Interim Advice Note 75/06

Code of Practice for Emergency Access to and Egress from the Trunk Road Network in England

Note.
This IAN should be read in conjunction with IAN 68/06

Contents

1 Introduction

1.1 Scope

1.1.1 This Code of Practice contains requirements and advice on the provision of emergency access and egress to and from the all-purpose and motorway trunk road network in England. This Code of Practice shall be implemented with immediate effect.

1.2 Background

1.3.1 The Highways Agency (HA) is concerned about the plight of road users whose vehicles become trapped on the network when one, or both, carriageways become totally blocked. This may be as a result of a major incident or adverse weather conditions.

1.3 Purpose of this Code of Practice

1.3.2 This Code of Practice has been developed, as part of the overall strategy for Traffic Incident Management. The objective is to detail the network infrastructure and procedure changes which may be implemented as part of the development of route specific, emergency access and egress procedures and to contribute to the significant reduction in the delays to road users when an incident or adverse weather has resulted in a blocked carriageway.

1.3.3 It has been calculated that over any twelve month period there is an average of one incident (blocking a carriageway for 3 hours or more) for each 8.26 km of all-purpose trunk road and one incident for each 8.54km of motorway trunk road (see Annex 3 for details of these calculations).

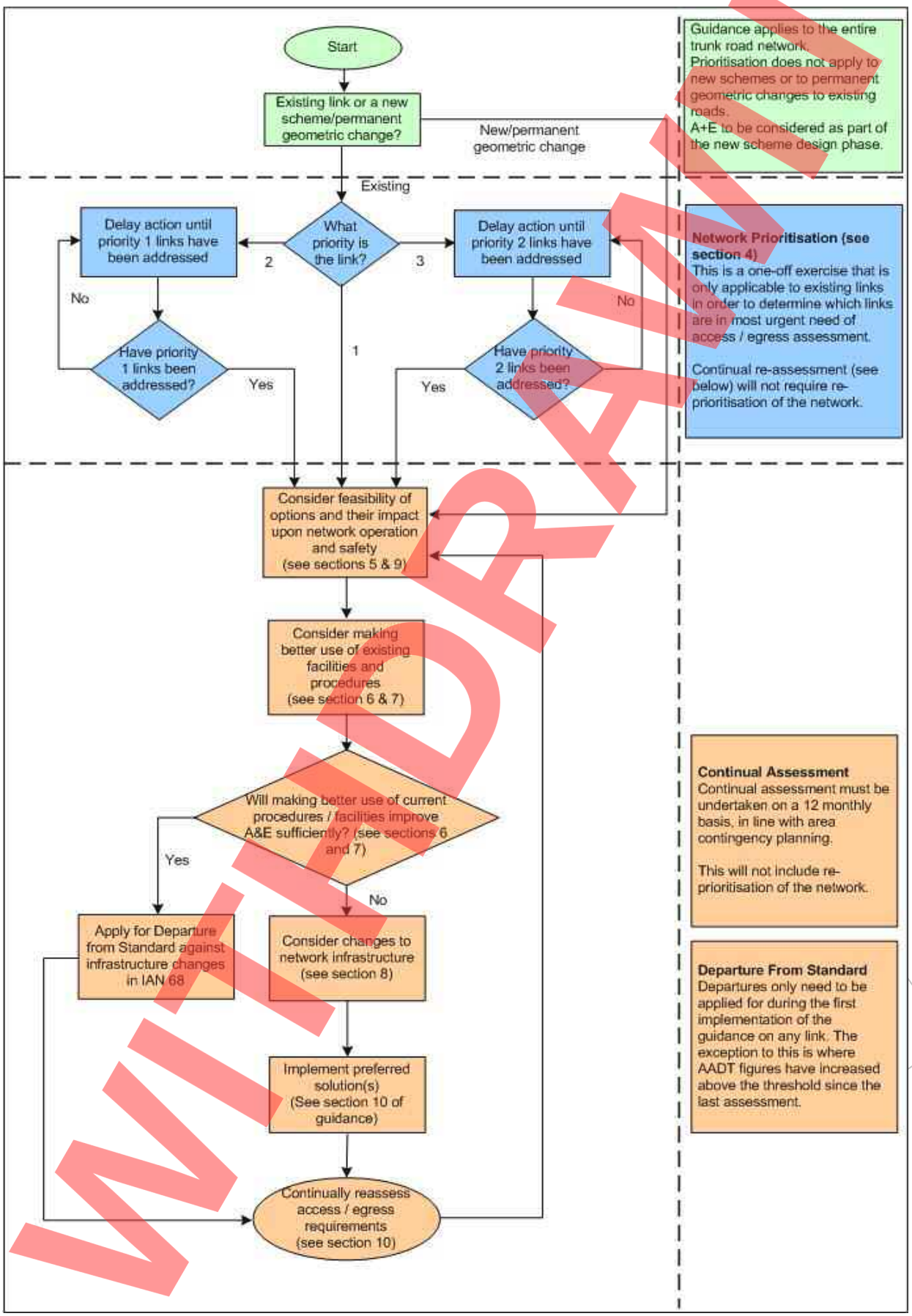
1.3.4 Applying this to the trunk road network across the whole of England suggests that there could be up to 624 such incidents on the all-purpose trunk road network in a 12 month period, and 357 on the motorway trunk road network, the management of which, could benefit from the implementation of emergency access and egress procedures.

1.3.5 This Code of Practice provides guidance on the range of issues and options to be considered when assessing the access and egress arrangements on any part of the trunk road network. This consideration should meet the operational needs of the emergency services, service providers and daily road users, in accordance with safe and efficient traffic management practice and with a minimal impact on the environment.

1.3.6 Route Performance Managers need to ensure that all the above are taken into account when preparing or updating their Emergency Access and Egress Procedure for a route.

1.3.7 This Code of Practice has been structured to guide the user through each of the necessary stages from initial network prioritisation through to implementation of changes in procedures and/or infrastructure, in line with the flowchart provided in figure 1. This Code of Practice must be used in conjunction with IAN 68/06, and is part of a full assessment process that will not be viable if individual elements are evaluated without following the entire process outlined in the flowchart.

Figure 1 Flowchart



1.3.8 In summary, this document details the requirements and advice to be followed in determining whether or not there is a need for changes to procedures and/or infrastructure to aid emergency access and egress for a specific section of a route. It also provides details for:

- Method to be adopted for network prioritisation;
- Guidance on preparation of route specific emergency access and egress procedures;
- Guidance on potential changes to network infrastructure in support of route specific emergency access and egress procedures
- Continuous assessment requirements

1.3.9 The network prioritisation methodology is provided in section 4 to enable Route Performance Managers to categorise which links on the network are in greatest need of improvements to route specific emergency access and egress arrangements.

1.3.10 Details of operational and infrastructure options are provided (sections 6, 7 and 8). These include an option overview and standard details where appropriate.

1.3.11 Certain options are only appropriate for dual carriageways (e.g. those options that require a procedure for implementing the emergency egress of trapped road users via the central reserve.) However, the full guidance should always be considered and a view should be taken as to the appropriateness of the available options with respect to the road under assessment.

1.4 Implementation

1.4.1 This Code of Practice does not apply in **Wales, Scotland and Northern Ireland**.

1.5 Definitions

1.5.1 **Many of the definitions set out below are not industry standard definitions and apply only in the context of this IAN.**

1.5.2 ***Trunk roads***: both all-purpose and motorway trunk roads unless specified otherwise.

1.5.3 ***Category 1 Incident***: Severe incidents creating stationary traffic on the network for three hours or more.

1.5.4 ***Category 2 Incident***: Intermediate incidents creating stationary traffic on the network for between one and three hours.

1.5.5 ***Category 3 Incident***: Minor incidents creating stationary traffic on the network for less than one hour.

1.5.6 ***Access***: Access to the trunk road network for the emergency services (or other authorised users) from the secondary carriageway or local road network.

1.5.7 ***Egress***: Egress from the trunk road network for the emergency services (or other authorised users) and road users to the secondary carriageway or local road network. (Note – this does not apply to the emergency evacuation of road users to another location without their vehicles, as sometimes happens in the event of a hazardous chemical spillage, fire, or in extremely adverse weather conditions).

1.5.8 ***Link***: Section of trunk road network between two junctions, unless otherwise specified.

1.5.9 ***Single closure***: The complete closure of the trunk road carriageway in one direction.

1.5.10 ***Double closure***: The complete closure of the trunk road carriageway in both directions.

1.5.11 ***Emergency Central Reserve Crossing Point***: A purpose built cross over point to enable access for emergency services and egress via the secondary carriageway, in accordance with IAN 68.

1.5.12 ***Emergency Turnaround Area (ETA)***: An area of hard standing located in the verge to assist with the turning of vehicles as part of the egress procedures.

1.5.13 ***Rearward relief procedure***: A procedure to allow the movement of trapped users by performing a u-turn on the same carriageway. Sometimes referred to as controlled reverse directional flow.

1.5.14 ***Emergency access and egress procedure***: A procedure specific to a route which enables emergency service access to and / or emergency egress of trapped road users from the trunk road network.

1.5.15 ***Secure Carriageway***: A carriageway where all access points have been closed and any broken-down vehicles have been removed.

1.6 Glossary

A glossary of acronyms used throughout this document can be found in Annex 1.

2 Potential scenarios that could benefit from improved emergency access and egress

2.1 General

2.1.1 This section identifies some of the circumstances that could lead to the requirement for facilitating emergency services access to or road user egress from the network.

2.1.2 Any recommended emergency access and egress measure is most likely to be of benefit to the traffic management in the event of a category 1 incident.

2.1.3 Any incident that would result in a full or partial closure of a section of network is likely to result in a category 1 incident. These include but are not limited to:

- Incidents involving fatalities that require police crime scene investigations;
- Incidents involving serious injuries with the potential of leading to a fatality and hence the requirement for a police crime scene investigation;
- Incidents involving passenger service vehicles, coaches, school minibuses, trains, or public service vehicles etc., resulting in multiple injuries;
- Incidents involving the crossover of a vehicle from one carriageway to another requiring significant repairs to the network infrastructure;
- Incidents requiring specialist recovery operations;
- Incidents involving a vehicle carrying a dangerous substance (e.g. hazardous chemicals, flammable liquids, radioactive materials, etc.);
- Incidents resulting in serious or potentially serious structural damage (e.g. to a bridge) necessitating road closures;
- Severe weather or road conditions requiring partial or full closure of the network;
- Security alerts or criminal / terrorist acts that require partial or full closure of the network;
- Any incident off or adjacent to the network that may impact upon the safe working of the network and require partial or full closure.

3 Other Traffic Incident Management strategy considerations

3.1 General

3.1.1 Emergency access and egress should not be considered in isolation and should always form just one element of an overall Traffic Incident Management strategy.

3.1.2 The implementation of emergency access and egress procedures is a key element of an overall Traffic Incident Management strategy. Many of the key elements are inextricably linked and one should not replace another. Other key areas of consideration, as part of an overall Traffic Incident Management strategy, should include but not be limited to:

- Incident response and clearance;
- Improved inter-agency cooperation;
- Driver information;
- Emergency diversionary routes;
- Provision of welfare facilities;
- Options for prevention of vehicles joining a queue of trapped traffic.

3.1.3 As the elements of network operation and traffic incident management in 3.1.2 are not directly related to providing improved measures for emergency access and egress they are considered outside the scope of this Code of Practice.

3.2 Incident Detection, Response and Clearance

3.2.1 Due to the severity of weather or complexity of certain types of incident, it is often not possible to effect rapid clearance and a quick re-opening of the carriageway. This has the potential for unacceptable delays to road users.

3.2.2 Options that would assist more rapid incident detection, response and clearance include, but are not limited to:

- Improvements to incident detection systems, e.g. more widespread use of Closed Circuit Television (CCTV);
- Greater on road resource levels, e.g. Incident Support Units (ISUs), Traffic Officers;
- Early scene presence of specialist recovery agencies. Interim Advice Note 65 provides guidance on the range of issues to be considered and the options available for recovery operations within road works on the trunk road network.

3.3 Improved Inter-agency Cooperation

3.3.1 A representative from the Managing Agent (or equivalent depending on the terms of the area commission) should attend during the very early stage of an incident, assess damage to the infrastructure and provide judgement as to how long the carriageway needs to remain closed. This will assist in Incident Management by:

- Providing more accurate information on the potential delay duration for dissemination to road users, thereby improving driver information.

- Enabling informed decisions for the implementation of the traffic incident management strategy which may include the route specific emergency access and egress procedure.
- Determining network infrastructure repair requirements.

3.4 Pedestrian egress from the trunk road network

3.4.1 When it is considered preferable for road users to leave their vehicles on the trunk road to enhance safety, e.g. as a result of chemical spillage or a fire, a pedestrian egress procedure would enable road users to leave the trunk road network in safety, e.g. via a pre-constructed pathway to a nearby local road.

3.4.2 Careful consideration must be made to ensure that implementation of any pedestrian egress procedure does not increase the existing risk to road users.

3.4.3 There are a number of standard infrastructure amendments that could assist with such a procedure, e.g. steps up / down a steep verge.

3.5 Driver Information

3.5.1 Providing accurate, real time information to road users may help to reduce the potential delays following an incident. This information could include the likely delay duration and information on steps being taken to manage the incident. The information may be disseminated to the road users via various sources, such as but not limited to:

- Variable Message Signs (VMS);
- In-car information i.e. radio;
- On road resources (e.g. Police, Traffic Officers).

3.6 Options for preventing further vehicle from joining queues

3.6.1 Several of the previous options considered in this section would assist in preventing road users from joining an already grid-locked network, but additional options include signalling and / or barrier systems at slip road junctions.

4 Network prioritisation

4.1 General

4.1.1 This section describes the priority ranking methodology for the assessment of the benefit of infrastructure modifications and improved route specific emergency access and egress procedures for any link length on the existing trunk road network.

4.1.2 A suitable link length will be between major junctions that lead to an alternative route which preferably forms part of an emergency diversionary route strategy.

4.1.3 The network prioritisation tool is to aid route performance managers in prioritising route specific access and egress procedures or existing links on their part of the network.

4.1.4 It is recommended that the network prioritisation assessment is undertaken once within each HA network area, to develop a route specific emergency access and egress procedure, after which there will be no requirement for a further prioritisation.

4.1.5 Network prioritisation will be at three levels,:

- Link Priority 1 – Those links in most urgent need of improved route specific emergency access and egress;
- Link Priority 2 – Links to be considered for improvements to route specific emergency access and egress after the priority 1 links have been addressed;
- Link Priority 3 – Links to be considered for route specific emergency access and egress after priority 1 and 2 links have been addressed.

4.1.6 The variables considered as the key determining factors in priority ranking are:

- Traffic Flow ;
- Link length;
- Severe delay history;
- Other factors (e.g. sub-standard design of existing network).

For Detailed Priority calculation information, see Annex 2.

4.1.7 The network prioritisation tool can be applied to S2, WS2, WS2+1, D2AP, D3AP, D2M, D3M, D4M carriageway standards. NOTE: there are special sections of network that do not conform to these carriageway standards, e.g. A38(M) which operates a tidal flow system. Such roads should automatically be made priority 1.

4.1.8 Wherever changes are made to network infrastructure (schemes of any size), the design must be to the requirements of IAN 68, therefore network prioritisation is not required.

5 Overview of options

5.1 General

5.1.1 Options for improving emergency access to and egress from any section of the trunk road network must be considered as part of an overall Traffic Incident Management strategy.

5.1.2 There is no single correct solution for improving emergency access and egress. Specific local issues and characteristics associated with the section of route under assessment will determine the best application for a specific location. This section provides an overview of the options that should be considered as a minimum. These options fall into two distinct categories as outlined in sections 5.2 and 5.3.

5.2 Making Better Use of Existing Access / Egress Procedures and Infrastructure

5.2.1 Making better use of either existing procedures and / or infrastructure that are already in place.

- Making better use of existing access and egress procedures (see section 6);
- Making better use of existing access and egress infrastructure other than at junctions (see section 7).

5.2.2 Generally, these options may be implemented without introducing major changes to the existing network infrastructure, although minor modifications may improve the operation, e.g. when implementing rearward relief procedures for trapped road users, minor improvements to the existing infrastructure such as modifications to the on slip junction geometry could assist the integration of vehicles into existing traffic flows. See section 8.

5.3 Potential Changes to Network Infrastructure

5.3.1 In certain locations major infrastructure changes may be required to either enable emergency egress of road users to move directly to an alternative route (e.g. via a purpose built connection on to a local road) or to travel across the central reserve on to the secondary carriageway via a crossing point. See section 8.

5.4 Guide to Reviewing Options

5.4.1 **Those options that involve making better use of existing procedures and infrastructure must always be considered first**.

5.4.2 Options requiring major changes to the network infrastructure must only be considered when it is clear that making better use of existing procedures and / or infrastructure will not be feasible or is unlikely to have any significant impact in terms of reducing delays to road users trapped on the network. For further guidance see Section 10.

5.4.3 Figure 1 provides an Order of Consideration for the various options available. This is to be considered an aid to the Continuous Value Management (CVM) process, and not as a replacement or alternative.

Figure 1: Order of Consideration of Options

Options Available as Part of an Overall Incident Management Strategy				Options Specific to Improving Emergency Access and Egress Operations		
Incident response / clearance (See section 3)	Communication / liaison (See section 3)	Welfare (See section 3)	Driver Information (See section 3)	Existing access / egress procedures (See section 7)	Existing access / egress locations (See section 6)	Network infrastructure changes (See section 8)

5.5 Network Operations and Safety

5.5.1 The network operation and safety considerations detailed in section 9 should be considered during assessment of options.

6 Making better use of existing procedures

6.1 General

6.1.1 Route Managers should consider and evaluate existing emergency access and egress procedures and ways of improving these, before assessing and implementing major changes to the network infrastructure.

6.1.2 Existing emergency access and egress Police procedures are documented in the National Police Motorway Manual.

6.1.3 The Traffic Officer procedures manual covers network operations and incident management procedures to enable the egress of trapped road users from the network.

6.1.4 Formal and informal procedures should be documented.

6.1.5 Existing procedures should be reviewed and reassessed to ensure that egress of road users minimises the disruption to the road user. To ensure best practice the following should be undertaken:

- Formal adoption of all procedures into Area Emergency Contingency Plans;
- Raise awareness to on road personnel of the availability of these procedures;
- Ensure training for all on road personnel to implement procedures;
- Confirmation and clarity of command structure for the implementation of any procedure;
- Ensure that clear, defined guidelines are available to assist incident managers in determining when these procedures may be adopted.

6.1.6 It is not within the scope of this guidance to define changes to existing network procedures as any changes to network operations must be authorised by the owners of the respective manuals. However, this guidance does offer proposals for improving the efficiency and effectiveness of emergency access and egress operations.

6.1.7 Where appropriate liaison with the relevant authorities should be undertaken to ensure a clear incident management strategy.

6.2 Working with the Emergency Services

6.2.1 On roads where network operations and incident management is still the responsibility of the police, different access and egress procedures may be operated.

6.2.2 Regular liaison should take place between the HA, Police and the local emergency services to promote best practice and ensure a clear and consistent strategy for emergency access and egress policy across the network, regardless of location and personnel.

6.2.3 Emergency access and egress procedures should be clear, consistent and documented to be shared, supported and implemented by the Police wherever possible.

6.3 Highways Agency Traffic Officer Procedures

6.3.1 Rearward Relief is the procedure recommended in The National Manual of Traffic Officer Procedures for enabling the egress of stationary road users from the network by safely turning their vehicles around on the same carriageway and directing them back to the next suitable junction. This procedure may be used on dual 2, 3 and 4 lane carriageways.

6.3.2 On many roads, this procedure will be sufficient for enabling the emergency egress of stationary road users and will not require the introduction of new procedures and infrastructure. Note the points raised in paragraph 6.1.5 should be observed. Where sections of the network are too narrow to implement the rearward Relief procedure minor modifications to the network infrastructure e.g. emergency turnaround areas in the verge or junction geometry revision may assist in making such an operation practical. See section 8.

6.3.3 If this procedure is not feasible even after modification consideration or does not provide a significant improvement to the current situation, then other options may be considered.

6.4 Formalisation of Procedures

6.4.1 Existing egress procedures are adopted on an ad-hoc basis.

6.4.2 A much used method is the removal of a length of central reserve barrier to permit the egress of stationary road users via the secondary carriageway. This procedure is operated if:

- It can be undertaken in a safe and controlled manner;
- It meets the performance requirements of a central reserve crossing point (see IAN 68 section 3.4)

6.4.3 Support for ad-hoc procedures should be given by:

- Formalisation of such a procedure;
- Use of other equipment to support the procedure, e.g. use of temporary roadway where the central reserve is not of a sufficient standard to support a continuous flow of traffic.

6.4.4 Consideration must be given to the protection of other elements of network infrastructure (other than to the safety fence) such as communications cabling, drainage etc. by the installation of temporary heavy duty vehicle matting or permanent hard standing.

6.4.5 This is just one example of a procedure undertaken on an ad-hoc basis. There are likely to be other procedures adopted in different areas and the same principles should be applied.

7 Making better use of existing infrastructure other than at junctions

7.1 General

7.1.1 Locations that provide connections to / from the network, other than at recognised junctions include, but must not be limited to, the following:

- Motorway Service Areas (MSAs);
- Maintenance / Traffic Officer/ police depots etc.,
- Purpose built connections.

7.1.2 The utilisation of one of the locations listed in 7.1.1 for an emergency access and egress procedure from a link length under assessment may provide a more cost effective solution than undertaking major or minor changes to the network infrastructure.

7.2 Motorway Service Areas

7.2.1 Although MSAs usually have restricted exits / entrances to and from alternative routes for use by service area staff, there is the potential to provide both access to emergency vehicles and egress for road users, under controlled conditions.

7.2.2 Such locations should be clearly identified in Area Emergency Contingency Plans (AECPs). Consideration of the following is paramount prior to any such inclusion.

- Internal road layout;
- The classification, design and construction of the adjacent road;
- A risk analysis of the method of operation of the emergency access and egress procedure;
- Suitability for use as a emergency services access only or full scale access / egress;
- Security matters and measures for maintaining integrity;
- Ownership of the land and cooperation of land owner / manager;
- Rectification of land/site after emergency use;
- Other significant local issues.

7.2.3 Each of the above is considered in more detail in the following paragraphs.

7.2.4 ***Internal Road Layout at MSAs***: Generally not suitably designed to facilitate high volumes of traffic. If the assessment of the MSA road layout does not support a safe egress operation for road users, it may still be possible to use the location as an access / egress point for emergency vehicles and other authorised vehicles only. Such locations should be clearly identified in AECPs as suitable for emergency vehicle use only.

7.2.5 Some restricted exits / entrances may not be suitable for certain types of vehicle.

7.2.6 ***Standard of Adjoining Road***: The standard of the adjoining road must be determined with regard to design, construction, restraints e.g. low bridges, prior to consideration as part of an emergency access or egress route. It would be preferable if any suitable adjoining road is part of an approved diversion plan.

7.2.7 Whether an approved diversionary route or not, an assessment of the proposed diversionary route to its connection with the trunk road network must be undertaken and the results included in the AECP.

7.2.8 ***Risk Analysis***: A risk analysis must be carried out paying particular attention to the potential for high volumes of traffic and the impact on pedestrians in the MSA.

7.2.9 ***Mode of Operation***: Suitability as an emergency services access and egress only or full road user access / egress will be determined as a result of the previous considerations, i.e. internal road layout, standard of adjoining road and risk analysis.

7.2.10 ***Security***: Security to ensure that non-authorised users are not able to use this point under normal circumstances must be provided although it must permit the selective passage of authorised users (e.g. police, Traffic Officers, etc.)

7.2.11 ***Landowner***: MSAs are generally located on private land and use for the purposes of access / egress must first be negotiated with the landowner.

7.3 Other Private Locations (Maintenance / Police Depots)

7.3.1 Many of the considerations in section 7.2 must be considered for the assessment of the potential use of other locations adjacent to the network such as maintenance contractor's depots and police depots.

7.3.2 The implementation of an emergency access or egress procedure must not adversely impact on the ability of the emergency services stationed at these locations to carry out their function.

7.4 Purpose Built Connections

7.4.1 Where a gated access / egress point is already provided from the network to an alternative road, the suitability of these locations should be assessed in terms of being used for emergency access or egress by emergency services only or along with road users.

7.4.2 The following issues need to be considered when assessing purpose built connections, in addition to those highlighted in 7.2.

7.4.3 ***Risk Analysis***: Procedures should be implemented to ensure controlled methods of egress for road users. Consideration should also be given to the impact on existing traffic on the adjoining road.

7.4.4 ***Security Measures***: Fly tipping is to be discouraged and consideration may be given to further deterrents e.g. Closed Circuit Television (CCTV).

7.5 Identification of Locations

7.5.1 After assessment, suitable locations should be clearly identified in the relevant documentation (e.g. AECPs) and the relevant agencies informed.

7.5.2 Figure 2 provides an example of location identification and potential use.

Figure 2: Example Location Table

M'way	Area Name	C'way	Emergency Access / Egress Infrastructure					
			Unsuitable	Emergency Vehicles (Access / Egress)	Cars (Egress)	Cars with trailers / caravans (Egress)	HGVs (Egress)	Articulated HGVs (Egress)
M00	Name MSA	n/b		✓	✓	✓		
M00	Name MSA	s/b		✓	✓	✓	✓	
M00	Name Police Depot	n/b		✓				
M00	Name Police Depot	s/b		✓				

7.6 Operation

7.6.1 The emergency services (and other authorised users) must be made aware of the potential risks involved in using such a connection and the precautions that should be made.

7.6.2 Operation of these connections will form part of an Incident Management Strategy and procedures which must incorporate:

- Guidance as to when to implement such operations;
- Specific local procedures for use of the connection under consideration.

8 Potential changes to network infrastructure

8.1 General

8.1.1 These options can be categorised into minor infrastructure changes to support existing access / egress procedures and changes of a more major nature that introduce new emergency access and egress procedures, as follows:

Major Changes

- Central reserve crossing points;
- Purpose built connections to a parallel road;
- Purpose built connections to an overbridge / underpass.

Minor Changes

- Hard standings for the emergency services or other authorised users;
- Emergency turnaround areas situated in the verge;
- Modifications to junction geometry;

8.1.2 Each link on the network must be assessed independently. Table 1 identifies some of the disadvantages associated with each of the options identified above. Further detailed information is in Section 3.

8.1.3 Detailed information on options and requirements for infrastructure changes can be found within IAN 68.

Table 1: Disadvantages of options for changes to network infrastructure

Option	Disadvantages
Hard standing for the emergency services	Potential for unauthorised use
Emergency turnaround area	Potential for unauthorised use
Modifications to junction geometry	Only useful in conjunction with rearward relief procedure
Central reserve crossing point	Risks to operatives when using
	Potential impact upon secondary carriageway flow when used for emergency egress.
	Implementation timescales may prevent full chapter 8 traffic management requirements being achievable.
	Potential increase in maintenance requirement of central reserve crossing points compared to adjacent barrier.
	Potential increase in deflection of central reserve crossing point compared to adjacent barrier. This would have particular impact on locations with narrow central reserves.
Purpose built connection to a parallel road	Risks to operatives when using
	Security issues related with creating an additional access / egress point on the network.
	Political impact related to creating additional access / egress points on the network.
	Objection from Local Authority
Purpose built connection to overbridge / underpass	Risks to operatives when using
	Likely to be the highest cost option
	Political impact related to creating additional access / egress points on the network.
	Objection from Local Authority

9 Network operation and safety

9.1 General

9.2.1 Consideration of the following must be given for the continued safe operation of the network when implementing and emergency access or egress procedure:

- The impact of the change to existing and provision of new procedures;
- The impact on resources;
- The Impact upon the local road network;
- The Impact upon the secondary carriageway;
- The impact on road user safety;
- The provision of lighting;
- The provision of traffic management / speed control;
- The necessity for training.

9.2.2 Dynamic risk assessments may determine that egress from the network is not the best solution. Issues which may cause this are detailed below.

9.2 New Procedures and Changes to Existing Procedures

9.2.1 Network operational procedures should be reviewed to assess the impact of the introduction of new measures for emergency access and egress.

9.2.2 Guidance on how to implement any change to procedures or utilise a change to the network infrastructure must be made available for those services that would require them e.g. Traffic Officer, Police.

9.2.3 Changes to the procedures in the National Police Motorway Manual are facilitated through ACPO and those required in the Traffic Officer Procedures Manual are the responsibility of the HA. Consideration must be given to the statutory powers of the police and Traffic Officers when developing new route specific emergency access and egress procedures on part of the local authority network.

9.2.4 ***Rearward Relief:*** Some of the options involving changes to the network infrastructure will complement and assist the rearward relief procedure, e.g. emergency turnaround areas, modifications to junction geometry.

9.2.5 When introducing rearward relief, procedural guidance inclusive of the following, will be necessary for operational personnel :

- Location of the new infrastructure on the network;
- Awareness and procedural training for operational personnel e.g. Traffic Officer, ISU, police, etc;
- Guidance as to 'best use' situations;
- Traffic Management (TM) guidance;
- Instruction on the procedures on how to use the infrastructure safely and effectively.

9.2.6 ***Egress via the Secondary Carriageway:*** This will necessitate the development of new safe working procedures, in consultation with the police and other services and will be a key part of any Traffic incident Management Strategy

9.2.7 However, if new infrastructure is to be introduced to specifically enable this operation to be performed (see section 8), then procedures must be in place to inform the relevant on road personnel as to when and how to use it.

- As with the rearward relief options, procedural guidance must be developed for infrastructure that has been introduced to enable egress via the secondary carriageway as in section 9.2.5.

9.3 Resources

9.3.1 The various options outlined in this document, in many instances, will introduce new modes of incident management operation. This is particularly true where options involve performing road user egress. As a result, changes to existing incident management guidance and procedures will be necessary. The agencies / organisations most likely to be affected by these changes are:

- RCC / Traffic Officers (where in operation);
- Emergency Services;
- MAC or MA / TMC Incident Support Units (ISUs);
- Local Highway Authorities;
- Cross border/area teams.

9.3.2 Implementation of the emergency access / egress options outlined in this document will require a significant amount of resource, e.g. in the case of performing egress of road users via the secondary carriageway, not only will resource be required to open the gated central reserve ECP but several other TM activities (e.g. setting out signs and cones, directing traffic, etc.) will need to be performed.

9.3.3 To aid with the resourcing of procedures formal agreements should be put in place prior to incidents for cross boundary co-operation, i.e. directing resources from neighbouring areas.

9.3.4 Without sufficient resource these operations could be rendered useless.

9.4 Impact on the Local Road Network

9.4.1 In the event of any section of the network becoming blocked when the local road network is operating at full or near full capacity, the length of potential delay should be quickly assessed.

9.4.2 Consideration may be given to deferring the implementation of egress procedures until such a time that conditions on the local road network have eased to a level that would facilitate the additional influx of road users.

9.5 Impact on the Secondary Carriageway

9.5.1 If a central reserve crossover is to be utilised, due consideration must be given to the impact that this operation would have on the secondary carriageway either in the form of adverse delays or unsafe usage.

9.5.2 Consideration may be given to deferring the implementation of egress procedures until such a time that conditions on the secondary carriageway have eased to a level that would facilitate the additional influx of road users.

9.6 Road User Safety

9.6.1 The safety of road users and site operatives is paramount, therefore on occasions it may be safer not to implement egress procedures and to leave road users on the network in their vehicles e.g. in poor weather conditions.

9.6.2 Local authority network conditions must be a consideration in making any decision with regard to the implementation of such a decision as 9.6.1.

9.6.3 See Section 3 for other incident management strategy options.

9.7 Lighting

9.7.1 When diverting vehicles through a central reserve ECP or via an emergency turnaround area, it is preferable for these locations to be within an illuminated section of road.

9.7.2 Where a crossover or an emergency turnaround area is located on an unlit section of road, the application of temporary street lighting to the approach areas should be considered. The provision of temporary lighting must not unduly delay the implementation of emergency procedures.

9.7.3 Temporary lighting should not be in the form of floodlighting, which may dazzle drivers, and create additional safety problems.

9.8 Traffic Management / Speed Control

9.8.1 Due to time constraints during major incidents on the network, it is unlikely that it will be possible to set out traffic management to meet the full requirements of Chapter 8 of the Traffic Signs Manual.

9.8.2 Any arrangement for enabling emergency egress of road users is likely to lead to lower geometric standards and the loss of safety features such as the hard shoulder or central reserve barrier. It will therefore be important to ensure that in such circumstances, the speed of traffic is appropriate.

9.8.3 A speed control strategy should be developed for such situations including:

- Advisory speed restrictions;
- Use of Police or Traffic Officers at crossing point;
- Traffic signs to promote traffic calming;
- Convoy working;
- Publicity and information.

9.9 Training

9.9.1 All forms of on-road resource (e.g. Traffic Officers, police, ISUs, etc) should have undertaken appropriate training with respect to any new procedures put in place for the implementation of emergency access and egress procedures.

9.10 Summary

9.10.1 Section 9 has provided an overview of the basic requirements for safe and effective operation of the network, specifically relating to emergency access and egress procedures. To enable safe and effective operation the following must be available:

- Guidance as to the use and suitability of road user egress;
- Clear identification (documented and physical) of procedures and infrastructure available for performing route specific emergency access / egress;
- Updates to existing and development of new operational procedures, particularly where new infrastructure has been introduced;
- The training of a personnel who are likely to be involved in implementation of route specific emergency access and egress;
- Suitable arrangements to ensure the availability of additional resources from neighbouring areas;
- Constant liaison and communication with stakeholders;
- Assessment of the risk to safety of any solution before action has been undertaken.

10 Option selection and continual assessment

10.1 General

10.1.1 The section provides guidance with respect to the next stages to be undertaken and the requirement of continual assessment.

10.1.2 Having considered options that involve making better use of existing procedures and infrastructure, the Route Performance Manager must make a subjective decision on whether it is considered that these options will provide an adequate level of improvement to the existing situation on the link in question, i.e. will better use of existing procedures and infrastructure ensure that road users do not become trapped on the network for an unacceptable length of time.

10.1.3 Where improvements cannot be made to a section of network, Route Performance Managers must document the reasons within contingency plans and highlight the area as a potential risk.

10.2 Next Steps

10.2.1 Upon completion of the options assessment and having identified the most appropriate option or options for the link, the options must be implemented as soon as is practicable. The next stages after the identification of options most suitable for implementation on a link should include the following as a minimum:

- Outline design (for those options requiring changes to infrastructure);
- Bid for funding, including application of any relevant Value Management process;
- Detailed design of options, should the bid for funding be successful;
- Liaison with stakeholders;
- Construction;
- Road Safety Audit (RSA);
- Development of route specific emergency access and egress procedures;
- Update to Area Emergency Contingency Plans to incorporate new route specific emergency access and egress procedures.

10.2.2 Note: Where infrastructure changes are implemented, an RSA must be undertaken, in line with the requirements of HD19. It is important that day to day safety during normal traffic operations should be assessed in addition to safety during the implementation of emergency access and egress procedures.

10.3 Continual Assessment

10.3.1 Once the selected options are in place, it will not be possible to immediately assess the success of the new route specific emergency access and egress procedures unless an incident takes place that requires their implementation. Even then, it is likely to be as a result of a number of incidents over several years to determine if the selected options have improved the situation.

10.3.2 Initial assessment of new route specific emergency access and egress procedures will therefore have to be of a subjective nature based on local operational experience. This should take place on a 12 monthly basis in line with reviews of Area Emergency Contingency Plans.

10.3.3 In the event that an incident occurs that does require the implementation of the route specific emergency access and egress procedures, it is important that details of the incident and the operation of the procedures are recorded. This assessment should include the recording of the following details as a minimum:

- Location on the network;
- Nature of the incident;
- Duration between vehicles becoming trapped and being released.

10.3.4 The information gathered in Section 10.3 should be considered as part of the de-briefing process and fed into future assessments to contribute to better informed decision making regarding emergency access and egress requirements.

11 References

1. Infrastructure changes to improve emergency access to and egress from the trunk road network in England. IAN 68/06.

2. Traffic Flow Ranges for Use in the Assessment of New Rural Roads. Design Manual for Roads and Bridges, Volume 5, Section 1, Part 3: TA 46/97.

3. Design of Vehicle Recovery Operations at Road Works. Code of Practice 65/05.

4. Interim Requirements for Road Restraint Systems. Revision 1.

5. The Introduction of a New Highways Agency Policy for the Performance Requirements for Central Reserve Safety Barriers on Motorways. Code of Practice 60/05.

6. Crossover and Changeover Design. Design Manual for Roads and Bridges, Volume 8, Section 4, Part 6: TA 92/03.

7. Guidance for Safer Temporary Traffic Management. (Highways Agency / Health and Safety Executive.)

8. Road Safety Audit. Design Manual for Roads and Bridges, Volume 5, Section 2, Part 2: HD 19/03.

9. Cross Sections and Headrooms. Design Manual for Roads and Bridges. Volume 6, Section 1, Part 2. TD 27/05.

10. Highways Agency Traffic Officer Procedures, V3.0

11. Study of grass verges strengthened for motorways Phase 1 Volume 1 and 2. PR/IP/43/00 Unpublished.

12. Strengthened grass verges and safe havens - Phase 2. Draft Interim Report UPR/INN/80/04 Unpublished.

13. Strengthened grass verges and safe havens - Phase 3. Draft Interim Report UPR/INN/039/05 Unpublished.

Annex 1 Glossary

The following table contains a general glossary of abbreviations and acronyms that have been adopted throughout the document:

Abbreviation / Acronym	Description
AADT	Annual Average Daily Traffic
ACPO	Association of Chief Police Officers
AECP	Area Emergency Contingency Plan
APM	Area Performance Manager
ATM	Active Traffic Management
CCTV	Closed Circuit Television
CHE	Chief Highway Engineer
CRF	Congestion Reference Flow
CVM	Continuous Value Management
DBFO	Design, Build, Finance and Operate
DBFO Co	DBFO Company
DMRB	Design Manual for Roads and Bridges
ECP	Emergency Crossing Point
ERA	Emergency Refuge Area
ETA	Emergency Turnaround Area
HA	Highways Agency
HGV	Heavy Goods Vehicle
IAN	Interim Advice Note
IRRRS	Interim Requirements for Road Restraint Systems
ISU	Incident Support Unit
MA	Managing Agent
MAC	Managing Agent Contractor
MCP	Maintenance Crossing Point
MSA	Motorway Service Area
OBB	Open Box Beam
PCO	Police Control Office
RCC	Regional Control Centre
RPM	Route Performance Manager
RSA	Road Safety Audit
SE	Scottish Executive
SSR	Safety Standards and Research
TMC	Term Maintenance Contractor
TOD	Traffic Operations Directorate
TCB	Tension Corrugated Beam
TM	Traffic Management
VMS	Variable Message Sign

The following table includes a glossary of carriageway standard types:

Abbreviation / Acronym	Description
S2	Single carriageway
WS2	Wide carriageway
WS2+1	Wide single carriageway plus climbing lane
D2AP	Dual 2 lane all purpose
D3AP	Dual 3 lane all purpose
D2M	Dual 2 lane motorway
D3M	Dual 3 lane motorway
D4M	Dual 4 lane motorway

Annex 2 Link prioritisation

A2.1 Link Priority Score

A2.1.1 The Link Priority bands are provided in Table A3-a below:

Table A3-a Link Priority Bands

Link Score	Link Priority Ranking
>= 23	1
>=16	2
<16	3

A2.1.2 The link score can be calculated by applying the following formula:

Link Score = (PkHTF rating) + (AWTF rating) + (L rating) + (SDH rating) + O

Where:

PkHTF is the Peak Hour Traffic Flow (see A3.2);

AWTF is the Average Weekday Traffic Flow (see A3.3);

L is the Link length (see A3.4);

SDH is the Severe Delay History (see A3.5);

O is other factors deemed to have a potential effect (see A3.6.)

A2.2 Peak Hour Traffic Flow Rating

A2.2.1 The PkHTF rating is taken from Table A3-b below using the Peak Hour Traffic Flow percentage:

Table A3-b Peak Hour Traffic Flow Rating

Peak Hour Traffic Flow %	Rating
> 66%	12
50-66%	8
<50%	4

A2.2.2 The Peak Hour Traffic Flow % should be calculated as follows:

(Peak Hour Flow / Carriageway Capacity) * 100

A2.2.3 The Peak Hour Traffic Flow data can be taken from the TRADS 2 database.

A2.2.4 The Carriageway Capacity should be taken from Table A3-c below:

Table A3-c Carriageway Capacity (or max sustainable hourly throughput)

Road type	Carriageway Capacity
D4M	7,850
D3M	5,888
D2M	3,925
D3AP	5,676
D2AP	3,784
WS2+1	Assume same as S2
WS2	Assume same as S2
S2	1,224

A2.2.5 The Carriageway Capacity figures have been calculated using the formula:

Carriageway Capacity = (Lane Capacity) * (Number of lanes)

A2.2.6 The lane capacity has been estimated using the formula:

Lane Capacity = (A – B*Pk%H)

A2.2.7 A and B are parameters based on the road standard, and Pk%H is the percentage of 'Heavy Vehicles' in the peak hour (based on TA46):

Table A3-d Lane Capacity

Road Type	A	B	Pk%H	Lane Capacity
Single Carriageway	1380	15.0	10.4	1224.0
Dual Carriageway	2100	20.0	10.4	1892.0
Motorway	2300	25	13.5	1962.5

Note – A and B parameters are not available for WS2 in TA46.

A2.2.8 When multiplied by the number of lanes, this formula gives the carriageway capacity as shown in Table A3-d above.

A2.3 Average Weekday Traffic Flow Rating

A2.3.1 The AWTF rating is found by calculating the AWTF percentage and cross referencing the percentage with Table A3-e below:

Table A3-e AWTF Rating

Average Weekday Traffic Flow %	Rating
> 66%	4
50-66%	2
<50%	1

A2.3.2 The Average Weekday Traffic Flow % is calculated as follows:

(12h AWT figure / 12h Carriageway Capacity) * 100

A2.3.3 The 12h AWT figure can be taken from the TRADS 2 database.

A2.3.4 The 12h carriageway capacity should be taken from Table A3-f below:

Table A3-f Carriageway Capacity

Road type	12h Carriageway Capacity
D4M	65,000
D3M	48,500
D2M	32,500
D3AP	51,500
D2AP	34,000
WS2+1	Assume same as WS2
WS2	16,000
S2	11,000

A2.3.5 The Carriageway Capacity is nominally set at 50% of the Congestion Reference Flow, based on TA 46:

Table A3-g Congestion Reference Flow

Road type	Congestion Reference Flow
D4M	130,000
D3M	97,000
D2M	65,000
D3AP	103,000
D2AP	68,000
WS2+1	Assume same as WS2
WS2	32,000
S2	22,000

A2.4 Link Length

A2.4.1 The link length rating is determined using Table A3-h below:

Table A3-h Link Length Rating

Link length (km)	Rating
> 10	8
5-10	6
<5	3

Where link length is the distance between the nearest upstream off-slip and the nearest downstream off-slip.

A2.5 Serious Delay History Rating

A2.5.1 The SDH rating should be determined by reviewing the number of incidents from previous years that have caused a complete carriageway to be closed for at least 3 hours. This should ideally be done by assessing data from at least the previous 3 years and determining the 12 month average, if the data is readily available, as year to year variations can occur.

A2.5.2 The number of incidents should be taken from local records e.g. unplanned closure reports.

A2.5.3 The incidents must be grouped into categories based on the duration in hours of the closure (3-4 hours, 4-8 hours, and >8 hours). For each category of duration, the link can then be given a rating dependant on whether there were more or less than three incidents in that duration of incident.

Table A3-i Severe Delay History Rating

		Number of incidents	
		<3	=>3
Duration	3-4 hours	3	6
	4-8 hours	5	8
	> 8 hours	7	10

A2.5.4 For example, if there were two incidents that caused a 3-4 hour closure, the rating for the '3-4 hour' duration category would be 3.

A2.5.5 The highest single rating is then taken from the table, not the aggregate. For example, if there were four incidents that caused a 3-4 hour closure, giving a score of 6, and two incidents that caused a 4-8 hour closure, giving a score of 5, the overall score for the link will be 6.

A2.6 Other

A2.6.1 'Other' factors are also available for determining the priority of a link. The purpose of these factors is to ensure that links that require special consideration are assigned the correct priority.

A2.6.2 The 'other' factors are:

- Percentage of HGVs;
- Severe weather history; and
- Secondary (e.g. proximity to chemical plants).

A2.6.3 Other factors should only be added to the link score when, based on local operational experience, it is believed that the four factors (i.e. link lengths, incident history, peak traffic flows and average traffic flows) will not provide a true assessment of the link.

A2.6.4 ***Percentage of HGVs:*** This factor is for use on links where the level of HGV traffic is such that there is the potential for it to have a significant impact on day to day network operations and incident management. The average percentage for HGVs is 15.5%[1] and 12.1%[1] for motorways and trunk roads respectively. The figures in Table A3-j reflect the fact that these averages were observed in 1995. Table A3-j shows the rating to be applied, dependant on which band the link falls within:

Table A3-j Percentage of HGVs

Motorway	Trunk Road	Rating
<18.5%	<14.1%	0
>18.5%	>14.1%	1

[1] TA 46 – Observed 1995 values

A2.6.5 ***Severe Weather***: This factor is for use on links where severe weather has a major impact on network operations, e.g. links subject to localised flooding, fog, high winds, etc.

A2.6.6 The following table gives the ratings to be applied with respect to the number of severe weather days per year:

Table A3-k Severe Weather Rating

No. of Severe Weather Days per Year	Rating
>10	3
5 – 10	2
3 – 5	1
<3	0

A2.6.7 ***Secondary***: There may be further factors, in addition to all of the previously discussed factors. Such an example is a link that leads directly to a chemical plant, or other unusual factors that are difficult to apply on a national basis.

A2.6.8 There is no formal rating for these factors, however, Route Performance Managers should take a subjective view as to whether the influence of these secondary factors is likely to be great enough to have an impact on the overall link priority score.

Annex 3 Statistical calculations

Area 5

The incident data for Area 5 has been taken from unplanned closure reports covering the period July 2004 to June 2005.

Road Type	Total Route Length (km)	No. of Incidents (over 3 hours) in 12 months	Incidents per Route km (Incidents / Length)
Trunk	86	7	0.081
Motorway	430	42	0.098
Total	516	49	

Area 7

The incident data for Area 7 has been taken from unplanned closure reports covering the period May 2004 to April 2005.

Road Type	Total Route Length (km)	No. of Incidents (over 3 hours) in 12 months	Incidents per Route km (Incidents / Length)
Trunk	317	37	0.117
Motorway	54	7	0.129
Total	371	44	

Area 9

The incident data for Area 9 has been taken from unplanned closure reports covering the period June 2004 to May 2005.

Road Type	Total Route Length (km)	No. of Incidents (over 3 hours) in 12 months	Incidents per Route km (Incidents / Length)
Trunk	281	46	0.164
Motorway	260	32	0.123
Total	541	78	

England

Road Type	Total Route Length (km)
Trunk	5150
Motorway	3050
Total	8200

Incidents calculated across entire English all-purpose and motorway and trunk road network

Road Type	Total Route Length (km)	Average Incidents per Route km (Based on Area 5, 7 and 9 Data)	Calculated Incidents per Year
Trunk	5150	0.121	623.15
Motorway	3050	0.117	356.85

In summary, based on incident statistics from Areas 5, 7 and 9, it has been calculated that there will be:

- 624 incidents (causing carriageway closure of 3 hours or more) on the English all-purpose trunk road network; and
- 357 incidents (causing carriageway closure of 3 hours or more) on the English motorway trunk road network.