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**VOLUME 5 ASSESSMENT AND  
PREPARATION OF ROAD  
SCHEMES**

**SECTION 3 THE STANDARDS  
IMPROVEMENT SYSTEM**

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**PART 1**

**HD 34/03**

**IMPLEMENTATION AND USE OF THE  
STANDARDS IMPROVEMENT SYSTEM**

**SUMMARY**

This Standard introduces the Standards Improvement System (SIS), a reporting and feedback system accessed over the Internet. It contains a computerised database of potential improvements to the standards and specifications published by the Overseeing Organisations of England, Scotland, Wales and Northern Ireland. It replaces the Quality Control Reporting System (QCRS).

**INSTRUCTIONS FOR USE**

1. Remove existing Contents pages for Volume 5.
2. Insert new Contents pages for Volume 5 dated November 2003.
3. Remove HD 34/93 from Volume 5, Section 3, Part 1 and archive as necessary.
4. Insert HD 34/03 into Volume 5, Section 3, Part 1.
5. Please archive this sheet as appropriate.

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



**THE HIGHWAYS AGENCY**



**SCOTTISH EXECUTIVE**



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

**WELSH ASSEMBLY GOVERNMENT  
LLYWODRAETH CYNULLIAD CYMRU**



**THE DEPARTMENT FOR REGIONAL DEVELOPMENT  
NORTHERN IRELAND**

# **Implementation and Use of the Standards Improvement System**

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**Contents**

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# 1. INTRODUCTION

1.1 This Standard introduces the Standards Improvement System (SIS).

1.2 SIS is a computerised database of reports generated from failures of specifications and design standards and other observations on these documents. The database records potential improvements using lists of components, symptoms, diagnoses and detailed descriptions.

1.3 SIS is operated and maintained by the Highways Agency. Its prime objective is to improve the performance of the engineering standards and specifications published by the Highways Agency, both independently and jointly with other organisations.

1.4 In England, SIS Reports are generated by any person or organisation involved in the Highways Agency's work including Designers, contractors, subcontractors and the Highways Agency's own staff.

1.5 In Scotland, Wales and Northern Ireland, SIS Reports are generated directly by the respective Overseeing Organisation's designated point of contact.

1.6 Reports are generated following observations made during the course of normal work and inspection activities.

1.7 SIS is not a defects reporting system. Defects resulting from poor workmanship, accidental damage, etc that do not have a direct bearing on the contents of standards and specifications should be dealt with in the course of normal duties.

## Scope

1.8 The design standards and specifications covered by this standard are listed in Appendix A.

1.9 SIS does not apply to design standards and specifications published independently by the Overseeing Organisations of Scotland, Wales and Northern Ireland.

## Feedback

1.10 An important part of SIS is to provide feedback to Originators. SIS Reports are assigned a status at key stages during their progress. Originators automatically receive an e-mail whenever the status of a SIS Report changes.

1.11 Users of SIS can access the system in order to monitor progress of their own reports or to search the database and comment on any other report.

## Mandatory Requirements

1.12 Paragraphs of this Standard which are highlighted by being contained in a box are mandatory. These are sections with which Designers must comply. The remainder of the document contains advice, which is commended to Designers for their consideration.

## Implementation

1.13 Designers involved in the design, construction, improvement or maintenance of the Highways Agency's network shall apply the guidelines and methodology of SIS. It is to be used on all schemes.

1.14 Designers working for other Overseeing Organisations should seek advice on the implementation and use of the system from their respective Overseeing Organisation.

1.15 Other organisations, including local authorities, contractors and subcontractors are encouraged to use SIS for all schemes that use the standards and specifications listed in Appendix A.

## Accessing SIS

1.16 SIS is accessed over the Internet. Any requests for help in using SIS, including requests for access for new users, should be directed to the Highways Agency ServiceDirect helpdesk in Leeds (Telephone 0113 254 1140).

**Superseded Documents**

1.17 This standard supersedes HD 34/93 –  
Implementation and Use of the Quality Control  
Reporting System.

## 2. DEFINITIONS AND TERMINOLOGY

2.1 **Departure Approval System (DAS)** – The Highways Agency’s system for dealing with departures from standards and specifications.

2.2 **Designer** – Any organisation which carries out design activities for or on behalf of the Highways Agency or other Overseeing Organisation, for example:

- a) **Managing Agent** – the organisation responsible for carrying out all design work, asset inspections, network maintenance management of the Highways Agency’s network, and supervision of the Term Maintenance Contractor.
- b) **Managing Agent Contractor** – the contracting organisation responsible for managing and maintaining the Highways Agency’s network.
- c) **Term Maintenance Contractor** – an organisation responsible for the maintenance of areas of the trunk road network in Scotland.
- d) **Design Agent** – a consultant or other organisation commissioned to undertake the various stages of Highways Agency scheme preparation and supervision of construction.
- e) Companies working on Design and Build (D&B) and Design Build Finance and Operate (DBFO) schemes.
- f) Organisations carrying out the design of temporary works.
- g) Organisations carrying out work during the course of site supervision.
- h) Organisations working as a supplier to any of the above.

2.3 **Expected Performance** – The ability of a design standard or specification to achieve the results reasonably expected by the Originator.

2.4 **Highways Agency Pavement Management System (HAPMS)** – The Highways Agency’s pavement management system incorporating the system for referencing roads in England.

2.5 **Originator** – A Designer, contractor, sub-contractor or Overseeing Organisation that generates a SIS Report.

2.6 **Overseeing Organisation** – The governmental or other body with statutory responsibility for the highway.

2.7 **Potential Improvement** – Circumstance where change in standard or specification could lead to improved performance identified from:

- a) failures of standards to meet Expected Performance; or
- b) other observations.

2.8 **Responsible Technical Adviser** – The Technical Adviser responsible for dealing with a specific SIS Report from initial entry to closure.

2.9 **SIS Report** – Report of a Potential Improvement entered into SIS.

2.10 **Safety Critical** – A status of a SIS Report considered by the Originator to have safety implications.

2.11 **Standards Improvement System (SIS)** – Computerised database of Potential Improvements to standards and specifications.

2.12 **Status** – The status automatically assigned to a SIS Report depending on the stage reached in the reporting process, selected from: Initial Entry, Agreed Action, On Hold or Report Closed.

2.13 **Structures Management Information System (SMIS)** – The Highways Agency’s database of structures.

2.14 **System Administrator** – The person within the Highways Agency with responsibility for:

- a) maintaining SIS with details of the latest published standards and specifications;
- b) maintaining the list of Technical Advisers;

- c) monitoring the progress of SIS reports; and
- d) producing annual reports on the performance of SIS.

2.15 **Technical Adviser** – Highways Agency's or other Overseeing Organisation representative responsible for designated technical standards and specifications and for the review of SIS Reports.

## 3. USE OF THE STANDARDS IMPROVEMENT SYSTEM

### The Reporting Process

3.1 Designers shall enter a SIS Report when they identify a Potential Improvement.

3.2 Information for SIS Reports shall be obtained from the basic information obtained in the course of the Designer's normal work and inspection activities.

3.3 SIS Reports shall be submitted electronically via the Internet.

3.4 The Highways Agency's own staff, other organisations involved in the Highways Agency's work and other Overseeing Organisations may also enter SIS Reports.

3.5 SIS includes a user guide giving detailed advice on the preparation of reports. The user guide can either be used on-line or downloaded and printed.

3.6 A unique report number is automatically generated whenever a report is entered into SIS.

3.7 Each report is assigned a status dependent upon the stage reached in the reporting process.

3.8 The reporting process contains five basic stages from identification onto the system until closure.

3.9 These stages are described below and summarised in Appendix B in a flowchart detailing how the Highways Agency deals with SIS Reports. This flowchart is indicative and is unlikely to cover all eventualities.

3.10 The roles of the different organisations affected by SIS are summarised in the chart contained in Appendix C.

#### Stage 1 – Identification

3.11 Potential Improvements are initially observed at working level, therefore Designers play a major role in the generation of SIS Reports.

3.12 The following are some of the key activities that may yield SIS Reports:

- a) Design:
  - design checks;
  - queries on the implementation and use of the Overseeing Organisations' standards;
  - client's briefing;
  - dealing with Statutory Undertakers, Health and Safety Executive, Environment Agency, etc;
  - design reviews;
  - road safety audits; and
  - departures from standards submissions.
- b) Construction:
  - failures during construction;
  - compensation events;
  - contractual claims;
  - design checks;
  - specification queries;
  - supervisor activities; and
  - road safety audits.
- c) Maintenance:
  - RMMS inspections;
  - structure inspections;
  - deflectograph surveys;
  - SCRIM results; and
  - communications, lighting, signals and sign inspections.

- d) Demolition.
- e) De-trunking.
- f) Public complaints.
- g) Police reports.

### Stage 2 – Data Entry

3.13 SIS contains the following field types:

- a) Mandatory – must have information entered.
- b) Optional – may have information entered.
- c) Automatic – fields generated by the entry of mandatory or optional data.

3.14 All mandatory fields must be completed for a report to be accepted on SIS with the status “*Initial Entry*”. There are two key areas:

- a) Report details – relating to the source, location and description of the report and whether it is considered Safety Critical.
- b) Diagnosis details – relating to the component, symptom and diagnosis information.

3.15 Report details require information on the following:

- a) Source of report – the Originator’s name and organisation. The e-mail address is required if the Originator is to receive feedback on the progress of a report.
- b) Highways Agency’s Maintenance Area or name of other Overseeing Organisation.
- c) The unique reference for the section of road concerned. In England, this is the Section Reference used in HAPMS; this is described in more detail in Appendix D. Other Overseeing Organisations may use a referencing system of their own.
- d) Structure reference number – a unique five figure structure key reference number allocated to each trunk road structure, provided via a direct link to SMIS. Structure key reference numbers should be issued during design and should be available throughout the life of a structure.

e) Report description – to allow the Originator to describe the situation succinctly and in sufficient detail for clarity.

f) Safety Critical – to identify whether the report is considered Safety Critical. This is subjective but is intended to highlight items that may need to be treated with higher priority on the grounds of safety. The Originator is required to enter a reason to explain why a report is considered Safety Critical.

3.16 Diagnosis details are entered using a separate screen and are necessary to identify the Technical Adviser to whom the report is sent. Data are entered by means of drop-down fields on the following:

- a) Component – the general area in which the Potential Improvement lies or is observed. It is loosely based on the series numbering used in the Specification for Highway Works (SHW) but it has been extended to include other volumes of the Manual of Contract Documents for Highway Works (MCHW), the Design Manual for Roads and Bridges (DMRB) and the Trunk Road Maintenance Manual (TRMM).
- b) Symptom – a phrase or word that best describes how the Originator first became aware of the Potential Improvement. The symptoms also include general terms for where standards are considered inaccurate, unclear or inadequate.
- c) Diagnosis – the general area in which the underlying problems most likely lie. In order to provide logic for the user and useful data on the analysis, diagnoses include:
  - clause numbers taken from the SHW and accompanying notes for guidance;
  - sample appendices;
  - drawing series from the Highway Construction Details;
  - design standards taken from the various sections of the DMRB; and
  - a reference that the diagnosis is best derived from another component.

3.17 Originators may enter multiple diagnoses for each report and must do so if the Originator considers that the diagnosis is best derived from another component.

### Stage 3 – Review by Highways Agency

3.18 When a report is generated, a notification is sent to the Technical Adviser whose name appears against the first entered diagnosis. This Technical Adviser becomes the Responsible Technical Adviser.

3.19 On receipt of notification the Technical Adviser checks that the report has reached the correct person and if appropriate reassigns it to another Technical Adviser who becomes the Responsible Technical Adviser.

3.20 The Responsible Technical Adviser reviews the report within three months unless it is identified as Safety Critical in which case it is reviewed within one month. The Responsible Technical Adviser:

- a) assesses the Safety Critical status assigned to the report and changes it if necessary;
- b) checks whether the report is covered by previous reports;
- c) determines whether to accept the report as a valid Potential Improvement;
- d) considers relevant departures from standard available to the Responsible Technical Adviser;
- e) assesses the diagnosis made by the Originator and amends it as required; and
- f) determines the required course of action.

### Stage 4 – Action

3.21 Courses of action include: a research programme, a review of a standard or other action. When the action has been selected and a date for completion entered, the report is assigned the status “*Agreed Action*”.

3.22 The Responsible Technical Adviser is responsible for ensuring that the action is carried out within the required timescale.

3.23 Non-urgent reports are assigned the status “*On Hold*” and are reviewed within a period selected by the Responsible Technical Adviser of 3, 6 or 12 months. Safety critical reports cannot be placed on hold.

### Stage 5 – Closure

3.24 A report is closed on completion of the agreed action or if it is not accepted as a valid Potential Improvement. At this stage, the report is assigned the status “*Report Closed*”.

#### Feedback

3.25 Where the Originator has provided an e-mail address, feedback is provided by the automatic generation of an e-mail when:

- a) changes are made to the report;
- b) the status of a report changes; or
- c) comments are added to a report.

3.26 Users may access any report both to monitor progress of their own reports or to search the database and add comments to any report in order to maximise the potential for sharing knowledge and improving standards.

#### Departures from Standards

3.27 The Highways Agency operates a Departure Approval System (DAS). Because a departure from standard often identifies an item not adequately covered by standards, DAS submissions will provide an additional source of SIS Reports. Not every DAS submission will result in a SIS Report and reports should only be produced for frequently recurring departures.

3.28 SIS Reports resulting from DAS submissions are generated by the DAS Administrator and by Designers who request frequently recurring departures from standards.

#### Administration

3.29 The System Administrator:

- a) maintains the lists of components, symptoms and diagnoses to take account of changes to the Highways Agency’s standards and changes required by Technical Advisers;
- b) maintains the list of Technical Advisers;

- c) monitors the progress of SIS Reports; and
- d) produces annual reports to senior management on the performance of SIS.

3.30 Technical Advisers provide the System Administrator with information on required changes to components, symptoms and diagnoses relating to their field of expertise.

3.31 In order to ensure that reports are dealt with expeditiously, e-mails are automatically generated and sent to Technical Advisers to cover reports that are nearing or past a date when further action is required.

## 4. ENQUIRIES

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

Chief Highway Engineer  
The Highways Agency  
Room B153A  
Romney House  
43 Marsham Street  
London SW1P 3HW

G CLARKE  
Chief Highway Engineer

Chief Road Engineer  
Scottish Executive  
Victoria Quay  
Edinburgh  
EH6 6QQ

J HOWISON  
Chief Road Engineer

Chief Highway Engineer  
Transport Directorate  
Welsh Assembly Government  
Llywodraeth Cynulliad Cymru  
Crown Buildings  
Cardiff  
CF10 3NQ

J R REES  
Chief Highway Engineer  
Transport Directorate

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

G W ALLISTER  
Director of Engineering

## APPENDIX A – STANDARDS AND SPECIFICATIONS COVERED BY SIS

### 1. The Manual of Contract Documents for Highway Works

- Volume 0: Model Contract Document for Major Works and Implementation Requirements
- Volume 1: Specification for Highway Works
- Volume 2: Notes for Guidance on the Specification for Highway Works
- Volume 3: Highway Construction Details
- Volume 4: Bills of Quantities for Highway Works
- Volume 5: Contract Documents for Specialist Activities
- Volume 6: Departmental Standards and Advice Notes on Contract Documentation and Site Supervision

### 2. The Design Manual for Roads and Bridges

- Volume 1: Highway Structures: Approval Procedures and General Design.
- Volume 2: Highway Structures: Design (Substructures and Special Structures) Materials
- Volume 3: Highway Structures: Inspection and Maintenance
- Volume 4: Geotechnics and Drainage
- Volume 5: Assessment and Preparation of Road Schemes
- Volume 6: Road Geometry
- Volume 7: Pavement Design and Maintenance
- Volume 8: Traffic Signs and Lighting
- Volume 9: Network – Traffic Control and Communications
- Volume 10: Environmental Design and Management

Volume 11: Environmental Assessment

Volume 12: Traffic Appraisal of Road Schemes

Volume 13: Economic Appraisal of Road Schemes

Volume 14: Economic Assessment of Road Maintenance

Volume 15: Economic Assessment of Road Schemes in Scotland

### 3. Trunk Road Maintenance Manual: (not applicable in Scotland, Wales and Northern Ireland)

Volume 1: Highways Maintenance Code

Volume 2: Routine and Winter Maintenance Code

Volume 3: Management of Health and Safety

### 4. Traffic Signs Manual

Chapter 1 Introduction

Chapter 7 The Design of Traffic Signs

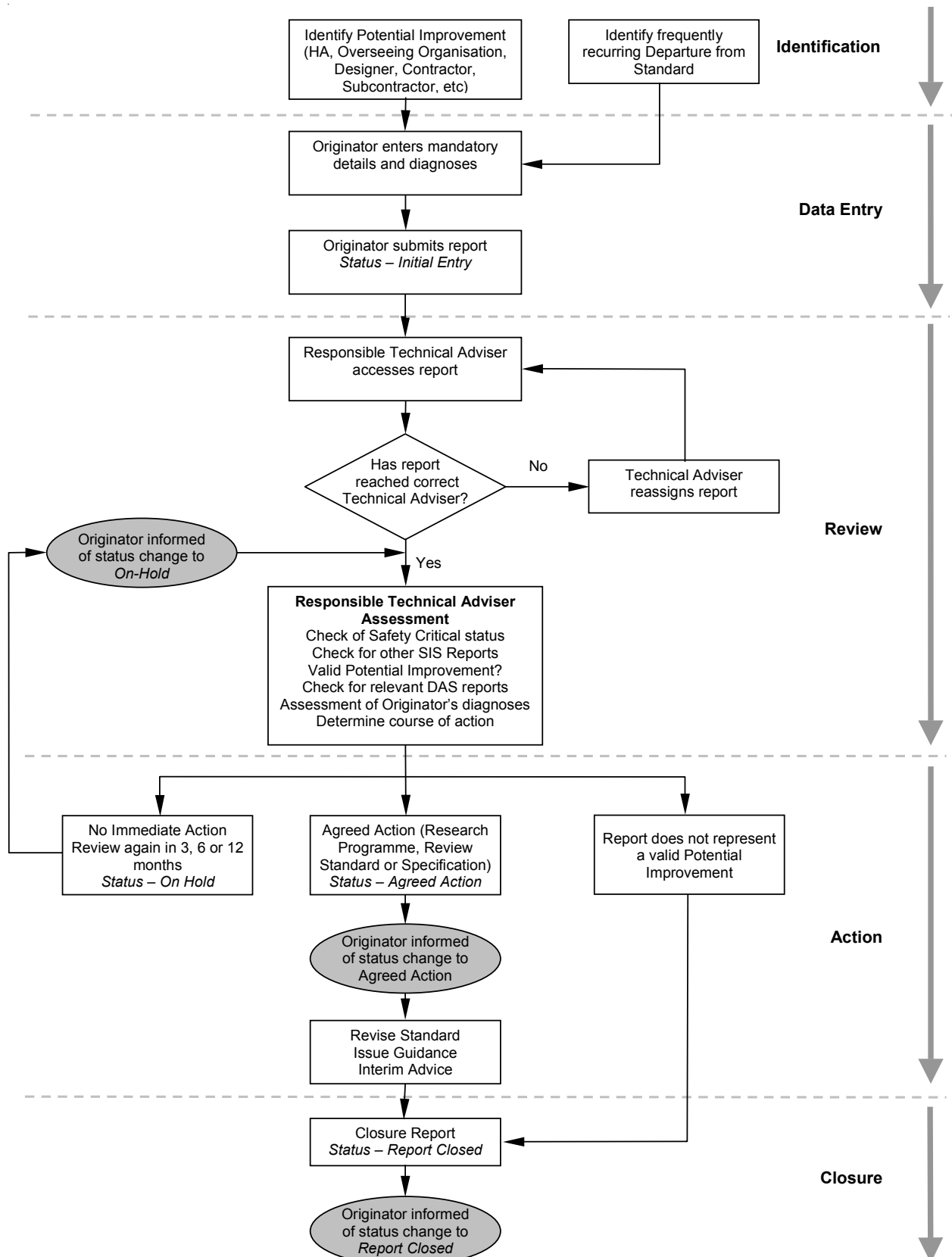
Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations

### 5. Working Drawings for Traffic Signs Design and Manufacture (Volumes 1, 2 and 3)

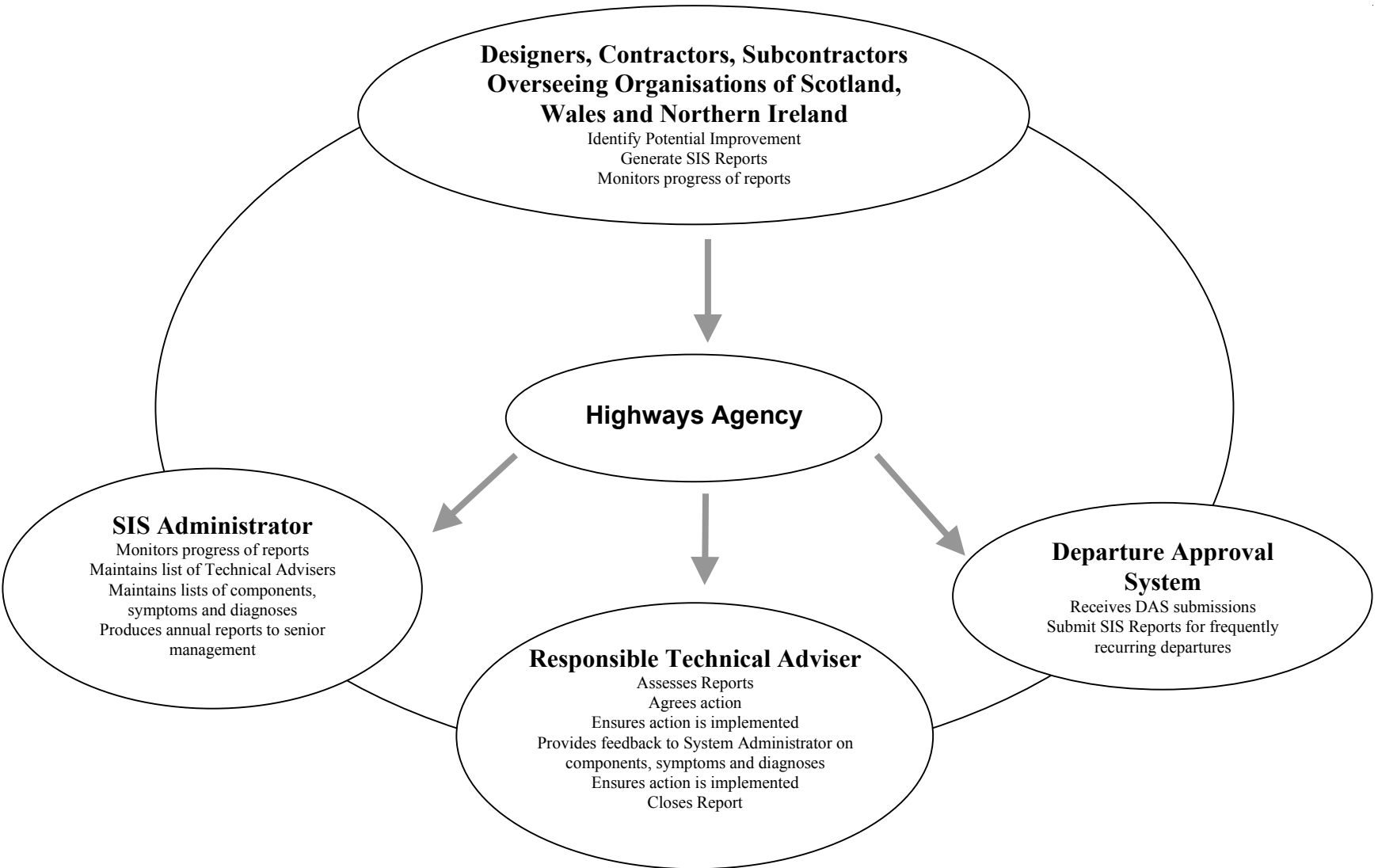
### 6. Highways Agency Traffic Systems and Signing (TSS) Documents

Documents listed in the latest issue of MCS 206 - List of Drawings, Specifications and Instructions.

# APPENDIX B – FLOWCHART



# APPENDIX C – ORGANISATION CHART



## APPENDIX D – ROAD REFERENCING SYSTEM

D1 In England, roads are referenced using a Section Referencing system. Each road on the Highways Agency's network is divided into sections and is assigned a Section Label. Agent Authority (AA) Area Codes are used for the referencing of Sections. In most cases AA Area Codes correspond to Local Authority areas (Counties and Metropolitan Authorities) and are used for Sections wholly and primarily within those areas. However each MA/MAC is also assigned its own AA Area Code which is used with Highways Agency approval.

D2 The Section Label is formulated as follows:

- a four digit AA Area Code, followed by
- an "A" or "M" character, followed by
- a road number of up to four digits, followed by
- an optional "M" character, followed by
- a forward slash ("/"), followed by
- a Section number of up to three digits.

D3 The following are examples of valid Section Labels:

- 1900M1/3
- 1900M62/105
- 1900A1M/25
- 1900A1001M/123
- 1900A10/15
- 4720A6120/103.

D4 Section Labels are allocated by the Highways Agency in conjunction with the organisations responsible for maintaining the highway network. Section Labels are subject to change and the Highways Agency's ServiceDirect helpdesk in Leeds (Telephone 0113 254 1140) should be contacted to obtain current labels.