Transport Research Laboratory

Reducing traffic sign clutter

by J Cooper, J Mitchell & J Bedingfeld

CPR727

Framework Reference Number PPRO 04/45/04

CLIENT PROJECT REPORT

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Prepared for: Project Record: **Framework Reference Number PPRO 04/45/04**

Guidance note for local authorities - reducing sign clutter

Client: **Department for Transport, Traffic Management Engineering**

(Graham Hanson)

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Executive summary

This project, which is being undertaken as part of the national Traffic Signs Policy Review, sets out how to audit traffic signs and remove those that are unnecessary. The requirement for this guidance is set out under the environment section of the Review action plan.

The Department for Transport (DfT) considers that there are too many traffic signs, and one of the key objectives of the review is to minimise the impact of traffic signs on the local streetscape. To that end, guidance is required for local authorities detailing:

- How to collect and store an inventory of baseline information on signing assets.
- How this inventory can be used to audit them, with a view to removing those which are unnecessary.
- How the inventory can be used to reduce the environmental impact of signs by, for example, considering suitable mounting positions, adopting correct sign sizes and reducing the use of backing boards.

Simple, easy to use guidance, probably in the form of a Traffic Advisory Leaflet (TAL) is to be produced for local authorities by the DfT giving the guidance specified above. This report provides the necessary background research and guidance to form the basis of this document.

Removing unnecessary traffic signing would have benefits to local authorities, including:

- Reducing the required level of maintenance for sign cleaning and foliage cutting;
- Reduction in lamp changes if lit signs are removed;
- Reduction in the temporary traffic management required for undertaking maintenance work, providing both costs benefits and exposing road workers to less risk;
- Reduction in the costs associated with providing signs and lighting units arising from more efficient use;
- Improved consistency in the provision of directional signing;
- Improved public perception of the highways authority if obsolete, damaged and worn out traffic signs are removed.

This report identifies a five step process for building an inventory of traffic signing assets, and gives guidance on each of them. The process steps are shown in the diagram below.

Determine use of data: The primary use of this inventory will be to identify unnecessary signs, but other potential uses of this inventory also exist. A local authority should first determine what use they intend to make of a signing inventory, as this will affect the data required to be collected and the optimum collection and storage methods.

Determine data to be collected: The basic information required to identify unnecessary traffic signs has been identified. As part of this development process, a survey was sent to 61 local authorities to ascertain if, and how, they collected their traffic signs asset data. The main results arising from the responses given showed that over 60% of respondents currently have an inventory of their traffic signs. Only 38% of respondents currently audit their traffic signs, traffic bollards or road markings. A sample data collection form is provided in this report. Additional information that may be required to allow other uses of the inventory is also presented.

Determine data collection and storage methods: A review of various data and storage methods is provided, and local authorities should choose those methods which satisfy their needs, or can most easily be adapted to do so. There is the opportunity to incorporate community audits into this process, which is encouraged in order to promote a sense of community ownership and to exploit the knowledge of the local environment which can aid successful urban design.

Prioritise routes & carry out data collection: It is unlikely a local authority will have sufficient budget to survey every road on their network so some prioritisation is likely to be necessary.

Process data: Some of the required data for each traffic sign cannot be collected from the roadside so some post processing will be required. If data is collected by community groups, further processing by the local authority may be necessary to extract all required information.

Once an inventory has been populated, auditing of signs can take place. Practical, easy to use guidance is given in this report on two levels of auditing:

1. **Removal of unnecessary signing**
2. **Reducing the environmental impact of other signs**

Advice is also given within this guidance on the need for consistency and continuity on the provision of directional signs.

As well as carrying out an audit of traffic signs, there are benefits to local authorities in having a streetscape policy which would bring together officers from various departments concerned with the design of the built environment, and not just those from the highways department. Within this policy framework, the use of traffic signing needs to be considered in the wider streetscape context and not just seen as a traffic management tool to be applied independently of other streetscape considerations.

Specific policies could be developed for particular aspects of traffic signing, such as tourist signs, temporary signs and directional signs. These policies can be used to not only ensure that traffic sign clutter does not build up in future, but provide the criteria to audit the current traffic signing inventory.

If a local authority has a streetscape policy in place then this can be utilised to audit the current signing inventory. If not, then the guidance contained within this report provides a suitable basis on which to audit signs, and can itself be used to assist in the creation of such a streetscape policy, should the local authority desire it.

1 Introduction and background

One of the key objectives of the national Traffic Signs Policy Review is to minimise the impact of traffic signs on the local streetscape. The Policy Review Action Plan has identified guidance for local authorities on reducing sign clutter as a requirement. Currently there is no single source combining all of the available guidance for local highway authorities (LHAs) regarding collecting information on, reviewing and auditing the number of traffic signs, with a view to removing those which are unnecessary and contribute to sign clutter, and reducing the environmental impact of those that remain.

The Action Plan requires practical, simple to use guidance to be available for LHAs in the form of a Traffic Advisory Leaflet (TAL). This guidance will be used by LHAs to collect baseline information on the traffic signs in their area, and provide a framework for regular auditing to take place. The information and findings contained within this document will form the basis of the TAL, which is to be subsequently produced by the Department for Transport (DfT).

1.1 Build up of sign clutter

Individual LHAs are responsible for all traffic management including traffic signs and bollards, within their own area. For a variety of reasons, streets can become cluttered with too many traffic signs. These include poor design of new schemes and failure to remove obsolete signs. Over time, there can be a build up in the number of traffic signs as new signs are added to serve particular purposes, for example additional tourist related information, providing signs for new traffic safety schemes and unnecessary stacking of flag type directional signs.

As well as having a negative effect on the general appearance of the streetscape, sign clutter can cause a number of other problems. Safety critical signing, such as warning of height restrictions for low bridges, can get lost within an environment of a large number of signs in very close proximity. Too many signs can distract drivers from the primary task of driving safely. Previous research has shown that the addition of information to a sign generally increases driver response times (*Cooper et al, 1998 and Agg, 1993*).

The over provision of signs can reduce the likelihood of drivers taking notice of them. The Traffic Signs Manual Chapter 4 (Warning Signs) (*DfT, 2004*) states:

> "Appropriate warning signs can greatly assist road safety. To be most effective, however, they should be used sparingly. Their frequent use to warn of conditions which are readily apparent tends to bring them into disrepute and detracts from their effectiveness."

Furthermore, the posts on which the signs are mounted can block footways or shared footways/cycle tracks and cause difficulty for users travelling along them.

1.2 Why collect and audit data?

In order to ensure only necessary signing is provided, LHAs are encouraged to collect information on all their existing signing assets, and from this create and maintain an inventory of signs. This inventory should be used for regular auditing to ensure that any signs no longer required are removed. The primary focus of this project is to encourage auditing of traffic signing through the production or updating of inventories, with a view to identifying and removing redundant signing leading to an improved streetscape.

The secondary focus of the project is rationalising the remaining signs and ensuring they have the minimal environmental impact through careful selection of aspects such as their siting, size and colour. Finally, as detailed later in this report in Sections 4.3 and 4.4, an updated inventory has potential use for both scheduling cyclic maintenance and carrying out other ad-hoc maintenance activities.

Traffic sign clutter tends to build up with the incremental addition of signs for a particular traffic related purpose. Too often, new signing is simply added to the existing signing in piecemeal fashion, and there is no over-arching plan for delivering signing and little or no consideration given to its effect on the streetscape. It is important for a number of reasons that signing provided is always the minimum required, and that it is well sited, organised and maintained as well as being of the correct size so as not to fill the environment with unnecessary clutter. As stated in the Manual for Streets (MfS) (*DfT/Communities and Local Government/Welsh Assembly Government, 2007*):

> "The excessive or insensitive use of traffic signs and other street furniture has a negative impact on the success of the street as a place"

Reducing unnecessary signing will not only benefit the appearance and function of the street as a place for pedestrians, but also aid drivers who can be left frustrated and confused by a mass of uncoordinated signing, and find it hard to distinguish those signs which provide crucial information from those which are scarcely, if at all, relevant or required. For the local authority, identifying and removing redundant signing and lighting units on signs will reduce the signing maintenance required and associated traffic management. It is also an opportunity to actively involve the community in improving the design and appearance of the street.

1.3 Key points

- ***As described in MfS and TSM, the overprovision of signing has a negative impact on the streetscape and does not benefit drivers.***
- ***Local authorities are encouraged to collect information on their signing assets and create and maintain an inventory of signs.***
- ***This inventory can be used to remove redundant signing which as well as benefiting the appearance of the streetscape may over the longer term benefit local authorities by reducing maintenance costs.***

2 Policy background

2.1 Introduction

A key objective of the current DfT Traffic Signs Policy Review is to reduce the number of traffic signs and their impact on the environment. Departmental guidance regarding traffic sign installation, for both designers and planners of new residential streets or for modifying existing streets, is available in MfS. Local Transport Note (LTN) 1/08 gives guidance in the design of traffic management measures to prepare schemes that both consider and care for the streetscape.

2.2 DfT Traffic Signs Policy Review

The objective of the current Traffic Signs Policy Review, which was launched by the DfT in 2008, is:

> 'To develop a traffic signing system that will both meet the changing needs of road users and provide effective tools for the better management of the road network incorporating new technologies and minimising the impact on the environment.'

Within the policy review, three working groups were set up to deliver the respective work streams:

- **The Environment working group** has addressed one of the key principles of the current review - responsibility for traffic signing. Concerns have been raised that some local authorities install too many traffic signs and do not remove unnecessary ones, both of which can lead to traffic sign clutter.
- **The Road User Information group** has identified both the advantages and disadvantages of the current regulatory framework. One advantage is that the current regulations specify the erection and the placement of signs, which helps to avoid both sign clutter and sign duplication.
- **The Enforcement working group** has considered the impact on the local streetscape of traffic signs erected to give effect to Traffic Regulation Orders (TROs), for example, the environmental impact of the use of area-wide parking signs.

2.3 Need for traffic signing

Road users require information in order to complete their journeys safely, legally and efficiently. As such, a variety of traffic signing is provided to advise drivers of legal restrictions, identify potential hazards and guide them towards their destination. Because of the different types of information provided to road users, there is a need for care in the design and planning of traffic signing provision. If, for example, safety critical messages are not provided and readily visible then the road environment becomes more dangerous. Similarly, without directional signing drivers may become lost, resulting in increased stress levels, mileage, congestion and accordingly the chances of collisions occurring. Conversely, too much or barely visible signing presents a cluttered and potentially confusing environment to road users, and ultimately some signs may not be read at all. Chapter 1 of the TSM (*DfT, 1982*) summarises this thus:

> "Signs are used to control and guide traffic and to promote road safety. They should only be used where they can usefully serve these functions[1]"

[1] Section 4, Paragraph 1.23

2.4 Regulation and DfT guidance

The following documents summarise current regulations and DfT advice regarding the provision of traffic signing.

2.4.1 The Traffic Signs Regulations and General Directions (TSRGD), 2002

The mandatory requirements for the use of traffic signs are set out in the current version of the Traffic Signs Regulations and General Directions, (TSRGD) 2002 which details every traffic sign prescribed for use in the UK and stipulates the conditions under which each sign can be used.

2.4.2 Traffic Signs Manual (TSM)

The TSM gives advice to traffic authorities and their agents on the correct use of traffic signs and road markings.

Chapters of the TSM of particular relevance to street design, specifically the reduction in sign clutter are:

- Chapter 1 – Introduction: this sets out the background to, and principles of, signing (*DfT, 1982*);
- Chapter 3 – Regulatory Signs: this gives advice on the use of signs which gives effect to Traffic Regulation Orders (TROs) (*DfT, 2008a*);
- Chapter 4 – Warning Signs: this gives advice on the use of signs warning of potential danger ahead (*DfT, 2004*);
- Chapter 5 – Road markings: gives advice on the correct use of road markings in common situations (*DfT, 2003a*);
- Chapter 7 – The design of signs: describes how sign faces should be designed (*DfT, 2003b*).

2.4.3 Manual for Streets

MfS (*DfT/Communities and Local Government/Welsh Assembly Government, 2007*) provides guidance for practitioners involved in the planning, design, provision and approval of new residential streets, and modifications to existing streets.

MfS draws a distinction between streets and roads. Roads are built primarily to facilitate the movement of vehicles along them. Trunk roads, which are maintained by the Highways Agency, would certainly fall into this category. A street is identified as:

> "A highway that has important public realm functions beyond the movement of traffic. Most critically, streets should have a sense of place[1]"

It is the place function that is the essential distinguishing feature between streets and roads. The MfS identifies five functions that a street has. These are:

- Place;
- Movement;
- Access;
- Parking;
- Drainage, utilities and street lighting.

The first two functions, place and movement, are those which primarily affect design. Place is deliberately listed first, to identify that it is imperative that streets are

[1] Paragraph 1.1.7

considered primarily as places in themselves. Streets make up the majority of public spaces and well designed streets are fundamental to producing sustainable, good-quality environments that encourage and help to develop strong local communities. While it is necessary that streets do provide for movement along them, they have often been designed predominantly with the aim of facilitating movement of vehicles through them, neglecting their place function altogether.

The relative importance of place and movement for particular streets and roads can be determined and this can subsequently inform design choices. For example, motorways have a high movement function and a low place function. Designers may exercise some flexibility in applying traffic signing guidance depending upon the relative importance of place.

MfS raises awareness of the visual impact of excessive signing and directs street design practitioners to detailed guidance on the use of traffic signs contained within the relevant Chapters of the TSM.

MfS also examines the flexibility allowed by TSRGD, 2002, such as the application of regulatory signs, including the use of smaller signs, in appropriate conditions, to ensure that signing is appropriate to its intended use.

2.4.4 Local Transport Note (LTN) 1/08 – Traffic Management and Streetscape

LTN 1/08 (*DfT, 2008b*) helps all bodies involved in the design of traffic management measures to prepare schemes that both consider and care for the streetscape. LTN 1/08 specifically aims to enhance the appearance of the streetscape by encouraging traffic scheme design teams to minimise the various types of traffic signs, road markings and other street furniture associated with the scheme.

As described in LTN 1/08, traffic signs, road markings and other types of street furniture all contribute to street clutter. Many traffic signs and road markings are no longer required, or are unnecessary duplicates of signs provided as part of a 'belt and braces' design approach.

LTN 1/08 asks streetscape designers to consider whether signs and road markings are required for their schemes and whether these signs and markings can be minimised in both number and size, while still fulfilling the statutory requirements of TSRGD, 2002 and by following guidance given in the appropriate TSM Chapters.

2.5 Benefits of a streetscape policy

Both the MfS and LTN 1/08 identify the importance of a streetscape policy with regard to traffic sign scheme design. In order to improve the design balance between place and movement, LHAs should consider adopting a streetscape policy. When being created, this should preferably bring together officers from various departments concerned with the design of the built environment, and not just those from the highways department. Within this policy framework, the use of traffic signing needs to be considered in the wider streetscape context and not just seen as a traffic management tool to be applied independently of other streetscape considerations. As well as an overall streetscape policy, specific policies could be developed for particular aspects of traffic signing, such as tourist signs, temporary signs and directional signs. These policies can be used to ensure that traffic sign clutter does not build up in future and also to audit the current traffic signing inventory.

2.6 Case Study – Kensington and Chelsea

The Royal Borough of Kensington and Chelsea have adopted transport and streetscape policies. Within the context of the streetscape policy, one of the key objectives is:

'Renewing the Legacy - removing clutter from our streets and using high quality materials to improve our environment'. Under this objective, Kensington and Chelsea have launched a number of projects for the 21st Century initiative, many of which involve streetscape. Kensington and Chelsea aim to meet their objective of improving the borough streetscape by means of a published streetscape guide. This guide covers the main principles for streetscape design, many of which are applicable to a reduction in sign clutter, for example, 'respecting and enhancing local character'. These principles were developed during the design and implementation of the Kensington High Street improvements and are now being incorporated into the development of all traffic, maintenance and environmental improvement schemes within the borough.

With regards to minimising the impact of traffic signs on the streetscape, the guidance covers many of the identified methods of reducing sign clutter, e.g. restrictions in the number of signs and road markings, appropriate sign location and mounting arrangements, and aesthetic considerations which limit the visual impact of signs, such as the use of backing boards. Sign design issues are also covered, for example, recommending the simplest form of a particular sign or road marking, such as minimal zig-zag markings for pedestrian crossings, unless restricted visibility dictates otherwise, as illustrated in Figure 1.

Figure 1: Kensington High Street – minimal zig-zag markings

(Awaiting permission for use from RB Kensington and Chelsea)

2.7 Key points

- ***Local authorities should consider adopting a streetscape policy – including specific policies related to aspects of traffic signing, such as tourist destination signing, temporary signing and directional signing.***

3 Building a sign inventory

There are a number of discrete process steps to be followed in the building of a traffic signing asset inventory. Figure 2 below identifies the steps and shows this process.

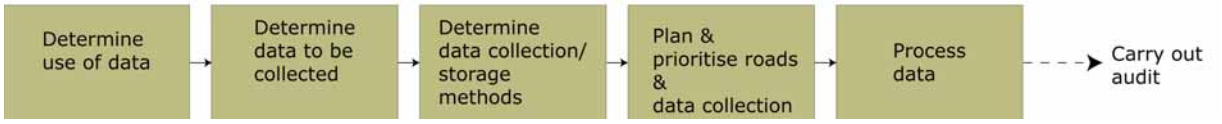

Figure 2: Sign inventory process diagram

Sections 4 – 7 of this report provide further details on each of these process steps.

Once a sign inventory is complete, it can be utilised in auditing signing assets with a view to:

1. Removing those which are unnecessary and contribute to street clutter.
2. Reducing the environmental impact of remaining signs.

Sections 8 - 10 of this report provide guidance on how auditing criteria can be determined for the above aims respectively.

If a local authority has a streetscape policy in place, then the same criteria that exists for auditing new signing can be retrospectively applied to those signs already existing. In this case, such auditing of traffic signing assets is policy led. If such a policy does not exist, then the information contained in Sections 8 - 10 could feed into the creation of one.

4 Building an inventory stage 1: Planning data collection

4.1 Introduction

This section considers the initial planning steps required for data collection to take place. This is to ensure clarity about why data is required and how it will be used most effectively.

4.2 Things to consider before planning data collection

There are various methods of data capture and storage that can be used for signing assets. The optimum method of each will not be the same for all local authorities and will depend upon a number of factors, including:

- What information is already held and in what format;
- Size of the road network and number of assets;
- Characteristics of the road network (i.e. what proportion is urban and rural, and the proportion of A, B and unclassified roads);
- Working procedures;
- Budgetary constraints; and
- Possible integration with collection and storage of other asset information.

Before undertaking survey work or purchasing software, local authorities should decide for what purposes, other than traffic sign removal they may wish to collect data, how they intend to keep an inventory updated, and how they intend to use it. There are a large number of established surveying techniques and software products available, and the most useful will be those most suitable or easily adaptable to fulfil the particular requirements of a local authority.

As well as the above considerations, it is important to consider that traffic signing is only one of a number of types of street asset, including, for example, street lighting and safety barriers. All of these assets may require data to be collected and stored, and so efficiencies can potentially be made by planning a coordinated data capture and storage regime. A simple example might be to obtain asset information on street lighting as well as traffic signing during one visit to the roadside. Consideration of street assets other than signing is however beyond the scope of this project.

4.3 Determining data usage

Although this project is primarily concerned with collecting baseline traffic signs data to be used in an audit with a view to reducing sign clutter there are a number of other potential uses for baseline signing information. These are shown in Figure 3 below.

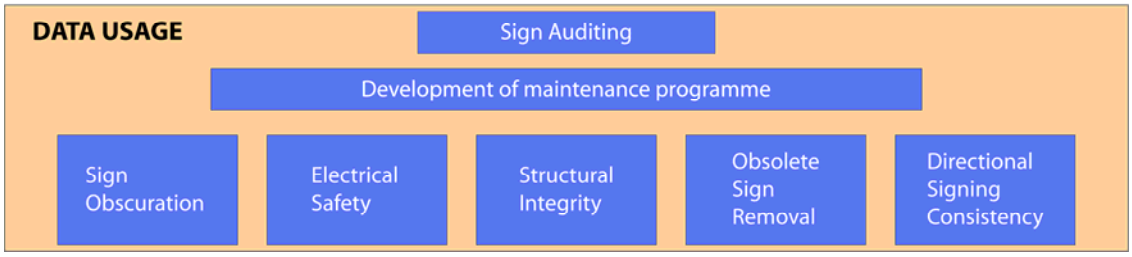

Figure 3: How sign auditing data can be used as part of a cyclic maintenance programme

a) Sign Obscuration

An audit of signs can reveal which are currently obscured by foliage and vegetation or those which are likely to be obscured in future. This can be used to target vegetation maintenance (for example, trimming back overhanging branches) to the areas which require it. Signing which is obscured by other signs or structures can also be targeted. Similarly, signs which are dirty, are covered in graffiti or damaged can also be identified and the appropriate maintenance or replacement work scheduled.

Figure 4: Many signs are obscured by vegetation

b) Electrical safety and operation

It is imperative that any lit signs are safe, and inspections are needed to ensure safety is maintained. The legal status of lit signs may also be affected if the lights are not working or defective, and so the alignment and operation of the luminaires also requires checking. Maintaining a signing asset inventory can help to schedule roadside visits required for this purpose more efficiently.

c) Structural integrity

The Highways Agency (HA) standard TD 25/01[1] (*Design Manual for Roads and Bridges, 2001*) specifies that the general condition of the sign face, clips and posts should be inspected annually. TD 25/01 also indicates that an assessment of the coefficient of retroreflectivity of a sign face should be measured 10 years after sign installation and every two years thereafter. Whilst this is an HA standard, it would be good practice for local authorities to also adopt these procedures. A signing inventory can be used to schedule such maintenance and ensure swift resolution of defects or replacing of signs as appropriate.

d) Obsolete sign removal

Once a detailed inventory of signing assets is held, it can be periodically reviewed to ensure any signs that have become obsolete can be removed, whether due to their age, changing legislation or for any other reason.

e) Directional signing consistency

A database of directional signs, (especially if mapped) will help identify existing signed routes and inconsistencies to aid movements through the area. For this to be most successful, cross border co-operation is required to ensure signing consistency along a route through multiple local authority areas.

[1] The title of this standard is "Inspection and maintenance of traffic signs on all-purpose trunk roads"

4.4 Development of a cyclic maintenance programme

The sign auditing process could provide the basis for the development of a cyclic maintenance programme to regularly address the issues identified above.

4.5 Key points

- ***As part of planning a traffic signs audit local authorities should:***
  - ***Determine what additional use can be made of the data.***
  - ***Determine whether data collection of signing assets can be incorporated into collection of data for other assets.***

5 Building an inventory stage 2: Determining data to be collected

5.1 Introduction

This section is concerned with what data should be collected. A form is provided in Appendix A for local authorities to use for collecting the basic information required for a baseline inventory of signing assets and to carry out a sign clutter audit. Additional information that might be collected so as to allow other use of the signing inventory is also discussed.

5.2 Local authority survey

A survey was sent to 61 local highway authorities to ascertain if, and how, they collected data regarding their traffic signs/road markings asset. Thirteen responses were received. The information provided a valuable insight to existing practice, and assisted with the determination of what data is required to be collected on signing assets in order to allow auditing to take place.

A copy of the survey is in Appendix B. Detailed analysis of the survey responses is provided in Appendix C. A summary of the key findings from the survey is given below:

HOW DATA IS COLLECTED AND STORED

***Q1*. Do you have an inventory of the following roadside assets?**		
Asset	***Yes***	***No***
Traffic Signs	*8* (62%)*	*5 (38%)*
Traffic Bollards	*10 (77%)*	*3 (23%)*
Road Markings	4 (31%)	9 (69%)

*One of the respondents has an inventory of illuminated and some non-movement traffic signs

Q2. How do you store your inventory?	
Storage method	**Number**
Paper-based	1 (8%)
Standard office software	2 (17%)
Specialist software	9 (75%)
Other	0

LOCAL AUTHORITY POLICY

Q10. Do you *ever* audit your traffic signs / traffic bollards / road markings?		
Detail	**Yes**	**No**
Traffic Signs	5 (38%)	8 (62%)
Traffic Bollards	5 (38%)	8 (62%)
Road Markings	5 (38%)	8 (62%)

Q14. Do you have specific policies for temporary signing, sign clutter and consistency in directional signing?		
Policy	**Yes**	**No**
Temporary signing	7 (54%)	6 (46%)
Sign clutter	4 (31%)	9 (69%)
Directional signing	4 (31%)	9 (69%)

5.3 Basic data collection form

This section presents a form designed to enable authorities to collect and update basic baseline signing information to allow identification of redundant signing assets to take place. The design of this form takes into account the findings of the survey, as detailed in Appendix C.

The information considered to be required as a minimum for traffic signs is detailed below:

- ***The sign's diagram number in the TSRGD, 2002;***

  This identifies all standard signs immediately. Any signs which do not correspond to a diagram number in TSRGD should have a photo taken.

- ***The purpose of the sign;***

  This is an important element of any information gathering exercise. Signs are only needed to warn or inform, or to give effect to TROs, and TSRGD sets out how signs must be used only once it has been decided that they are necessary. This information will be essential in helping to determine whether an audited traffic sign is correctly placed and meets its function.

- ***The compliance of the sign with TSRGD, 2002;***

  At the completion of the information gathering exercise the sign should be checked to see if it is still prescribed within the current version of TSRGD; or if it is not compliant, whether special approval has been obtained from DfT. For non-standard signs the photograph of the sign can easily be checked to see whether special approval has been granted for its use in that location.

- ***Whether it is a repeater sign;***

Repeater signs are important for informing the road user of restrictions over an area. However, the excessive use of repeater signs will lead to clutter. Chapter 3 of the TSM recommends that waiting restrictions should be sited at approximately 60 metre intervals[1] and parking and loading bay signs at approximately 30 metre intervals[2]. Clearly, this guidance should be applied carefully and with due regard to the required restriction.

- ***The physical condition of the sign;***

Signs should be visually assessed to see whether they are still 'fit for purpose'. The condition of sign faces should be checked as they become less effective when, over time, their colours fade and there is degradation of their retroreflective properties. Damaged or dirty signs discredit the individual highway authority and can lessen road user's respect for the signs. Signing in poor condition can lower the appearance of the overall streetscape.

- ***The physical position of the sign (mounting height, etc);***

The correct positioning of signs can reduce visual clutter. It's siting, placement, mounting height and orientation should be appropriate for its location. Chapter 1 of the TSM recommends that signs should be set at least 450mm from carriageway edge, with a sign mounting height of between 900mm and 1500mm of the lower edge of the sign above the highest point of the carriageway alongside the sign[3].

- ***The illumination requirements of the sign;***

Safety critical signs need to be illuminated in areas with street lighting, whilst many other signs do not. Some external methods of providing sign illumination add to the visual impact and internal illumination is often considered to be a less visually intrusive arrangement.

- ***The size of the sign;***

The size of a sign should be of sufficient but not excessive size for its location, so that drivers are able to recognise them and assimilate the information in time. Chapter's 3 and 4 of the TSM give guidance on the appropriate size of sign for a range of approach speeds linked to different types of road[4]. Oversize signs, in particular map type directional signs, add to visual clutter and should be replaced with the correct size of sign.

- ***The type of retroreflective sign face material used;***

For reflective signs, the sign face material should be checked to establish its type of retroreflective material. Newer type microprismatic materials have a higher roadside performance in darkness, i.e. are brighter, clearer and easier to read from longer distances compared to the older glass bead types. The actual type of reflective material can often be determined from the regular pattern appearing on the sign

[1] Paragraph 6.34
[2] Paragraph 7.50
[3] Section 6 – The Positioning of Signs
[4] Appendix A in both documents

face. For example, 3M High Intensity™ glass bead product has a regular hexagonal pattern, whilst their microprismatic Diamond Grade™ products have a regular diamond grade pattern.

- ***The type of mounting device for the sign;***

The mounting device for a sign should be assessed to see if it is appropriate for its location. In some exposed sign locations, where there is a greater risk of injuries or deaths to road users hitting the posts, the use of passively safe Lattix® posts could be appropriate. In other locations, mounting the signs on normal sign posts or lamp columns would be appropriate.

- ***The structural effectiveness of mounting the sign on a lighting column;***

If the sign is mounted on a lighting column, an assessment of whether the column can safely withstand the additional wind loading placed upon it should be undertaken.

- ***The number of signs installed on a mounting device;***

Mounting too many signs on one post can cause an overload of information to drivers and add to sign clutter. Chapters 3 and 4 of the TSM recommend that, generally, not more than two signs should be mounted on a single post[1]. When a sign is accompanied by a supplementary plate, the combination of sign and plate should be regarded as one sign.

- ***The use of yellow or grey backing boards;***

A sign may be mounted on either a yellow or grey backing board to improve its conspicuity against a dark or a complex background. However, the overuse of backing boards devalues their effectiveness and, as described in Chapter 7 of the TSM, can also be environmentally intrusive[2]. TSRGD prescribes that the yellow backing boards must be rectangular in shape (except when used for a boundary sign to diagram 2402.1); however grey backing boards may be non-rectangular. Backing boards should not have a border.

- ***The use of protective overlay films;***

Transparent anti-graffiti resistant overlay films are sometimes used in urban areas, particularly where there is a perceived risk of vandalism. Dew resistant overlay films could be used in rural locations, where dew formation is more problematic.

- ***If the sign is still appropriate for its location.***

As part of the information gathering exercise, it is important to establish that a sign is still appropriate for its location. For example, if street lighting has been installed, the illumination requirements for a sign may have changed. The lighting requirements for individual signs are prescribed in TSRGD. Alterations to the road layout may negate the requirement for the sign in that location and the reason for the sign being there, such as giving effect to a TRO, may no longer exist.

[1] Section 1 in both documents
[2] Paragraphs 14.19 -14.24

The structure of the outline data collection form can be seen in Appendix A for traffic signs, bollards and road markings. Note that it is not necessarily suggested that local authorities print out and use a paper copy of this form, because as discussed in the next section it is generally more efficient to enter data straight into an electronic format on site. However this form provides the data fields and format required whether a paper or electronic system is used.

5.4 Further information that can be collected

The following additional information can be collected on traffic signing assets if required for one of the potential other uses identified in Section 4.3.

- **Clip condition (traffic signs);**

  Sign clips eventually become worn out and need replacing. TD 25/01, the HA standard for trunk roads, specifies that the general condition of the clips should be inspected annually. It may be considered prudent by a local authority to assess clip condition while collecting other information on signs.

- **Post condition (traffic signs);**

  As with sign clips, posts eventually corrode or become damaged and may require replacement.

- **Co-efficient of retroreflectivity (traffic signs, retroreflective bollards and road markings);**

  Over time, the reflective performance of all retroreflective material diminishes. For traffic signs, measuring the co-efficient of retroreflectivity can identify when a sign's performance is starting to degrade and indicates that the sign needs replacement. For reflective road markings, Chapter 5 of the TSM recommends they are inspected at regular intervals in different lighting conditions[1]. Specialist optical measuring equipment, i.e. a retroreflectometer is required for measuring in-situ the coefficient of retroreflection of reflective sign faces and road markings.

- **Accumulation of dirt (traffic signs and bollards).**

  Dirt can accumulate on all signs and bollards and ideally all should be routinely cleaned. Chapter 4 of the TSM gives advice on the routine maintenance of signs. In practice, some signs and bollards accumulate dirt more easily and quickly than others due to their location and traffic conditions. Collecting information on how dirty a sign is can aid the setting up of a cleaning regime.

[1] Paragraph 23.22

6 Building an inventory stage 3: Determine suitable data collection and storage methods

6.1 Introduction

This section presents a review of various data collection and storage methodologies that are available.

There are various data collection and storage options available to local authorities that can be utilised in order to produce a signing inventory. This section presents some of these together with information on their relative merits and drawbacks. Although the focus of this project is on collecting signing inventory data with a view to identifying and removing unnecessary signing, it is also briefly discussed how this data could be used to develop various preventative maintenance programmes.

A functional diagram shown in Figure 5 below outlines the various collection and storage methodologies that can be employed as well as the ways in which this data can be utilised.

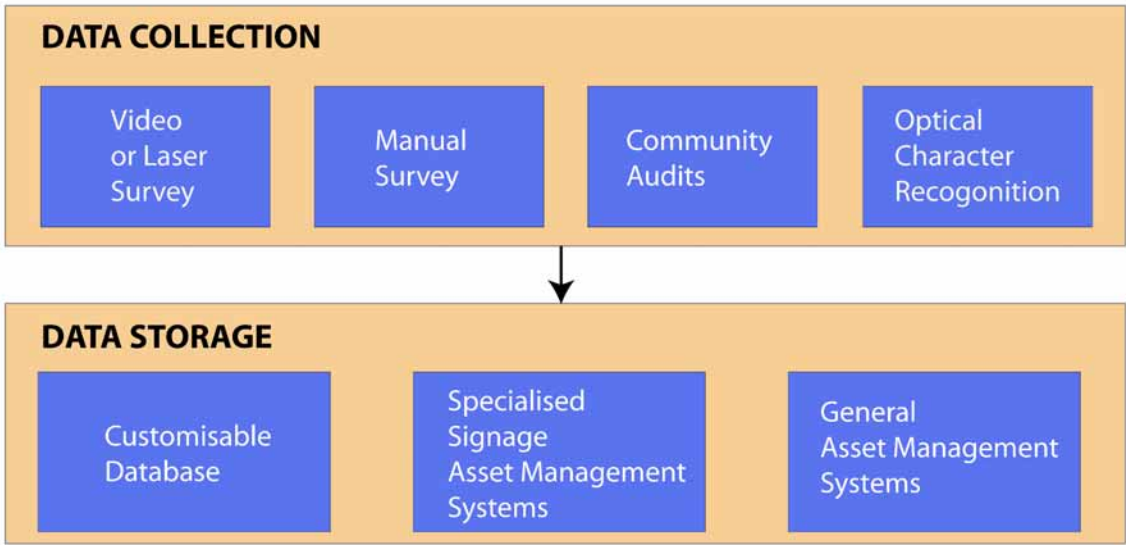

Figure 5: Possible methods of collecting and storing signing asset data

6.2 Data collection methods

6.2.1 Laser scanning technology

Laser surveys are very accurate but are likely to be prohibitively expensive for use on a large scale. Vans can be equipped with laser and video scanners to survey the road network while being driven around the area. This allows image data to be captured quickly and easily at normal traffic speeds, and processed afterwards.

This type of survey produces a detailed 3-D scan of an environment and can map all geographic features in the environment at the same time. It is usually used for surveying in advance of engineering work or to provide an accurate model of the environment for use in accident reconstruction. This level of accuracy is not necessary for building an inventory of road signing assets. However, signing assets could be recorded at the same time for negligible additional cost. A typical setup could include a scanner pointing down to map the road surface, one pointing up to capture overhead

wires, and one scanner on each of the left and right sides to capture traffic signing and other street furniture. Figure 6 below shows an image generated from such a survey.

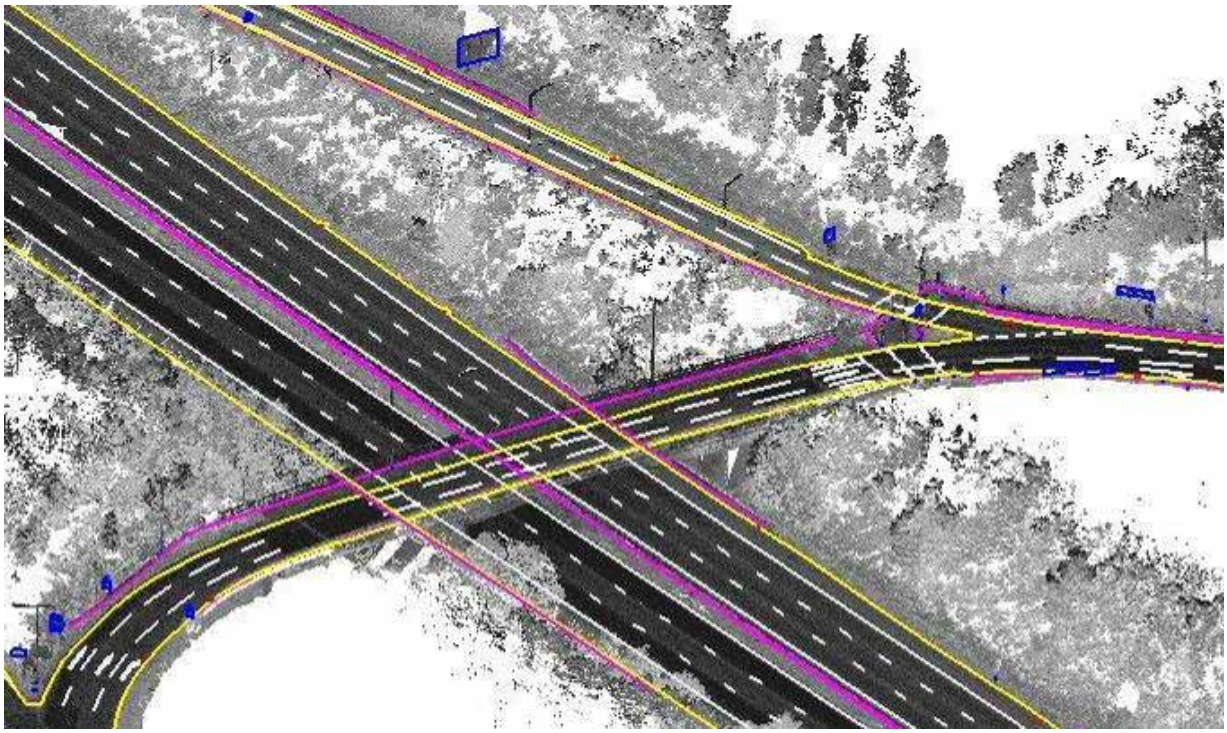

Figure 6: Laser scan of part of a motorway junction. The traffic signs can be seen in blue (courtesy of 3Dlasermapping).

6.2.2 Video survey

For collecting road signing asset information, video surveying is a less expensive option. Video surveys combine recorded images with GPS technology to allow the position of items seen in the images to be logged. There are various systems available, the simplest and cheapest of which uses only one camera. A survey using a single camera will not record position very accurately, and errors in the quoted position of some objects could be of the order of 10m. In some situations this may be considered sufficient, but it will not enable accurate mapping of traffic signs, bollards and other street furniture in a cluttered urban environment. For example, if it is desired to map actual locations of signing assets at traffic signal junctions or on splitter islands, this will not be possible with such a survey. More complex video surveys use multiple cameras to the front and rear, both for improved accuracy and to provide a wider view. With these systems accuracy to less than a metre is obtainable, which should be sufficient for any asset inventory application.

After data has been captured, the images are processed to combine them with geographic information. Asset information can then be manually extracted to a database by viewing the images and clicking on the objects to obtain their geographic position. As well as 'point' items such as traffic signs, this also allows continuous assets such as road markings to be mapped. The data can then be plotted on GIS if required. Alternatively the data can be exported to other specialist asset management systems, to take advantage of their capabilities. This can be a labour intensive process. Figure 7 below shows asset information being captured on a road marking.

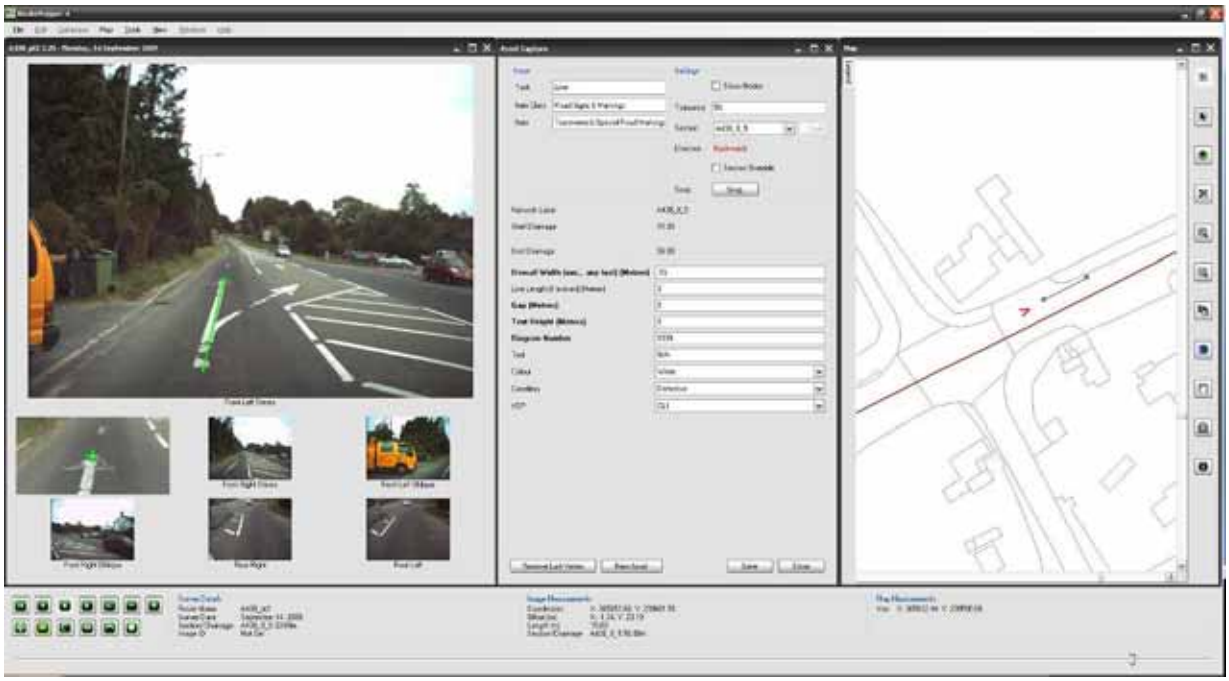

Figure 7: Capturing asset data from a video survey (courtesy of IBI Group RouteMapper)

Although cheaper than laser scanning, video surveying is still a relatively expensive option for local authorities. Therefore it is generally used only on A and B roads. A roads are usually surveyed in both directions, but some B roads and all minor roads are surveyed in one direction only. The cameras mounted to the rear are used to obtain information on assets facing drivers on the opposite side of the road.

It is also worth noting that video surveys can only capture information on signs that are readily visible to drivers. Details such as post and clip condition, and detailed information on lighting units cannot be obtained from such a survey. It is also possible that signs could be obscured during the survey by large HGVs.

6.2.3 Manual survey

The most common method of collecting data is to survey the area of interest on foot, recording information on all of the street signing or marking assets as they are encountered.

Although it is possible to record information manually on site using pen and paper, this is not recommended. It is likely to take longer and be less accurate, especially in regard to defining a sign's position, and sketching rather than photographing the sign will certainly have both time and accuracy penalties. The data will also require digitising if it is to be searchable and usable for other tasks such as auditing signs or scheduling maintenance, and therefore it is sensible to record the information digitally in the first instance.

Data collection can be carried out on site using a hand held PDA, GPS logger, Smartphone or a tablet pc, such as that shown in Figure 8 below. A Toughbook™ or similar rugged laptop is a further option. Data is usually entered by filling in an electronic form for each sign. Some asset management systems provide mobile software which can be used to input the information directly into these products. For a rugged laptop a full version of the product could be used. Alternatively, if the authority is using a standard software product (such as Microsoft Access) then data could be recorded electronically directly into this.

Figure 8: Hand held PDA used for capturing sign information (Picture courtesy of Symology)

Where the sign face is a standard prescribed sign (such as a warning or regulatory sign) then the sign diagram number from TSRGD, 2002 should be recorded. For other unique signs (generally directional and informatory signs) it would be prudent to take a photograph of the sign face.

Undertaking a manual survey is likely to be a fairly labour intensive activity. Local authorities may want to outsource survey work to an external consultancy to survey the area and record all the items of interest onto a digital environment, such as one of the specialised asset management systems identified in Section 6.3.2. Alternatively, the authority staff or temporary workers could go on-street to record this information. It is possible that collecting some of this information could be incorporated into contractor's visits to the roadside, for example when undertaking bulk lamp changes or sign cleaning activities. Signing information could also be collected as part of a routine safety inspection.

6.2.3.1 Google Street View

An alternative to undertaking an onsite survey is to use mapping software tools, such as Google Street View. This software tool will allow a manual survey to be undertaken from an office environment, thereby removing the requirement for wholesale site visits and possibly a reduction in manpower requirements. Google Street View allows the user to manually navigate along roads in small increments and offers a 360 degree view on the horizontal plane and 180 degrees on the vertical plane from every location and the ability to zoom, thereby ensuring that all sign faces should be viewable using this method. An additional benefit of using this method is that data can be electronically stored while undertaking the survey, reducing time requirements if a pen and paper based survey method was used.

A disadvantage of Google Street View is that fine details, such as post and clip condition, cannot be collected. Because of the quality of the images it may also be difficult to assess sign condition. Unlike a detailed video survey, measurements cannot accurately be made from the images (for example of sign size) because the images are not linked to a coordinate system so there is no exact distance scale. For the same reason the exact location of signs will be difficult to plot. It is also possible that signs may have been obscured while the survey was taking place, and in some cases the Google software appears to have mistaken text on signs for personal information and blanked it out. Furthermore, the date when the Google survey was actually undertaken will not be known and how recent this is may determine the suitability of using this system, as the streetscape may have changed and therefore the signs information collected may also be out of date. Lastly, not all of the roads in the UK are currently available to view via Google Street View - some minor rural and urban streets are not covered and would have to be surveyed using a different method.

Google appears to encourage actively the use of Street View for business purposes on the web, for example to promote a business location. There do not seem to be any terms or conditions restricting the reuse of Street View images – in fact, Google invites users to

register novel ideas. There does not appear to be any copyright or propriety reason why a local authority should not use these images without a licence. However, it is advised that local authorities satisfy themselves that this is the case before doing so as any liability will be upon the authority.

Figure 9: Typical view using Google Street View (Picture courtesy of Google)

6.2.4 Involving the local community

Involving the local community in matters relating to the physical streetscape encourage a sense of community ownership and pride in the local area. Therefore this is to be encouraged where it is likely to be relevant and useful. It is envisaged that local communities could audit signs primarily within their local neighbourhoods - it would certainly not be appropriate for members of the public to carry out sign auditing at the side of busy rural A roads. It must be noted that they are not likely to be traffic signing experts and therefore the level of detail that can be collected on signing assets may be limited. However, photographs and location data can easily be captured and may provide enough information to an authority for such assets. Council staff could train local groups to capture the required information. In towns and villages, away from the main through routes and shopping streets, some of these roads are of relatively minor importance in terms of the volume of traffic, both pedestrian and vehicular, using them. Therefore, it is unlikely that there will be sufficient budget for authorities to fully audit them in any case, so utilising the community could provide a function that would otherwise not exist.

6.2.4.1 Existing community audits

Community audits of the street environment are already carried out in a number of local authority areas, particularly in London. They involve a walkabout, where typically members of the community and representatives of local bodies such as the police and councils patrol neighbourhoods identifying the amount and condition of facilities, often taking pictures as evidence. Those community audits that have been identified as part of this study have tended to be primarily focussed on social issues. When looking at the streetscape, the focus has been on such matters as graffiti, litter, broken footways and the amount and quality of open space. However, collecting basic traffic signing and road marking information could be included in this type of audit.

Figure 10: Community group carrying out an audit of the local streetscape (Picture courtesy of Charles Martin)

Living Streets is an organisation that promotes walking, and campaigns to make streets pedestrian friendly. They have experience of engaging with the local community to identify issues affecting the pedestrian environment, and seek resolution to any problems. Getting the best from community involvement can be challenging, if not well managed. Eleven local authorities are currently members, and work with Living Streets to promote best practice in pedestrian areas and encourage effective local engagement.

To assess streets from the viewpoint of the people who use them, Living Streets carry out Community Street Audits. Local residents, traders, councillors and officers undertake assessments of a route on foot, and produce a report detailing the findings and recommendations. These audits include reporting on any signs that in the opinion of the auditors are too large, unnecessary or otherwise contribute to street clutter. This in itself is a very useful function, and it is feasible that if provided with suitable equipment, community auditors could log all signing while undertaking an audit, if this is deemed necessary.

6.2.4.2 Neighbourhood Action Groups (NAGs)

Neighbourhood Action Groups (NAGs) are a police initiative to encourage local communities to become involved in improving their local area. As well as the police, they consist of relevant partner agencies, key stakeholders and members of the local community. After identifying three main priorities for improving their neighbourhoods, the NAGs concentrate their efforts on attempting to carry out measures to achieve them. Typical areas of concern are speeding, fly tipping or anti-social behaviour.

It has not been possible to identify any specific examples of where NAGs have been involved in an audit of traffic signing, and given their remit it is quite unlikely that many will have been. However, NAG members will have knowledge and experience of a local area and it would be appropriate to obtain their assistance. They do sometimes conduct walkabouts and collecting baseline information on the location and condition of signing could be incorporated into this.

6.2.4.3 How to carry out plan and carry out a community audit

Community auditing traffic signing assets presents a unique set of challenges. There are a number of steps required in order to successfully plan and carry out such a community audit. A process diagram identifying these is shown in Figure 11 below.

Figure 11: Community auditing process diagram

Further information on each step is detailed below:

1) Identify community groups

There are various ways in which existing community groups could be identified. The local police could be contacted to ascertain if there are any NAGs in the area, or if not, any Neighbourhood Watch schemes. Local or parish councils could also be contacted to identify if their members would take an active interest in community auditing.

2) Carry out training

Members of the community are very unlikely to be traffic signing experts. Therefore it is sensible to simplify the data capture regime as much as possible when they will be capturing the data. Community members will need to be trained to collect the basic information required.

3) Plan routes

Local community members cannot be exposed to working in potentially dangerous situations so it is important to plan sensible and safe routes. For example, it would not be appropriate to have members of the public standing on the verges of high speed rural A roads where no footway is present. Environments suitable for community audits include residential and high streets.

4) Carry out Health and Safety briefing

As most traffic signs are located close to the edge of a road with live traffic, it is imperative that the local authority's Health and Safety officer produces a Risk Assessment, and carries out a Health and Safety briefing with all members of the local community who are carrying out the traffic signs audit.

5) Collect data

Data collection methods will vary, but if traffic signs data is recorded on a hand held device, such as a PDA, adequate instruction on how to use the device must be given to the members of the community carrying out the audit prior to it taking place.

6) Process data and perform audit

Because of the basic nature of data collection, further data processing will need to be carried out by local authority staff. Procedures must be put in place prior to the commencement of the audit to ensure the swift and efficient return of sign audit data to the local authority.

6.2.5 Existing paper-based assets

Many local authorities already have datasets, but in paper-based form. Paper-based inventories should no longer be considered suitable due to the increased risks of poor document control, misfiling and loss. Any existing paper assets should be digitised.

Optical character recognition software can be used to digitise paper assets. The documents can be scanned, and then the software allows the text to be edited and

stored digitally. This is likely to be a superior solution to entering all of the data manually. Manual checking of the digitised file will be required as the scanning process is not completely accurate, especially for older documents where the ink may have faded.

OmniPage Professional 17 and ABBYY Finereader™ are two recognised products for this application. There are also companies that will carry out and manage the entire process of digitising paper assets.

6.2.6 Summary: pros and cons of each data collection technology

Each of the data collection methods outlined above has both potential benefits and drawbacks. Table 1 below summarises these pros and cons.

Table 1: Summary of the pros and cons of various data collection technologies

Technology	Pros	Cons
Laser scanning	1. Extremely accurate (~cm). 2. Allows collection of data without having to stand by the roadside (potentially good on rural A roads for example). 3. Allows detailed dimensions to be collected, Details of both signs and markings can be collected.	1. An extremely expensive option and likely to be prohibitively expensive unless a survey of the roadside environment is required for another reason. 2. Cannot collect information on post and clip condition. 3. Cannot collect detailed information on luminaires
Video surveying	1. Accurate (~1m). 2. Allows quick collection of data without having to stand by the roadside (potentially good on rural A roads for example). 3. Allows detailed sign dimensions to be collected. 4. Details of both point and line objects (i.e. signs and markings) can be easily and accurately collected. 5. Video footage can be used for multiple purposes – road survey conditions or collecting information on other assets (e.g. safety fences).	1. Amount of post processing required makes this relatively expensive. 2. Cannot collect information on post and clip condition. 3. Cannot collect detailed information on luminaires.
Manual survey	1. Relatively cheap in terms of equipment. Data is collected quite slowly but little post processing required. 2. All required information on signs can be collected. 3. Details of line objects (i.e. road markings) may be recorded less accurately.	1. Requires staff to be working in potentially dangerous roadside environments. 2. Taking physical measurements of sign clearance, size etc, can be time consuming. 3. Error in quoted position can be of the order of a few metres using GPS logging equipment.

Technology	Pros	Cons
Mapping software (Google street view)	1. Cheap – Only cost is staff time and possibly the cost of a licence (if required). 2. Software simple to use and readily available. 3. Removes safety concerns associated with manual surveys.	1. Hard to plot the location accurately. 2. Information is accurate from when survey was conducted and so may be out of date. 3. Only simple, readily visible information can be collected. 4. Does not allow detailed sign dimensions to be collected. 5. Cannot collect information on post and clip condition. 6. Cannot collect detailed information on luminaires. 7. Details of line objects (i.e. road markings) may be recorded less accurately.
Community survey	1. Cheap. 2. Involves local community in decision making. 3. Allows surveys to be carried out on roads that otherwise may well not be surveyed.	1. Only simple information can be collected. 2. Potentially requires members of the public to be working in dangerous roadside environments. 3. Training required. 4. More post-processing required. 5. Potentially less accurate information.

6.3 Storage options

As with data collection, there is no single optimum storage solution. There are a variety of software products available which include those that store information on multiple types of highway assets, and those that are more specialised and are specifically designed to store and manage information on traffic signs or road markings. These are considered separately below, although it should be noted that many of the highly specialised products are part of a wider suite of software, other parts of which may be used to store information on assets other than traffic signs.

The use of a Geographic Information System (GIS) as part of a storage and asset management system would be beneficial to local authorities, as GIS enables data to be extracted, combined in new ways and displayed as desired by the user. GIS can also provide valuable planning tools.

6.3.1 Self-made database

Depending on the amount of functionality required, and the expertise available within the authority, a relatively simple database is an option, particularly for smaller authorities. This could be on any database product such as Microsoft Access or SQL Server. Photographs could be stored in the database for simplicity and portability, but this could make the database very large. Alternatively, hyperlinks to the photos could be stored in the database.

If it is required to view the data on map, it could be plotted on a GIS product (e.g. Mapinfo or ArcGIS) if that is available within the authority.

6.3.2 Specialised signing asset management system

A number of specialist software products exist for storing information on traffic signing assets. Generally they are map-based products, using GIS to display the location and orientation of signs. They contain databases which store detailed information on many aspects of signs, such as details of the posts, the environment around the location of the sign as well as reflectivity measurements of the sign face. Many products also allow pictures to be uploaded to show the signs in their environment. The database fields are typically either user-customisable, or could easily be amended by the supplier to match a local authority's needs. Figure 12 below shows a typical database entry for a directional sign.

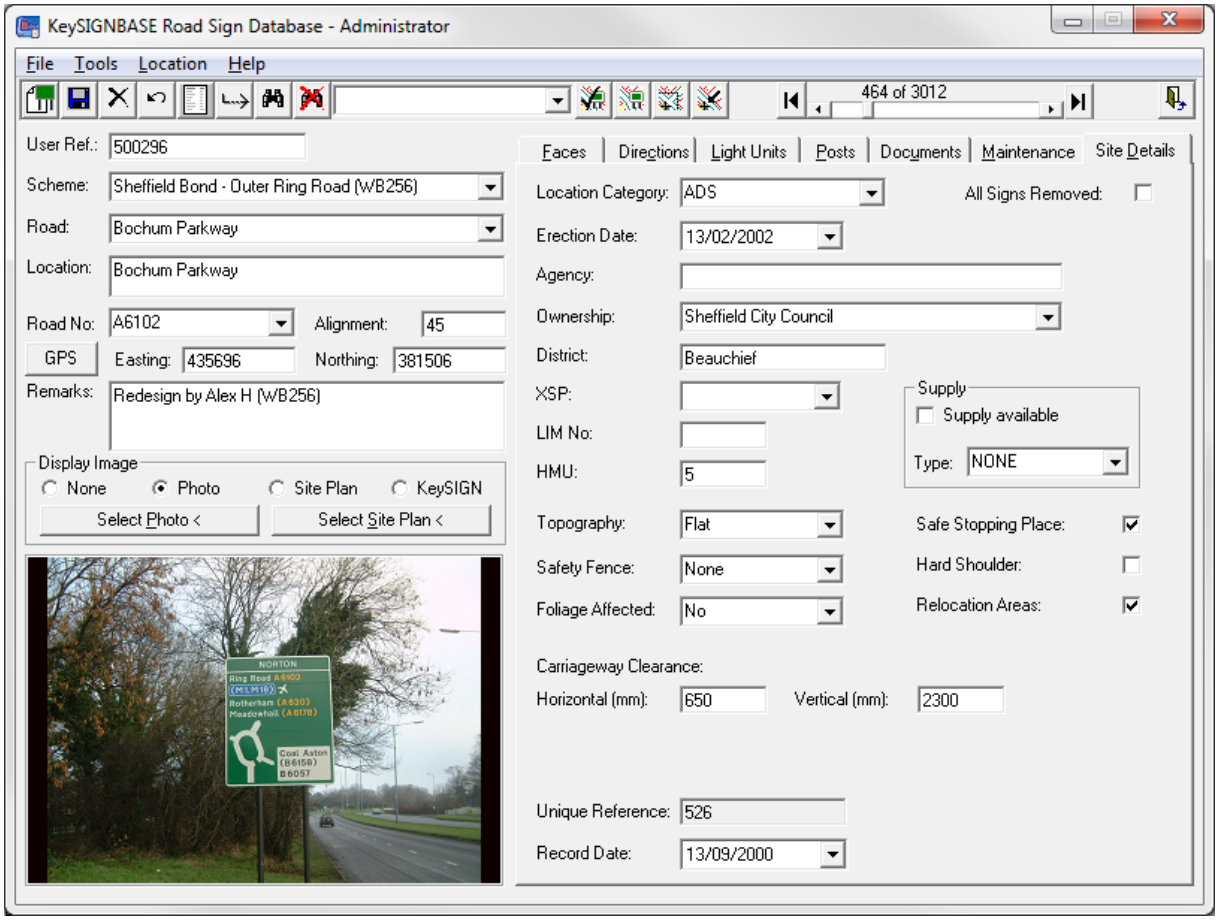

Figure 12: Database entry for a directional sign in a specialist signing asset management product (courtesy of Key Traffic Systems).

As well as storing information on signing assets, in some of the specialised signing software packages the maintenance history can be stored and cyclic maintenance such as cleaning and lamp changing can also be scheduled.

These products can also provide a framework for data collection. Most of these packages have versions for mobile devices which can be used to collect data on site with the mobile data collection equipment specified in Section 6.2.3 above. Any existing paper assets can also be entered onto these systems.

Table 2 below gives details of some of the identified specialised signing asset management systems.

Table 2: Specialised signing asset management systems

Product and (supplier)	New sign designs can be imported from sister software?	Maintenance can be scheduled?	Displays photos?	Configurable database?	Mobile software for data collection?	Stores information on road markings?	Special features
SignMap (Buchanan Computing)	Yes	Yes	Yes	Yes, user-configurable	Yes	No but sister product LineMap does	Optionally, post and foundation calculations and bills of quantity produced. Integrates with SignPlot design software, allowing new designs to be imported. Can be used as an aid to check continuity in directional signing.
KeySignBase (Key Traffic Solutions)	Yes	Yes	Yes	Yes, but not user configurable	Yes	No but sister product KeyLINES does	Integrates with KeySigns design software, allowing new designs to be imported. Can be used as an aid to check continuity in directional signing.
Insight for Highways (Symology)	No	Yes	Yes	Yes, user-configurable	Yes	Yes	System can manage all aspects of highway assets including streetworks, customer contact and contract management.
Mayrise	No	Yes	Yes	Unknown	Yes	Yes	Stores info on ducting and cabling for lit signs in lighting module. System can manage other highways assets and streetworks.
Structures Management System (WDM)	No	Yes	Yes	Yes, user-configurable	Yes	Yes	There are a number of configurable and linked products that can manage signing in conjunction with other assets (Lighting Management System, Routine Management System, and Structures Management System).

6.3.3 Highways asset management system

In 2005 the DfT produced 'Maintaining a Vital Asset' *(UK roads liaison group, 2005)*. This stressed that all authorities should produce a Highway Asset Management Plan based on the whole life cost of road assets, in order to establish and prioritise investment and lead to co-ordinated work programmes. There are a number of companies specialising in asset management systems that now offer integrated Highways Asset Management Systems, with the aim of meeting this requirement. The carriageway itself is by far the biggest highway asset any authority has, so these systems tend to focus on storing and managing information on the carriageway, such as safety inspections, condition surveys and scheduling street works. Signing information can also be held in such systems, although discussion with some local authorities has indicated that these systems may not be ideal for managing signing assets, and that a more specialised product may be preferable. However, if such a system has application in the local authority, then it would be prudent to investigate if storage of signing assets within the same system is likely to be useful.

6.4 Case Studies

As our survey shows (Appendix C), some local authorities are already undertaking audits of traffic signs and for some, these audits form part of a wider streetscape policy. The following cases highlight some of these developments.

6.4.1 City of York

The City of York undertook a relatively simple and inexpensive system of data collection in 2002. Two temporary workers with no previous experience in similar work travelled the entire road network on foot, bicycle and car. They used Pocketsigns software on a PDA to collect baseline information on all of the signs, using a preconfigured form to enter details on each sign. A GPS logger was used in conjunction with the PDA which recorded the position of each sign accurately. At the end of each day, the gathered information was uploaded to a Microsoft Access database. Data stored within the database has been used to target maintenance more accurately, for example to identify where vegetation needs cutting back to reduce the likelihood of it obscuring signs, or where defective signs need replacing. This means that not only can this information be used to audit and remove unnecessary signing, but that it is in itself a cost-effective exercise.

Currently, they are undertaking a project to reduce street clutter concentrating initially on the following areas:

- City centre and conservation areas;
- Main radial routes into the city;
- A review of existing TROs.

All signs, posts and associated equipment within these areas are being photographed and then the equipment is to be reviewed systematically to see if it is all still needed or could be combined, relocated, or improved in some way.

In addition, a basic set of principles on when signs should be used is being drafted, and a sign audit system is being considered for new schemes.

6.4.2 Sheffield City Council

Sheffield utilise KeySIGNBASE to store information on all their directional traffic signs. Due to the time and financial cost of gathering all the required information, this has not been extended to other signs. They have found that the main benefit of using this

software is it allows them to test new signing strategies and to find out where signs are located with specific destinations. It also provides links to drawings/photos of the signs so that if the sign is damaged, design details can be easily retrieved to manufacture a replacement. When the database was established details of signs affected by vegetation were gathered and some remedial work undertaken. The data held on signs is only correct at the time it was surveyed, and is not updated unless the sign installation has been removed/replaced/changed.

Details on all lit signs are held in Mayrise. This stores technical information on the cabling and ducting as well as the lighting unit and schedules the required maintenance. No other routine maintenance takes place on traffic signs due to budgetary constraints. Maintenance takes place in response to reports from the public or other sources that it is required.

6.4.3 Somerset County Council

Somerset used video footage of most of their roads (except the minor ones) from which they identified their signing and lining assets. Although Somerset use the *CONFIRM* system very successfully for scheduling and storing details of safety inspections and street works, they have found advantage in designing their own mapping/GIS software using ArcGIS to display the location of their traffic signs. They also use the ParkMAP product to store signing and lining assets related to TROs.

7 Building an inventory stages 4 and 5: Collecting and processing the data

7.1 Introduction

This section considers the collecting and processing of the data. As well as considering the prioritising and planning of routes, the post processing required after data collection to produce data that is suitable to be used for auditing the traffic signs.

7.2 Prioritise roads and plan routes

It is not likely that a LHA will be able to survey every single road under their control in one audit, so it is necessary to identify which roads or areas are the most important or would benefit most from a traffic sign audit. This is often done on a road hierarchy basis, so that the A and B roads are prioritised, but it would be possible to prioritise by the importance of the place function of streets, so that high streets, shopping areas, or anywhere used by a high number of people are considered first. It is also necessary to record boundaries of any areas where special consideration of signing is required e.g. urban and rural conservation areas or Areas of Outstanding National Beauty. Once priorities have been determined, it is necessary to plan the most efficient route.

7.3 Carry out collection and post-processing of data

Data collection will be carried out using one of the methods identified in the previous section.

Not all of the required data can be collected at the roadside. Some of the required information for each sign must be assessed later. This relates to whether a sign is erected to give effect to a TRO or for some other reason, and whether the sign is compliant with TSRGD.

Also assessment of whether the sign is needed should be assessed against local authority policy or as per the guidance given in Sections 8 and 9.

If a community audit has been carried out, only very basic information and a photograph may be provided, in which case more processing will be required to fill in the other fields such as the sign diagram number.

8 Development of guidance on reducing sign clutter

8.1 Desktop study

Two desktop studies formed the background for the guidance contained within this report:

a) A desktop study investigated general advice applicable to reducing sign clutter given in relevant documents:

- Manual for Streets (MfS) (*DfT/Communities and Local Government/Welsh Assembly Government, 2007*);
- Save Our Streets – Street Clutter Audit (*English Heritage, a*);
- Living Streets DIY Community Street Audits (*Living Streets, 2003*);
- Local Transport Note (LTN) 1/08 Traffic Management and Streetscape (*DfT, 2008b*);
- LTN 1/94 The design and use of directional informatory signs (*DfT, 1994*);
- Traffic Advisory Leaflet (TAL) 06/05 Traditional Direction Signs (*DfT, 2005*);
- Road Furniture in the Countryside 2006 (*Transport Scotland, 2006*);
- Streets for All (*English Heritage, b*);
- PPG15: Planning and the Historic Environment (*Department of Environment/ Department of National Heritage, 1994*);
- Consultation on the English National Parks and the Broads: Draft Circular – revised version combining Circular 12/96 and 125/77 (*DEFRA, 2009*); and
- Traffic Measures in historic towns - An introduction to good practice (*Civic Trust / English Historic Towns Forum, 1993*).

b) An additional desktop study assimilated the information contained within the TSRGD 2002 and amendments, and appropriate Chapters of the TSM (1, 3, 4, 5 and 7) to ensure that the guidance and advice contained within this report reflects the legal and design principles outlined by DfT. This enabled advice and guidance to be given to local authorities on how to reduce the number of signs, by providing clear guidance reflecting the design principles advice in MfS and LTN 1/08 and sets out criteria and methodology for reducing the need for non-essential traffic signs.

8.2 Linking the guidance and advice on sign removal to the audit process

Once data is collected and processed on signing assets, local authorities should carry out an audit with a view to firstly identifying which signs must, should or can be removed, and then a secondary audit can establish how to reduce the environmental impact of the remaining signs.

Guidance contained within this section of the report provides local authorities with a set of six logical steps that should initially be followed to identify traffic signs which can be removed.

Section 9 contains further information and examples of how sign reduction can take place in practice.

Section 10 contains information and examples of how reducing the environmental impact of signs can be achieved.

The set of steps to be followed to determine which signs can be removed are:

- *Whether the sign is prescribed in TSRGD, 2002, or if not, has special authorisation from the Secretary of State*

All signs should conform to TSRGD, 2002 unless special signs authorisation has been granted for the use of a particular sign at a specific location. If neither of these things is true, the sign must be removed as it is an unlawful obstruction in the highway.

- *Whether regulatory signs and relevant road markings accurately reflect a TRO*

A TRO is required for almost all regulatory signs. If a sign is installed without a TRO then it is unenforceable and should be removed. The signs should be in the correct location. If marking the border of a prohibition or restriction, this sign should match the boundary stated in the TRO.

- *Necessity of warning signs*

As stated in Chapter 4 of the TSM, many warning signs are installed marking out dangers which are either readily apparent or which would be expected in that environment[1]. Authorities should question whether there is there a specific safety issue at the site which is not obvious to drivers. Unjustified warning signs should not be installed simply in response to a complaint if it is believed by the authority to be unjustified. Any signs identified as superfluous through this audit should be removed.

- *Temporary signing*

As specified in TSRGD, 2002 Direction 37, temporary signing warning of changes to road layouts, such as new roundabouts, is permitted to be installed for a maximum of three months. After this time it must be removed, but anecdotal evidence suggests many of these signs remain in place long after this period. Many temporary signs are also put up directing drivers to new housing developments and these signs also need to be controlled and removed if they are not in line with local policy or are no longer required.

- *Tourist destination signs*

Tourist signs should only be provided for major destinations and not those for local residents. Although frequently provided, it is questionable whether facilities such as golf courses, garden centres and leisure centres require tourist signing. Local authorities should have a policy on tourist destination signing against which signs can be audited. HA policy guidance on tourist destination signing can be found in TA 93/04 (General Introduction), TD 52/04 (Trunk Roads) and TA 94/04 (Local Roads) (*Design Manual for Roads and Bridges 2004a, 2004b and 2004c*) and subsequent Local Authority policy guidance.

- *Directional, especially local destination signing*

Directional signing is often provided for too many local places such as particular housing estates, leading to over-proliferation of destination signs. Furthermore, non-residential destinations that overwhelmingly attract local residents and repeat visits such as schools, churches, cafés and local shops may not need signing, as residents should know where these facilities are located. It is understood that pressure is often applied to local authorities to erect these types of sign by businesses and other

[1] Paragraph 1.7

organisations, but local destination signing should be minimal. There should be a specific policy for it, in order not only to evaluate new applications, but so that existing signing can be audited against this policy, and unnecessary signing removed. It is also worth ascertaining for existing directional signs if the destination shown is still valid. If an establishment closes, then any signing referring to it should be removed as soon as possible.

9 Audit stage 1: Reducing the number of traffic signs

9.1 Introduction

No traffic signs are required to be erected by law. Traffic signs are only required to give effect to TROs, or to warn or to inform drivers. Traffic signs should only be introduced where a clear need has been identified.

This section of the report gives practical advice on how to identify traffic signs which are not essential and which should be removed.

9.2 Removal of regulatory signs

Most regulatory signs are erected to give effect to a TRO or other statutory provisions as specified in TSRGD which sets out the mandatory requirements for the correct use of signs and road markings. As stated in the TSM Chapter 3, it is for local authorities to determine what signing is necessary to meet their duties under Section 122 of the Road Traffic Act 1984 and Part 2 of the Traffic Management Act 2004[1]. Authorities should always remember that the purpose of regulatory signs is to ensure that drivers clearly understand what restrictions or prohibitions are in force. It should be emphasised that regulatory signs are those which give the most important messages to road users, for example, 'Stop' and 'Give Way' or mandatory speed limits.

As part of the baseline sign auditing process, local authorities should review their existing TROs. Local authorities should establish what level of regulatory signing is actually required to give effect to a TRO, and remove excessive regulatory signs. During the sign auditing process the identification of out of date TRO's could subsequently result in the removal of a number of regulatory signs.

A particular case of potential overuse of regulatory signing is speed limit repeater signs. Consideration should be given to reviewing how close repeater signs are placed to one another, and to terminal signs. It is frequently the case that speed limit repeater signs are placed to remind of the current limit just before a terminal sign which then changes the limit.

9.3 Removal of warning signs

Appropriate warning signs can greatly assist road safety. However, as set out in Chapter 4 of the TSM, warning signs should only be used where there is a specific safety issue where a road user needs to be especially cautious[2]. Unless there are genuine hazards that require warning signs, which would not be readily apparent to drivers without the sign, these signs should be removed. The excessive use of warning signs also devalues their effectiveness. Examples of some of the signs most excessively used are highlighted below.

As set out in Chapter 4 of the TSM, these signs are useful to provide advance warning of a roundabout ahead on high speed roads, or if the view of the roundabout or the other signing associated with it is restricted[3]. However, on straight approaches to roundabouts with unobstructed views, these signs are frequently positioned just in front of much larger directional signs indicating the presence of a roundabout. At best, these signs merely duplicate information presented on the larger sign, and at worst they actually block the view of it as drivers approach it.

[1] Paragraph 1.1
[2] Paragraph 1.6
[3] Paragraph 2.13

Figure 13: This warning sign obscures long distance visibility of the larger directional sign from oncoming drivers

In built up areas, frequent side road junctions are to be expected, and unless there is a particular issue with a junction, such as it being hidden around a corner, there is no reason to provide a sign for it.

On main roads, these warning signs are also often provided in close proximity to directional signs which inform drivers of the destinations that can be reached from each arm of an approaching junction. In such a case this sign is merely duplicating the existing information that there is a junction ahead.

Use of this sign to mark severe or hidden bends is very useful to aid driver safety. However it is frequently used to mark bends which are not very severe and which are readily apparent, so drivers find it difficult to ascertain the severity of a bend from the use of this sign. As Chapter 4 of the TSM indicates, this particular sign should be used sparingly[1]. This sign is also sometimes used repeatedly prior to each of series of bends when the sign to diagram 513 (double bend or series of bends ahead) may be more appropriate.

Figure 14: Excessive number of warning signs on a rural lane

[1] Section 3

Traffic signals are themselves illuminated, so this sign should only be required where there is not a long distance unobstructed view of the signals.

Generally this sign should only be required where the visibility distance of the signals is less than that given in Table 3 below[1].

Table 3: Visibility distance criteria for use of "traffic signals ahead" sign

85th percentile speed (mph)	Visibility distance of signals (m)
Up to 30	65
31 - 35	80
36 - 40	100
41 – 45	125
46 – 50	150
Over 50	All sites

However this sign is frequently used in front of signals where this is not the case.

Figure 15: Traffic signal warning sign positioned close to signals – with a higher level of illumination, the signals can be seen from further away than the sign by day and night

In addition to the above, unnecessary warning signs are often installed with the intention of improving safety but often arguably contributing little to that aim. Figure 16 below identifies a warning sign of questionable value in its present location. If such a sign is felt to be required it should be installed in a location where it will be readily visible, and could possibly be installed on a lighting column to reduce clutter.

[1] This table is taken from Section 8 of Chapter 4 of the TSM.

Figure 16: There is an unobstructed long distance view of this zebra crossing, but the sign is set too far away from the road where it may not be seen

Unjustified warning signs should not be installed at specific locations if this is in response to complaints, from individuals or others, such as local action groups.

9.4 Removal of local directional signs

Directional signs exist to guide drivers unfamiliar with their route toward their destination. The majority of these signs serve a valuable function in preventing drivers becoming lost. However when a need for new information is identified, new signs are sometimes added because it is often cheaper to put up a new sign rather than to replace existing signs with the new composite sign. In this way, no review of the overall amount of information provided is undertaken and over time this can lead to an over proliferation of directional signing. Too much information can be distracting to drivers, as well as being dangerous as this reduces their ability to read and follow directions, undermining the purpose of these particular signs. Local authorities should undertake a comprehensive review of all roadside signs and remove all but those essential to safe driving and route direction, or reduce the amount of information on them.

Local directional signing should be restricted as much of it is unnecessary. Facilities such as youth clubs, doctor's surgeries, schools and churches are not likely to attract visitors from outside the local area, and the local population will have means of finding the locations of these without requiring traffic signing. Figure 17 below shows local destination signing which may be considered superfluous. Although it cannot be seen in the photo, these signs were installed in close proximity to a number of regulatory and warning signs, adding to an already cluttered environment.

Figure 17: Directional signing for local facilities; are these signs really required?

9.5 Removal of tourist destination signs

Tourist destination signing should be kept to a minimum. Only major tourist destinations should be signed and not local attractions. Although frequently provided, it is questionable whether facilities such as golf courses, garden centres and leisure centres require tourist signing. It is strongly recommended that local authorities adopt a tourist signing policy based on TA 93/04.

For comparison, extracts of the policy for the trunk road network, set out in TD 52/04, are below:

- Attractions should have at least 250,000 visitors a year to be eligible for signs on motorways adjacent to large conurbations, 200,000 for other motorways, 150,000 for dual carriageways with a speed limit of 50 mph or more, 100,000 for other dual carriageways and 40,000 for single carriageway roads.
- Attractions which do not meet the annual visitor number criterion may be considered for tourist signing if the number of visitors in the peak month exceeds 20% of the annual requirement.
- For most tourist destinations signing would only be appropriate within 2 or 3 miles.
- The number of tourist destinations signed at a junction should not exceed three.

9.6 Removal of temporary and obsolete signs

Temporary warning signs, for example warning of floods or ice, should be removed when no longer required.

All temporary or emergency directional signs, for example, informing of new housing developments or temporary diversionary routes, should also be removed when they cease to be required.

Figure 18: Temporary housing development sign added to non-primary route directional sign

For a traffic sign to be lawfully placed it must be a prescribed sign in TSRGD, 2002, or authorised. Unless granted special authorisation by DfT, all non-prescribed traffic signs should be removed.

All obsolete signs should be removed and only replaced with the current authorised version of the sign providing there is still a requirement for it. For example, no waiting signs to diagram 637 in TSRGD, 1994 are no longer prescribed for a prohibition of waiting that is applicable for 24 hours a day, every day of the year, so should be removed from all streets. See Figure 19 for an illustration of this particular sign.

Figure 19: Obsolete no waiting sign

The example in Figure 20 below shows two signs which are obsolete for different reasons and which should be removed.

Figure 20: These signs are either obsolete or unreadable and must be removed

9.7 Removal of all types of sign (in environmentally sensitive streets only)

In environmentally sensitive streets, the DfT may be prepared to authorise departures from TSRGD, 2002 to reduce the number of signs (and road markings)[1]. In Figure 21 below, a mini roundabout sign has been installed in an urban conservation area, but to avoid attaching it to a listed building it has been installed in such a location as to be almost invisible to approaching drivers, making it almost redundant. In such a situation it would be preferable to seek permission to not install the sign at all.

Figure 21: This sign satisfies neither the needs of approaching drivers to see the sign nor the need to reduce signing in this area

9.8 Removal of road markings

The removal of road markings in appropriate locations can reduce visual clutter. One example is the excessive use of speed limit roundel road markings in built up areas. Guidance on the use of speed limit roundel road markings for traffic calming is given in Chapter 5 of the TSM[2]. The removal of speed limit roundel road markings could be considered in both villages and on minor roads in urban areas when these road markings used as repeaters in conjunction with upright speed limit repeater signs.

As part of the sign auditing process, worded and diagrammatical markings, for example, 'KEEP CLEAR' should be assessed on a case by case basis to establish if there is a clear need for their retention. Guidance on the use of authorised worded and diagrammatical road markings is given in Chapter 5 of the TSM[3].

Waiting restriction markings must only be used to indicate the effect of a statutory provision as stated in TSRGD. During the baseline sign auditing process, when reviewing existing TRO's, local authorities should identify and subsequently remove all waiting restriction markings giving effect to out of date TRO's.

Illegal road markings, such as those illustrating the sign face on upright triangular warning signs, for example warning of children going to or out of school or playground ahead (diagram 545), must be removed.

[1] This is described in Section 9.2.8 of MfS,
[2] Paragraphs 21.4 – 21.6
[3] Section 22

Figure 22: These speed limit roundel repeater road markings are unnecessary in a rural conservation area. Their shape is also unlawful (they must be circular) so they must be removed

Chapter 5 of the TSM recommends that on rural roads of a width less than 5.5m, the centre road line should be omitted to prevent over-running the carriageway edge, with resulting maintenance problems. If the centre line is omitted, the use of edge of carriageway markings is recommended instead[1].

In urban conservation areas, providing certain conditions are met, yellow waiting restriction lines in either a Restricted Zone or a Pedestrian Zone can be removed and replaced with the appropriate sign (diagram 637.2 in TSRGD, 2002), at the entrance to the zone and repeater signs within the zone. Figure 23 shows this sign.

Figure 23: Sign 637.2

Designated parking space markings can also be omitted if physical delineation such as build outs, as described in MfS[2] is used.

[1] Paragraph 4.6
[2] Section 9

10 Audit stage 2: Reducing the environmental impact of traffic signs

10.1 Measures to be considered on reducing the impact of signs on the environment

After identifying which signs can be removed, further auditing can establish how to rationalise the remaining signs and ensure they have minimal environmental impact. This audit may identify that in a few locations additional safety-critical signing needs to be provided, or that new signs need to be put up in place of existing ones. This section of this guidance provides details of measures that should be considered to reduce the impact of the remaining signs on the environment i.e.:

- Correct size of signs;
- Mounting of signs;
- Correct placement of signs;
- Sign lighting;
- Sign backing boards;
- Appropriate colour of posts and backs of signs;
- The use of traditional direction signs; and
- The use of environmentally sensitive road markings.

Advice is also given to local authorities on the need for consistency and continuity on the provision of directional signs.

Within this guidance, consideration is given to the:

- Road hierarchy, e.g. main roads, minor roads;
- Environment, e.g. residential areas, town centres, country lanes, conservation areas; and
- The function of a particular sign, i.e. whether it is a regulatory, warning, directional, informatory sign or a road marking.

10.2 Correct size of signs

All signs must be of a size that is appropriate to the prevailing speed of traffic on the road for which the sign is to be used. Signs must be of a sufficient size to enable drivers to recognise, read and comprehend all of the information shown on a sign.

Guidance on the size of regulatory signs is given in Chapter 3 of the TSM[1].

Similarly, guidance on the size of triangular warning signs is given in Chapter 4 of the TSM[2]. A simplified version of the table, which relates the height of triangular warning signs to the speed of traffic is given in Table 4 below.

[1] Appendix A
[2] Appendix A

Table 4: Size of triangular warning signs related to traffic speed

85th percentile speed of private cars (mph)	Height of triangular warning signs (mm)
Up to 20	600
21 to 30	600
31 to 40	750
41 to 50	900
51 to 60	1200
Over 60	1200

Signs which are too large add to visual clutter. Oversized signs should be removed and replaced with the correct size of sign, unless a larger size of sign has been recommended to address a specific safety issue. Ultimately determining suitable sign size is a subjective judgement that takes into account the relative risk of the situation. Figure 24 below shows a very large school warning sign with yellow backing board on a 40mph road. This sign is much larger than that recommended for such an environment, but it may be that in this particular case the level of risk justifies it.

Figure 24: Large school warning sign with yellow backing board on a 40mph road – too large for its environment or justified because of the risk?

Directional signs should be reduced to the minimum suitable size, taking into account the required text size and all necessary information, but also the effect on the local environment. Chapter 7 of the TSM specifies that signs should be designed as economically as possible to make most efficient use of the space and not contain any large blank areas. Chapter 7 also provides some guidance on how this may be achieved[1]. Figure 25 below highlights bad practice regarding these issues.

[1] Section 11

Figure 25: Apart from its poor condition, this sign is oversized for its rural environment. The layout is also unsuccessful as it does not make efficient use of the sign space.

The use of symbols on tourist signs is encouraged in order to reduce their size and therefore environmental impact. An example of this is shown in Figure 26 below. This arrangement would be further improved by combining the signs on a single plate.

Figure 26: Use of symbols on tourist signing to reduce their size.

10.3 Mounting of signs

It is important that signs are mounted correctly so as to be both clearly visible to drivers but at the same time having the minimum required impact on the streetscape. Verge mounted signs usually have the lower edge between 900mm and 1500mm above the ground, depending upon the likelihood of spray affecting the sign. In general the lower a sign is mounted within this range, the less the impact on the environment will be. Where signs are located above footways, a minimum of 2100mm clearance is required, while this rises to 2300mm above cycle tracks. Sign posts should not obstruct footways and it is desirable to limit the number in footways.

Wherever possible, signs in urban areas should be attached to adjacent walls so that they are not more than two metres from the edge of the carriageway. However attaching signs to a wall requires either permission from the owner or a legal agreement. Signs can also be fitted to bollards, railings and other types of street furniture, such as a post box, or grouped together on posts.

Figure 27: Left - could this particular sign have been attached to the building? Right – flag directional sign attached to building

Mounting more than one sign on the same post can reduce visual clutter. Advice on mounting warning and regulatory signs together can be found in Chapters 3 and 4 of the TSM[1]. Generally not more than two (exceptionally three) signs should be erected on any one post when viewed from the approach direction. This also applies when regulatory signs are mounted at the same location on separate posts.

Speed limit terminal signs should always be mounted on their own post except where they are combined with a boundary sign (for example at the entrance to a village). STOP or GIVE WAY signs should always be mounted alone.

When installing an assembly of signs, account should always be taken of the potential environmental impact of a tall cluttered array of signs. It is recommended that generally, no assembly of signs should exceed a height of 4 metres above ground level.

Posts that protrude above the tops of signs look untidy and needlessly increase both visual intrusion and clutter so should be avoided.

Figure 28: Sign post protruding above the top of the sign

[1] Section 1 in both documents

10.4 Correct placement of signs

10.4.1 Regulatory and warning signs

The placement of regulatory signs is constrained; they must be located where the TRO takes effect. Warning signs must be erected an appropriate distance from a hazard so that drivers have enough time to respond to the warning. In general, the appropriate distance increases with increasing approach speed. Chapter 4 of the TSM gives details of the appropriate distance from a hazard that a sign should be installed as a function of approach speed[1]. Guidance within Chapter 4 indicates that signs should be placed within 10% of these figures so there is a small degree of latitude in exact installation position. This is predominantly to ensure that drivers have an unobstructed view of the signs, and required clear visibility distances of the signs is also given. If this can be achieved in a range of positions then a secondary consideration is placing signs so as to produce the minimum impact on the environment, by for example setting the sign against a backdrop of a rock or group of trees, or attaching the sign to a wall rather than installing a new post. However, it is emphasised that it is imperative that warning signs are placed in a location so that they are conspicuous; otherwise they will not achieve their intended function.

10.4.2 Directional signs

As with other signs, the primary consideration regarding the location of directional signs must be that they are an appropriate distance from a junction to provide sufficient warning. However if possible these signs should be installed so as to blend in with the environment, particularly in open rural areas where they may otherwise present a very large visual impact. Figure 29 below shows an example of this in practice.

Figure 29: Directional sign set against a background of trees which reduces its visual impact

10.5 Sign lighting

Safety critical signs require direct lighting in street lit areas. This includes most regulatory signs and many warning signs. TSRGD, 2002 requires such signs to be lit by means of internal or external lighting.

However, a number of warning signs and directional signs are lit unnecessarily in areas with street lighting. There is currently no legal requirement to light any directional signs on all purpose local authority roads. Gantry mounted signs may require lighting due to

[1] See Appendix A

the reduced amount of headlamp illumination falling upon them, but lighting can be removed from all verge mounted directional signs.

Many warning signs when placed on single carriageway roads with a 30mph or less speed limit, which are not principal or trunk roads, no longer require lighting yet are still lit. Direct lighting can be removed from such warning signs. A list of warning signs falling into this particular category can be found in Appendix D. Further information on sign lighting can be found in *Cooper and Mitchell, 2008*.

Where sign lighting is required, consideration should be given to the use of new technology to replace existing luminaires. Some of these technologies are less intrusive than external lighting units, and can also reduce power consumption. For example, electroluminescent lighting is provided by a thin translucent sheet, which fits between the sign face and sign back. Thus by day the sign has the same appearance as an unlit sign.

10.6 Sign backing boards

10.6.1 Yellow backing boards

Yellow rectangular backing boards are visually intrusive and should not be used as a matter of course. If a sign is not readily visible to a driver then consideration should first be given to moving the sign or increasing its size; a bigger sign will also increase the distance from which the symbol or text on it can be read. Use of a yellow backing board should be considered a last resort and, as stated in Chapters 3 and 4 of the TSM, they should only be used in locations where the background is dark or complex[1].

The use of yellow backing boards should be avoided wherever possible in historic town or city centres, or in other conservation areas. Figure 30 below shows such a sign. In the case of this particular sign, the use of the backing board also diminishes the unique shape of the sign.

Figure 30: Obtrusive yellow backing board in an urban conservation area

Fluorescence can aid a sign's conspicuity in dull weather, at dusk and where signs are mounted in shadow (for example under trees). Where fluorescence is required, modern true yellow coloured materials should be used instead of the original yellow-green type, as they appear less garish. Figure 31 shows signs with yellow-green backing boards in an area of outstanding national beauty.

[1] Paragraphs 1.31 to 1.33 in both documents

Figure 31: Obtrusive fluorescent yellow-green backing boards in an area of outstanding natural beauty

Where it is necessary to make a sign more conspicuous, consideration should be made of the use of a larger warning or regulatory sign instead of a yellow rectangular backing board. This has the advantage of actually making the sign easier to read.

The use of flashing amber lights mounted on yellow backing boards is counter-productive and should be avoided, as shown in Figure 32 below.

Figure 32: This yellow backing board is unnecessary and it reduces the contrast between the yellow flashing light and the background

10.6.2 Grey backing boards

The use of grey backing boards is recommended in many locations, e.g. for mounting flag type directional signs, combinations of a speed limit signs with a name on a village boundary sign, or for combinations of parking restriction time plates in urban areas. An appropriate use of such backing boards is shown in Figure 33 below.

Figure 33: Appropriate use of grey backing board for mounting flag type direction signs

Grey backing boards can be non-rectangular to allow signs to be bracketed from buildings and lighting columns to minimise sign clutter and environmental intrusion.

10.7 Appropriate colour of posts and backs of signs

The finish of posts and backs of signs, as set out in directions 41 and 42 of TSRGD, 2002, should be co-ordinated with nearby lighting columns and similar street furniture, so as to be as inconspicuous as possible. Direction 41 specifies that a post must be of any single colour.

In urban and rural conservation areas, black would be an appropriate colour for the finish of the posts. In other areas, where larger signs are often used, and aesthetic appeal is of less concern, it would be appropriate to use grey or any other single colour.

Figure 34: Black post supporting a National Speed Limits Apply sign at the edge of an urban conservation area

Direction 42 specifies that sign backs must be grey, black or non-reflective metallic. In most areas, grey would be appropriate, but in conservation areas, black could be used to complement the colour of the posts and improve the appearance of the streetscape.

10.8 Use of traditional direction signs

On minor rural roads where traffic is light and where traffic speeds are relatively low, and there are unlikely to be any safety implications if drivers slow down to read the signs, the use of traditional fingerpost direction signs is recommended.

Figure 35: Traditional fingerpost sign in rural conservation area

Modern signs and symbols should not be added to traditional fingerpost signs.

Further guidance on the use of traditional direction signs is given in Traffic Advisory Leaflet 6/05 (*DfT, 2005*).

10.9 Use of environmentally sensitive road markings

Where long term waiting restrictions are required, particularly in historic town centres, or in conservation areas, it is recommended that narrow (50mm) double yellow lines are used, as they look less visually intrusive compared to normal width yellow lines. The use of such road markings does not require special authorisation by DfT.

Figure 36: Use of narrow double yellow lines in a conservation area

In environmentally sensitive areas, either deep cream or primrose yellow markings would be preferable to the standard lemon yellow colour. Special authorisation is not required for either of these shades of yellow.

10.10 Specific considerations regarding directional signing

10.10.1 Consistency and continuity in their provision

When designing directional signing schemes, local authorities must check carefully that there is consistency and continuity in both the place names and route numbers shown on the signs. Inconsistent signing is a source of great frustration and confusion to road users.

Analysing directional signing can identify where changes need to be made to ensure routes to destinations are signed consistently. Specialist signing asset management software is currently available to perform this task, see Section 6.3.2.

Further guidance on the selection of place names and the continuity of signing is given in LTN 1/94 (*DfT, 1994*).

Note that commercial software is available that helps automate route signing between destinations and improve consistency.

A signing inventory, if plotted on GIS, could also be used to check route consistency.

10.10.2 Removal of blue bordered signs

As outlined in LTN 1/94:

> "The distinction between black-bordered non-primary route signs and blue-bordered local direction signs has been eliminated. All local and non-primary

routes are now to be signed with black-bordered white background signs… Blue-bordered local direction signs must be replaced by 1 January 2015[1]".

From the 1st January 2015 these blue bordered signs are unlawful, so they must be replaced before that date. Although many of these signs have already been replaced there are a large number still in use. When these particular signs come to be replaced, there is an opportunity to consider the issues relating to their size, placement, mounting and indeed necessity outlined in the rest of this section before replacing them.

10.11 Summary of good and bad signing practice

A summary of both good and bad signing practice, identified in the Audit Stage 1 – reducing the number of signs and in the Audit Stage 2 – reducing the environmental impact of traffic signs, is summarised in Table 5 below.

[1] Paragraphs 1.4 and 1.9

Table 5: Identifying good and bad signing practice

Issue	Urban			Rural				
	Main roads	Minor roads	Conservation areas	Main roads	Minor roads	Conservation areas	Special landscape areas	
							Major roads	Minor roads
Removal of permanent signs								
Removal of temporary and obsolete signs								
Removal of road markings								
Correct size of signs								
Mounting of signs								
Correct placement of signs								
Removal of unnecessary sign lighting								
Use of yellow backing boards								
Use of grey backing boards								
Appropriate colour of posts and back of signs								
Use of traditional direction signs								
Environmentally sensitive road markings								

Key	
Good practice	
Good practice (where appropriate)	
Bad practice	
Not applicable	

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Appendix A Outline Data Collection Form

Traffic Sign Information

1. Special Landscape area / National Park / Conservation Area / Other*_____
*Delete as appropriate

2. Road name _____

3. Location _____

GPS co-ordinates E _____ N _____

4. Sign face (diagram number from TSRGD 2002) _____

5. Photograph taken Yes ☐ No ☐ Number: _____

6. Sign purpose: Reflecting existing TRO ☐ Safety issues ☐ Other ☐_____

7. Compliant to TSRGD, 2002, has special approval by DfT, or is non-compliant _____

8(a). Is it a repeater sign (e.g. speed limit) Yes ☐ No ☐

(b). If yes, distance to next repeater / terminal sign _____

9. Physical condition: Poor ☐ Adequate ☐ Good ☐

10. Carriageway clearance Vertical _____

Horizontal _____

11. Is sign illuminated: Yes ☐ No ☐

12. Sign size (warning / regulatory signs) _____

13. Mounting device type (type and dimension) _____

14. Foliage affected Yes ☐ No ☐
Possible in future ☐

15. Number of signs installed on the mounting device _____

16. Number of other signs, and type, in close proximity _____

_____

Photographs taken Yes ☐ No ☐ Numbers: _____

17. Use of yellow or grey backing boards Yellow ☐ Grey ☐

18. Is the sign still required Yes ☐ No ☐

19. Number of destinations signed at single location (Directional signs) _____

Traffic Bollard Information

1. Road name _____

2. Location _____

GPS co-ordinates E _____ N _____

3. What, if any, sign is shown (TSRGD number) _____

4. Type of bollard Reflective ☐ Internally illuminated ☐

5. Photograph taken Yes ☐ No ☐ Number:

6. Physical condition: Poor ☐ Adequate ☐ Good ☐

7. If illuminated, is illumination working Yes ☐ No ☐ Not known ☐

Road Marking Information

1. Road name _____

2. Location _____

GPS co-ordinates (Start) E _____ N _____

GPS co-ordinates (End) E _____ N _____

3. Diagram number from TSRGD, 2002 _____

5. Photograph taken Yes ☐ No ☐ Number:

5. Its purpose: Reflecting existing TRO ☐ Safety issues ☐ Other ☐ _____

6. Compliant to TSRGD 2002, has special approval by DfT, or is non-compliant _____

7. Physical condition: Poor ☐ Adequate ☐ Good ☐

8. Colour White ☐ Yellow ☐ Red ☐

9. Road marking dimension (observed dimension) _____

10. Is the correct accompanying sign present Yes ☐ No ☐

Appendix B Copy of the Traffic Sign asset management survey sent to LHAs

What is the survey about?

This survey aims to establish if, and how, LHAs collect data regarding their traffic signs / road markings assets and their maintenance condition. It forms part of a research project commissioned by the Department of Transport to develop guidance for local highways authorities to assist them in reviewing their existing traffic signs, leading to a reduction of signs and the impact they have on the environment.

TRL are investigating how local authorities currently undertake their sign auditing which should provide valuable inside to existing good practice.

What happens to the information?

The information you provide **is confidential**. It will be used to develop guidance on collecting and auditing baseline traffic signs data. This guidance will subsequently form part of a new Traffic Advisory Leaflet for local authorities, issued by the Department for Transport, on reducing traffic sign clutter.

Further information / clarification

If you have any questions or need any assistance, please contact James Bedingfeld at jbedingfeld@trl.co.uk on 01344 770510.

Filling in and returning the survey

Please print out the survey and fill it in by hand. Please return the survey either by:

- Scanning it and emailing it to jbedingfeld@trl.co.uk
- Posting it to the following freepost address:

Freepost RRJK-KLHB-TTAB,
TRL,
Mr J Bedingfeld,
Floor B1, Crowthorne House,
Nine Mile Ride,
Wokingham, RG40 3GA

Completing this survey should take approximately 20-30 minutes.

A. THIS SECTION IS DESIGNED TO FIND OUT HOW DATA IS COLLECTED AND STORED

1. Do you have an inventory of the following roadside assets?

Traffic Signs	Yes ☐1	No ☐2	
Traffic Bollards	Yes ☐1	No ☐2	
Road Markings	Yes ☐1	No ☐2	⇒ **If none please go to Question 10**

2. How do you store your inventory?

☐1 Paper-based

☐2 Standard office software (e.g. MS Excel– please state product below)

☐3 Specialist software (please state product and supplier below)

☐4 Other (please state below)

Please give further details:

3. Are the locations of these assets digitally mapped?

☐1 Yes, as part of the specialist software package mentioned above

☐2 Yes, on other GIS software

☐3 No

4. How often is the information in the inventory updated, and what prompts this?

5. How do you update your inventory? (please tick all that apply)

- ☐1 Updated on ad-hoc basis during routine maintenance
- ☐2 Survey by own staff
- ☐3 Survey by external consultancy or contractors
- ☐4 Community audit by local interest groups (Please state groups below)
- ☐5 Other (please state below)

Please give further details:

6. When gathering information, how is it recorded on site? (please tick all that apply)

- ☐1 Hand-held PDA
- ☐2 GPS logger
- ☐3 Pen and paper
- ☐4 Other (Please state below)

Please give further details:

7. Do you collect the following information on each sign?

	Yes	No
a. Sign face (diagram number from TSRGD 2002 or photo)	☐1	☐2
b. Its purpose (e.g. Reflecting TRO's, due to safety issues)	☐1	☐2
c. Whether it is compliant to TSRGD 2002, has special approval by DfT, or is non-compliant	☐1	☐2
d. Whether it is a repeater sign (e.g. for speed limit signing)	☐1	☐2
e. Physical condition	☐1	☐2
f. Physical position (mounting height, orientation etc)	☐1	☐2
g. Illumination requirements and whether it is illuminated	☐1	☐2
h. Sign size	☐1	☐2
i. Type of retro-reflective material (e.g. glass bead, microprismatic or none)	☐1	☐2
j. Mounting device type (e.g. post, lighting column) and info on type of post (e.g. Is it a passively safe Lattix ® post?)	☐1	☐2
k. If mounted on a lighting column, any effects this may have on structural effectiveness (taking into account wind loading etc)	☐1	☐2
l. Number of signs installed on the mounting device.	☐1	☐2
m. Use of yellow or grey backing boards	☐1	☐2
n. Use of protective overlays (dew or anti graffiti)	☐1	☐2
o. Is the sign still appropriate for its location (e.g. sign size, lighting, its reason for existing)	☐1	☐2

If you collect any other information not listed above, please state it below

8. Do you collect the following information on each bollard?

	Yes	No
a. What, if any, sign is shown	☐1	☐2
b. Type of bollard (e.g. reflective or internally illuminated)	☐1	☐2
c. Physical position and orientation	☐1	☐2
d. Cleanliness	☐1	☐2
e. Physical condition	☐1	☐2
f. Details of the base	☐1	☐2
g. If illuminated, whether illumination is working	☐1	☐2
h. If non-illuminated, whether it is authorised	☐1	☐2
i. If non-illuminated, use of protective overlays (dew or anti graffiti)	☐1	☐2
j. If non-illuminated, is it appropriate for its location (e.g. does it provide enough illumination)	☐1	☐2

If you collect any other information not listed above, please state it below

9. Do you collect the following information on each road marking?

	Yes	No
a. Diagram number from TSRGD 2002	☐1	☐2
b. Its purpose, if not obvious (e.g. Reason for use of a stop line)	☐1	☐2
c. Physical condition	☐1	☐2
d. Whether reflectorised	☐1	☐2
e. Colour	☐1	☐2
f. is the appropriate accompanying sign present e.g. waiting restrictions	☐1	☐2

If you collect any other information not listed above, please state it below

C. THIS SECTION IS CONCERNED WITH LOCAL AUTHORI

10. Do you *ever* audit your traffic signs / traffic bollards / road markings?

Traffic Signs	Yes ☐1	No ☐2	
Traffic Bollards	Yes ☐1	No ☐2	
Road Markings	Yes ☐1	No ☐2	⇒ **If none please go to Question 13**

11. Do you do this *periodically*, and if so, how often?

Traffic Signs	Yes ☐1	Every _____ months/years	No ☐2
Traffic Bollards	Yes ☐1	Every _____ months/years	No ☐2
Road Markings	Yes ☐1	Every _____ months/years	No ☐2

12. For what purpose do you conduct audits of your traffic signs / traffic bollards / road markings? (please tick all that apply)

	Signs	Bollards	Road Markings
Ensure maintenance is carried out when and where required	☐1	☐2	☐3
Ensure assets no longer required are removed	☐1	☐2	☐3
Ensure assets in place are still appropriate following changes to the road (e.g. speed limit or streetscape design)	☐1	☐2	☐3
Other (please state below)	☐1	☐2	☐3

Please give further details below

13. When introducing new traffic signs / traffic bollards / road markings do you carry out an audit of assets already in the vicinity?

Traffic Signs	Yes ☐1	No ☐2
Traffic Bollards	Yes ☐1	No ☐2
Road Markings	Yes ☐1	No ☐2

14. Do you have a policy on temporary signing (e.g. who may put up signing, how long it can remain in place for)?

☐1 Yes (please give details below)

☐2 No

15. Do you have specific policies on traffic sign clutter?

☐1 Yes (please give details below)

☐2 No

16. Do you have any policies on consistency in directional signing?

☐1 Yes (please give details below)

☐2 No

Thank you for your time

If your authority has a local traffic signing policy document, and would be willing to share it with us, please can you return this with the survey or email it to jbedingfeld@trl.co.uk

Appendix C Analysis of survey responses

The survey in Appendix B was sent to a total of 61 LHAs including two consultants (working on behalf of a LHA) and to Transport for London.

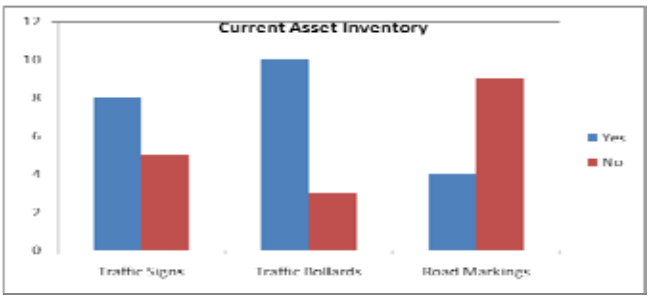
Thirteen responses were received from the consultation process, approximately a 21% return rate. The findings from these responses are detailed below.

HOW DATA IS COLLECTED AND STORED

Question 1: Do you have an inventory of the following road side assets - Traffic Signs, Traffic Bollards and Road Markings?

Asset	*Yes*	*No*
Traffic Signs	*8**	*5*
Traffic Bollards	*10*	*3*
Road Markings	4	9

*One respondent has an inventory of illuminated and some non-movement traffic signs

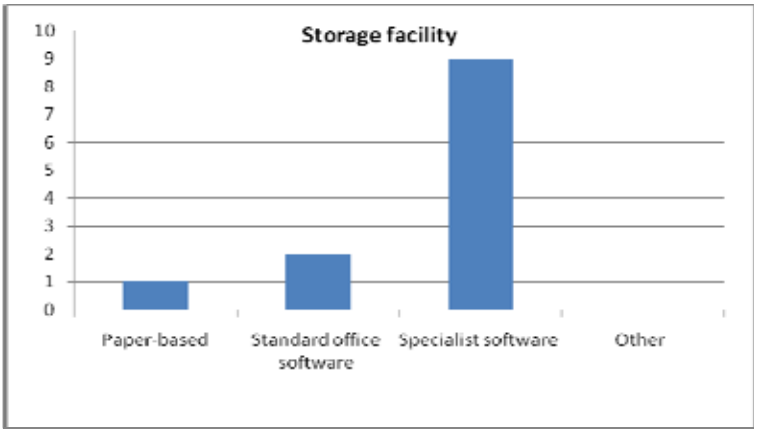


Of the thirteen responses received:

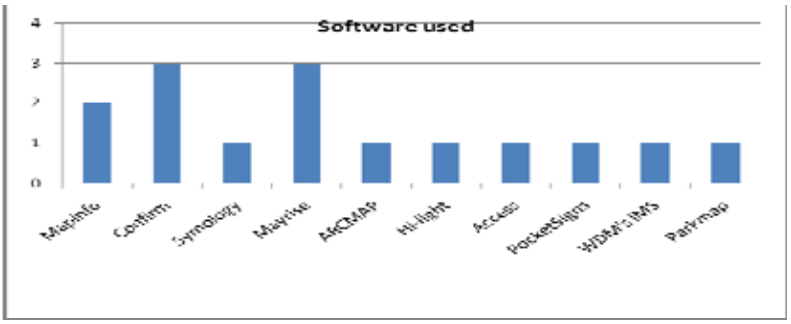
- Four carry out an inventory of all assets;
- Four carry out an inventory of traffic signs and bollards only;
- Two carry out an inventory on bollards only; and
- Three do not have an inventory of assets.

Question 2: How do you store your inventory?

Storage method	Number
Paper-based	1
Standard office software	2
Specialist software	9
Other	0

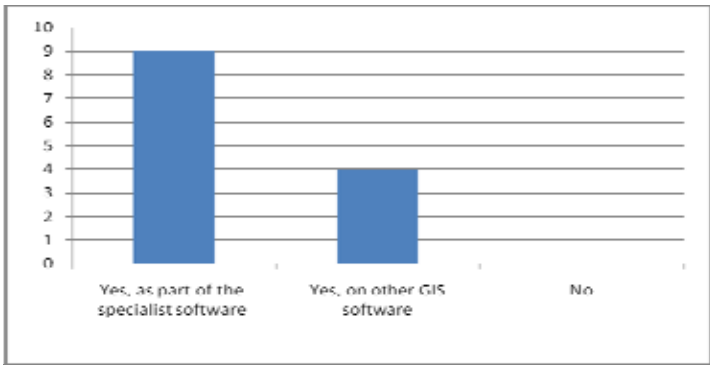


Types of Software currently used	
Software	**Number**
Mapinfo	2
Confirm	3
Symology	1
Mayrise	3
ARCMAP	1
Hi-light	1
Access	1
PocketSigns	1
WDM's IMS	1
Parkmap	1



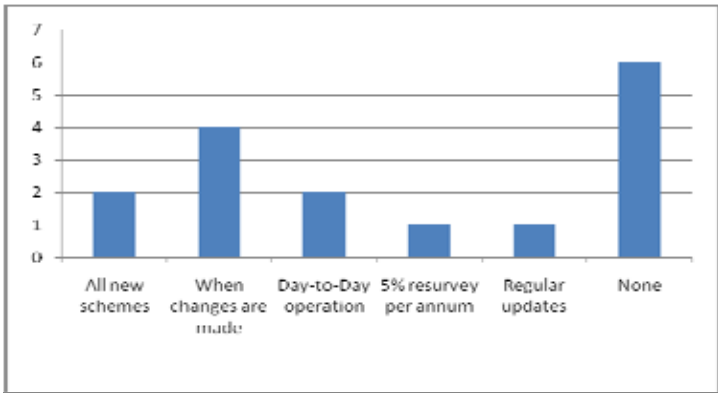
Question 3: Are the locations of these assets digitally mapped?

	Number
Yes, as part of the specialist software	9
Yes, on other GIS software	4
No	0



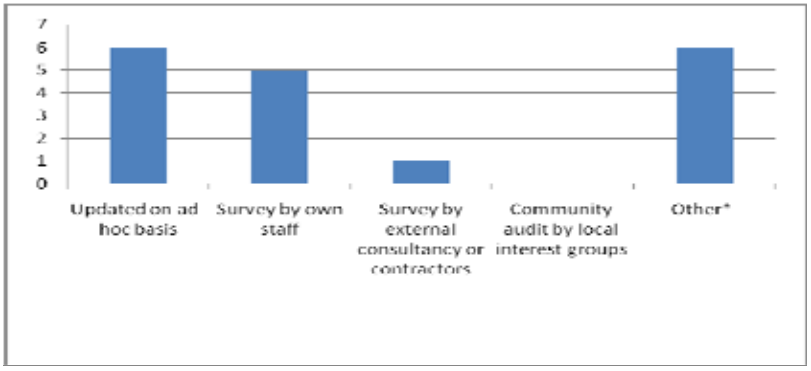
Question 4: How often is the information in the inventory updated, and what prompts this?

Regularity	Number
All new schemes	2
When changes are made	4
Day-to-Day operation	2
5% resurvey per annum	1
Regular updates	1
None	6



Question 5: How do you update your inventory?

Option	Number
Updated on ad-hoc basis	6
Survey by own staff	5
Survey by external consultancy or contractors	1
Community audit by local interest groups	0
Other*	6

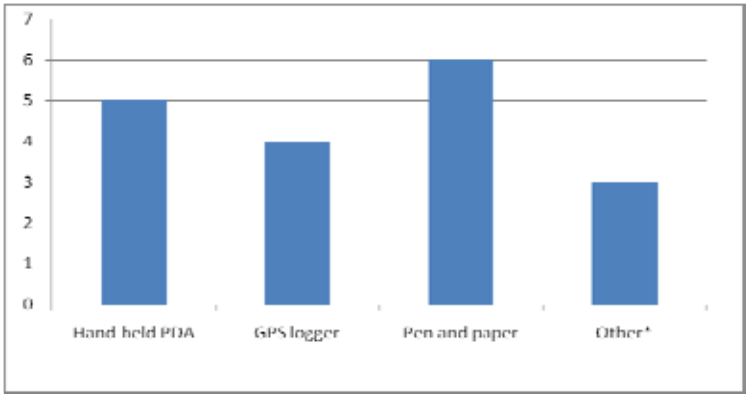


*Other

1. Survey from 1980's. No new survey yet
2. When new works are complete
3. For new Traffic Regulation Orders
4. Inventory not updated
5. Update procedure in place
6. External survey – respondee did not state who

Question 6: When gathering information, how is it recorded on site?

Device	Number
Hand-held PDA	5
GPS logger	4
Pen and paper	6
Other*	3



*Other

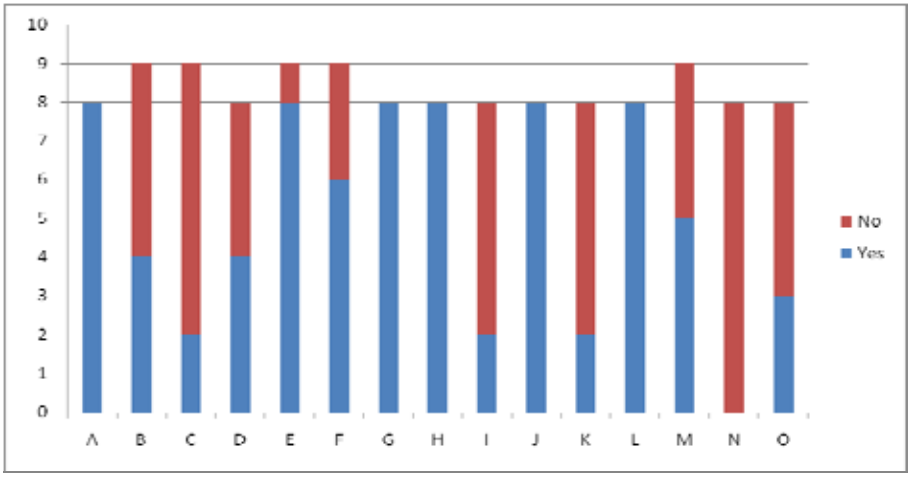
1. Pentablet PC
2. Camera
3. Video camera capture from scanner and survey

WHAT INFORMATION IS COLLECTED

Question 7: Do you collect the following information on each sign?

Ref	Detail	Yes	No
A	Sign face (TSRGD 2002 or photo)	8	0
B*	Its purpose Reflecting TRO's, safety issues)	4	5
C*	Compliant to TSRGD 2002/ approval by DfT	2	7
D	Whether it is a repeater sign	4	4
E*	Physical condition	8	1
F*	Physical position (mounting height, orientation etc)	6	3
G	Illumination requirements and whether it is illuminated	8	0
H	Sign size	8	0
I	Type of retro-reflective material	2	6
J	Mounting device type and info on type of post	8	
K	If mounted on a lighting column, any effects this may have on structural effectiveness	2	6
L	Number of signs installed on mounting device.	8	0
M*	Use of yellow or grey backing boards	5	4
N	Use of protective overlays	0	8
O	Is the sign still appropriate for its location	3	5

*One respondent carries out an inventory for signs for TROs on items B, C, E, F and M, but not when a TRO is not in place, so has selected both 'yes' and 'no' for each of these items

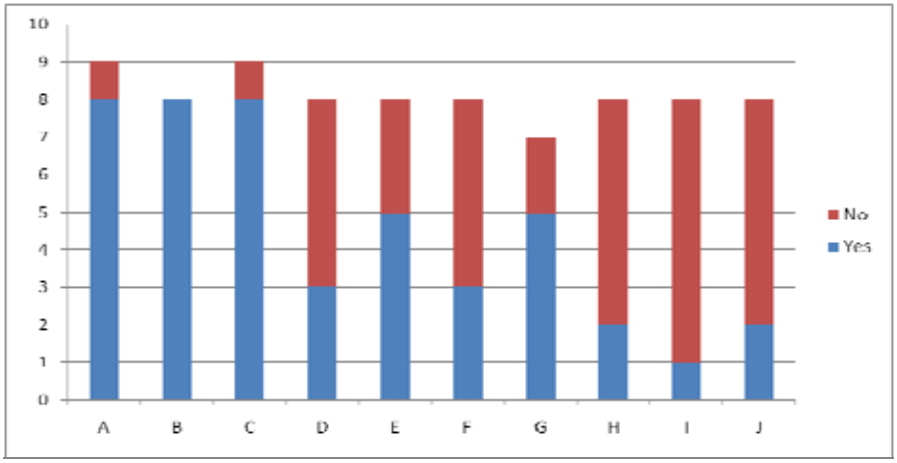


Other information collected / provided:

1. Any special wording - photos taken
2. Checked twice a year and redundant signs / posts removed
3. Condition of illumination unit
4. Risk of vegetation masking sign face (High to Low)
5. Retroreflectivity sometimes measured

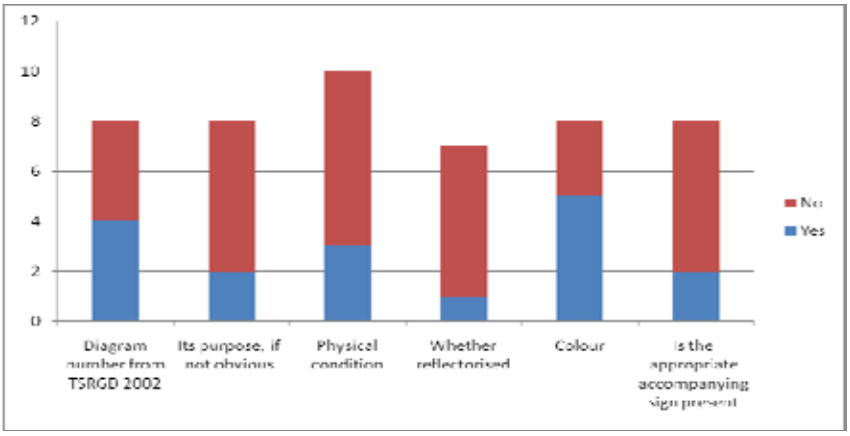
Question 8: Do you collect the following information on each bollard?

Ref	Detail	Yes	No
A	What, if any, sign is shown	8	1
B	Type of bollard	8	0
C	Physical position and orientation	8	1
D	Cleanliness	3	5
E	Physical condition	5	3
F	Details of the base	3	5
G	Is illumination working	5	2
H	If non-illuminated, is authorised	2	6
I	If non-illuminated, use of protective overlays	1	7
J	If non-illuminated, is it appropriate for its location	2	6



Question 9: Do you collect the following information on each road marking?

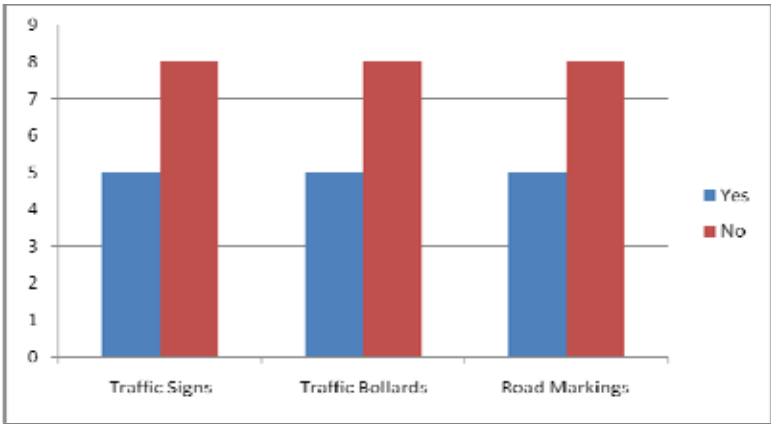
Detail	Yes	No
Diagram number from TSRGD 2002	4	4
Its purpose, if not obvious	2	6
Physical condition	3	7
Whether it is reflectorised	1	6
Colour	5	3
Is the appropriate accompanying sign present	2	6



LOCAL AUTHORITY POLICY

Question 10: Do you *ever* audit your traffic signs / traffic bollards / road markings?

Detail	Yes	No
Traffic Signs	5	8
Traffic Bollards	5	8
Road Markings	5	8



Question 11. Do you do this *periodically*, and if so, how often?

Only three respondents provided details of the regularity of their sign auditing; these provided the following information:

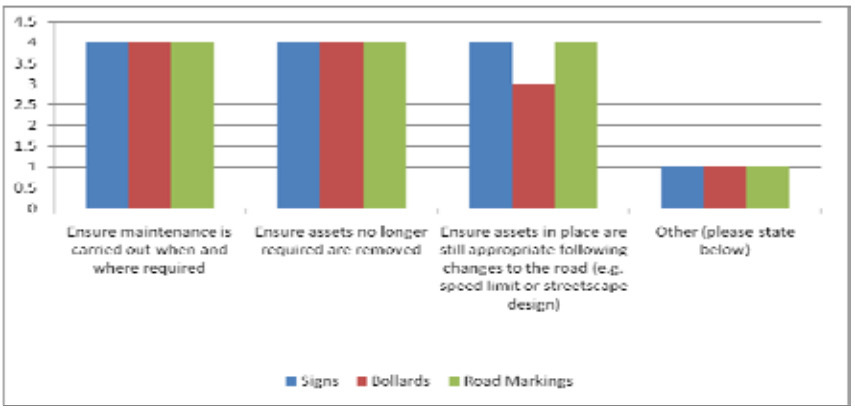
1. Two respondents include auditing as part of routine safety inspection; regularity is dependent on the road hierarchy.

2. The third respondent undertakes auditing as part of a streetscape review.

Question 12: For what purpose do you conduct audits of your traffic signs / traffic bollards / road markings?

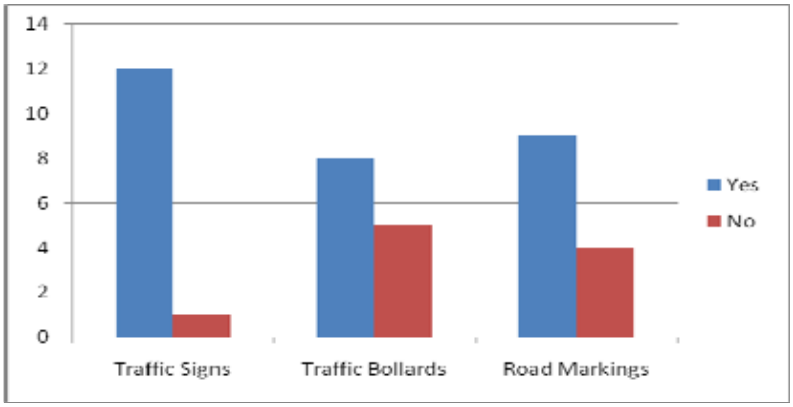
Purpose	Traffic Signs	Bollards	Road Markings
Ensure maintenance is carried out when and where required	4	4	4
Ensure assets no longer required are removed	4	4	4
Ensure assets in place are still appropriate following changes to the road (e.g. speed limit or streetscape design)	4	3	4
Other (please state below)*	1	1	1

*For the purposes of a safety inspection



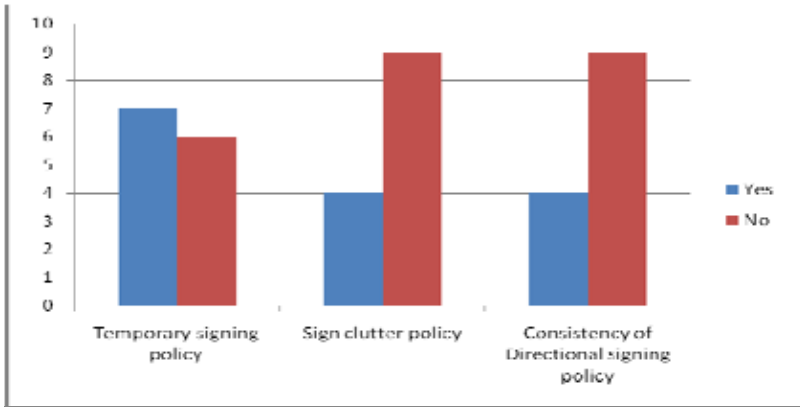
Question 13: When introducing new traffic signs / traffic bollards / road markings do you carry out an audit of assets already in the vicinity?

Asset	Yes	No
Traffic Signs	12	1
Traffic Bollards	8	5
Road Markings	9	4



Q14 – Q16. Do you have specific pol temporary signing, sign clutter and consistency in directional signing?

Policy	Yes	No
Temporary signing	7	6
Sign clutter	4	9
Directional signing	4	9



Policy documents supplied by respondees

Temporary signing critera

Number	Criteria
1	1. The development must be planned for a minimum of 30 bedrooms. 2. Generally signing should be restricted to within a half-mile radius, or two junctions away from the development, whichever is the further. 3. Applications must be accompanied by: a)The completed and signed agreement form "Temporary Direction Signing for New Housing Developments". b)A suitable plan, detailing the proposed locations of the signs and method of fixing to the street furniture. Note: No signs of area greater that 0.30m^2 shall be permitted to be erected on any lamp column or on any lamp column with existing signs if the combined area exceeds 0.30m2. Signs erected on existing sign supports shall not obscure any part of the existing sign. Signs erected over a footway must be mounted at not less than 2.30m c)A drawing depicting the sign face details in accordance with Diagrams 2701 and 2701.1 of the TSRGD 2002. d)The date when the signs are proposed to be erected. e)A copy of the developer's, or signing organisations, insurance policy indemnifying LHA against any damage or property by the erection of the authorised signs on the highway. 3. Upon receipt of a copy of the appropriate documentation and the signed Agreement Form, authorisation shall be granted (subject to the necessary criteria being met), for the erection of the authorised signs. 5. Authorised signs may only be erected when work commences on the site groundwork. 6. The authorisation will expire after a period of six months and an application for a further six month extension must be received at the end of each period of six months. 7.The signs must be removed from the public highway within three months of completion of the sale of 80% of the properties. 8.Where a developer erects unauthorised signs on the highway, all signs relating to that site, previously authorised or not, are liable to be removed by the Council and the cost charged to the developer. 9.Such conduct will also be taken into consideration when the developer makes any future applications. It is implicit that a development site may only be served by authorised, prescribed temporary signs. 10. Any signs erected at unauthorised locations, or signs that are deemed to be a danger to highway users are liable to be removed by the Council at the developer's cost. 11. The Council reserves the right to refuse any signing scheme if it considered that there is safety or other reasons why the signing scheme should not be permitted. 12. Commercial names, in whole or part, shall not be allowed on the signs. 13. Applications that do not comply with the above conditions will be refused. 14. The developer, or signing organisation, should submit their application, with the completed agreement form, no later than ten working days before the required date of signing to LHA.
2	1. Advance Notice boards will be erected for all County Council funded major carriageway works 2. Temporary advance signs such as 'Work starts here' should be erected at least 2 weeks before commencement of work on site. These should be removed on commencement of the works and replaced with a scheme sign showing contractors name and emergency contact details. 3.Signs erected to warn of permanent changes to the highway layout to dia 7014 of the TSRGD 2002 should be removed no later than 3 months of completion of the works. 4.To assist in this a removal date should be fixed to the front face of the sign in the bottom left hand corner. These letters should be approximately 2 cm high. 5.Signs to new housing developments (to dia. 2701 of the TSRGD 2002) will only be permitted immediately adjacent to the site. Additional signs may be erected if justified because the site is difficult to find and traffic problems may result if no signs are erected. This decision will be made by the local Highways Manager. All costs relating to the supply and erection of the signs will be borne by the developer 6.As temporary signs warning of a particular road hazards erected by AIU (usually black on yellow) are not prescribed signs in the TSRGD they may only be erected with the prior permission of the Service Director of Highways. 7. The guidance on siting of signs contained in Section 5.7.3 applies to siting of temporary signs. Signs erected on site should be positioned to avoid damage from passing traffic. This should be a minimum of 450mm from the kerb edge to the edge of the sign.
3	Our general Streetscape Policy discourages any additional signing. We very rarely allow such signs which require authorisation from the Council before erection.
4	Discretionary Signing Policy currently under review. Temporary signs require approval.
5	In accordance with TSRGD
6	Only accredited companies, must have public liability insurance

Sign clutter policy

Number	Policy
1	Guidance provided in Streetscape Guide
2	Policy document on signing, particularly in the Peak District National Park.
3	Our own Streetscape Design Manual
4	Keep signage to a minimum, do not erect unnecessary signs

Consistency of directional signing policy

Number	Criteria
1	No written policy, but all aware of need for continuity and consistency
	Do have Tourist Sign Policy and a policy for directional signing to Retail and other Local Non-tourist attractions
	RETAIL AND OTHER LOCAL NON-TOURIST ATTRACTIONS
	1. The purpose of direction signs is to guide drivers unfamiliar with the area to their intended destination along the most appropriate route during the latter stage of their journey.
	2. Direction signing will therefore only be provided when and where it is an aid to navigation and for safety or traffic management reasons. The number of any signs provided will only be sufficient to satisfy these needs but must be limited in order to comply with environmental objectives including that of reducing visual intrusion and street clutter.
	3. Decisions on the provision of direction signing to individual destinations will be considered on their merits and will depend on local circumstances. Priority will be given to signing destinations likely to attract a high volume of visitor traffic and which cannot be reached simply by following existing signs to a town, village or other prominent local landmark and particularly where the destination or entrance may be difficult to find. Establishments may be asked to confirm that they have all necessary approvals and licences required to operate from the location before any agreed signing is provided.
	4. Individual establishments will not normally be named on direction signs. Where appropriate the collective name of a retail destination or other centre may be used. The name should be concise and easy to assimilate, e.g. 'Lakeside.' Such collective names must be included in the postal address of the individual establishments within the destination area. Otherwise generic names will normally be used, such as 'Shopping centre', 'Retail park', 'Supermarket', `Industrial estate' etc.
	5. It is apparent that direction signs are often perceived by businesses as useful advertising and marketing tools, however this is not the purpose for which they are provided.
	6. They must not be used as a substitute for promotional material, nor as a means to circumvent planning control of advertisements. It is the responsibility of the owner or operator to advertise their attraction, including the opening times, the location, and accessibility by road and public transport, in newspapers and leaflets and on web sites etc.
	7. If a destination merits the provision of signing, then that provision shall be conditional on the removal of any unauthorised directional advertisement signs on or adjacent to the highway, together with any other unauthorised advertising materials.
	8. Signing to a new or redeveloped destination should normally be at the expense of the developer, so that the highway authority incurs no financial burden. Section 278 of the Highways Act 1980 provides a means for the highway authority to recover its actual costs, including the installation costs, administration costs and, where appropriate, future maintenance costs.
	9. Once the signs have been installed, they become the property of the highway authority and are maintained on the same basis as other directional signs.
	10. When a signed destination is closed permanently, the redundant signs will be removed (or the appropriate legend covered up in accordance with the Traffic Signs Manual, Chapter 7, Section 11) as soon as possible.
	11. The design and layout of traffic signs must comply with The Traffic Sign Regulations and General Directions (TSRGD). Guidance on the design of traffic signs is contained in Chapter 7 of the Traffic Signs Manual, while guidance on the use of directional signing generally is contained in Local Transport Note 1/94.
	12. Symbols and logos associated with retail destinations and exhibition centres or other Businesses are not prescribed by the TSRGD and are unlikely to be authorised by the Department for Transport. For example the garden centre (tourist) symbol that was previously authorised before the TSRGD 2002 came into force can now no longer be used.
2	Published Direction Signs Policy referred to in LTP. Only provide signs to Tourist destinations if they have off-street parking
3	Currently under review, the idea is that all signing is consistent with the policy.
4	No policy as such, trained staff in this specialism.
5	We require no more than 5 destinations on a single sign for example.

Appendix D Warning signs no longer requiring lighting in all circumstances

The following warning signs **need to be lit** unless located on a single carriageway, non-principal or non-trunk road with a speed limit of 30mph or less - in which case they must be reflectorised (TSRGD, 2002, Schedule 17 Item 1 with asterix (*))

Note that additional regulations may occur as a result of the TSRGD review and that practitioners should keep up to date

					
504.1	505.1	506.1	507.1	508.1	509.1
					
510	512	512.1	512.2	513	516
					
517	521	522	523.1	524.1	528
					
529	529.1	545	557.1	950	

Appendix E Contacts

This section details the companies and products investigated as part of the investigation into data collection and storage undertaken for this report.

Data collection products and methods

Video and laser scanning:

http://www.3dlasermapping.com/uk/mobile/applications/highways.htm

http://www.routemapper.net/application/

Specialised Asset Management systems – for collecting and storing data

http://www.adaptivegeo.com/products/pocketsigns.pdf

http://www.symology.co.uk/

http://www.buchanancomputing.net/SignMap.php

http://www.keytraffic.com/KeySIGNBASE.aspx

http://www.wdm.co.uk/default.aspx?page=documents

http://www.mayrise.co.uk/

OCR: Products

http://www.abbyyeu.com/showcase/en/?qclid=CODnyqHejaACFVAA4wodn1tsdA

http://shop.nuance.com/DRHM/servlet/ControllerServlet?Action=DisplayProductDetailsPage&SiteID=nuanceus&Locale=en_US&productID=127352200&resid=S4aOuQoHAisAAAJnOj0AAAAv&rests=1267109561828

OCR: companies managing digitising of paper based assets

http://www.stortextfm.com/?q=node/46

Community auditing

Street audit examples:

http://www.suttonlivingstreets.org.uk/wp-content/uploads/2009/09/CommunityStreetAudit_SuttonLivingStreets_July2009_Print.pdf

http://www.preston.gov.uk/GetAsset.aspx?id=fAA0ADIAMAAzAHwAfABGAGEAbABzAGUAfAB8ADAAfAA1

http://www.walk21.com/papers/Allen,%20David%20et%20al%20-New%20directions%20in%20street%20auditing.pdf

Living streets

http://www.livingstreets.org.uk/our-services/community-street-audits/

General Highways Asset Management Systems

http://www.pbinsight.com/files/resource-library/resource-files/confirm-overview-DS-v3.pdf

http://www.mapinfo.co.uk/products/solutions/infrastructure-asset-maintenance-and-management/

http://www.exorcorp.com/page.aspx?pageId=25

http://www.exorcorp.com/uploads/Case%20Studies/York%20Street%20Scene%20v1.pdf

http://www.exorcorp.com/uploads/Case%20Studies/Dorset%20EDRMS.pdf

http://www.infor.com/content/brochures/hansen-asset-management.pdf/