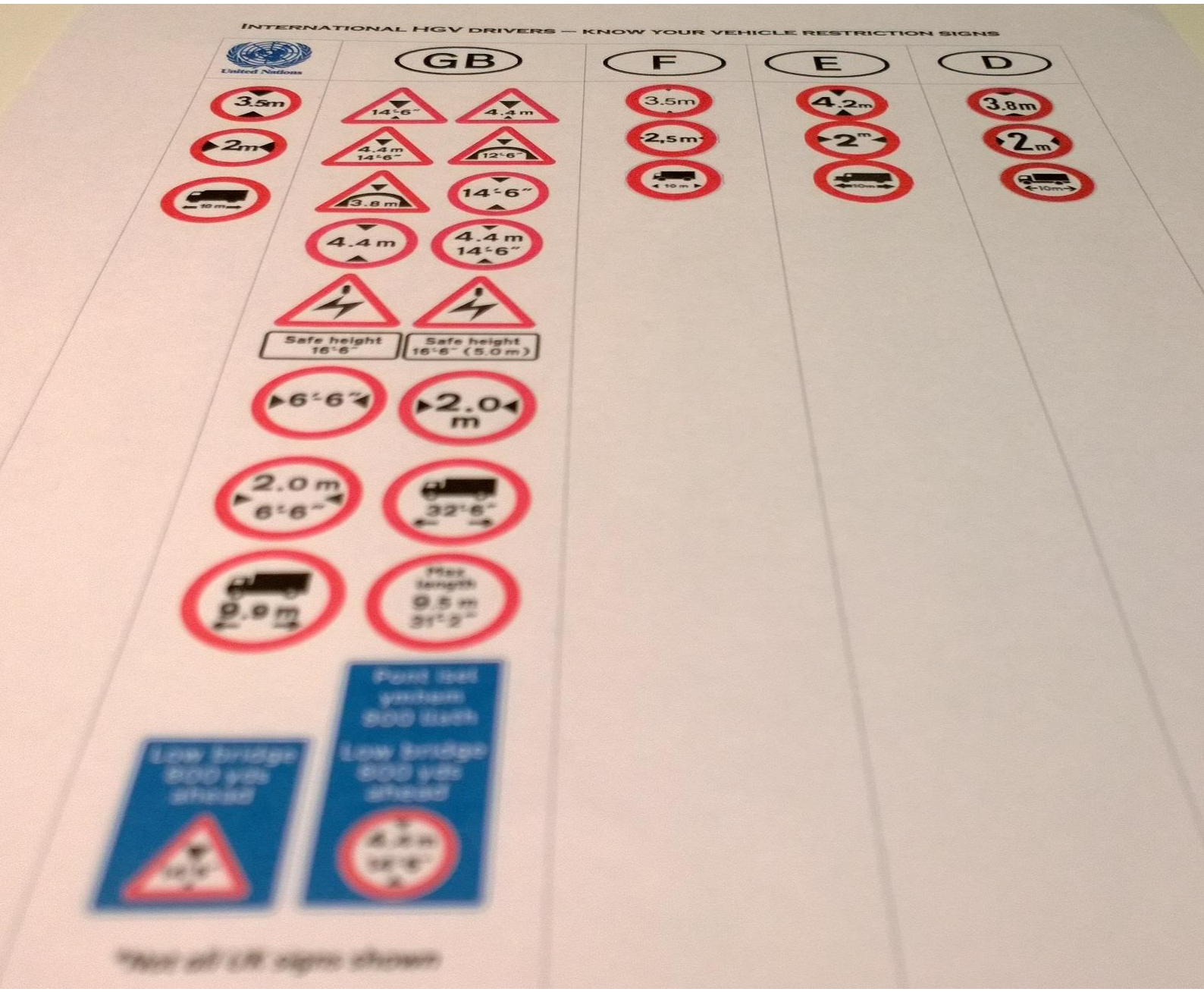
Vehicle dimension signs in the UK

A review of current practice, and opportunities for improvement

May 2014



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A review of current practice, and opportunities for improvement

A report for the UK Metric Association

"I believe that, if applied, these legal instruments will contribute to preventing many deaths and injuries on the world's roads and I encourage all UN Member States that have not yet done so to adhere to and implement them as soon as possible. It is often said that time is gold. In this matter, time is also human lives. Let's act quickly to save many lives"

Marek Belka, United Nations Economic Commission for Europe

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Executive Summary

The United Kingdom has a very good road safety record overall, with accident rates generally below those of comparable countries.

Nevertheless, there is always room for further improvement, and a new version of the Traffic Signs Regulations and General Directions, planned for 2015, should finish the process, started two decades ago, of ensuring that safety-critical vehicle dimension signs display the limits in metres.

Between 1999 and 2008 there were 5 fatalities, 66 serious injuries and 779 injuries caused by overheight vehicles striking low bridges, and the cost to Network Rail alone is estimated at £6 to 7 million per annum, and significant costs accrue to other rail and road users, all of which affects the UK economy.

However, at present the signing of such restrictions in the UK is a mess, with multiple signs in a mixture of imperial, metric and dual units, text in both English and Welsh, and signs with subtly different meanings. In a DfT research study in 2004, only 3% of non-professional drivers, and 21% of professional drivers, were able to correctly differentiate between the height warning sign and the mandatory height restriction sign; since then the number of height sign designs has increased (e.g. a new dual unit warning sign has been introduced but no obsolete signs such as imperial-only versions have been withdrawn).

This study has found very strong support within the industry for the mandatory use of metres on such signs, including amongst representatives of the Department for Transport, Highways Agency, AA, RAC Foundation, Road Haulage Association, Freight Transport Association, Transport Research Laboratory, Network Rail, Transport for London, London Underground Limited, the County Surveyors Society (now ADEPT) and the Council of the Protection of Rural England.

This study has also found widely varying practices when it comes to signage of vehicle restrictions by highway authorities around the UK. There is inconsistency between the signs permitted in the TSRGD and the recommendations within the Traffic Signs Manual, and numerous authorities are unaware of the latest guidance, with one still believing that the 1994 regulations are still current. Some authorities choose to disregard the advice of the Traffic Signs Manual on the basis that it is only guidance and its recommendations cannot be enforced.

The lack of a dual unit length sign is reducing the take-up of the metric version of that sign, and some highway authorities have taken to designing their own dual-unit length signs.

The lack of a deadline to replace imperial-only signs means that while the vast majority of vehicle dimension signs in the UK will include metres within the next couple of years, a small number of local authorities have no plans to follow the advice contained within the Traffic Signs Manual, and action to rationalise the signing including withdrawal of the imperial-only signs is needed.

Recommendations

This report concludes with a series of recommendations designed to address the problems identified, which could be introduced in the next version of TSRGD due in 2015.

PROBLEM – SIGN POLICY/DESIGN	RECOMMENDATION
The UK uses a wide variety of different sign designs for the same or similar purposes, where other countries use simpler single signs for vehicle restrictions. As a result there is confusion amongst drivers (only 3% of non-professional and 21% of professional drivers in a DfT study could identify the difference between mandatory and warning height signs) and professionals (numerous sign design errors can be found on the UK's roads).	The number of signs available to highway authorities should be drastically reduced, and all should follow international standards
A small minority of local authorities continues to use imperial-only dimension signs despite the guidance from the DfT since 1994 that the dual unit signs should be used	The option for providing imperial-only vehicle height and width signs should be withdrawn at the soonest opportunity. In 2009 the DfT proposed a four-year period to allow these signs to be withdrawn from an assumed starting date of 2010, meaning all signs would have to be replaced by 2014. Given that authorities have now had four years to undertake these works as part of their maintenance cycle and that the vast majority have done so (or will have shortly), it is recommended that as and when the TSRGD is update, authorities are given no more than two years to complete the task of removing imperial-only versions of these signs.
Only a small number of length restrictions exist, and where they do, highway authorities have called for metric-only units or invented bespoke dual-unit signs	The imperial-only length restriction sign should be withdrawn, and all such restrictions to be signed in metres only. This would be equivalent to the 1981 change from tons to tonnes, and would affect very few signs, but would mean that all length restriction signs would be the same as those everywhere else in Europe and would finally accord with the UN convention, which the UK signed in 1971. If there is a view that it is not possible to eliminate overnight length restrictions in feet, then the imperial-only sign should be withdrawn from the TSRGD, and replaced by a new dual unit sign, allowing highway authorities to use a single sign to display both units.

Ford depth gauges have been available in dual units since 1994 yet many remain imperial-only despite 40 years of metric education and the potential for deaths at such locations	Imperial-only ford depth gauges should be withdrawn as soon as possible, potentially without awaiting the new version of TSRGD, and dual-unit depth gauges provided at all fords as a matter of urgency. The notation on sign 826.1 should be corrected from "M" to "m".
Distances to hazards such as low bridges are generally signed in yards, which are unfamiliar to foreign drivers, and inconsistent with the metres learnt by British drivers. These also entail translation into Welsh within Wales, adding to cost and clutter	New signs should display the distance in metres instead of yards, and older signs should be modified with overlays to change the units from "yds" to "m"

See Appendix 1 for a schedule of the signs affected by the above recommendations and the specific recommendations for that sign.

In addition, the review has found a number of issues related to the management of sign regulations, guidance and provision, and makes the following additional recommendations.

PROBLEM – SIGN MANAGEMENT	**RECOMMENDATION**
There is a major discrepancy between the legislation and the guidance, particularly with respect to imperial-only dimension signs, which the regulations permit but the guidance recommends are not used	The TSRGD should be amended to reflect the recommendations within the Traffic Signs Manual for imperial-only vehicle dimension signs to be withdrawn, and the TSRGD and TSM should be updated together to be in conformity with one another.
The survey has shown that that some highway authorities are still applying regulations from a version of the TSRGD which was withdrawn in 2002 and others are using only the TSRGD without reference to the Traffic Signs Manual guidance	An electronic (PDF) consolidated version of all chapters of the Traffic Signs Manual should be published by the DfT, with a link to an online version sent to all highway authorities, requesting their confirmation that they are using the current version of the guidance.
Many local authorities do not have an asset register of their road signs and are therefore unable to adequately manage their signage and keep signs up to date	All highway authorities should follow the best practice demonstrated by several other local authorities in undertaking a review of their road signs, particularly safety critical signs such as low bridge signage, to allow improvements to signing to be effectively planned.

1. Introduction

1.1 Background

The United Kingdom has a very good road safety record overall, with accident rates generally below those of comparable countries.

Nevertheless, there is always room for further improvement, and a new version of the Traffic Signs Regulations and General Directions, planned for 2015, will be an excellent opportunity to further improve the signage on Britain's roads. Consultation on the next version of the regulations is due in early 2014.

Clear, consistent road signage is a fundamental element of providing safe road infrastructure, and the UK Metric Association[1] (UKMA) believes that there is scope to further improve the safety of Britain's roads by adopting the best international practice in road signage, including eliminating words where symbols would be more easily understood, and to use units of measurement which are more widely understood.

An area where there is particular opportunity to improve safety is to finish the process, started two decades ago, of ensuring that safety-critical vehicle dimension signs (e.g. low bridge signs and width limits) display the limits in metres.

1.2 This report

This report sets out the current regulatory framework and guidance on vehicle dimension signage, and then focuses on the current status of height, width and length restriction signing on Britain's roads, drawing Freedom of Information requests for information from all 209 highway authorities in the UK.

This report analyses the responses, identifies some of the reasons behind the variability in practice (including the poor awareness, in some cases, of the current guidance).

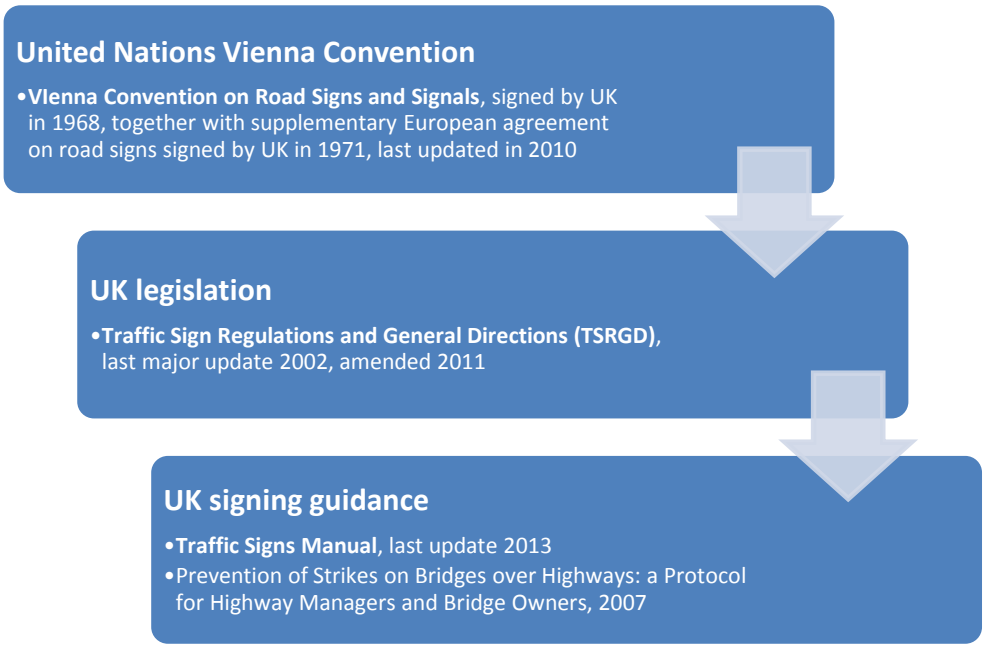
Finally, recommendations are made for the expedient delivery of this low-cost road safety improvement.

[1] www.ukma.org.uk

2. Road signs in the UK – legislation and guidance

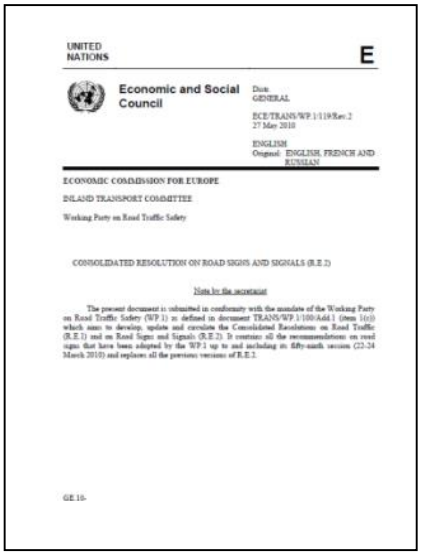
2.1 Background

There are several pieces of legislation and guidance related to the provision of road signs on public highways in the UK, starting with the international standard for road signs, the United Nations Vienna Convention on Road Signs and Signals, adopted by 72 countries (the UK signed in 1968), the UK Statutory Instrument setting out the UK's road sign legislation, and other guidance, most notably the Traffic Signs Manual, published by the government and providing guidance on the best practice application of the permitted signs.



This chapter briefly summarises these documents in terms of vehicle dimension signage.

2.2 UN Vienna Convention on Road Signs and Signals



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Working Party on Road Traffic Safety

CONSOLIDATED RESOLUTION ON ROAD SIGNS AND SIGNALS (R.E.2)

Note by the secretariat

The present document is submitted in conformity with the mandate of the Working Party on Road Traffic Safety (WP.1) as defined in document TRANS/WP.1/100/Add.1 (item 1(c)) which aims to develop, update and circulate the Consolidated Resolutions on Road Traffic (R.E.1) and on Road Signs and Signals (R.E.2). It contains all the recommendations on road signs that have been adopted by the WP.1 up to and including its fifty-ninth session (22-24 March 2010) and replaces all the previous versions of R.E.2.

GE.10-

With over 3 million foreign vehicles entering Great Britain every, as well as a land border between Northern Ireland and the Irish Republic, the international context is very important with respect to safety-critical road signs. This is particularly pertinent for vehicle dimension signs, with an increasing share of heavy good vehicles on our roads coming from abroad.

It is clearly in the interests of the UK's road users that road signage can be readily understood not only by British motorists, but also by the very large number of drivers arriving from the continent, who have to contend with

- driving on the left
- using a foreign language
- using a different system of measurement

In 2009, a study[2] by the Department for Transport found that *"the number of reported bridge strikes at Network Rail underline bridges was in the region of 2,000 p.a. over the last 5 years. Based on records from Network Rail's incident logs since April 2008, approximately 10 – 12% of bridge strikes involved foreign lorries. This is disproportionately high in terms of the number of foreign lorries on the road network."*

The UK has participated in the development of international standards for road signage, and has been a signatory to the UN's Vienna Convention on Road Signs and Signals since it was agreed in 1968, and also the supplementary European Agreement on Road Signs and Signals[3] since 1971.

However, the convention principles have still not been fully incorporated into UK legislation despite the UK's role in helping to shape these international standards.

> ***"I believe that, if applied, these legal instruments will contribute to preventing many deaths and injuries on the world's roads and I encourage all UN Member States that have not yet done so to adhere to and implement them as soon as possible. It is often said that time is gold. In this matter, time is also human lives. Let's act quickly to save many lives"***
>
> - *Marek Belka*
> *Executive Secretary*
> *United Nations Economic Commission for Europe*

[2]Impact Assessment of the Traffic Signs (Amendment) Regulations and General Directions 2010 and of the Traffic Signs (Temporary Obstructions) (Amendment) Regulations 2010

[3]http://www.unece.org/fileadmin/DAM/trans/conventn/Conv_road_signs_2006v_EN.pdf

For clarity, the Convention's standards with respect to vehicle dimension signs is reproduced below:

Extracts from the European Agreement supplementing to the UN's Convention on Road Signs and Signals, signed by the United Kingdom on 27 October 1971, relating to vehicle dimensions

PROHIBITORY OR RESTRICTIVE SIGNS

II. Descriptions

1. Prohibition and restriction of entry

(e) Notification that entry is prohibited for vehicles whose mass or dimensions exceed certain limits shall be given by the signs:

C, 5

C, 5 "NO ENTRY FOR VEHICLES HAVING AN OVERALL WIDTH EXCEEDING ... METRES"

C, 6

C, 6 "NO ENTRY FOR VEHICLES HAVING AN OVERALL HEIGHT EXCEEDING ... METRES"

C, 9

C, 9 "NO ENTRY FOR VEHICLES OR COMBINATIONS OF VEHICLES EXCEEDING ... METRES IN LENGTH".

Thus the international road sign standards require highway authorities in the United Kingdom to sign all vehicle dimension restrictions (height, width, and length) in metres; however as the next section illustrates, 46 years after signing the convention, and 43 years after signing up to the above sign design standards, the DfT has still not transposed this UN road safety requirement into UK law.

> The international standards "are important legal tools enabling not only the facilitation of trade and transport through harmonized rules, but also the development of road safety policies aimed at the reduction of the number of road crashes and victims. The more countries adhere to these Conventions, the more road safety will prevail."
>
> - *Convention on Road Signs and Signals*

2.3 Traffic Signs Regulations and General Directions (TSRGD)

STATUTORY INSTRUMENTS

2002 No. 3113

ROAD TRAFFIC

The Traffic Signs Regulations and General Directions 2002

ARRANGEMENT OF INSTRUMENT

The Traffic Signs Regulations and General Directions (TSRGD) is the Statutory Instrument which sets the legal basis for road signs on public highways in the UK[4].

All signs on public highways should comply with the requirements of the TSRGD, or otherwise be specially authorised by the appropriate authority (the Secretary of State in England, or the appropriate devolved government.

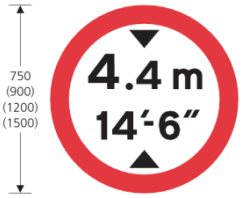
For brevity, not all signs are shown in this section, but sign Diagram numbers are given and they can be found at Appendix 1.

1994 TSRGD

Prior to publication of the 1994 TSRGD, the addition of metric units to vehicle dimension signs was not permitted under TSRGD, although such signs did exist on the network, subject to approval by the Secretary of State.

The 1994 TSRGD introduced several changes to vehicle dimension signage, key points being:

- new optional metric height warning triangle (Diagram 530) to be used optionally alongside the imperial sign
- new metric width restriction sign (Diagram 629) to be used optionally alongside the imperial sign (not illustrated in the document but included in the working drawings)
- dual unit mandatory height roundel (Diagram 629.2A) (right)
- dual unit ford depth gauge introduced (Diagram 826.1)



629.2A Mandatory height restriction (metric and imperial units)

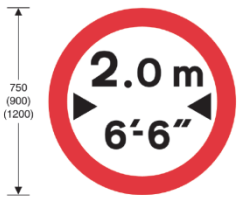
The Department's Circular 4/94 stated that "Where mandatory signs are used combined metric/imperial roundel (new diagram 629.2A) should be used if possible."

2002 TSRGD

The most recent comprehensive version of the TSRGD was published in 2002 (although it has subsequently been amended, as described below).

Key changes in the 2002 TSRGD were:

- Introduction of optional dual metric-imperial width restriction sign (Diagram 629A), replacing the metric-only sign (right)



629A
As diagram 629, with width indicated in both metric and imperial units

[4] There are subtle differences in the legislation related to Northern Ireland, for example some of the 2002 changes were introduced in Northern Ireland in 1997; for brevity these are not all outlined explicitly here

- Introduction of optional metric length signs (Diagram 629.1, not illustrated but included in the working drawings)

2009 TSRGD consultation on amendments

In 2009, the DfT consulted on proposed amendments to the TSRGD.

The DfT proposed that the principal imperial-only vehicle dimension signs would be withdrawn in favour of dual unit versions:

> *"Signs shown in diagrams 530, 530.2, 531.1, 532.2, 532.3, 629 and 629.2 must be replaced within four years of the date on which these regulations come into force."*

With the amended TSRGD anticipated to come into force in 2010, all vehicle dimension signs would be signed in metric units by 2014, 20 years after the DfT's Circular 4/94 called on highway authorities to use the dual unit signs in place of imperial signs.

Importantly, the consultation included an impact assessment of the proposed change, which sought to monetise the costs and benefits of the proposed change[5]. This found that on balance there would be a positive economic effect if the remaining imperial-only signs were to be replaced with dual unit signs (i.e. including metres).

The impact assessment found that:

> *"The number of accidents caused by over height vehicle bridge strikes is recorded from 1999 to 2008. These show that over this period there were a total of 5 fatalities, 66 serious injuries and 779 injuries over the period.*
>
> *Based on records from Network Rail's incident logs since April 2008, approximately 10 – 12% of bridge strikes involved foreign lorries. This is disproportionately high in terms of the number of foreign lorries on the road network.*
>
> *We are aware that, since dual imperial / metric signing was permitted for the first time in TSRGD 1994, the imperial-only signs have often been replaced with the dual unit alternative, as part of authorities' maintenance programmes. Furthermore, for several years this Department has recommended, through the Traffic Signs Manual, the use of the dual unit height limit warning and regulatory signing in preference to the imperial only alternative. In addition, this message was strongly reiterated in the joint DfT / Network Rail / County Surveyors Society October 2007 publication: 'Prevention of Strikes on Bridges over Highways - A Protocol for Highway Managers and Bridge Owners'.*

[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/2382/annexd.pdf

> ***Balance of Costs and Benefits for Amending Traffic Signs***
>
> *On balance the Department believes that the changes to the legislation to introduce the new traffic signs will be beneficial. This is based around the central estimates that the introduction of the new road signs will reduce the number bridge strikes resulting in benefits to rail users, reduced injuries and damage costs to road users. Furthermore, these are likely to underestimate the overall benefits as there are still benefits from reduced road user delays that are not incorporated into these values. The Department considers that the 1% assumption for represents a conservative estimate of the likely reduction in over height roof bridge strikes.*

In total, 64 organisations with an interest in road signing responded to the consultation that they supported the DfT's proposals (including withdrawal of imperial-only dimension signs) or that the proposals did not go far enough, including the Institute of Highway Engineers, the Highways Agency, the Local Government Technical Advisors Group, local highway authorities including Transport for London, Glasgow, and Leeds, and police forces, including the Metropolitan Police, Avon & Somerset and Kent.

Some key organisations commenting in favour of the proposals included:

AA

"There is no doubt that bridge height and warning signs need to be in metric measures"

RAC Foundation

"Proposals for both metric and imperial signs are welcome as this change should reduce the likelihood of bridge strikes, especially from foreign registered vehicles"

west sussex county council

"The removal of imperial-only signs is welcomed, and will contribute to the prevention of bridge strikes nationwide. Could go one step further and support the use of metric only signs, and abolition of imperial signs"

CPRE Campaign to Protect Rural England Standing up for your countryside

"We very much support ... the proposals to include metric figures for restrictions"

City of Westminster

"a phased approach to the provision of metric only signs should be adopted"

EAST RIDING OF YORKSHIRE COUNCIL

"Suggest you go straight for the metric warning sign."

Another 34 organisations made no comment about these elements of the DfT's proposals, suggesting acquiescence to the proposals.

Only two responses opposed this element of the DfT's proposal. North Lanarkshire Council believed that dual unit signs would cost local authorities money, but did agree that *"on a positive note, it will help to remove any dubiety for drivers."* Finally the British Weights and Measures Association opposed the use of metres on road signs.

In summary, there was a huge level of support amongst the industry for the removal of imperial-only vehicle signs, and several experts advocated the use of metric-only signs.

Some authorities did respond to the effect that four years for the withdrawal of the imperial-only sign (i.e. assumed to be 2014) was too short a period (despite them being recommended by DfT since 1994), and that the requirement for two signs to display both units on height warning signs added to the cost of displaying metres on low bridges.

Others, however, considered this point and agreed with the proposal that imperial-only signs should be withdrawn within by 2014. Aberdeenshire, for example, responded that *"consistency is important here and it is agreed that a four year saving is appropriate for all changes involved in the introduction of this measure."*

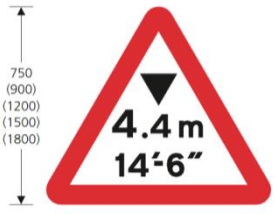
It should be noted that given the DfT has advocated the use of the dual-unit sign at low bridges since 1994, and any authorities with newer imperial-only signs have disregarded this advice for the past 20 years.

2011 TSRGD amendments

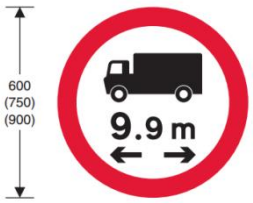
In 2011, following the 2009 consultation, an amendment to the 2002 TSRGD was published. However, this differed from the version which was subject of the consultation.

In terms of vehicle dimension signing, the key points were:

- The proposal to withdraw imperial-only signs was dropped despite near unanimous industry support
- A new dual-unit warning sign was introduced (Diagram 530A, right) to allow the metric units to be added in a more cost effective way than addition of a second sign
- The metric version of the length restriction sign (right) was included within the document (although it was already permitted)

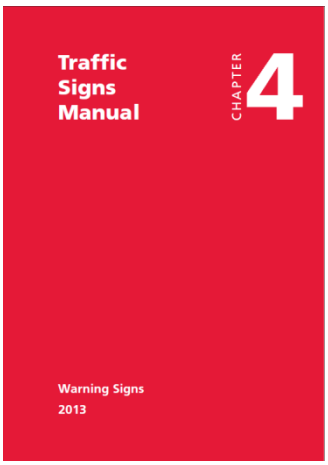


530A Single sign showing available headroom in both metric and imperial units



629.1
Vehicles or combinations of vehicles exceeding length indicated prohibited

2.4 Traffic Signs Manual (TSM)



While the TSRGD provides the legal framework for signage and sets out which signs are permitted to be erected on the public highway, the government's Traffic Signs Manual (TSM) sets out the detailed guidance to highway authorities on matters of signing.

The TSM is not published concurrently with the TSRGD, but separate chapters are updated on a rolling basis.

Over the years, each update to the TSM has progressively given stronger advice on the units to be used on vehicle dimension signs.

2004 update

Includes (Chapter 4) the recommendation to display the metric units on main routes:

"Metric heights may be shown in addition to imperial heights at any bridge. This is recommended for all bridges on main routes and on roads used frequently by foreign drivers."

2008 update

Includes (Chapter 3) the recommendation to include metric units in preference to imperial-only versions:

"The sign to diagram 629A is a combined metric and imperial version of the width limit sign. ... It is recommended that this sign is used in preference to the sign to diagram 629."

2013 update

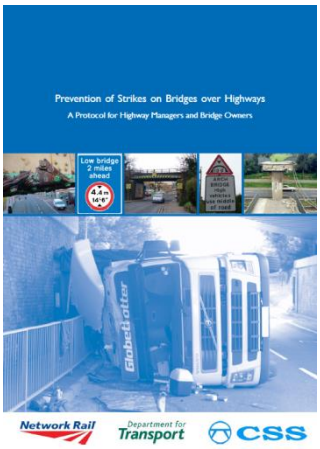
In 2013 the advice was strengthened such that it became "strongly recommended" to display metres alongside imperial units (Chapter 4):

"The Regulations allow heights to be shown in either imperial units or both metric and imperial units. It is strongly recommended that both units are displayed on signs, especially on main routes and roads used frequently by foreign vehicles."

On the signing of low clearances to power cables (e.g. at level crossings), the Manual now states:

"While the Regulations permit the omission of the height indication in metric units, this is inadvisable."

2.5 Prevention of Strikes on Bridges over Highways: A Protocol for Highway Managers and Bridge Owners



In October 2007, the County Surveyors Society (CSS – now called ADEPT) published *Prevention of Strikes on Bridges over Highways: A Protocol for Highway Managers and Bridge Owners* on behalf of the Department for Transport's Bridge Strike Prevention Group.

The scope of this report, produced by CSS in close collaboration with the DfT and Network Rail, is set out as follows:

"Purpose: *To give guidance and advice to highway managers and bridge owners to minimise strikes on bridges that span public highways.*

Scope: *- The guidance is intended for all highway authorities and for all local authorities, transport authorities and other public authorities and private companies who own bridges over public highways.*

- Additionally, the advice is pertinent to private landowners who have access ways under bridges carrying railways or public highways.

- The guidance applies to all bridges, with and without headroom signs, over vehicular highways."

The report pays close attention to the issue of signage as a means of reducing the occurrence of bridge strikes, stating:

"It is a requirement that heights must be shown in imperial dimensions and may additionally be shown in metric units. They must not be displayed in metric units alone. It is important however, *given the volume of foreign freight traffic in the country, that all signing upgrade schemes include for dual signing. Consideration should also be given to implementing a change to include metric signing at bridges on routes to and from ports or industrial parks where there is a significant concentration of HGV traffic from the rest of Europe."*

2.6 Summary timeline of official regulations and guidance on use of metric units on vehicle dimension signs in the UK

3. Other industry research on vehicle signage

3.1 Bridge Strike Prevention Group

In order to combat the problem of bridge strikes, the Department for Transport created the Bridge Strike Prevention Group, a group of industry experts brought together to advise on how best to deal with the problem of bridge strikes.

The group considered the issue of metric signage, and in a meeting at the Department for Transport in October 2004 resolved to ask the DfT "to consider mandatory imperial/metric signing at low bridges".

The organisations represented at the Group's meeting were:

- Department for Transport
- Police Liaison Office, Department for Transport
- Highways Agency
- Road Haulage Association
- Freight Transport Association
- Transport for London
- Transport Research Laboratory
- Transport & General Workers Union
- Railway Inspectorate
- London Underground Limited
- London Bridges Engineering Group (LoBEG)
- Network Rail
- County Surveyors Society (now ADEPT) Bridges Group

Some nine years after this request from this expert panel convened by the DfT, its recommendation for mandatory use of dual unit signs has yet to be heeded.

3.2 DfT report: Increasing understanding of traffic signs

In 2004, the Department for Transport completed a major research report (Report UG 484, "Increasing Understanding of Traffic Signs") on the understanding of road signs amongst drivers, including professional drivers[6].

Height restriction signs were amongst the signs researched, and in particular drivers were asked to look at the height warning signs (Diagram 530) and mandatory roundels (Diagram 629.2A) and state the meaning to ascertain whether there is a general understanding of the different signs.

The results are summarised below.

	Full & complete	Main idea right	**TOTAL RIGHT**	Partially right	Wrong	Don't know	Opposite meaning	**TOTAL WRONG**
Non-professional drivers	1.3	1.8	**3.1**	12.7	69.2	14.8	0.3	**84.6**
Professional and semi-professional drivers	5.9	14.7	**20.6**	14.7	52.9	11.8	0	**64.7**

Staggeringly, **only 3% of non-professional drivers** and **21% of professional drivers** were able to correctly identify the different meaning of the mandatory and warning signs.

The report notes, *"Signs 11 and 12 (maximum headroom available at hazard and no vehicles over height shown) produced a variety of rather confused responses, including 'Height restriction/width restriction', 'Bridge height/main road height', and 'Advisory height/Height warning'. It is not easy to interpret what some of these mean, but the main point is that respondents seem not to have fully grasped the significance of a sign within a red triangle as distinct from one in a red circle."*

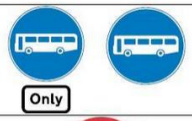
And of professional drivers, the report notes *"Of particular concern is the high proportion of drivers who do not understand the difference between the height warning and restriction signs."*

It is clear from this research that a simplification of height restriction signing system would be beneficial.

[6] Report written by Transport Planning (International), Birmingham, with research undertaken by Social Research Associates, Leicester

However, when a further piece of work was commissioned in 2011 as part of the recent Traffic Signs Police Review[7], this issue was inexplicably not addressed. Instead of considering the understanding of the plethora of vehicle dimension signs currently in use in the UK, it asked drivers to identify the meaning of just one height limit sign (mandatory dual unit) and one width sign (imperial only).

This extract from the report shows the relevant signs presented, and the levels of understanding:

Sign		Key Area of Understanding	Key Area of Misunderstanding	Improvements/ Recommendations
Bus Lanes and Gates B3a/b: 953 Bus Only		• Buses only (98% answered correctly with 'only' plate; 96% without)	• None	• None
Sign H1: 629.2A Height Restrictions		• Height restriction (94% got all comprehension questions correct)	• None	• None
Sign H2: 6221.A Weight Restriction		• Weight restriction (96% got all comprehension questions correct)	• None	• None
Sign H3: 629 Width Restriction		• Width restriction (96% got all comprehension questions correct)	• None	• None

As these were well understood the report concluded that no changes were necessary, but drivers were not asked to comment on a wide range of alternative sign designs for height and width signs. Had drivers been asked to identify the differences between the alternative sign designs, it is likely that a much more mixed picture would have been presented, as per the 2004 report which highlighted the differences, and some more informative conclusions drawn.

[7] Research Project into the Awareness of the Meaning of Traffic Signs, report PPRO 04/16/24, by AECOM for Department for Transport

3.3 Measures to Reduce the Frequency of Over-Height Vehicles Striking Bridges

In 2004, the Transport Research Laboratory (TRL) completed a report (Report T/079/0) on the subject of over-height vehicles striking bridges:

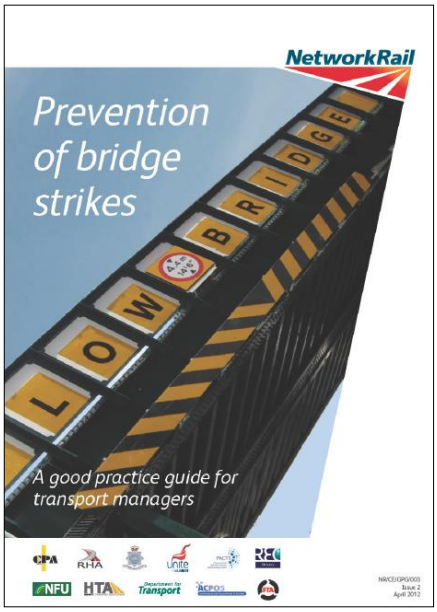
> There are nearly 2000 reported bridge strikes recorded by Network Rail for their own bridges each year (where vehicles, typically lorries or double-decker buses, try to pass under bridges that are lower than the height of their vehicles). There is an upward trend in the occurrence of recorded bridge strikes. A review of statistics for the last ten years has shown that the number of reported strikes at underline bridges has doubled. The consequences of bridge strikes can be very disruptive to road and rail transportation systems. Traffic can be brought to a standstill for several hours while damaged vehicles are removed. Bridges under railways tend to be associated with railway embankments which create barriers across the road network. Thus the bridges become critical points on those networks and any blockage there can have widespread impact. Where railway bridges are affected, speed restrictions or prohibitions may have to be placed on the line while the bridge is inspected to confirm that it is safe for vehicles to cross... Bridge strikes also cause damage to the rail infrastructure, which has to be repaired.
>
> The occurrence of over height vehicles hitting low bridges, i.e. those bridges with a clearance of less than 5.03 metres, has been a problem for several decades. Various solutions have been proposed, working parties have been established, legislation has been updated, and however, the problem has still not been fully resolved. TRL Limited was commissioned in 2003, by the Department for Transport, to conduct research into the bridge strike problem and find ways of reducing the incidence of bridge strikes. In particular the project has concentrated on the following issues:
>
> - To obtain a better understanding of the reasons why drivers do hit low bridges, so as to better target action to reduce the number of incidents;
> - To review the range of measures that have been taken so far to reduce bridge strikes, especially those at the frequently hit bridges;
> - To assess and/or develop other ways of reducing bridge strikes;
> - To provide advice to the Department for Transport (the Department) and the Bridge Strike Prevention Group (BSPG).

This research recommended greater use of mandatory signs instead of warning signs, and the use of dual unit signs in place of imperial-only or separate signs.

6.3 Improvements in Signing

Measure	Description
Metric heights	Metric heights should be shown for all bridges on main roads and routes that are used frequently by foreign drivers.

3.4 Prevention of Bridge Strikes: a good practice guide for transport managers



Prevention of Bridge Strikes: a good practice guide for transport managers was first published by Network Rail in 2004, and an updated version was published in 2012.

The document recognises that use of metres on signs is advisable, and in the foreword, the Parliamentary Under Secretary of State, Norman Baker, says:

"To prevent bridge strikes, it is important that your drivers know the height of their vehicle and understand and obey traffic signs. To assist them, the Department for Transport has amended the Traffic Signs Regulations to allow local councils to use new signs that show, for example, the maximum headroom in imperial and metric units."

The publication outlines the problem in its introduction, which is reproduced below.

> *Bridge strikes continue to be a significant problem to rail and highway/road authorities across the country. Between April 2011 and March 2012, there were more than 1500 bridge strikes at railway bridges over roads reported to Rail Authorities. A survey in 2011 indicated that drivers believed causes of bridge strikes include:*
> - *Drivers not knowing vehicle height (32%)*
> - *Poor route planning (22%)*
> - ***Drivers not understanding signs (15%)***
> - *Poor information about low bridges when planning a route (11%)*
> - ***Inadequate signing (9%)***
> - ***Drivers not believing signs (8%)***

It is notable that signing is a major contributing factor, with poor understanding and inadequate signing an issue for 32% of drivers interviewed.

4. Signing practice in the UK

In the foreword to *Prevention of Bridge Strikes: a good practice guide for transport managers*, the Parliamentary Under Secretary of State, Norman Baker, says *"To prevent bridge strikes, it is important that your drivers know the height of their vehicle and understand and obey traffic signs."*

Marek Belka, Executive Secretary of the United Nations Economic Commission for Europe, says of road signage, *"It is often said that time is gold. In this matter, time is also human lives. Let's act quickly to save many lives."*

Unfortunately vehicle dimension signing in the UK falls considerably short of best practice, with a plethora of different signing arrangements at different locations, and many examples of errors on signs. This section briefly reviews some of the issues with the current signing practice.

4.1 Height signage

There are 1,500 to 2,000 bridge strikes in the UK each year, with the DfT reporting that foreign vehicles account for a much higher proportion of collisions than their share of HGV traffic would suggest. This is particularly revealing given that, unlike UK vehicles, in most continental countries vehicles are limited to a maximum of 4 metres in height.

Between January and September 2007, Network Rail paid over £5 million in compensation to train operators for loss of rail service due to bridge strikes, making the annual cost to Network Rail alone at least £6 to 7 million[8].

Despite unanimous agreement at all levels within the industry that effective signage of low bridges is a critical road safety feature to reduce these volumes of cost to the economy, practice across the UK is confusing compared with other countries.

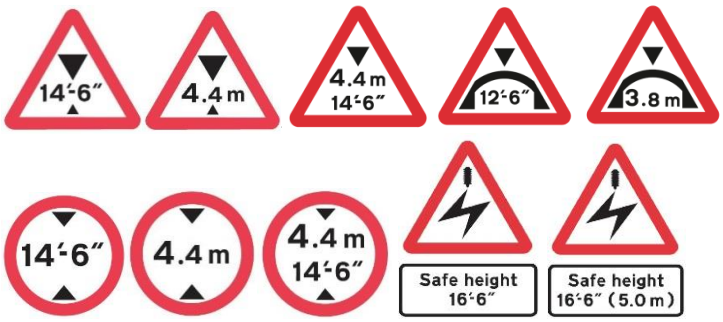
It is notable that in a 2011 survey by Network Rail, 32% of drivers involved in bridge strikes stated that they did not understand the signs, the signing was inadequate, or they did not believe the signs[9].

There is a plethora of sign styles available for highway authorities in the UK compared with other countries. The European convention specifies one sign style, which if applied consistently across Europe would provide clear signage for all road users. UKMA is aware of no other country in Europe which allows more than one style of sign at low bridges except for Ireland, which employs a warning sign on advance direction signs. In contrast, the UK has no fewer than ten current sign styles which indicate low headroom.

[8] Based on compensation paid by Network Rail to train operating companies following line closures due to bridge strikes, January to September 2007 of over £5 million.

[9] Prevention of Bridge Strikes: a good practice guide for transport managers, Network Rail, 2012

Current permitted signs

UN'S VIENNA CONVENTION	
UNITED KINGDOM	
IRELAND*	
FRANCE	
GERMANY	
NETHERLANDS	
SPAIN	
POLAND	

**Current designs; older dual unit versions still exist but are not permitted for new signs.*

The UK's ten designs for height restrictions stands in sharp contrast to other countries, where a single sign is usually used for all purposes. A large part of the problem is clearly the muddle of measurement units, with feet and inches remaining the primary unit despite fifty years of government policy to move to using metric units for all purposes.

Many other countries have managed to convert their road signs from one system to another. Across the UK's only land border, Ireland has managed a similar transition more smoothly; the case study below explores Irish height sign policy.

Case Study – height restriction signs in Ireland

Like the UK, the Republic of Ireland traditionally used imperial units of measurement, but recognised that it was important for road safety to follow international best practice.

Until the 1990s, Irish height restrictions were signed in feet and inches; these signs were the Irish equivalent to the UK sign 530. (Note that in Ireland, warning signs conform to the North American practice of yellow diamond signs rather than the European red triangles.)

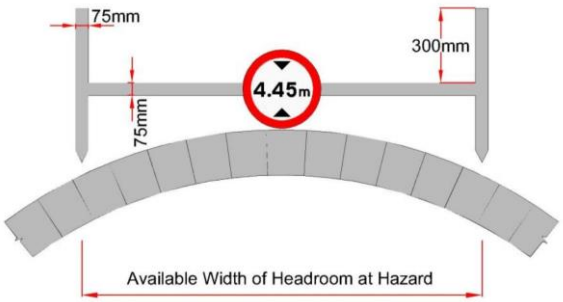
From the 1990s, the warning sign was changed to include metres alongside the imperial units.

In 1996, a new mandatory height restriction sign was introduced, incorporating the metric and imperial units on a single sign. In the early 2000s a programme of sign renewal was undertaken to introduce the new sign at all sites where imperial-only signs were present.

In 2010, the new Irish Traffic Signs Manual replaced the previous dual unit sign with a new mandatory sign, very similar to the UK sign 629.2A but with two decimal places and the same x-height for all numerals.

The yellow warning sign still exists only for use on advance directional signs. The 2010 Traffic Signs Manual has removed the imperial unit, and new signs now show only metres.

There is no variant for arched bridges along the lines of UK sign 531.1; the mandatory roundel is used alongside bridge markings, as illustrated below:



Thus in the course of 15 years, Ireland's height restriction signs have moved from being fully imperial to dual unit, with all new signs in future displaying metres only.

UKMA believes that the UK would benefit greatly from following Ireland's example.

Issues with the signing of height restrictions in practice

All ten designs of height limit signs can be found on the UK's road network, together with some obsolete signage such as the illustration below (taken in 2012):

Even where current designs are in use, errors are frequently made. For example, imperial signs are often not rounded to the nearest 3 inches as required under the regulations. Numerous examples abound, for example one of the busiest roads in London was incorrectly signed with a height limit of 3'-4" and 9'-5" for many years (now corrected).

In other examples, inconsistent information can be seen on different signs. In the example below (now corrected), a major tunnel was simultaneously signed with a 4.4 m and a 4.5 m limit on adjacent signs:

Some authorities seem not to understand the size of normal highway gauge:

While others have invented their own signs, complete with decimal feet:

Private sector signing practice

On roads, accesses and other sections of 'road' which are accessed by vehicles but which are not public highway, the owners of the land have discretion to erect their own signs.

Vehicle restriction signs are common in such circumstances, particularly height warning signs, which are frequently required at the access points to car parks, loading areas, petrol stations, etc.

Such signs tend to reflect general public usage rather than government policy, and the signs are overwhelmingly metric.

As a result there is a significant disconnect between the metric signs encountered whenever vehicles leave the public highway, and those encountered on the UK's public roads.

4.2 Width signage

The UN's Vienna Convention allows for the following sign to be erected to signify width limits:

C, 5 "NO ENTRY FOR VEHICLES HAVING AN OVERALL WIDTH EXCEEDING ... METRES"

Current permitted signs

Three different designs currently exist at width restrictions in the UK:

The only one meeting the international standards is the metric-only version, but this cannot be used alone without the imperial version and was replaced in 2002 by the dual unit version; the Traffic Signs Manual recommends that the dual unit version should be used in preference to the imperial-only sign.

Issues with the signing of height restrictions in practice

UKMA has observed that UK highway authorities do not always apply the signs correctly, and would benefit from simplification.

For example, the following examples can currently be found on the UK's roads:

In the sign on the left, the highway authority seems confused between a width and a weight restriction and the sign has remained on a busy dual carriageway for over a decade. The second sign seems to be technically correct, but the value would suggest some confusion over how wide 15 feet actually is. In the third example, the local authority appears confused between width and height, and has placed the units in the wrong order. The final sign shows a restriction of 2.9 m / 7'-0", a very considerable variance between the two units.

In the following location, both metric and imperial units were shown from the 1990s until 2008. New signs erected in 2009 showed metres only; in 2011, these were replaced with new imperial-only signs, demonstrating the need for imperial-only signs to be withdrawn even if the intention is to change over through normal maintenance renewal programmes:

In addition, in several areas the metric only sign is used. While UKMA supports this, this arrangement is not permitted under current legislation.

Case Study – £100,000 cost of imperial signs

In 2008, a French HGV driver took his vehicle along a road in London and was confronted by an imperial-only 7 feet width restriction[10].

Without any signs in metres, the driver took his vehicle through the restriction – and punctured his fuel tank, spilling 600 litres of diesel. The diesel damaged the highway surface, and left Hammersmith and Fulham council with a ***£100,000*** *resurfacing bill.*

The Evening Standard reported that Hammersmith & Fulham council plans to recover the cost from the French haulage firm. A spokesman said: "We are flabbergasted by this hare-brained action. There's a sign which says how wide the restrictions are." Sadly though, no signs conforming to international standards and showing the width in units that the driver would have understood.

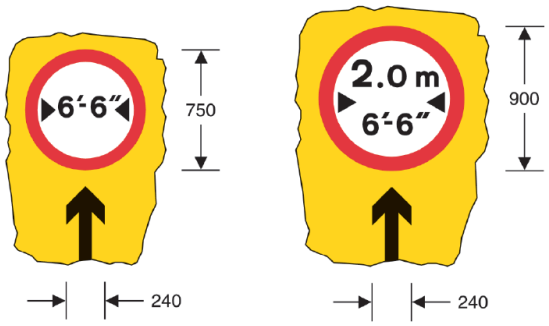
In UKMA's view, it is time for the imperial-only version to be withdrawn; its replacement with the metric-only version would be preferred, but the use of the dual unit sign may be appropriate in the short term.

[10] http://www.standard.co.uk/news/what-kind-of-fuel-would-drive-a-lorry-down-here-6628835.html

Temporary width restriction signs

There are temporary versions of numerous signs including height restrictions, but temporary width restriction signs deserve a special mention due to their extensive use on the motorway and trunk road network, and the poor and inconsistent usage of the signs.

Although not exclusively used for this purpose, an overwhelming majority of such signs are used on motorways and trunk road where road works have resulted in narrow lanes, and wide vehicles are prohibited from using the outermost lanes on safety grounds, allowing the outer lanes to be made narrower than the standard lane width or the temporary inside lane(s).



Either imperial-only or dual unit versions can be used. Chapter 8 of the Traffic Signs Manual states unambiguously that *"Dual unit signs should be used wherever possible."* This is consistent with the advice in other chapters that dual unit signs should be used, especially on main roads and those used frequently by foreign vehicles – almost the definition of the motorway and trunk road network.

However, observations suggest that this advice is regularly not followed by the Highways Agency, despite their good progress in implementing dual units on permanent signage. For example, recent major road works on the A2/M2 leading away from the primary entry points for continental HGVs from Dover, the Channel Tunnel and other ferry ports was signed using imperial-only width restriction signs, placing other road users in danger of wide vehicles straying into the narrow offside lanes.

Foreign HGVs passing imperial-only lane restriction signs:

Given that the imperial-only sign is not recommended to be used in the Traffic Signs Manual, it presents an inherent safety hazard with foreign HGVs unable to interpret these safety signs which are found on the busiest parts of our road network, and the signs have a very short lifespan being moved regularly in accordance with the progress of the road works, it is UKMA's view that the imperial-only versions of these signs should be withdrawn forthwith and the dual unit version mandated within months of the next update to the TSRGD.

4.3 Length signage

The UN's Vienna Convention allows for the following sign to be erected to signify width limits:

C, 5 "NO ENTRY FOR VEHICLES HAVING AN OVERALL LENGTH EXCEEDING ... METRES"

Current permitted signs

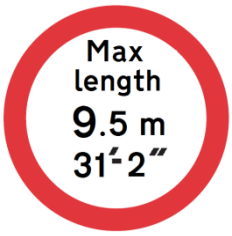
The current UK legislation allows for the following length limit signs to be erected at length restrictions:

Currently the metric version can only be used in conjunction with the imperial sign.

Issues with the signing of length restrictions in practice

UKMA has observed that UK highway authorities do not always understand the signage, and would benefit from simplification.

For example, the following examples have recently been found on the UK's roads:



The sign on the left (reproduced in the centre for clarity) is currently in use in several locations, where the local authority has been unable to use an authorised dual unit sign and so has improvised instead. The sign on the right inadvertently banned vehicles over 33 inches (83 cm) long (it was corrected after UKMA informed the highway authority).

Case Study – call for metric only signs in London

Length restrictions are relatively uncommon. The largest length restriction zone in the UK is in central London, where parts of Westminster, Camden, Islington and the City of London (CoL) are covered by a ban on long vehicles over 40 feet in length (12 metres).

The signs follow a variety of styles, many conforming to the current design, some conforming to earlier styles (see left).

Due to the high proportion of foreign vehicles in central London, use of metric units may help to provide the environmental benefits sought. This is recognised by the councils, with the City of London having instituted a programme of adding metres to all height and width signs, but with no dual unit available, the councils do not wish to add to street clutter by adding a second sign.

In response to the 2009 consultation on amendments to the TSRGD, Westminster City Council, suggested that rather than use dual-unit signs, "a phased approach to the provision of metric only signs should be adopted." Westminster is likely to have more length restriction signs than any other highway authority.

The City of London is adding metres to all its height signs, but is reluctant to do so for length signs due to the lack of a dual unit version, or the ability to use metres alone. "The CoL has no plans to duplicate the Central London 40-foot length restriction signs with metric versions as this would contribute considerably to the sign clutter in environmentally sensitive locations including conservation areas and the setting of several listed buildings. Use of imperial and metric units together on a single sign is not permitted for length restrictions" – City of London, 2013

If metric only length signs were adopted, this would bring central London, with its high proportion of foreign visitors, into line with other cities in the UK which already use metric units for such restrictions (see left), despite the DfT's official signing policy framework lagging several decades behind the times.

In UKMA's view, it is time for the imperial-only length sign to be withdrawn; its replacement with the metric-only version would be preferred, but the use of a dual unit sign may be appropriate in the short term.

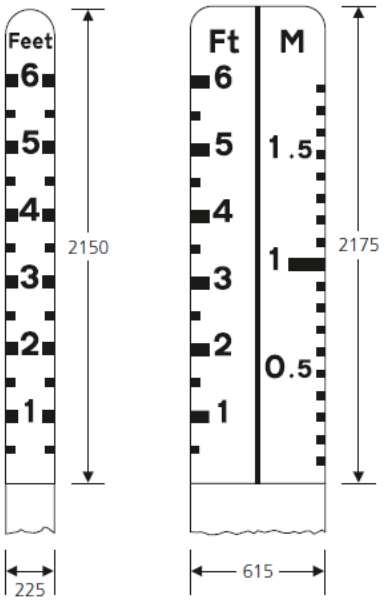
4.4 Depth signage

Depth gauges at fords are not covered under the UN's Vienna Convention, although the principle that cross-border drivers need to be able to understand safety critical signs clearly still holds.

However the benefits could be significant, with errors by driver gauging depths potentially fatal, and certainly resulting in significant costs to insurers (and therefore all drivers).

Current permitted signs

The current UK legislation allows for either of the following depth gauges to be erected at fords:



Issues with the signing of fords in practice

Despite the potentially fatal consequences of drivers misjudging ford depths, signage of fords is highly variable. Some are signed in imperial units only, some in both imperial and metric units, and some in metric units only. Some authorities have taken to designing their own signs, as illustrated below.

In 2012 two cars were washed downriver at a ford in Hinxton, South Cambridgeshire, after misinterpreting the depth gauge. Newspaper reports[11] quoted a local resident "It would help to have clearer depth signs".

Case Study – death in Hampshire

Thornbury Road in Headley, Hampshire, crosses the River Enbourne by way of a ford. It has reportedly been the scene of several accidents in which vehicles have been washed down the river, and in around 2011 Hampshire reviewed signage at the site.

Despite the availability of a dual imperial/metric gauge (Diagram 826.1) since 1994, which would maximise the comprehension of the water depth, the Council decided not to use the better understood dual unit gauge, and instead retained only imperial units, together with a new non-TSRGD compliant yellow warning sign.

Tragically in 2012, a judge was drowned at the river when his vehicle was washed 100 metres downriver from the ford following heavy rain.

Councillor Mel Kendal, Executive Member for Environment and Transport at Hampshire County Council, said: "The ford is located on the county boundary with Berkshire and the signs on the Hampshire side of the ford have recently been changed and improved to advise motorists to check the depth markings before proceeding to cross the ford.

"The depth markers are clearly visible, even at night in headlights, and the measurements are each one foot apart.

"Approximately 900 metres before reaching this sign and depth markers, there are advance signs warning that the road is liable to flooding."

It cannot be said whether a dual unit gauge might have averted the tragedy, but with two generations having been educated in metric units for the past 40 years, and foreign drivers being unfamiliar with feet, it is clearly important for metres to be provided on such safety critical signs/gauges.

It also underlines the ineffectiveness of the DfT's "softly, softly" approach to introducing dual unit signs without withdrawing old imperial-only versions, as the signing review by Hampshire could have included installation of a dual unit gauge which would have been more readily understood by more drivers rather than installing a bespoke non-TSRGD sign.

[11] http://www.dailymail.co.uk/news/article-2245813/An-underwater-pile-Drivers-forced-abandon-vehicles-ignoring-warning-signs-getting-stuck-flooded-ford.html#ixzz2khO5KKsJ

UKMA finds it extraordinary that 20 years after the introduction of the dual unit depth gauge, and 40 years since Britons have been educated in metric rather than imperial units, depth gauges at fords can still display imperial units only, despite the deaths associated with such crossings each year.

There are only a very limited number of depth gauges in the UK, and there would be a negligible cost of replacing the remaining imperial-only gauges with dual unit gauges.

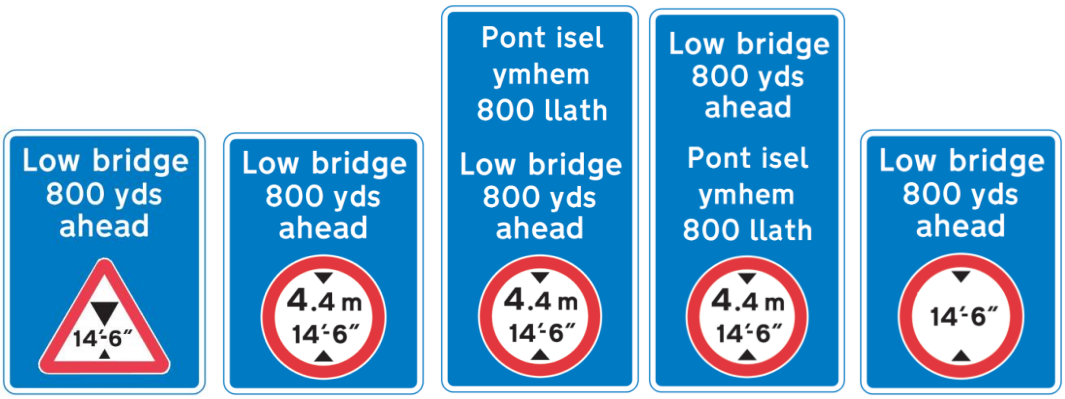
4.5 Distance to vehicle restrictions

A related issue to the signing of what a vehicle restriction is, is how far it is until the restriction. This is related to a wider issue about the signing of distances to hazards, which is very much a safety critical issue.

In the UK, such distances are generally signed in yards.

Current permitted signs

There are numerous combinations of distance plates, but examples of those most relevant to the matter at hand are given below:



Issues with the signing of distance to restrictions in practice

There are numerous issues with the current practice:

- While yards and metres are both generally understood by British drivers, generations of learner drivers have learnt stopping distances from the Highway Code in metres, only to be confronted on the roads with road signs in yards;
- Foreign drivers – over 3 million of whom enter Britain's roads each year – are not familiar with yards, and are therefore unable to gauge distances to hazards;
- By not using the international metric standards, signs in Wales must display translations of the sign text, adding to the cost and clutter, and making them less legible;
- The signs provide an overload of information to digest at speed.

The drawbacks of the current regulations have been recognised by British highway authorities, who have deviated from the prescribed designs to provide signage which will be more readily understood by all drivers.

The information overload is further illustrated in the following examples comparing UK practice against those in other countries.

UK (except Wales)	UK (Wales)	Germany	Austria	France
				

In UKMA's view, there is scope to significantly improve the clarity of these types of signs which would improve road safety, including mixing fewer units, using less text, and having a single sign usable across the whole of the UK including Wales, as illustrated below.

Existing signs	
	Distance understood by UK drivers? ✓ Distance understood by foreign drivers? × Restriction understood by UK drivers? ✓ Restriction understood by foreign drivers? × Legible at speed? ~
	Distance understood by UK drivers? ✓ Distance understood by foreign drivers? × Restriction understood by UK drivers? ✓ Restriction understood by foreign drivers? ✓ Legible at speed? ~
	Distance understood by UK drivers? ✓ Distance understood by foreign drivers? × Restriction understood by UK drivers? ✓ Restriction understood by foreign drivers? ✓ Legible at speed? ×
Proposed sign	
	Distance understood by UK drivers? ✓ Distance understood by foreign drivers? ✓ Restriction understood by UK drivers? ✓ Restriction understood by foreign drivers? ✓ Legible at speed? ✓

It should be noted that a review of issues surrounding metrication of road signs by the DfT's Traffic Policy Division found that:

"Yards occur on very short distance direction signs eg Station 700 yds and on warning signs to features ahead such as roadworks 400 yds. Conversion to metres would not be a technical problem given the effective equivalence of the yard and the metre within the implied accuracy of such signs. Hence '200 yds' is for all practical traffic signing purposes the same as '200m'. Indeed it would not be impractical to allow both units to be used simultaneously and at major roadworks sites to obliterate the abbreviation 'yds' where a multitude of imperial and metric signs might appear odd. Rounding to the nearest 50 or 100 yards is the normal practice. Hence metrication of the yard could be accomplished at relatively little cost providing this were done under the normal cycle of sign renewals."

UKMA would go further and suggest that conversion of yards to metres would not only cost little, as the DfT acknowledges, but save considerable sums of money in Wales by obviating the need for the units to be translated, and would greatly enhance safety by displaying the units learnt by British drivers in their Highway Code, and the units familiar to foreign drivers.

Indeed, given the equivalence acknowledged by the DfT, conversion could be undertaken at little cost and great speed through the simple application of m overlays over 'yds' on existing signs, as well as being applied to new signs.

4.6 Summary of current signing practice

A review of current signing practice illustrates significant failings in the current practices of signing vehicle dimension restrictions in the UK:

- There are a complex array of sign designs available, including up to ten height warning or restriction signs (other European countries have a single design) and three width restriction signs (again, other countries have a single design)
- DfT research suggests that only 3% of drivers (and only 20% of professional drivers) could distinguish between warning and mandatory height signs
- Highway authorities use a seemingly random mixture of imperial-only signs, metric-only signs (although they are not strictly permitted), and dual unit signs
- Signs still exist which predate even the current designs, suggesting a need for deadlines to be met when safety critical sign designs are updated
- There is no permitted dual unit length restriction sign, which has led some highway authorities to call for a switch to metric-only length signs, and others to invent their own non-compliant standard dual unit length sign
- The bewildering array of signs available had led to numerous erroneous signs being erected

It is clear that the next iteration needs to work towards a standardisation of vehicle dimension signage, by:

- Reducing the number of available signs
- Ensuring that metres are shown on all vehicle dimension signs, including height, width and length signs, and depth gauges
- Setting time limits for the removal of out of date signage
- Replacing the imperial length restriction sign with a metric length restriction sign
- Simplifying the warning signs to such hazards including the use of language-neutral metric units to improve clarity, understanding, and allow the same signs to be used across the UK including bilingual Wales

5. Survey of UK highway authorities, 2013

5.1 Survey background

The previous chapters outline the current legal status of vehicle dimension signing in the UK, as well as practical issues with the implementation of the dimension sign policy. However, while the guidance is clear (if somewhat more complex than it needs to be) that authorities should be moving from imperial to dual unit signing, to what extent are local authorities putting into practice the current guidance? To study this, UKMA conducted a survey to ascertain the current position around the country.

In summer 2013, a Freedom of Information (FOI) request was made to every highway authority in the UK, ranging from borough and county councils to national highways authorities including the Highways Agency (England), Transport Scotland, the Welsh Assembly Government, and the Department for Regional Development (Northern Ireland).

The same request was made to all highway authorities, except for minor changes to reflect the status of the authorities, as follows:

> *The government's Traffic Signs Manual provides advice on road signage to assist local authorities in the discharge of their duties under section 122 of the Road Traffic Regulation Act 1984 and Part 2 of the Traffic Management Act 2004. This states that "...failure to follow the Manual's guidance without good reason might well lead to enforcement difficulties. In particular, adjudicators might consider such failure to be evidence that the signing was unclear. Traffic authorities should always remember that the purpose of regulatory signs is to ensure that drivers clearly understand what restrictions or prohibitions are in force."*
>
> *1. Is the Council aware that the Traffic Signs Manual strongly recommends that all warning and regulatory signs displaying height, width and length restrictions should show the restriction dimensions in metres as well as imperial units?*
>
> *2. At which locations (if any) on the authority's road network does height, width or length signage remain which does not meet the recommendations of the Traffic Signs Manual to include dimensions in metres?*
>
> *3. What plans does the Council have to bring its height, width and length signage into conformity with the guidance within the Traffic Signs Manual?*

Overall results

The requests were submitted between 31 July and 3 August 2013. Taking into account weekends and bank holidays, responses should have been received within 29 calendar days. This was achieved by 156 of the 209 authorities, or 75%. However, it should be noted that some authorities which were quick to answer did so without any serious consideration of the request and with inadequate responses, while some replied later but with fuller information.

On balance, it is better to receive a late response, which has been answered in a co-operative spirit, than a rapid response which fails to answer the request.

However, some 23 authorities did not respond to the FOI request.

Good performers ✓

A large number of local authorities did respond to the request constructively, with **Darlington** doing so within a day.

Poor performers ✗

A disturbing number of authorities' officers appear unable to understand simple English, with, for example, **Reading** answering the question "At which locations on the authority's road network does height, width or length signage remain which does not meet the recommendations of the *Traffic Signs Manual* to include dimensions in metres?" with the answer to a different question: "All sites in the Reading Borough with such restrictions are signed correctly in accordance with the *Traffic Signs Regulations and General Directions 2002*."

The poorest response of all came from Bracknell Forest. Uniquely amongst 209 authorities, they refused to answer the questions, claiming that *"I cannot find that your request above is for recorded information held by the Council."*

Authorities who had not responded after five months were:

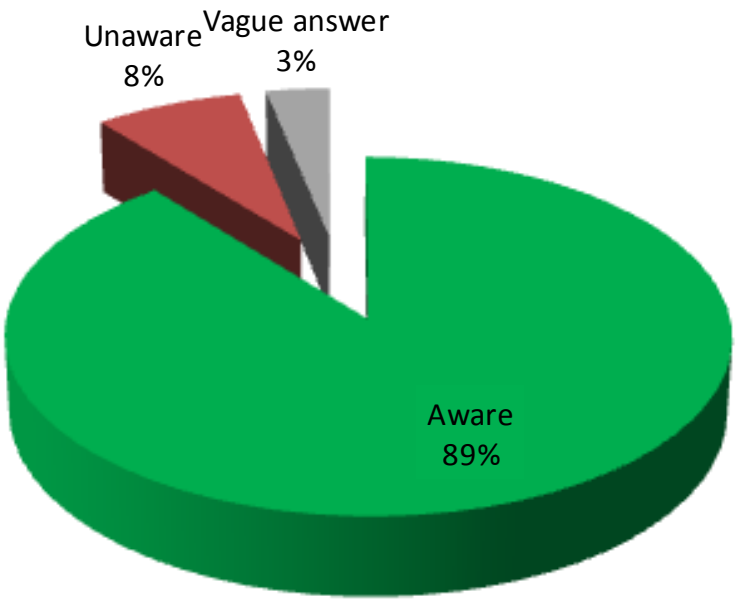
Blaenau Gwent	Bury	Middlesbrough
East Dunbartonshire	Cambridgeshire	North Yorkshire
Inverclyde	Croydon	Sheffield
Midlothian	Cumbria	Shropshire
North Lanarkshire	Devon	Torbay
Perth & Kinross	Halton	Wigan
Vale of Glamorgan	Kingston upon Thames	Wirral
Birmingham, UK	Liverpool	

5.2 Awareness of the current regulations

The first question posed sought to assess the level of awareness amongst highway authorities of the Traffic Signs Manual recommendations that metres should be used on vehicle dimension signs. The request was made just a few days after all highway authorities were notified by the DfT of the new 2013 Traffic Signs Manual, so all should have been very aware of the latest guidance.

"Is the Council aware that the Traffic Signs Manual strongly recommends that all warning and regulatory signs displaying height, width and length restrictions should show the restriction dimensions in metres as well as imperial units?"

Overall results



The vast majority of highway authorities are aware of the regulations in the Traffic Sign Regulations and General Directions (TSRGD) and the recommendations in the Traffic Signs Manual (TSM). A number quoted passages from the TSM, while others were at pains to point out (correctly, but irrelevantly with respect to the question) that TSRGD permits imperial-only signs and therefore imperial-only signs meet the legal requirements.

However, it should be noted that in a large number of cases their self-proclaimed knowledge of the current regulations could not be verified; several authorities claiming to know the current advice proceeded to quote from superseded versions of the Traffic Signs Manual, whereas the question was seeking to prompt an awareness of the most recent 2013 update.

Good performers ✓

With 91% of authorities having (or claiming) awareness it is not possible to highlight any particular authorities for their knowledge.

Poor performers ✗

However, there were some notably poor performing highway authorities, which demonstrated a worrying lack of awareness of current signage legislation and guidance.

For example:

- **Gateshead Council** are unaware of the latest TSRGD and TSM, stating in their response to the FOI that the latest regulations they follow are those contained within the obsolete *1994* regulations.
- **North Ayrshire Council** incorrectly believes that the regulations do not permit metric length signs, despite being permitted under TSRGD for over a decade: *"Distances and lengths on signs are to be provided in imperial units only."* In fact, the Traffic Signs Manual states in Chapter 3, paragraph 5.38: "It is recommended that both the imperial and metric sign should be used wherever practicable."
- **Wandsworth Council** stated that *"Whilst the Traffic Signs Manual does make a recommendation, we are unable to find a paragraph that strongly recommends what you have raised."* Wandsworth should refer to Chapter 4, which states, "**It is strongly recommended that both units are displayed on signs**"
- **East Sussex County Council** claimed that *"The use of combined Imperial and metric signs has only been approved as part of the revised guidance from the DfT in 2012"* despite their appearance within the TSRGD since 1994, a recommendation they should be used in preference to the imperial version since Circular 4/94 in the same year, and no new TSRGD being published in 2012.

Bracknell Forest declined to answer.

Conclusions on awareness of the current regulations

Issue – lack of knowledge of latest guidance

While the vast majority of highway authorities are aware of the latest guidance, it should reasonably be expected that *all* authorities would be well aware of the latest guidance. It is particularly concerning that one local authority still believes that the 1994 regulations are current; a large number of others appear to apply only the TSRGD without reference to the government's TSM which provides the context and recommendations on the application of the signs permitted in TSRGD.

It is therefore recommended that:

- All highway authorities should be reminded to ensure that they are using the latest version of the TSRGD and Traffic Signs Manual, given the evidence that some authorities are still applying regulations from a version of the TSRGD which was withdrawn in 2002 and others are using only the TSRGD without reference to the Traffic Signs Manual guidance

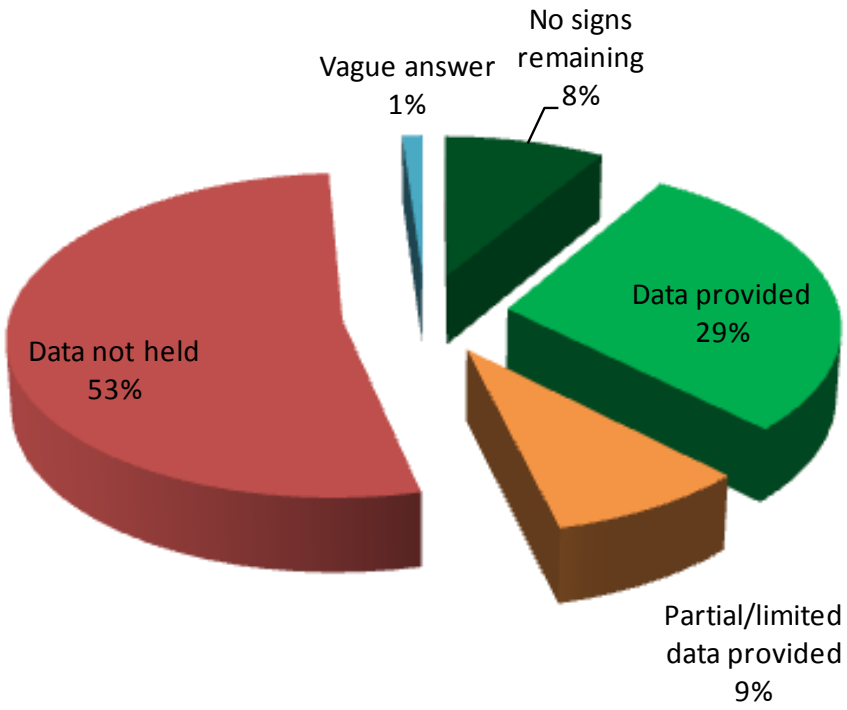
- The DfT should rationalise and consolidate the legislation and guidance such that inconsistencies are eliminated and highway authorities are able to refer to the correct legislation and guidance more easily

5.3 Knowledge of current signage

Many highway authorities maintain asset registers detailing the signage on their networks. Those holding such information will be better equipped to keep their signs up to date with the latest guidance, and therefore highway authorities were asked about their level of knowledge of the signs on their networks:

"At which locations on the authority's road network does height, width or length signage remain which does not meet the recommendations of the Traffic Signs Manual to include dimensions in metres?"

Overall results



Just under half of all highway authorities were able to provide details of locations where imperial-only dimension signs remain or have no such signs remaining, and just over half were unable to provide this information.

Good performers ✓

Several highway authorities have established that they have no remaining signs which do not conform to the recommendations to use both units on such signs.
These are:

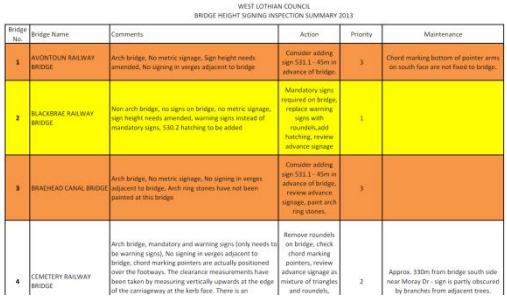
Angus	Isle of Anglesey	Renfrewshire
Blackpool	Monmouthshire	South Lanarkshire
Ceredigion	Northamptonshire	Transport NI
Dundee	Reading	Nottingham
East Lothian	Redbridge	Stockton-on-Tees
East Renfrewshire		

Several other authorities do have imperial-only signs remaining but have good knowledge of the signs on their road networks and were able to immediately furnish clear information.

Detail of locations were forthcoming from:

Aberdeenshire	Hartlepool	Sheffield
Blackburn with Darwen	Havering	Solihull
Bolton	Hillingdon	South Ayrshire
Bournemouth	Islington	Southampton
Brighton and Hove	Kensington & Chelsea	Stirling
Camden	Kent	Suffolk
Carmarthenshire	Kirklees	Sunderland
Central Bedfordshire	Knowsley	Swindon
City of London	Leeds	Telford and Wrekin
Clackmannanshire	Luton	Torfaen
Comhairle nan Eilean Siar	Newcastle upon Tyne	Trafford
Conwy	North Ayrshire	Waltham Forest
Darlington	North East Lincolnshire	Warrington
Derby	Oxfordshire	Welsh Government
Derbyshire	Peterborough	West Dunbartonshire
Ealing	Powys	West Lothian
Edinburgh	Redcar and Cleveland	
Enfield	Rutland	

Particularly detailed information was provided by some local authorities, such as **West Lothian** and **Waltham Forest** (extracts below).



WEST LOTHIAN COUNCIL
BRIDGE HEIGHT SIGNING INSPECTION SUMMARY 2013

Bridge No.	Bridge Name	Comments	Action	Priority	Maintenance
1	AVONTOUN RAILWAY BRIDGE	Arch bridge, No metric signage, Sign height needs amended, No signing in verges adjacent to bridge	Consider adding sign 533.1 - 45m in advance of bridge.	3	Chord marking bottom of pointer arms on south face are not fixed to bridge.
2	BLACKBRAE RAILWAY BRIDGE	Non arch bridge, no signs on bridge, no metric signage, sign height needs amended, warning signs instead of mandatory signs, 530.2 hatching to be added	Mandatory signs required on bridge, replace warning signs with roundels,add hatching, review advance signage	1	
3	BRAEHEAD CANAL BRIDGE	Arch bridge, No metric signage, No signing in verges adjacent to bridge, Arch ring stones have not been painted at this bridge	Consider adding sign 533.1 - 45m in advance of bridge, review advance signage, paint arch ring stones.	3	
4	CEMETERY RAILWAY BRIDGE	Arch bridge, mandatory and warning signs (only needs to be warning signs), No signing in verges adjacent to bridge, chord marking pointers are actually positioned over the footways. The clearance measurements have been taken by measuring vertically upwards at the edge of the carriageway at the kerb face. There is an	Remove roundels on bridge, check chord marking pointers, review advance signage as mixture of triangles and roundels,	2	Approx. 330m from bridge south side near Moray Dr - sign is partly obscured by branches from adjacent trees.

Schedule to FOI 2013-0367

Bridges and railway crossings with height or width restrictions				Restriction Parameters		Information		
Network Rail Reference	LBWF Reference	Name	Under/Over	Height ft in	Height m	Width m	Signed	Metric Units	Notes
37/97	B.1.03	Lea Bridge Road nr. Bakers Arms E10	Over	15'0"	4.877		Yes	No	
37/207	B.1.05	Grove Green Road E11	Over	15'0"	4.191		Yes	Yes	
22/1912	B.1.06	Kings Road E4	Over	15'0"	4.800		Yes	Yes	
22/1891	B.1.10	St James Street Station E17	Over	16'0"	4.876		Yes	Yes	
22/1900A	B.1.12	New Road (Hatch Lane) E4	Over	16'0"	4.877		Yes	No	
22/1900	B.1.13	Wood Street Station E17	Over	14'0"	4.267		Yes	Yes	
37/304	B.1.14	Harrow Road E11	Over	15'3"	4.648		see notes		Bridge replacement in progress (as at 19/8/13).
37/331	B.1.15	Cann Hall Road E11	Over	15'9"	4.801		No	No	
37/175	B.1.16	Hainault Road Leyton E11	Over	14'0"	4.267		Yes	No	
37/117	B.1.17	Capworth Street E11	Over	14'0"	4.496		Yes	No	
37/71	B.1.18	Boundary Road E17	Over	13'9"	4.191		Yes	No	
TAH2 63	B.1.22	Palmerston Road E17	Under			2.00	Yes	Yes	Temporary width restriction
22/1906	B.1.24	Macdonald Road E17	Over	13'9"	4.191		Yes	No	Road closed to motor traffic
22/1890	B.1.30	Essex Road E17	Over	9'3"	2.819		Yes	No	Road closed to motor traffic
TAH2 58	B.1.32	Shrewsbury Avenue E17	Under			3.00	see notes		Signed by weight limit only
TAH2 60	B.1.34	Suffolk Park Road E17	Under			2.75	see notes		Signed by weight limit only
TAH2 62	B.1.36	Northcote Road E17	Under			3.00	see notes		Signed by weight limit only
TAH2 65	B.1.37	Vernon Road E17	Under			3.00	see notes		Signed by weight limit only
37/133	B.1.41	Skelkims Lane E10	Over	14'6"	4.420		Yes	No	
37/337	B.1.43	Ramsay Road E7	Over	15'0"	4.648		Yes	Yes	
37/356	B.1.44	Peversey Road E7	Over	14'3"	4.343		Yes	Yes	
37/311	B.1.46	Cranfernay Road E11	Over	14'6"	4.420		Yes	No	
37/302	B.1.47	Montague Road E11	Over	15'0"	4.570		see notes		Bridge replacement in progress (as at 19/8/13).
37/296	B.1.48	Acacia Road E11	Over	15'0"	4.877		see notes		Bridge replacement in progress (as at 19/8/13).
37/274	B.1.51	Lancaster Road E11	Over	16'0"	4.877		No	No	
37/363	B.1.52	Vanelttart Road E7	Over	15'3"	4.648		Yes	Yes	

Poor performers ✘

Over half of highway authorities were unable to identify the locations on their network where imperial-only vehicle signs are still present.

A particularly obtuse answer came from **Bradford City Council**, who stated, *"The information regarding each sign is in the public domain - i.e. visible when viewing the signs themselves."*

Bracknell Forest declined to answer.

Conclusions on knowledge of current signage

Issue – some authorities have no register of road sign assets

Several highway authorities have demonstrated an excellent knowledge of the signs on their network, which allows them to closely manage their road sign assets, but a majority of authorities do not hold a detailed asset database of their road signs.

Given the safety-critical nature of these signs, the fact that over the last two decades the guidance has been increasingly clear that providing metres on such signs would improve road safety, and the low cost of incrementally adapting such signs, it is surprising that so many highway authorities do not hold this information.

It is therefore recommended that:

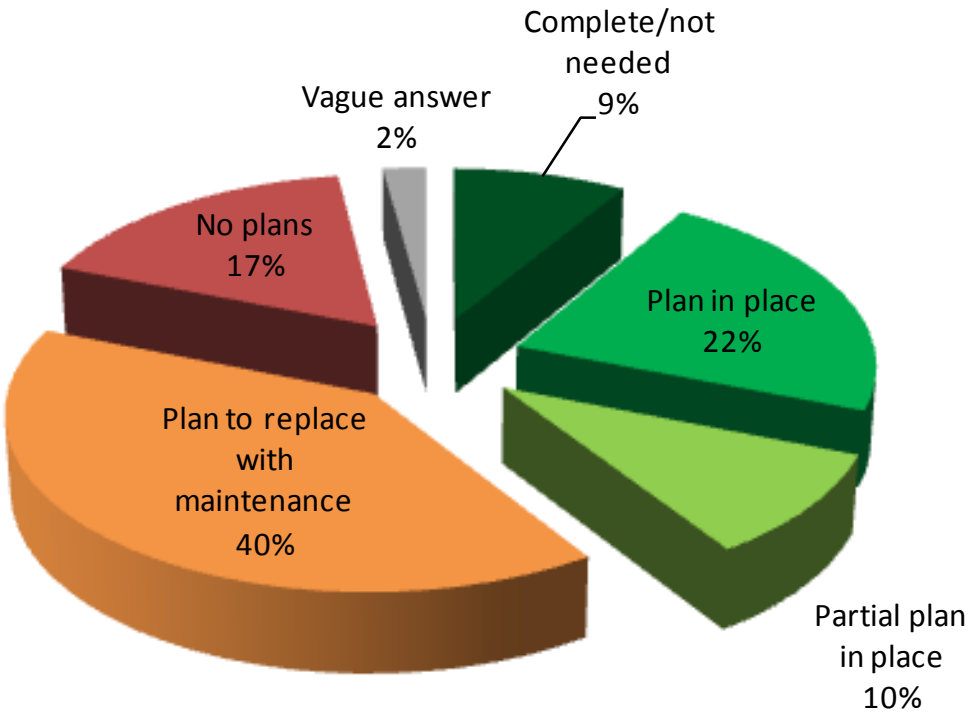
- All highway authorities should follow the best practice demonstrated by several other local authorities in undertaking a review of their road signs, particularly safety critical signs such as low bridge signage, to allow improvements to signing to be effectively planned.

5.4 Plans to improve signage

Highway authorities were asked about any plans to upgrade signage to incorporate the recommendation that metres should be displayed on vehicle dimension signs:

"What plans does the Council have to bring its height, width and length signage into conformity with the guidance within the Traffic Signs Manual?"

Overall results



Overall, 9% of highway authorities have already updated all signage to incorporate metres and imperial units, or have no such signs, and a further 23% have a plan in place to add metres to all such signs in the near future.

Another 10% have a partial sign renewal plan in place. In almost all cases, those authorities have a plan in place to upgrade all height restriction signage but will replace width and length signs gradually as part of their general sign maintenance regime.

40% of highway authorities plan to upgrade all signage to include metres, but plan to do so gradually as part of general sign maintenance plans.

17% of highway authorities have no plans to upgrade their signs to meet the recommendations in the Traffic Signs Manual.

With regard to those authorities with partial sign replacement plans in place, some authorities offered explanations. For example, the **City of London** (CoL) explained its position thus:

> *"The CoL are planning to change all existing illuminated [height] signage to low energy light-emitting diode (LED) types. The new signs will include both imperial and metric units.*
>
> *The CoL has no plans to duplicate the Central London 40-foot length restriction signs with metric versions as this would contribute considerably to the sign clutter in environmentally sensitive locations including conservation areas and the setting of several listed buildings. Use of imperial and metric units together on a single sign is not permitted for length restrictions (Item 2 of Schedule 16 to the Traffic Signs Regulations 2002)."*

Good performers ✓

The highway authorities report that they have no outstanding imperial-only dimension signs are:

Angus
Blackpool
Ceredigion
Dundee
East Lothian
East Renfrewshire
Isle of Anglesey
Monmouthshire
Northamptonshire
Nottingham
Reading
Redbridge
Renfrewshire
South Lanarkshire
Stockton-on-Tees
Transport NI

The highway authorities with active plans to add metres to their outstanding dimension signs are:

Aberdeenshire
Barnet
Bedford
Bournemouth
Brent
Brighton and Hove
Calderdale
Cardiff
Carmarthenshire
Central Bedfordshire
Comhairle nan Eilean Siar
Darlington
Derbyshire
Durham
Ealing
Enfield
Fife
Haringey
Harrow
Hartlepool
Herefordshire
Islington
Knowsley
Leeds
Lewisham
Luton
Milton Keynes
Newcastle upon Tyne
Norfolk
North Tyneside
Oxfordshire
Portsmouth
Sheffield
Solihull
South Gloucestershire
Stoke-on-Trent
Sutton
Swindon
Torfaen
West Dunbartonshire
West Lothian
Norfolk
North Tyneside

Poor performers ✗

The highway authorities with no plans to bring their signs into conformity with the recommendations in the Traffic Signs Manual are:

Argyll and Bute	Gloucestershire	Salford
Bradford	Hackney	Sefton
Bromley	Kirklees	Slough
Buckinghamshire	Lambeth	Staffordshire
Cheshire East	Leicester	Tameside
Conwy	Medway	Transport Scotland
Denbighshire	Merton	Wandsworth
Dudley	North Somerset	Warwickshire
East Riding of Yorkshire	Orkney Islands	Westminster
Essex	Rhondda Cynon Taf	York
Gateshead		

Bracknell Forest declined to answer.

All other unnamed highway authorities either plan to add metres to signs as part of their general maintenance programmes, or gave vague answers which were impossible to classify.

Conclusions on plans to improve current signage

Issue – some authorities have no plans to update signage

The study has found that a minority of authorities (17%) have no plans to replace imperial dimension signage with signs showing metric and imperial units, despite this being not only permitted but recommended by the DfT and others for two decades.

Research by the DfT in 2009 showed a positive business case for adding metres to vehicle dimension signs and withdrawing imperial-only versions, despite acknowledging that its benefits excluded road user benefits and was therefore a conservative estimate.

Given this, it seems reckless that imperial-only dimension signs are still permitted under the regulations despite the DfT's own signing guidelines "strongly recommending" use of the dual unit signs, and warning that the omission of metres on signs warning of power cables is "inadvisable".

It is recommended that:

- the option for providing imperial-only vehicle height and width signs should be withdrawn at the soonest opportunity. In 2009 the DfT proposed a four-year period to allow these signs to be withdrawn from an assumed starting date of 2010, meaning all signs would have to be replaced by 2014. Given that authorities have now had four years to undertake these works as part of their maintenance cycle and that the vast majority have done so, it is recommended that when the TSRGD is updated, authorities are given no more than two years to complete the task of removing imperial-only versions of these signs.

Issue – no dual unit length sign

The study has found that 10% of authorities have plans to replace some types of sign but not others; in some cases, the lack of a dual unit version of the length restriction has been cited. For example, the City of London explained that the addition of a second length sign would worsen sign clutter in environmentally sensitive areas, but they are adding metres onto all other vehicle dimension signs.

There are very few length restrictions in the UK; and many length restriction signs observed are life expired and no longer meet current standards, as illustrated on the right. In addition, the City of Westminster, which hosts the majority of the central London zone, previously called on the DfT to permit the use of metric-only length signs, as these would improve comprehension, particularly among foreign drivers, without adding to street clutter.
It is recommended that:

- the imperial-only length restriction sign should be withdrawn, and all such restrictions to be signed in metres only. This would be equivalent to the 1981 change from tons to tonnes, and would affect very few signs, but would mean that all length restriction signs would be the same as those everywhere else in Europe and would finally accord with the European convention, which the UK signed in 1971.

- If there is a view that it is not desirable to eliminate overnight length restrictions in feet, then the imperial-only sign should be withdrawn from the TSRGD, and replaced by a new dual unit sign, allowing highway authorities to use a single sign to display both units.

Current imperial sign:

Preferred metric-only sign:

Possible dual unit sign:

6. Conclusions and recommendations

6.1 Conclusions

This study has found widely varying practices when it comes to signage of vehicle restrictions by highway authorities around the UK. There is inconsistency between the signs permitted in the TSRGD and the recommendations within the Traffic Signs Manual, and numerous authorities are unaware of the latest guidance, with one still believing that the 1994 TSRGD is still current and another that dual unit signs were introduced in 2012.

The lack of a dual unit length sign is reducing the take-up of the metric version of that sign, and some highway authorities have taken to designing their own dual-unit length signs.

The lack of a deadline to replace imperial-only signs means that while the vast majority of vehicle dimension signs in the UK will include metres within the next couple of years, a small number of local authorities have no plans to follow the advice contained within the Traffic Signs Manual.

6.2 Recommendations

This report therefore concludes with a series of recommendations designed to address the problems identified, which could be introduced in the next version of TSRGD due in 2015.

PROBLEM – SIGN POLICY/DESIGN	**RECOMMENDATION**
The UK uses a wide variety of different sign designs for the same or similar purposes, where other countries use simpler single signs for vehicle restrictions. As a result there is confusion amongst drivers (only 3% of non-professional and 21% of professional drivers in a DfT study could identify the difference between mandatory and warning height signs) and professionals (numerous sign design errors can be found on the UK's roads).	The number of signs available to highway authorities should be drastically reduced, and all should follow international standards

A small minority of local authorities continues to use imperial-only dimension signs despite the guidance from the DfT since 1994 that the dual unit signs should be used	The option for providing imperial-only vehicle height and width signs should be withdrawn at the soonest opportunity. In 2009 the DfT proposed a four-year period to allow these signs to be withdrawn from an assumed starting date of 2010, meaning all signs would have to be replaced by 2014. Given that authorities have now had four years to undertake these works as part of their maintenance cycle and that the vast majority have done so (or will have shortly), it is recommended that as and when the TSRGD is update, authorities are given no more than two years to complete the task of removing imperial-only versions of these signs.
Only a small number of length restrictions exist, and where they do, highway authorities have called for metric-only units or invented bespoke dual-unit signs	The imperial-only length restriction sign should be withdrawn, and all such restrictions to be signed in metres only. This would be equivalent to the 1981 change from tons to tonnes, and would affect very few signs, but would mean that all length restriction signs would be the same as those everywhere else in Europe and would finally accord with the UN convention, which the UK signed in 1971. If there is a view that it is not possible to eliminate overnight length restrictions in feet, then the imperial-only sign should be withdrawn from the TSRGD, and replaced by a new dual unit sign, allowing highway authorities to use a single sign to display both units.
Ford depth gauges have been available in dual units since 1994 yet many remain imperial-only despite 40 years of metric education and the potential for deaths at such locations	Imperial-only ford depth gauges should be withdrawn as soon as possible, potentially without awaiting the new version of TSRGD, and dual-unit depth gauges provided at all fords as a matter of urgency. The notation on sign 826.1 should be corrected from “M” to “m”.
Distances to hazards such as low bridges are generally signed in yards, which are unfamiliar to foreign drivers, and inconsistent with the metres learnt by British drivers. These also entail translation into Welsh within Wales, adding to cost and clutter	New signs should display the distance in metres instead of yards, and older signs should be modified with overlays to change the units from “yds” to “m”

See Appendix 1 for a schedule of the signs affected by the above recommendations and the specific recommendations for that sign.

In addition, the review has found a number of issues related to the management of sign regulations, guidance and provision, and makes the following additional recommendations.

PROBLEM – SIGN MANAGEMENT	**RECOMMENDATION**
There is a major discrepancy between the legislation and the guidance, particularly with respect to imperial-only dimension signs, which the regulations permit but the guidance recommends are not used	The TSRGD should be amended to reflect the recommendations within the Traffic Signs Manual for imperial-only vehicle dimension signs to be withdrawn, and the TSRGD and TSM should be updated together to be in conformity with one another.
The survey has shown that that some highway authorities are still applying regulations from a version of the TSRGD which was withdrawn in 2002 and others are using only the TSRGD without reference to the Traffic Signs Manual guidance	An electronic (PDF) consolidated version of all chapters of the Traffic Signs Manual should be published by the DfT, with a link to an online version sent to all highway authorities, requesting their confirmation that they are using the current version of the guidance.
Many local authorities do not have an asset register of their road signs and are therefore unable to adequately manage their signage and keep signs up to date	All highway authorities should follow the best practice demonstrated by several other local authorities in undertaking a review of their road signs, particularly safety critical signs such as low bridge signage, to allow improvements to signing to be effectively planned.

Glossary

CoL– City of London

DfT– Department for Transport; for clarity, also used in this report to refer to the Department in the past when it has been known as the Department of Transport (DoT) and Department for the Environment, Transport and the Regions (DETR)

FOI – Freedom of Information

Highway authority – an authority responsible for the maintenance of public roads, usually national authorities for trunk roads (all roads in Northern Ireland), unitary councils (including metropolitan and London boroughs), and county councils

Highways Agency – highway authority for motorways and trunk roads within England

Transport NI –highway authority for Northern Ireland

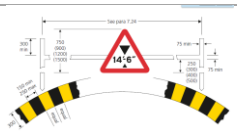
Transport Scotland – highway authority for trunk roads within Scotland

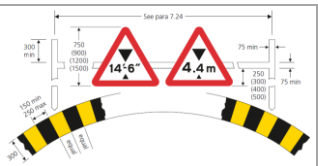
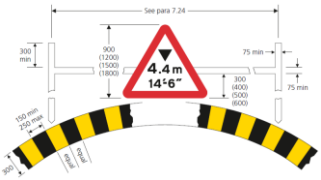
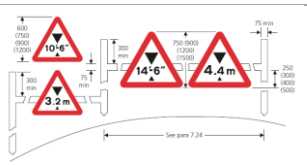
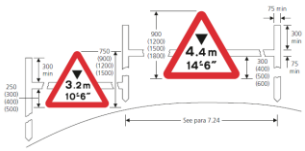
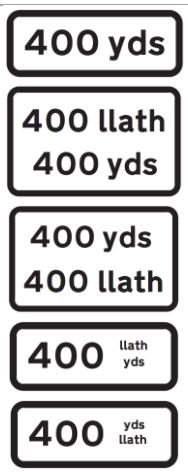
TSM – Traffic Signs Manual, guidance on the application of road signage

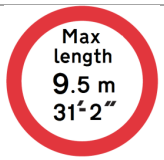
TSRGD – Traffic Signs Regulations and General Directions, legislation defining the signs permitted to be erected on public highways

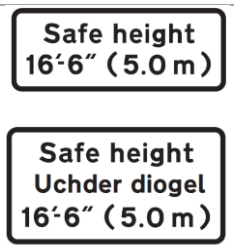
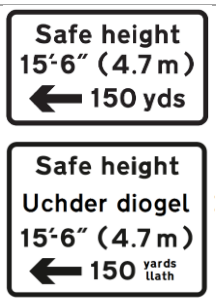
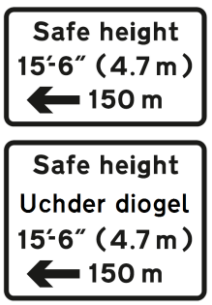
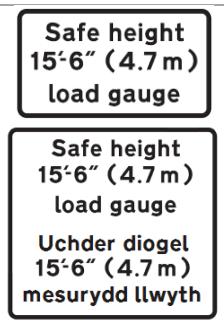
United Kingdom– Great Britain (England, Scotland and Wales) and Northern Ireland

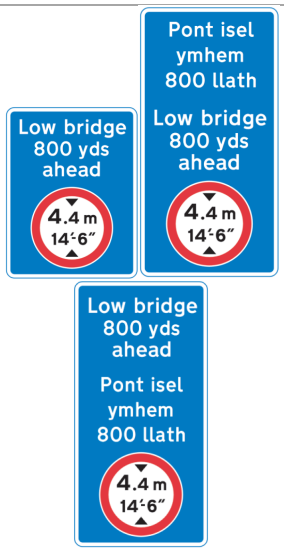
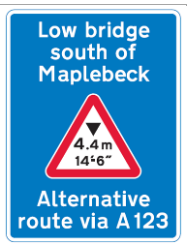
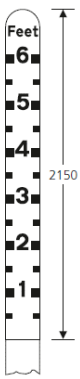
Appendix 1: Schedule of signs and recommendations

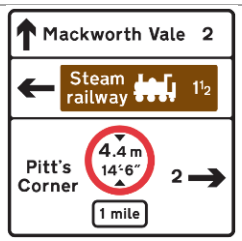
TSRGD number	Image	Comments	Recommendation
530 (imperial)		Not recommended for use alone and superseded by new sign 530A introduced in 2011. Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Withdraw sign.** Existing signs permitted only when accompanied by the metric version
530 (metric)		Not permitted without imperial version, and superseded by new sign 530A introduced in 2011. Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Withdraw sign.** Existing signs permitted
530A		Introduced in 2011, replaces the imperial-only and metric-only signs 530 Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Retain** as the only permitted warning sign, especially on advance direction signs. Could arguably be withdrawn in favour of 629.2A
531.1 (imperial)		Not recommended for use alone and superseded by new sign 530A introduced in 2011. Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Withdraw sign.** Existing signs permitted only when accompanied by the metric version
531.1 (metric)		Not permitted without imperial version, and superseded by new sign 530A introduced in 2011. Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Withdraw sign.** Existing signs permitted
532.2 (imperial)		Not recommended for use alone and superseded by new sign 532.2A introduced in 2011. Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Withdraw.** Existing signs permitted only when accompanied by the metric version

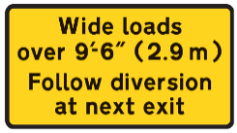
532.2 (dual)		Not permitted without imperial version, and superseded by new sign 532.2A introduced in 2011. Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Withdraw**. Existing signs permitted
532.2A		New dual unit height sign introduced in 2011	**Retain**. Could arguably be withdrawn in favour of 629.2A
532.3		Superseded by new sign 532.3A introduced in 2011. Arguably warning signs for low headroom could be withdrawn altogether and replaced with mandatory roundels.	**Withdraw**. Existing signs permitted only when accompanied by the metric version
532.3A		New dual unit height sign introduced in 2011	**Retain**. Could arguably be withdrawn in favour of 629.2A
572		Distance ahead to hazard. Safety critical information but inconsistent with metres used for stopping distances in Highway Code since 1980s, unfamiliar units to foreign drivers, and requires 2 languages in Wales resulting in five different designs on the UK's roads	**Withdraw** all five versions of the current sign and replace across the UK with new standardised sign 572X (below) Also applies to other signs using "yds", not all listed for brevity
572X		**Proposed new sign to replace 572 (and related other signs, not shown for brevity).** **Suitable for use across the UK and comprehendible by both British and foreign drivers.**	**Proposed new sign to replace English and bilingual signs 572 (and variant signs)**
629 (imperial)		Imperial only width restriction, not recommended for use in the Traffic Signs Manual	**Withdraw sign**. Existing signs to be replaced by metric version or 629A within 2 years

629 (metric)		Metric only width restriction, predates dual unit sign and currently only permitted in conjunction with imperial versions. However the sign is in widespread use and could be used in preference to the imperial or dual signs	**Recommended for width restrictions in place of imperial or dual versions**
629A		Dual unit width restriction sign	**Retain**, or replace with metric only version
629.1 (imperial)		Imperial-only length restriction sign, recommended to be used in conjunction with the metric version although this requires 2 signs	**Withdraw sign** and replace with metric only version of 629.1 within 2 years
629.1 (old)		Already withdrawn, but frequently still displayed	Set deadline for replacement with metric only version of 629.1 within 2 years
629.1 (metric)		Metric-only length restriction sign. Currently only permitted in conjunction with the imperial only version	**Retain** as the sole length restriction sign
n/a		Sign in current use in the UK	Should not be permitted; UKMA recommends straight switch to metric only units, but if a dual unit sign is preferred, the language neutral sign 629.1X below is preferred
629.1X		**Possible dual unit sign should straight switch to sole use of metric units not be considered possible**	**Possible sign although metric only is preferred**
629.2		Imperial-only mandatory height restriction, not recommended for use in the Traffic Signs Manual	**Withdraw sign** and replace with 629.2A within 2 years except where accompanied by a metric equivalent alongside

629.2 (metric)		Not permitted without imperial version, and superseded by new sign 629.2A introduced in 2002. Would ideally be the only height sign used but it is likely that the use of both units for height signs would be needed in the short term	**Retain sign**
629.2A		Dual unit mandatory height restriction	**Retain sign**
780A		Safe height beneath overheight cable, metric units may be omitted	Remove option for metric units to be omitted, imperial-only versions to be removed within 2 years
780.1A		Safe height beneath overheight cable, metric units may be omitted	Remove option for metric units to be omitted, imperial-only versions to be removed within 2 years
780.1X		**UKMA proposed new sign to simplify sign, improve legibility and allow for common signs across the UK**	**Proposed new sign to provide consistent distance units and simplify bilingual sign units**
780.2A		Safe height beneath overheight cable, metric units may be omitted	Remove option for metric units to be omitted, imperial-only versions to be removed within 2 years

784.1		Drivers of large of slow vehicles must phone for permission to cross level crossing. Only allows for dual units.	Any old signs without the metric units should be withdrawn and replaced within 2 years
818.3		Distance to a height restriction. Requires 2 languages in Wales Can currently be used with 629.2A, 622.1A, 626.2A, 629, 629A, 629.1 or 629.2.	**Withdraw** and replace with new sign 818X (below)
818X		**UKMA proposed new sign to simplify sign, improve legibility and allow for common signs across the UK**	**Proposed new sign to replace English and bilingual signs 818.3**
818.5		Low headroom warning and diversion. New sign introduced in 2011 which extraordinarily can be varied for use with imperial-only sign 530	**Withdraw** imperial-only variant incorporating sign 530
826		Imperial-only ford depth gauge. Not recommended for use in Traffic Signs Manual	**Withdraw** sign and replace with 826.1 within 2 years

826.1		Dual unit depth gauge	**Retain** as the sole depth gauge but with the incorrect upper case 'M' changed to 'm'
2002		Direction sign incorporating a low bridge warning. Numerous variants permitted	Permit only dual unit versions of the restriction
2003		Direction sign incorporating a low bridge roundel. Numerous variants permitted	Permit only dual unit versions of the restriction
2027		Direction sign incorporating a low bridge warning. Numerous variants permitted	Permit only dual unit versions of the restriction
2107		Direction sign incorporating a low bridge warning. Numerous variants permitted	Permit only dual unit versions of the restriction
2711.1		New sign introduced in 2011 which does not conform to the UN's Vienna Convention or UK policy to use metres on safety signs especially when users of tunnels could be non-drivers and those transiting through the UK	Withdraw all three signs in favour of single new sign 2711.1X below, replacing 'yards' with 'm' in accordance with international safety requirements

2711.1X		**UKMA proposed new sign to simplify sign, improve legibility and allow for common signs across the UK**	**Proposed new sign to replace English and bilingual signs 2711.1**
Numerous (example given is 2918)		Numerous signs use 'm' as an incorrect abbreviation of 'mile', despite the DfT recommending in 1989 that this should be dropped to avoid confusion with 'm' for metre	Remove the 'm' from such signs
7283		Symbol that can be incorporated into temporary road works (imperial only). Not recommended for use by the Traffic Signs Manual	**Withdraw** all signs within 1 year (temporary signs have a short life and are regularly re-sited)
7283.1		Symbol that can be incorporated into temporary road works (dual unit). Recommended for use by the Traffic Signs Manual	**Retain**
7284		Symbol that can be incorporated into temporary road works signs (imperial only). Not recommended for use by the Traffic Signs Manual	**Withdraw** all signs within 1 year (temporary signs have a short life and are regularly re-sited)
7284.1		Symbol that can be incorporated into temporary road works signs (dual unit). Recommended for use by the Traffic Signs Manual	**Retain**
7292		Drivers of wide loads must divert. Only allows for dual units.	Any old signs without the metric units should be withdrawn and replaced within 1 year (temporary signs have a short life and are regularly re-sited)