
Director of Engineering Memorandum
DEM 118/16
DEM TITLE: Design Speed for Roads

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| Level 1 (Title/ Key Words) : | Selection of Design Speed for Road Design |
| Level 2 : (Directorate/Owner): | Engineering |
| Level 3: (RSHQ or HoBU Managed Function): | Strategic Road Improvements / Network Development |
| Level 4 : (Work Areas) | Design; Development Control; Forward Planning |

Purpose

This memorandum identifies how Design Speeds are to be derived for the design of roads.

Scope

This memorandum shall be used to select Design Speeds for the design of both new roads and improvements/amendments to existing ones.

Policy

The following preset values for Design Speed shall be used:

- Unrestricted single carriageways, i.e. those on which the National Speed Limit applies, shall be 100A kph.
- Unrestricted Motorways/Dual Carriageways, i.e. those on which the National Speed Limit applies, shall be 120A kph.
- Roads with a speed restriction, i.e. those with a speed limit less than the National Speed Limit, where Design Manual for Roads and Bridges (DMRB) Vol. 6, TD 9/93 (Incorporating Amendment No. 1 dated February 2002) Table 2 then applies.
- Where the Design Speed to be used in specific circumstances is stipulated by DMRB, i.e. the design of Grade Separated (DRMB Vol.6 TD 22/06) and Compact Grade Separated Junctions (DMRB Vol. 6 TD 40/94).
- Where DMRB specifically requires that an 85th percentile speed is used to determine certain parameters of a design, i.e. the design of mini roundabouts (DMRB Vol.6 TD 54/07).

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Where it is proposed that the Design Speed deviates from the above preset values, agreement should first be sought from the Divisional Client. This early agreement will help to avoid any nugatory design activities.

It is the responsibility of the Divisional Client to ensure that the selected Design Speed is not too low. For example, there may be locations where the 85th percentile traffic speed is greater than the existing speed restriction or locations where it is proposed to increase or remove the existing speed restriction. In discharging this responsibility, the Divisional Client should also consider the appropriateness of existing speed restrictions and, if necessary, implement additional measures to manage traffic speeds accordingly.

A Design Speed less than the preset value is not permitted for works on the Trunk Road Network (Strategic Road Network). Furthermore, a Design Speed less than the preset value should only be considered for works on non-trunk A Class roads in exceptional circumstances. When agreeing Design Speeds the client should also ensure that the chosen value takes cognisance of any overall route improvement strategy.

In situations where a road is to be 'de-trunked' as part of the scheme, the Design Speed should be selected based on the characteristics of the final arrangement.

The lowest acceptable Design Speed shall be 60B kph except for specific situations stipulated by DMRB, i.e. Compact Grade Separated Junctions.

Annex 1 contains a flowchart illustrating the process for determining Design Speeds for road design.

Procedure for Deviating from Preset Design Speeds

- *Calculated Design Speed (TD 9/93 Method)*

For non-trunk roads, the above preset Design Speeds may, with prior agreement from the Divisional Client, be amended using the Alignment constraint (Ac) and Layout Constraint (Lc) procedure identified in TD 9/93.

For roads that do not meet the minimum standards in TD 9/93 (incorporating amendment no.1) Table 1 (i.e. less than 6.0m road width and 0.5m verge width) it is acceptable to calculate Lc based on the lowest criterion provided.

- Measured Vehicle Speed

On existing non-trunk roads, where it is not possible or pragmatic to calculate the Design Speed in accordance with the TD 9/93 method, the Design Speed may be based on measured vehicle speeds on approach to the proposed improvement scheme.

The speed survey should be undertaken in accordance with DMRB Vol. 5 TA 22/81. Other less onerous survey methods may be adopted for small schemes subject to the agreement of the Project Owner.

Approval of Design Speeds

- Strategic Road Improvement Schemes

For Strategic Road Improvement (SRI) schemes, a Design Speed Assessment Summary Report must be created. This report should detail the various Design Speeds being used as part of the scheme, the method used to calculate them and the rationale for deviating from preset values, where appropriate. The Design Speed Assessment Summary Report must be approved by SRI (Headquarters) as part of the geometric standards approval process prior to Gateway 2 (Ref. RSPPG E030). The report should also include a copy of the Design Speed Table proposed for inclusion within the 'Works Information - Employers Requirements'.

This submission should be addressed to the Strategic Road Improvement Programme Manager and be accompanied by confirmation from the Senior Responsible Owner (Divisional Manager) that they are content with the proposals.

Where subsequent geometric design approval is being sought under 'DEM 162/16: Scheme Design Approval Procedures for Non-Trunk Roads', then the approved Design Speed Assessment Summary Report should be referenced on the Scheme Design Overview (SDO) pro-forma.

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- Other Schemes

For all other schemes, including Developer led schemes, approval for both the Design Speed and the method of calculation must be obtained from the Divisional Client.

Where design approval is being sought under 'DEM 162/16: Scheme Design Approval Procedures for Non- Trunk Roads' the Divisional Client (SPTO) should record that they are content with the proposed Design Speed where it deviates from the preset value on the SDO pro-forma.

DEM 162/16 outlines circumstances where the SDO will not be used for the design approval of non-trunk roads (e.g. on non-trunk roads which form part of a trunk road scheme). In these circumstances confirmation that the Divisional Client (PPTO) is content with the Design Speed should be:

- (i) Recorded on the scheme file; and,
- (ii) Included within any application that may be necessary for the approval of associated Departure from Standards (DfS) or Relaxation of Standards (RoS). These procedures are outlined within RSPPG_E006 and RSPPG_E007 respectively.

Equality

No Section 75 equality issues arise from the introduction of this Memorandum as it addresses a procedural matter covering how Design Speeds are to be derived for the design of roads.

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ANNEX 1

NOTES:

1. In situations where a road is to be de-trunked as part of the scheme, the Design Speed should be selected based on the characteristics of the final arrangement.
2. Design Speed to be determined using either TD9 method or measured vehicle speeds. The lowest acceptable Design Speed is 60Bkph.
3. For roads where a SDO form is not required (or not being used), the rationale and method used to calculate the Design Speed shall be recorded as follows:
 - a. For SRI schemes: on the Design Speed Assessment Summary Report issued to SRI HQ.
 - b. For other schemes: on the scheme file and within any associated DfS or RoS applications.

