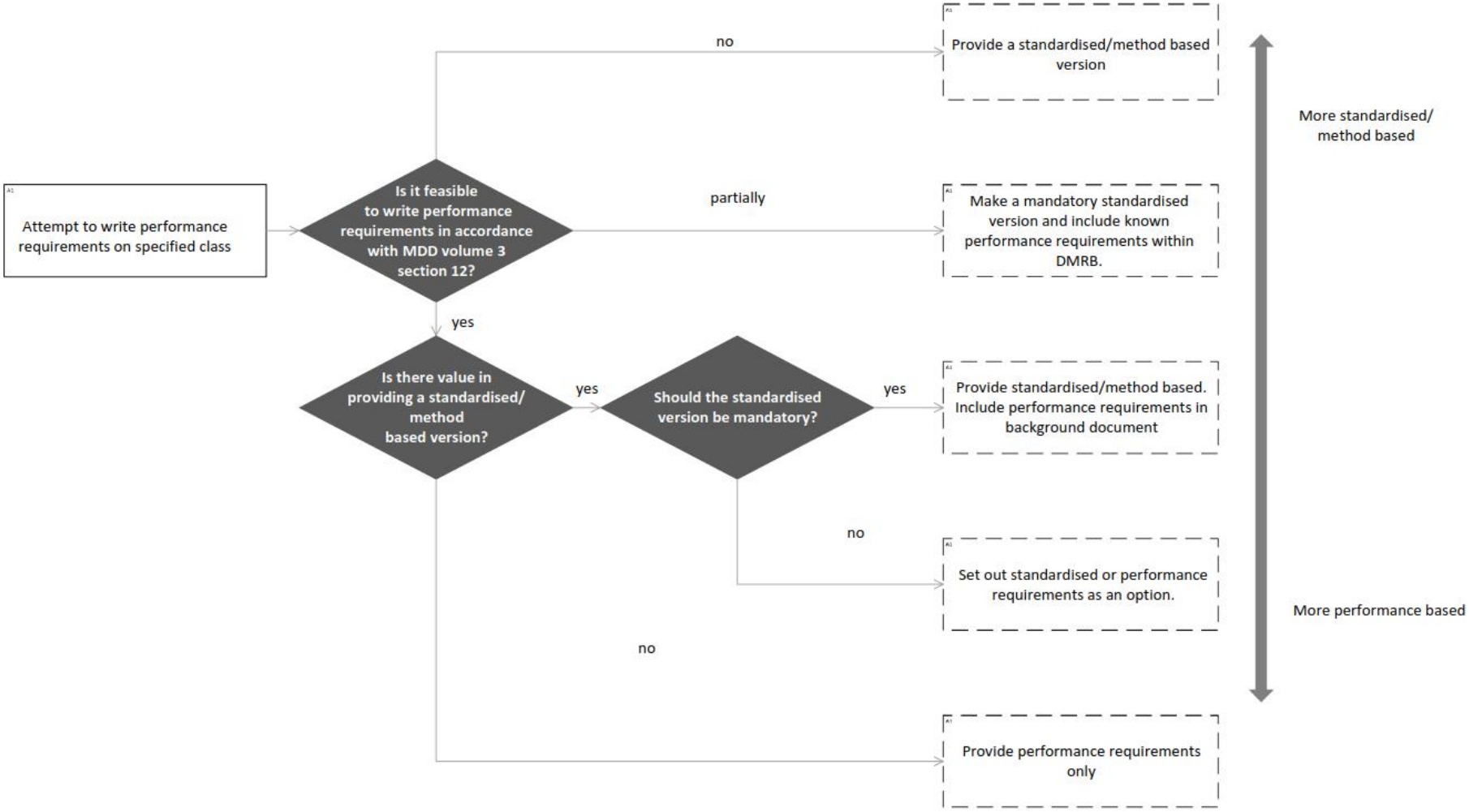
12.38.1 Where it is desirable to provide more flexibility to the supply chain to innovate, performance-based requirements should be introduced.

12.38.2 Where a very limited number of methods exist to verify performance requirements, method requirements should be employed.

12.38.3 Where there are benefits in presenting both method-based and performance-based requirements both should be presented.

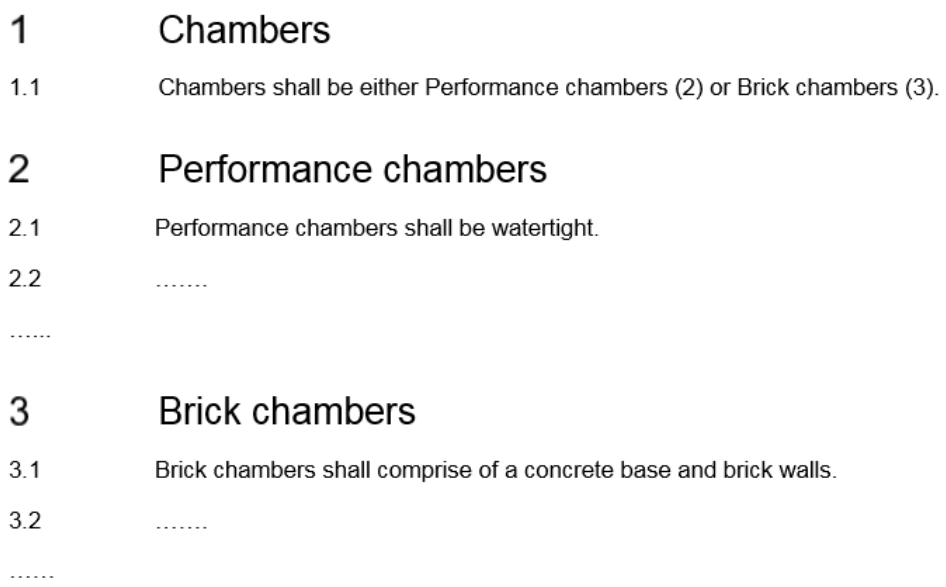
NOTE 1 The decision tree in Figure 20 presents options for expressing performance-based requirements and method-based requirements.

Figure 20. Decision tree for performance-based and method-based requirements



NOTE 2 The example in Figure 21 sets out standardised and performance requirements as options:

Figure 21. Example of setting out standardised and performance requirements as options



12.39 For a performance-based approach, technical provisions shall be expressed in a manner that makes the intended outcome or the performance requirements clear to the constructor.

Products requirements

12.40 Performance requirements shall be used for products that have performance criteria defined in the product standards.

Installation/workmanship requirements

12.41 An assessment shall be undertaken to establish whether performance and / or method requirements are relevant for installation/workmanship requirements.

NOTE Method based requirements are generally suitable for installation/workmanship requirements.

Specifying temporary objects and materials

12.42 The author shall contact TSG for guidance on the coverage of temporary objects and materials.

NOTE 1 The focus of the SHW is on permanent works. Specifying method of works, including temporary work, is under the responsibility of the constructor, unless there is an impact on safety risk for any of the populations on the motorway and all-purpose trunk roads.

NOTE 2 A differentiation between permanent and temporary works at requirement level can lead to contractual issues. The CPR (Art 2) refers to "permanent works" when differentiating between products that fall within the scope of CPR and those that do not. If a product has a "intended use" that is for temporary works, there is no requirement for a CE mark and a DoP, even if the client intends to use them in the permanent works.

Specifying existing objects and materials

12.43 Requirements which only apply to materials or physical objects which already exist in the site prior to the works starting shall not be contained in the same section as those which apply to new materials or physical objects.

12.43.1 The use of the word "existing" should be used in section titles to identify materials or physical objects which already exist in the site.

12.44 The author shall contact TSG for guidance on when the distinction between new and existing materials or physical objects is relevant and how it can be presented.

NOTE The distinction between new and existing materials or physical objects cannot be easily identified in all cases, for example when dealing with earthworks or transition between existing and new objects.

Specifying tolerances

12.45 Allowable tolerances for placement shall be specified for object or material where relevant.

NOTE There are cases where it is appropriate for example to specify minimum levels rather than a tolerance on a specific level.

12.45.1 Tolerances may be specified by reference to an external standard.

12.45.2 Tolerances may be specified by reference to the works specific inputs.

Standard format for constructor requirements

Verification requirements

12.46 Verification requirements related to a single method of verification shall be grouped under a section heading or a sub-section heading titled "verification <subject or blank>".

NOTE 1 Verification requirements are those related to the assessment of whether other requirements have been fulfilled.

NOTE 2 Examples of verification requirements include requirements to conduct testing or inspection.

12.47 Where verification requirements are to be referenced from other sections, they shall be grouped under their own section title (see section 11 Style of MCHW clauses).

12.48 Each group of verification requirements shall include the requirements as provided in Standard format for verification requirements Table 22:

Table 22 **Standard format for verification requirements**

X.X	Verification shall be undertaken for <item to be verified> <description of testing/inspection>.

X.X+1	The frequency of <description of testing/inspection> shall be <frequency of testing/inspection>.
X.X+2	The requirements for Verification ([replacement for Clause 105]) shall apply to <subject of verification>.
X.X	Verification shall be undertaken for <item to be verified> <description of testing/inspection>.
X.X+1	The frequency of <description of testing/inspection> shall be <in put minimum frequency> unless otherwise stated in <<Ref to WSI>>.
X.X+2	The requirements for Verification ([replacement for Clause 105]) shall apply to <subject requiring verification>.
X.X	Verification for <subject requiring verification>shall be undertaken by an accredited testing laboratory in compliance with ([replacement for Clause 105]).

NOTE 1 Verification requirements were previously summarised in Table NG 1/1 "Typical testing details" within Series NG 100.

NOTE 2 An example of application of the standard format is presented in Table 23:

Table 23 **Example of application of standard format for verification requirements**

	Verification of ancillary concrete
3.3	Verification shall be undertaken for ancillary concrete using the test methods described in BS EN 1234 in the section titled slump testing.
3.4	The frequency of consistency class (slump) testing shall be each batch delivered to site.
3.5	The requirements for Verification ([replacement for Clause 105]) shall apply to ancillary concrete.

3.3	Verification shall be undertaken for ancillary concrete using the test methods described in BS EN 1234 in the section titles slump testing.
3.4	The frequency of consistency class (slump) testing shall be every 50m^3 unless otherwise stated in <<WSI GC 100/1.1>>.
3.5	The requirements for Verification ([replacement for Clause 105]) shall apply to ancillary concrete.
	Verification for ancillary concrete shall be undertaken by an accredited testing laboratory in compliance with ([replacement for Clause 105]).

NOTE 3 In the example above "Verification of ancillary concrete" is a subheading.

Documentation requirements

12.49 Documentation requirements related to a single documentation submission shall be grouped under a section heading or a sub-section heading titled "Documentation <subject or blank>", where a Documentation Requirement is one related to the submission of documentation to the Overseeing Organisation.

12.50 Each group of Documentation Requirements shall include requirements in the following standard format shown in Table 24:

Table 24 **Standard format**

X.X	The following Documentation shall be submitted for <subject requiring documentation> prior to the commencement of <type of works>: <detail the documentation>.
X.X+1	The requirements for Documentation ([replacement for Clause 104 and 105]) shall apply to <subject requiring documentation>.

X.X	The following Documentation shall be submitted for <subject requiring documentation> prior to the commencement of <type of works>: <detail the documentation>.
X.X+1	Documentation < subject requiring documentation> shall be submitted <timescales, or other requirements if different to those stated in the requirements for Documentation (new section in the introduction documents to give generic documentation requirements)>.
X.X	The following Documentation for <subject requiring documentation> shall be submitted as continuous records <list/detail the requirement records>.
X.X+1	The requirements of continuous records ([replacement for 105]) shall apply to <subject requiring documentation>.
X.X	The following Documentation shall be submitted for <subject requiring document> prior to the commencement of <type of works>: <detail the documentation>.
X.X	The Documentation for <subject requiring documentation> shall be <detail of the documentation> as stated in <<Ref to WSI>>.

NOTE: An example of the standard format for presenting documentation is presented shown in Table 25:

Table 25 **Example of application of standard format for documentation requirements**

5.2	The following Documentation shall be submitted for woven steel wire prior to the commencement of gabion works: compliance with BS EN 10223-3 and BS EN 10223-8.
5.3	The requirements for Documentation ([replacement for Clause 104 and 105]) shall apply to woven steel wire.
5.3	The following Documentation shall be submitted for woven steel wire prior to the commencement of gabion works: compliance with BS EN 10223-3 and BS EN 10223-8.
5.4	Documentation for woven steel wire in gabions shall be submitted 10 weeks prior to commencement of the gabion works.
5.3	The following Documentation for woven steel wire in gabions shall be submitted as continuous records, compliance with BS EN 10223-3 and BS EN 10223-8.
5.4	The requirements of continuous records ([replacement for 105]) shall apply to woven steel wire for gabions.
5.3	The following Documentation shall be submitted for woven steel wire prior to the commencement of gabion works: compliance with BS EN 10223-3 and BS EN 10223-8.

5.3	The Documentation for woven steel wire shall be georeferenced where it is installed within the works as stated in <<WSI GC 100/1.1>>.

Requirements for constructor design

12.51 Requirements for constructor design shall require the use of DMRB design documents to design works.

NOTE 1 A requirement for constructor design is a requirement stating that design for an aspect of the works is to be undertaken by the constructor.

NOTE 2 DMRB design documents can require updating to ensure consistency between the SHW and the DMRB. For example, where the MCHW has previously referred solely to an external standard for design requirements.

12.52 Requirements for constructor design shall be in the following standard format as shown in Table 26:

Table 26 **Standard format**

X.X	The design of <subject of design> shall be in accordance with <design standard reference>.
X.X+1	The requirements for design ([replacement for Clause 106]) shall apply to <subject of design>.
X.X	The design of <subject of design> shall be in accordance with <<Ref to WSI>>.
X.X+1	The requirements for design ([replacement for Clause 106]) apply to <subject of design>.
X.X	The design of <subject of design> shall be in accordance with <<Ref to WSI>>.
X.X+1	The requirements for Technical Approval ([replacement for sub-Clauses 106.2 to 106.7]) shall apply to <subject of design>.
X.X+2	The requirements for design ([replacement for Clause 106]) apply to <subject of design>.

NOTE 1 Where site specific requirements are required, some design requirements are to be included in the works specific inputs.

NOTE 2 For information on technical approval procedures and documentation submission, see existing Series 100.

NOTE 3 An example of the requirements for constructor design standard format is presented in Table 27:

Table 27 **Example of application of standard format for requirements for construction design**

3.3	The design of combined kerb-drainage shall be in accordance with BS EN 1433.
3.4	The requirements for design ([replacement for Clause 106]) shall apply to combined kerb-drainage.
3.3	The design of combined kerb-drainage shall be in accordance with <<WSI GC 100/1.1>>.
3.4	The requirements for design ([replacement for Clause 106]) apply to combined kerb-drainage.
3.3	The design of combined kerb-drainage shall be in accordance with <<WSI GC 100/1.1>>.
3.4	The requirements for Technical Approval ([replacement for sub-Clauses 106.2 to 106.7]) shall apply to combined kerb-drainage.
3.5	The requirements for design ([replacement for Clause 106]) apply to combined kerb-drainage.

Requirements to use a Harmonised Standard

12.53 Requirements for compliance with a harmonised standard shall be in the following standard format as shown in Table 28:

Table 28 **Standard format**

X.X	<Subject of standard> shall be compliant with <reference to standard>.
X.X+1	The <subject of standard> shall meet the following performance characteristics: <list performance characteristics>.
X.X+2	The requirements of ([replacement for Clause 106]) shall apply to <subject of declaration of performance/conformity>.
X.X	<Subject of standard> shall be compliant with <reference to standard>.
X.X+1	The <subject of standard> shall meet the performance characteristics as stated in table <Table reference>.
X.X+2	The requirements of ([replacement for Clause 106]) shall apply to <subject of declaration of performance/conformity>.

NOTE 1 Where site specific requirements are required, some performance requirements are to be included in the works specific inputs.

NOTE 2 For general requirements on products covered by harmonised standards including information regarding documentation submission, see existing Series 100].

NOTE 3 An example of the standard format is presented in Table 29:

Table 29 **Example of application of standard format for requirements to use a harmonised standard**

3.4	Combined kerb-drainage shall be compliant with BS EN 1433.
3.5	The combined kerb-drainage shall meet the following performance characteristics: 1. Weather resistance Type R+; 2. [Add performance characteristic]; and, 3. [Add performance characteristic].

3.6	The requirements of ([replacement for Clause 106]) shall apply to combined kerb-drainage.
3.4	Combined kerb-drainage shall be compliant with BS EN 1433.
3.5	The combined kerb-drainage shall meet the performance characteristics as stated in table weather resistance for combined kerb-drainage. [Insert table – weather resistance for combined kerb-drainage]
3.6	The requirements of ([replacement for Clause 106]) shall apply to combined kerb-drainage.

Product Certification Schemes

12.54 Requirements for compliance with a product certification scheme shall be written in the following standard format as shown in Table 30:

NOTE For general requirements on product certification schemes including information regarding accreditation and document submission, see existing Series 100].

Table 30 **Standard format**

X.X	<Subject of standard> shall be compliant with <reference to standard>.
X.X+1	The <subject of standard> shall meet the following performance characteristics: <list performance characteristics>.
X.X+2	The requirements for Product Certification Schemes ([replacement for sub-Clauses 104.12 to 104.14]) apply to <Subject of standard>.

X.X	<Subject of standard> shall be compliant with <reference to standard>.
X.X+1	The <subject of standard> shall meet the performance characteristics as stated in table <Table reference>.
X.X+2	The requirements for Product Certification Schemes ([replacement for sub-Clauses 104.12 to 104.14]) apply to <Subject of standard>.

NOTE An example of the standard format for product certification requirements being used is presented in Table 31:

Table 31 **Example of application of standard format for compliance with a product certification scheme**

3.5	Combined kerb-drainage shall be compliant with BS EN 1433.
3.6	The combined kerb-drainage shall meet the following performance characteristics: 1. Weather resistance Type R+; 2. [Add performance characteristic]; and, 3. [Add performance characteristic].
3.7	The requirements for Product Certification Schemes ([replacement for sub-Clauses 104.12 to 104.14]) apply to combined kerb-drainage.
3.5	Combined kerb-drainage shall be compliant with BS EN 1433.
3.6	The combined kerb-drainage shall meet the performance characteristics as stated in table weather resistance requirements for combined kerb-drainage. [Insert table – weather resistance for combined kerb-drainage]
3.7	The requirements for Product Certification Schemes ([replacement for sub-Clauses

	104.12 to 104.14]) apply to combined kerb-drainage.

Product Acceptance Schemes

12.55 Requirements for an object, material or activity to hold a product acceptance scheme shall be written in the following standard format as shown in Table 32:

Table 32 **Standard format**

X.X	The requirements for Product Acceptance Schemes ([replacement for sub-Clauses 104.15 and 104.16]) shall apply to <subject of product acceptance scheme>.

NOTE An example of the standard format in use is presented in Table 33:

Table 33 **Example of application of standard format for requirements to hold product acceptance scheme**

3.3	The requirements for Product Acceptance Schemes ([replacement for sub-Clauses 104.15 and 104.16]) shall apply to fibre reinforced polymer combined drainage-kerbs.

National Highway Sector Schemes

12.56 Requirements for the use of operatives trained under National Highway Sector Schemes shall be written in the following standard format as shown in Table 34

NOTE 1 For general requirements on national highway sector schemes including their interaction with the Construction Product Regulations and equivalent quality schemes, see existing Series 100.

Table 34 **Standard format**

X.X	<Subject of NHSS> shall be <operations covered by NHSS> by organisations registered to and operating in compliance with a quality management scheme in accordance with [(replacement for Clause 104.8-11)].

NOTE 2 An example of the standard format being used is presented below Table 35:

Table 35 **Example of application of standard format for requirements on National Highway Sector Schemes**

3.3	The design and/or supply, installation, and repair of fences for infrastructure works shall be designed, supplied, installed, and repaired by organisations registered to and operating in compliance with a quality management scheme in accordance with [(replacement for Clause 104.8-11)].

12.57 The constructor requirements shall not mandate the use of a National Highway Sector Scheme where it applies to the design or manufacture of construction products covered by the Construction Products Regulation.

References to the works specific inputs

12.58 Where works specific inputs are required to create a complete specification, the constructor requirements shall explicitly refer to them.

NOTE Section 13 contains requirements for the specifier instructions including the types and formats of works specific inputs.

12.59 The work specific inputs shall not be used to write requirements that could be in the SHW.

12.60 Reference to the work specific inputs shall be written in the following standard format as shown in Table 36:

Table 36 **Standard format**

X.X	The <subject of requirement> shall be as stated in <<Ref to WSI>>.
X.X	<Subject of requirement> shall <enter requirement>, unless otherwise stated in <<Ref to WSI>>.

X.X	<Constructor requirement that requires a schedule> shall be <as described/specified> in schedule <<Ref to WSI>>.
X.X	The <subject of standard> shall meet the performance characteristics stated in <<Ref to WSI>>.

NOTE Examples of the standard format being used are presented in Table 37:

Table 37 **Examples of application of standard format for reference to the works specific inputs**

4.2	The combined kerb-drainage hydraulic capacity shall be as stated in <<WSI GC 100/1.1>>.
4.2	In situ concrete shall reach a strength of 50N/mm^2 after 28 days, unless otherwise stated in <<WSI GC 100/1.1>>.
	The demolition, breaking up and remove buildings, structures and superficial obstructions shall be as described in schedule WSI GC 100/1.1.
	The combined kerb-drainage hydraulic capacity shall meet the performance characteristics stated in <<Ref to WSI>>.

Products Covered by Non-designated (or Non-harmonised) Standards

12.61 Requirements for an object, material or activity covered by a non-designated (or non-harmonised) standard shall be written in the following standard format as shown in Table 38:

NOTE For general requirements on objects, materials or activities covered by a non-designated (or non-harmonised) standards, see existing Series 100.

Table 38 **Standard format**

X.X	<Subject of standard> shall be compliant with <reference to standard>.
X.X+1	The <subject of standard> shall meet the following performance characteristics: <list performance characteristics>.
X.X	<Subject of standard> shall be compliant with <reference to standard>.
X.X+1	The <subject of standard> shall meet the performance characteristics as stated in table <Table reference>.
X.X	<Subject of standard> shall be compliant with <reference to standard>.

NOTE An example of the standard format in use is presented in Table 39:

Table 39 **Example of application of standard format for requirements for objects, materials or activities covered by a non-designated (or non-harmonised) standards**

3.3	Combined kerb-drainage shall be compliant with BS EN 1433.
3.4	The combined kerb-drainage shall meet the following performance characteristics: 1. Weather resistance Type R+;

	2. [Add performance characteristic]; and, 3. [Add performance characteristic].
3.3	Combined kerb-drainage shall be compliant with BS EN 1433.
3.4	The combined kerb-drainage shall meet the performance characteristics as stated in table weather resistance requirements for combined kerb-drainage. [Insert table – weather resistance for combined kerb-drainage]
3.3	Combined kerb-drainage shall be compliant with BS EN 1433.

General

12.62 General requirements shall be written in the following standard format as shown in Table 40:

Table 40 **Standard format**

X.X	<Subject of requirement> shall <enter requirement>.

NOTE An example of the standard format in use is presented in Table 41:

Table 41 **Example of application of standard format for requirements for general requirements**

3.3	In situ concrete shall reach a strength of 50N/mm^2 after 28 days.

Validating constructor requirements

12.63 A link shall be established between constructor requirements and related verification and documentation requirements for validation purposes.

NOTE: CARS functionality is available to assist the technical author in linking the clauses.

References to sections within the SHW

12.64 Options to references to other sections within the SHW shall be given as follows: Enter [CC 700.11 Type 1 mixture or CC700.12 Type 2 mixture]

Table 42 **Standard format**

SI.x.y	Enter [<section title>.<section reference> <subject> or <section title>.<section reference> <subject>]

NOTE An example is shown below.

Table 43 **Example of references to sections within the SHW**

SI.5.3	Enter [CC 700.11 Type 1 mixture or CC700.12 Type 2 mixture]

13. Style of MCHW clauses: Specifier instructions in the IfS

General

Basic rules

13.1 Specifier instructions shall be instructions to the specifier on producing the works specific inputs.

NOTE 1 The works specific inputs can complement or supplement the SHW requirements, but not contradict them.

NOTE 2 Specifier instructions define the type and format of information to be provided by the specifier within the works specific inputs.

NOTE 3 The role of the specifier is to take the design outputs and present them as works specific inputs, but not to undertake design activity. The process of determining the design outputs, through design activity, is outside the scope of the specifier instructions.

NOTE 4 The specifier is not a party to the contract between the client and constructor, and cannot be held responsible for the works.

13.2 Specifier instructions shall not include advice or guidance.

13.3 The current Volume 2 of the MCHW "Notes for Guidance" includes, in places, advice related to design activity and therefore this content shall be reviewed and relevant content transferred to DMRB design documents.

Departures

13.4 Deviation to instructions shall be permitted through the departures process.

NOTE 1 Departures to the specifier instructions are likely to fall into one of two categories:

1. those associated with a departure against a DMRB design document requirement; or
2. departures against the type and format of information required for the works specific inputs.

NOTE 2 Departing from a SHW requirement is done through the contract - i.e. asking the acting Overseeing Organisation to specify something different, which in turn submits a departure against the DMRB or the Specifier Instructions.

Site information

[DRAFTING NOTE: A common approach to guide technical authors on how site information / site requirements are to be used and referenced contractually in the works specific inputs will be provided - see existing Series 100. For any queries, please ask TSG].

Types of works specific inputs

13.5 Specifier instructions shall be written using the following types of works specific inputs:

1. fixed options;
2. numbers;
3. free text;
4. works specific requirements;
5. schedules.

Fixed options

13.6 Fixed options shall be used where a works specific input is selected from a discrete number of choices.

NOTE 1 Including fixed options can improve the consistency of specifications.

NOTE 2 The underlying requirement is expressed through the constructor requirement and the fixed option is used to allow the specifier to invoke a choice associated with that constructor requirement. Where there is a need to give a requirement beyond the constructor requirements then a supplementary requirement can be used.

Numbers

13.7 Numbers shall be used where a works specific input is expressed numerically and cannot conveniently be expressed as fixed options.

Free text

13.8 Free text shall be used where a works specific input can only be expressed alphanumerically and cannot conveniently be expressed as fixed options or numbers.

NOTE 1 Permitting or requiring the compiler to include free text can increase the risk of contractual ambiguity and therefore the chance of disputes.

NOTE 2 When developing the work specific inputs, it would be advantageous to capture the 'free text' expected to be input by the specifier when authoring the SHW and specifier instructions. This can allow the 'free text' to be broken down into a set of standard requirements and included in the SHW, or be expressed by a set of more standardized specifier instructions, giving greater control over the specifier tool output and the performance characteristics in the work specific inputs

. [DRAFTING NOTE: General rules setting out what is and is not permitted within free text will be developed, see also existing Series 100].

Works specific requirements

13.9 Work specific requirements shall only be required or permitted when it is not possible to provide specifier instructions by means of fixed options, numbers of free text.

NOTE 1 Requiring the specifier to include works specific requirements can increase the risk of contractual ambiguity and therefore the chances of disputes. Constructor requirements are written by experts and are likely to be subject to more rigorous checking and approval procedures than works specific requirements. Constructor requirements can also be validated and improved upon over time.

NOTE 2 Work specific requirements can be useful where, in many cases, against a particular item, additional input will be required to achieve a complete specification. Work specific requirements can also be relevant where the type of input will vary considerably or a potential set of fixed options is not inclusive of all possible options.

NOTE 3 It can be useful to both the specifier and constructor to be aware that additional input is commonly required for particular areas of the specification.

[DRAFTING NOTE: A standard set of rules for specifiers authoring works specific requirements will be provided].

13.10 The scope of works specific requirements permitted or required by the author shall be clearly stated using the standard format for specifier instructions.

Standard formats for specifier instructions

13.11 Where a constructor requirement invokes a works specific input, one or more of the standard formats outlined in CARS shall be used for the specifier instruction.

NOTE 1 CARS gives examples of how to use the different specifier instructions.

NOTE 2 Within CARS the text in squared brackets is that to be populated by the specifier. Such formatting is provided as a guidance.

13.11.1 More than one specifier instruction may be presented for a constructor requirement; hence more than one standard format may be used.

14. Style of NAA and NDR clauses

National Application Annexes

14.1 National Application Annexes (NAAs) shall be drafted following the rules of DMRB documents as presented in Section 10, the only difference being the prefix to clauses, which depends on the abbreviation of the Overseeing Organisation (see Table 5).

NOTE For example: requirements in NAAs are identified by E/2.3, S/5.4, etc; advice in NAAs is identified by NI/2.3.1, W/5.4.1, etc.

Nationally Determined Requirements

14.2 Nationally Determined Requirements and Sections shall be drafted following the rules of MCHW documents as presented in Sections 11, 12 and 13, the only difference being the prefix to clauses, which depends on the abbreviation of the Overseeing Organisation (see Table 11).

15. Style of CHE Memos clauses

[DRAFTING NOTE: Future work to be completed by TSG.

Revision history

Version	Date	Description	Author
6.4	October 2023	Figure titles placed above figures rather than below in accordance with how figures are presented in CARS. BEIS (old government Department for Business, Energy, and Industrial Strategy) replaced by DBT (Department for Business and Trade) Section 4 Table 1 updated to include a row for 'P' contract preparation. Section 4 requirement added to reflect the need to insert a space between a number and a unit of measurement. New requirement added to Section 9 related to consistent use of units (e.g., avoiding instances of 10 m and 10 metres in the same document).	NH/WSP
6.3	October 2022	Technical Assurance and Governance Group (TAGG) renamed to Technical Standards Group (TSG). Section 4 DMRB document layout - Note added to Table 1 to explain the different life-cycle stages. Section 4 DMRB document layout, Section 5 MCHW document layout and Section 6 NAA document layout - Feedback and enquiries text updated to reflect new online feedback form. Section 9 Style of basic elements – updates have been made to support accessibility of text and figures, including rules on introducing alternative text for figures.	NH/WSP
6.2	February 2022	Section 4 – new requirement added to Year of issue section to reflect document review requirements in MDD part 1. Section 13 – standard formats for specifier instructions updated to reflect new template options in CARS.	NH/WSP
6.1	November 2021	Highways England changed to National Highways throughout Details of release notes and version numbers updated in sections 4 and 5. Updates to section 9 Figures Note to 12.65 updated	NH/WSP

6.0	March 2021	Terms, definitions, and abbreviations updated (section 3) Table 1 updated with revised numbering for disciplines and new row 'P' for contract preparation. Now called matrix of standards (section 4) New section created for MCHW document layout (section 5) Section on NAA document layout (DMRB) is now section 6. New section created for NDR document layout (MCHW) (section 7) New section created for Style of MCHW clauses (section 10) New section created for Constructor requirements in SHW (section 11) New section created for Specifier Instructions in the IfS (section 12) Section on Style of NAA clauses is now titled Style of NAA and NDR clauses (section 13)	WSP/HE
5.1	October 2019	Reference to Temporary Instruction Notes (TINs) removed. Additional information added to terms and definitions in section 4 in relation to terms and units being in accordance with British Standards. Requirements and guidance on use of capital letters, figures, lists and symbols underneath equations expanded for clarity in section 8. Detailed guidance on references moved from MDD v5.1 part 2 to MDD v5.1 part 3 (section 5) for clarity. Information on advice clauses in section 9 expanded to include information about design justifications.	WSP/HE
5.0	November 2018	The Manual has been restructured into three parts in recognition of different audiences and feedback received by users: • Part 1 is relevant to those involved in the governance process. • New Part 2 on document layout and clause style. This contains text from old Part 2 and provides information relevant to set up documents layout	WSP

		and style in CARS. Key updates include: • separate sections covering layout of different RADs • separate sections covering clause style for different RADs • clarification of areas identified by users such as need for and content of fixed sub-headings in DMRB documents, clauses covering DBFO contracts, use of colour, caption to equations, presentation of symbols underneath equations, symbols style. • New Part 3 provides fundamental rules relevant to document authors.	
4.2	March 2018	No changes have been made to requirements contained in MDD 4.1. This version provides additional requirements and guidance, and addresses feedback and comments received.	WSP
4.1	September 2017	No changes have been made to requirements contained in MDD 4.0. This version provides additional requirements and guidance, and addresses feedback and comments received.	WSP
4.0	April 2017	The entire Manual is reviewed to reflect the style of the new DMRB drafting rules. The Manual is developed into two separate Parts to acknowledge their different audiences.	WSP Parsons Brinckerhoff
3.0	January 2017	Restructure of the Manual into two parts. Part 2 on drafting rules reviewed in a pilot project. Revisions and changes made throughout including: new drafting rules, new Annexes, new concepts such as content specialist, National Application Annexes, performance-based requirements for assets.	WSP Parsons Brinckerhoff
2.2	October 2015	Revisions made throughout to make suitable for use by a wider audience. References to Peer Review Board amended to Technical Project Board. Minor changes throughout.	CH2M
2.1	1 June 2015	Revisions to Section 6 for Cost Impact Toolkit. Addition of Annex B Cost Impact Identification for document owners. Revisions to Section 10.	CH2M
2.0	7 May 2015	Revisions for CDM 2015. Name change to Highways England throughout. New Section 3.0 Roles and Responsibilities added. New Section 15 Technical Project Board added. New Annex A Drafting	CH2M

		Content of RADs added. Minor changes throughout.	