VOLUME 9 **NETWORK - TRAFFIC CONTROL AND COMMUNICATIONS**

SECTION 2 **TRAFFIC TECHNOLOGY DEVICES AND SYSTEMS**

PART 1

TD 73/16

EMERGENCY ROADSIDE TELEPHONES (ERT)

SUMMARY

This document details the requirements for the provision of Emergency Roadside Telephones along highways. It replaces TA 73/97 Emergency Roadside Telephones.

INSTRUCTIONS FOR USE

This revised document is to be incorporated into the Manual.

1. This document supersedes TA 73/97, which is now withdrawn
2. Remove TA 73/97 from Volume 9, Section 4. Part 2 and archive as appropriate
3. Insert TD 73/16 into Volume 9, Section 2, Part 1
4. 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

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TD 73/16
Volume 9, Section 2,
Part 1

HIGHWAYS ENGLAND

TRANSPORT SCOTLAND

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DEPARTMENT FOR INFRASTRUCTURE

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1. INTRODUCTION

1.1 Background

1.1.1 The Overseeing Organisation (as specified in GD 01 *Introduction to the Design Manual for Roads and Bridges (DMRB) clause 1.9*) procures, operates and maintains Emergency Roadside Telephones (ERTs) on highways. ERTs are deployed along the highways to allow customers to contact the control centres in the event of an emergency, breakdown or to obtain assistance.

1.2 Scope and Purpose

1.2.1 The purpose of this document is to:

- define the criteria to be met for the provision of ERT on highways;
- provide the principles to be applied when siting ERT on highways;
- provide the requirements for provision of ERT infrastructure and equipment.

1.2.2 This document does not provide the requirements for provision of ERT infrastructure and equipment for tunnels. Further information on provision of ERTs in tunnels is available in BD 78 *Design of Road Tunnels* (DMRB 2.2.9).

1.2.3 Where this document contains design requirements, it must be read in conjunction with the general requirements in GD01, GD02 and GD04 and with all other DMRB documents relevant to the design of the particular works to be undertaken.

1.2.4 This document should be read in conjunction with TD 71 *Technology Overview and General Requirements* (DMRB 9.3.1).

1.3 Definitions, Acronyms and Abbreviations

1.3.1 A list of abbreviations used in this document is given in Table 1.3.1.

Table 1.3.1 Abbreviations used in this document

APTR	All Purpose Trunk Roads
DMRB	Design Manual for Roads and Bridges
ERA	Emergency Refuge Area
ERT	Emergency Roadside Telephone
IP	Internet Protocol
PSTN	Public Switched Telephone Network

1.3.2 The definitions listed below are relevant and pertinent to this document.

Upstream
A position in advance of a reference point, measured in the direction of travel.

Downstream
A position trailing a reference point, measured in the direction of travel.

Full width hardshoulder
Hardshoulders with preferred widths of 3.30 metres and, as minimum, widths of 3.0 metres. See TD 27 *Cross-Sections and Headrooms* (DMRB 6.1.2).

Hardshoulder Discontinuity
Hardshoulders with widths less than 3.0 metres. See TD27 (DMRB 6.1.2).

Inter-junction
This is the region between junctions on the mainline carriageway between the merge tip of the nose of one junction and the diverge tip of the nose of the next junction.

Intra-junction
This is the region within a junction on the mainline carriageway between the diverge tip of the nose and the entry tip of the nose. Intra-junction also includes the entry slip road.

1.4 Equality Impact Assessment

1.4.1 Where the design falls within the scope of the Equality Act, an equality impact assessment shall be carried out by the designer.

1.5 Mutual Recognition

1.5.1 Where there is a requirement in this document for compliance with any part of a "British Standard", technical specification or quality mark, that requirement may be met by compliance with GD 01.

1.5.2 Where there is a requirement in this document for compliance with any part of a "British Standard", technical specification or quality mark, that requirement may be met by compliance with Series 100 of the Specification for Highway Works.

1.6 Application in Devolved Administrations

1.6.1 Contract-specific additional requirements and substitute requirements may be included for contracts where the Overseeing Organisation is not Highways England (or its successor). Where required, these will be issued by:

Scotland:
Transport Scotland, 8th Floor, Buchanan House, 58 Port Dundas Road, Glasgow, G4 0HF.

Wales:
The Welsh Government, Transport Department, Cathays Park, Cardiff, CF10 3NQ.

Northern Ireland:
Director of Engineering, Department for Infrastructure, Clarence Court, 10 – 18 Adelaide Street, Belfast BT2 8GB.

1.6.2 The Overseeing Organisation may also issue an initial list of alternative requirements/departures.

1.7 Implementation

1.7.1 Refer to GD 01.

1.8 Feedback and Enquiries

1.8.1 Users of this document are encouraged to raise any queries and/or provide feedback on its content and usage to the dedicated Highways England team. The email address for all enquiries and feedback is: Standards_Enquiries@highwaysengland.co.uk

2. ERT OUTCOMES AND PROVISION

2.1 ERT Outcomes

2.1.1 ERTs are expected to contribute to the operation of highways by ensuring that customers can obtain assistance quickly and easily, which will reduce their exposure to danger (and risks for other customers). ERTs shall also be safe and efficient to use, install and maintain. The requirements governing the delivery of these outcomes are specified in the following sections.

2.2 ERT Provision

2.2.1 ERTs shall be provided on highways where provision criteria are met to enable any customers to connect to control centres in the event of an emergency, breakdown or for assistance.

2.3 ERT Provision Criteria Selection Process

2.3.1 The criteria selection process given below shall be followed to select the correct ERT provision criteria and the relevant requirements for siting ERTs to be considered for the class of road.

2.3.2 The criteria selection process takes into consideration the provision of ERTs on APTRs and trunk motorways, including variant forms of making use of the hardshoulder by traffic.

3. ERT ON HIGHWAYS (EXCLUDING MOTORWAYS)

3.1 CRITERIA FOR PROVISION OF ERTs

3.1.1 The provision of ERTs along highways (excluding motorways) shall be designated by the Overseeing Organisation on a scheme-by-scheme basis.

3.2 ERT SITING REQUIREMENTS ON HIGHWAYS (excluding motorways)

3.2.1 Where provision of ERTs along highways (excluding motorways) has been designated, the ERTs shall be provided as follows:

- for highways (excluding motorways) with hardshoulder, ERTs shall be provided in accordance with section 4;
- for highways (excluding motorways) without hardshoulder, ERTs shall only be provided in lay-bys or Emergency Refuge Areas (ERAs) in accordance with section 5. Further information on lay-bys is available in TD 69 *The Location and Layout of Lay-bys and Rest Areas* (DMRB 6.3.3).

4. ERT ON MOTORWAYS

4.1 Overview

4.1.1 For motorways where the hardshoulder is not utilised as a running lane, ERTs shall be provided and meet the siting requirements of section 4.2.

4.1.2 For motorways where the hardshoulder has been converted to a running lane or is dynamically used as a running lane, ERTs shall be provided within ERAs and meet the siting requirements of section 4.

4.2 Criteria for provision of ERTs on Motorways

4.2.1 This section details requirements for the siting of ERTs along motorways, where the hardshoulder is for emergency use only and not used as a running lane.

4.2.2 ERTs should be placed adjacent to signals located in the verge or opposite to another ERT to reduce the infrastructure required by making use of common cabling facilities. There are also maintenance, safety and other advantages in siting ERTs opposite each other or adjacent to signals.

4.3 Safety Requirements for Siting ERTs on Motorways

4.3.1 Where full width hardshoulders are provided, the ERT site shall be located in the verge.

4.3.2 ERTs shall be positioned such that they can be safely installed, maintained, operated and removed.

4.3.3 ERTs shall be "safe to reach" at all times. The customer should not be tempted to cross the carriageway or slip road, or stray into any hardshoulder discontinuity, to reach an ERT.

4.3.4 ERTs shall be located in positions where it is safe for a vehicle to stop and subsequently re-join the carriageway. ERTs shall also be located where it is safe for the customer to travel safely between their vehicles and the ERT (including customers with disabilities).

4.3.5 ERTs shall be sited to achieve maximum visibility for customers, and whilst they are using the ERT, taking into account nearby structures and road geometry.

4.3.6 ERTs shall be provided so that they can be accessed by customers without being exposed to additional risk.

4.3.7 The customer shall be directed to an ERT on the same side of the road and dissuaded from attempting to cross the carriageway to the opposite ERT. This should be achieved through the use of information signs and the correct orientation of arrows on the distance delineator posts.

4.3.8 Distance delineator posts occur at intervals of 100 metres in the motorway verge. They are marked with an arrow and a telephone legend showing the direction the customer should travel to the nearest "safe to reach" ERT.

4.3.9 Where ERTs are provided at an intra-junction, only the intra-junction ERT shall be signed as the nearest "safe to reach" ERT on the intra-junction distance delineator posts. The intra-junction ERT shall not be signed as the nearest "safe to reach" ERT on the distance delineator post outside of that intra-junction.

4.3.10 The location of the distance delineator post legend shall be checked and renewed or replaced if incorrect. If additional ERTs are provided, the distance delineator posts shall be re-labelled or replaced to ensure the arrows provide the correct direction to the nearest "safe to reach" ERT.

4.3.11 Safe access shall be provided to the ERT site for customers including mobility impaired customers. This may include ramps, clearances and guardrails.

4.4 Design sequence for locating ERTs

4.4.1 The design sequence for locating ERT sites is:

1. ERT locations on the main carriageway near junctions (before diverge and after merge connector roads);
2. ERT locations near to (before and after) hardshoulder discontinuities;
3. Intra-junction ERT locations;
4. Inter-junction ERT locations taking into account 1 and 2 above;
5. ERT locations on slip roads and motorway to motorway link roads.

4.5 ERT Siting Requirements on Main Carriageway near Junctions

4.5.1 ERTs on the main carriageway near junctions shall be located in relation to the exit and entry datum points.

4.5.2 Provided the ERTs can be provided in pairs and is in accordance with the requirements for ERT provision adjacent to hardshoulder discontinuities, the following ERT locations shall be provided:

- between 400 metres and 300 metres upstream of the exit datum point; and
- between 300 metres and 400 metres downstream of the entry datum point.

4.6 ERT Siting Requirements at Hardshoulder Discontinuities

4.6.1 At sections of hardshoulder discontinuities, ERTs shall be provided upstream and downstream of the discontinuity so that customers can access them without crossing the discontinuity. The ERTs shall be provided 100 metres from the tips of the discontinuity tapers so vehicles can park clear of the discontinuity and rejoin traffic safely. If this cannot be achieved due to site constraints, then the ERTs shall be provided between 100 metres to 300 metres from the tips of the discontinuity tapers.

4.6.2 When the full width hardshoulder length is 100 metres, the ERT shall be placed at the midpoint of the length of the hardshoulder; or when the full width hardshoulder length is between 100 metres and 200 metres; the ERT should be placed at the midpoint of the length of *full width* hardshoulder. In all other instances, the provision of ERTs along highways shall be designated by the Overseeing Organisation on a scheme-by-scheme basis.

4.6.3 The requirement for minimum length of full width hardshoulders shall be in accordance to TD 27 (DMRB 6.1.2). To reduce the risk of customers trying to stop and accelerate up to traffic speeds in short lengths of discontinuous hardshoulder, consideration should also be given to extending the discontinuity hatching to remove short lengths of full width hardshoulders between local discontinuities.

4.6.4 Where provision of ERTs near discontinuities result in ERTs being spaced at less than the minimum spacing, this may be acceptable. If ERTs are being spaced in close proximity to each other, the number of ERTs may be reduced to prevent proliferation, if it can be demonstrated that safety has not been compromised. Advice of the Overseeing Organisation should be sought.

4.6.5 Within a section of full width hardshoulder adjacent to a hardshoulder discontinuity, the nearest “safe to reach” ERT shall be within that same section of full width hardshoulder.

4.6.6 Where the above requirements cannot be achieved due to site constraints or there are long lengths of discontinuous hardshoulder, the use of special measures such as an ERA should be considered, to enable customers to stop and accelerate up to traffic speeds safely.

4.7 Intra-junction ERT Siting Requirements

4.7.1 Intra-junction ERTs shall be provided to minimise the risk of customers crossing sliproads to reach an ERT.

4.7.2 The ERTs shall be arranged to ensure that any customer is able to see either an ERT or a telephone legend on a distance delineator post that can be accessed without incurring any additional risks (e.g. from crossing carriageways or climbing structures).

4.8 Inter-junction ERT Siting Requirements

4.8.1 For motorways with up to three running lanes, ERTs shall be provided at regular intervals, nominally at 1,500 metre intervals, but not less than 1,350 metres and not greater than 1,650 metres. Where there are discontinuities in the hardshoulder, the requirements of section 4.6 shall take precedence.

4.8.2 For motorways with four (or more) running lanes, ERTs shall be provided at regular intervals, nominally at 1,000 metre intervals, but no less than 900 metres and not greater than 1,100 metres. Where there are discontinuities in the hardshoulder, the requirements of section 4.6 shall take precedence.

4.8.3 Where sections of dual carriageway roads have climbing lanes in place, the number of lanes in the link, rather than the number of lanes at the gradient, shall be the determining factor upon which ERT spacing is determined. For example, for a three lane link with a section of climbing lane, making a short section of four lanes, the ERT spacing shall be based upon the requirement for a three lane link (nominally 1,500 metres).

4.8.4 Where the implementation of climbing lanes results in discontinuous hardshoulders, the requirements of section 4.6 shall take precedence.

4.9 Motorway to Motorway Link Roads and Slip Roads

4.9.1 Where ERTs are to be provided on junction links, motorway to motorway interchange or slip roads, this shall be in accordance with section 4.3 to ensure safety of the customer.

4.9.2 Where ERTs are to be provided on junction links, motorway to motorway interchange or slip roads, they shall be spaced in accordance with section 4.8. Where the link road or slip road is less than 1350 metres at least one ERT shall be provided.

4.10 Upgrading/Replacing ERTs

4.10.1 Where existing ERTs are being upgraded or replaced, the replacements shall be located within 10 metres of the existing site where possible and no further than 10 metres from a perpendicular line from the ERTs on the opposite carriageway. This will allow the same ERTs site data address to be used and also the existing cable ducts can be re-used without significant changes to cable lengths.

4.10.2 If the replacement cannot be relocated in accordance with the siting criteria in Chapter 3 and 4 of this document, a departure from standard shall be submitted to the Overseeing Organisation.

4.10.3 Where ERTs cannot be replaced in the same location, the geographic and electronic addresses in the Traffic Management System site data shall be updated accordingly.

5. ERT WITHIN EMERGENCY REFUGE AREAS

5.1 ERT within Emergency Refuge Areas

5.1.1 An Emergency Refuge Area (ERA) is defined as a place (or facility) where customers may stop in an emergency.

5.1.2 ERAs may either be bespoke facilities or converted from an existing facility, for example a wide load bay.

5.1.3 Distance delineator posts shall not direct customers to ERTs unless there is a continuous hardshoulder between the distance delineator post and the ERT.

5.1.4 An ERT shall be provided at each ERA. The ERT shall be positioned such that:

- the operation of the ERT is not negatively affected;
- it can be safely accessed by customers including mobility impaired customers.

6. TRANSMISSION SYSTEMS

6.1 Overview

6.1.1 The configuration of ERT to be installed will depend upon the availability of transmission network infrastructure.

6.1.2 Where the Overseeing Organisation's own network is not available, alternative methods shall be used to provide the service.

6.1.3 There are three main variants of ERT available. These are ERT that use:

- the Overseeing Organisation's own transmission network, which may or may not use Internet Protocol (IP);
- the Public Switched Telephone Network (PSTN); and
- a mobile operator's network (for example GSM).

6.1.4 All these variants will be connected back to the operator at the Control Centres and have the same appearance to the customer.

6.1.5 For ERTs that work over a mobile network, the coverage from the identified communications network provider shall be established before the ERT is installed. The communications network provider shall be appointed by the Overseeing Organisation.

7. REFERENCES

7.1 Informative References

7.1.1 The following documents provide further information related to Emergency Roadside Telephones:

1. GD 01 Introduction to the Design Manual for Roads and Bridges (DMRB)
2. GD 02 Quality Management Systems for Highways Design
3. GD 04 Standard for Safety Risk Assessment on the Strategic Road Network
4. BD 78 Design of Road Tunnels (DMRB 2.2.9)
5. TD 71 Technology Overview and General Requirements (DMRB 9.3.1)
6. TD 27 Cross-Sections and Headrooms (DMRB 6.1.2)
7. TD 69 The Location and Layout of Lay-bys and Rest Areas (DMRB 6.3.3)
8. Equality Act 2010

8. ENQUIRIES

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