



road furniture

IN THE COUNTRYSIDE

Guidance for Road and Planning Authorities
and Statutory Undertakers

Road Furniture

in the Countryside

guidance for road and planning
authorities and statutory undertakers

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Ministerial Foreword



The splendour of Scotland's landscape is internationally renowned. Each year many visitors take time to tour our country by coach, car, motorcycle and bicycle to take in the history, culture and scenic beauty that is Scotland. It is important that the quality of their experience is maintained and enhanced in all that we do.

Road verges form part of the 'picture frame' through which the landscape beyond is viewed and enjoyed. These same verges are also home to traffic signs, marker posts, safety fences, public utility equipment and all the other paraphernalia of a modern communications corridor. Many such items, either singly or in combination, can have a significant visual impact on the surrounding environment.

Transport Scotland and local road authorities regularly replace traffic signs and other items of road furniture as part of annual maintenance and renewal programmes. By working together the Agency and SCOTS have produced this guidance document for all those involved in the design and installation of roadside equipment. The document explores the flexibility contained in existing regulations and local transport notes and advocates an holistic approach to the provision of road furniture in the context of the adjacent landscape. It also provides a valuable section on the general principles of designing for Scotland's landscape.

In January 2003 the Scottish Executive made the decision to approve provision of bilingual road signs on trunk and local roads in the Western Highlands. The guidance will help ensure that any further new signs respect the inherent character of the landscape, enhancing the sense of place and pride in language and cultural identity felt by Gaelic speakers and all those who enjoy the countryside of Scotland. The guidance will also be of immediate benefit to those involved in equipping roads within our two newly created National Parks.

I commend this document to all who are involved in the design and installation of roadside equipment in Scotland.

Tavish Scott MSP
Minister for Transport

June 2006





1 Introduction

- Road furniture comprises widely diverse objects covered by a broad range of design regulations, standards and codes of practice
- The considerable flexibility that exists within design guides is not always used
- Little guidance is available regarding the cumulative visual effects of road furniture
- Substantial increases in road furniture are occurring in rural areas due to perceived tourism and road safety needs
- Threat of increasing visual problems associated with recent trends in traffic management and the impact of tourist signs
- Incremental increase in road furniture over time results in visual clutter

1



The cumulative impact of signs and safety fences at this junction has produced visual intrusion in a remote landscape.

1 What is the problem?

There is growing concern about the visual effects caused by the proliferation of signs and other items along roads in the Scottish countryside. While this is not necessarily a major problem in all areas at the moment, it threatens to become so as more and more elements are added to roadside landscapes. Many of these elements are there to help with road safety and it is understandable and right that road authorities consider this one of their main priorities. The scenery of Scotland is one of its main assets and attracts many visitors. The majority tour the country by road and consequently see much of the landscape from the road corridor. Road users need the safety messages and other information provided by road furniture but, ideally, its intrusive effects should not diminish their experience of the countryside. It is possible to maintain adequate levels of information whilst also respecting the quality of rural scenery. This document explores how this can be achieved.



An example of a clutter of signs resulting in visual intrusion and confusion in the messages.

2 What is 'Road Furniture'?

'Road furniture' is a term used to describe a variety of structures found within a road corridor whether the road is a motorway or a country lane. It includes:

- Road signs of all descriptions, including variable message signs and signs to provide directions to tourist destinations.
- Lighting.
- Safety fences, barriers, bollards and verge marker posts.
- Bus shelters, telephone kiosks, telephone and other control pillars as well as other objects placed by utility companies, the most recent being cellular phone masts.

Most of these elements are the responsibility of the roads authority. Many are of a standard design, providing drivers with consistent messages that are recognised throughout the UK. Other elements are of a more local nature and design.



Whether considered singly or in combination, such a wide variety of structures has an impact on the landscape. This impact is variable, depending on the particular circumstances, and can be experienced by road users as well as others who may see the structures from elsewhere in the surrounding area.



3 Regulations, standards and codes of practice

A wide range of regulations, standards and codes of practice already cover the provision, positioning and design of road furniture. However, these have generally developed independently of one other and they usually deal with each issue in isolation. This means that there is little, if any, relationship between one set of regulations and another. Such a lack of integration frequently leads to a mix of positions and styles that can be confusing in the messages they convey and result in a negative visual impact on the landscape.

Many of the regulations already contain some flexibility in how they are applied. The type of provision and the location and style of road furniture can usually be adjusted to fit the local setting to some degree. For example, where directional signs are needed, there is often a range of possible positions within which acceptable sight lines can be achieved. From these the best site can be chosen that fits in with other roadside structures or features. At the other extreme, however, statutory undertakers often have considerable freedom in the siting of their installations.

The existing rules and regulations do not adequately refer to visual design issues or to ways of balancing functional, economic and aesthetic factors in the siting of items of road furniture. They also lack guidance on how to deal with the cumulative impact of increasing numbers of different types of furniture, a frequent problem in many places.



Some examples of the range of road furniture in the countryside and the visual impact it can cause:

- a A bus shelter, litter bin, telephone kiosk, tourist information sign and letter box, all of different design styles.
- b Road signs, safety fences and street lights have a cumulative effect.
- c Safety fence, road signs, verge markers and snow markers attract attention on the outside of the bend, contrasted with a forest backdrop.



Tourist signs like this are increasing in number and can add to the clutter of signs already present.



Two examples of recent additions to road furniture, traffic-management structures and speed cameras. There is flexibility in their siting, so locations should be chosen that present the lowest visual impact. The traffic-management structure breaks the skyline and presents a strong silhouette. Dark blue may not be a colour that works very well in the countryside.

4 The need for guidance

With more emphasis being placed on the countryside and rural development, particularly tourism, it is an appropriate time for a reassessment of the impact of road furniture. At the same time approval has now been given for the introduction of bilingual signs (English-Gaelic) on a selection of North Western routes which will invariably bring more pressure on the environment due to the increase in size of signs. Alongside the recent creation of Scotland's first two National Parks, new approaches to rural landscape planning are also being introduced which aim to take account of local character in all aspects of development. Several factors have been identified that need to be addressed:

- Road safety is rightly the top priority, so that other impacts, such as the visual effect of road furniture, are not necessarily considered as well as they could be in the decision-making process. Road use clearly involves some risk. Whilst it is desirable to reduce this to a minimum, there is always some residual risk.
- The flexibility contained in regulations and design standards is not sufficiently utilised.
- The independent nature of the various rules and regulations, together with disparate responsibilities for road furniture provision frequently produces uncoordinated results.
- The amount of tourist signing has increased significantly since the introduction of the Circular 27/95 'Tourist Signposting' and the 'Trunk Road and Motorway Tourist Signing Policy – May 1998'. In response to this draft policy advice and guidance on Scottish Trunk Road and Motorway Tourist Signposting was prepared in November 2005 and is currently out to consultation.
- The creeping urbanisation of the countryside, in part due to increasing amounts of road furniture, concerns many people.
- Visual clutter occurs when more road furniture is gradually added to what is already there.
- Standard layouts and designs for road furniture often sit uncomfortably in the local landscape setting.



At this site on the urban/rural fringe a proliferation of varying signs in different positions contributes to visual clutter.

Those involved in the design and installation of road furniture must be encouraged to recognise that, while ensuring that roads are safe and function effectively is a fundamental aim, protecting and enhancing the rural environment is also important; **these objectives need not be mutually exclusive.**

5 The purpose of these guidelines

This guidance has been developed in order to provide those with responsibility for undertaking work within the road corridor with advice and guidance on how to prevent road furniture causing unnecessary visual intrusion and how to minimise any resulting visual impact. It represents both a consolidation of best practice and a number of alternative approaches. In particular, it demonstrates how to use the existing guidance and regulations more effectively to avoid adverse visual effects while maintaining safety levels and the appropriate provision of information. While it is obviously undesirable to remove road furniture from the countryside entirely, it is also important to ensure that local character is recognised and taken into account when introducing road furniture into visually sensitive landscapes. This guidance demonstrates how to incorporate landscape character into road furniture planning.

Some situations will mean that technical requirements are particularly restrictive and that visual intrusion is inevitable. However, this should be justified as part of the design process.



In this example a lot of new signs, provided where a contraflow cycle route is associated with a one-way road, have created a very confusing and intrusive effect.

It clearly demonstrates the need for a credible approach to the application of road furniture which ultimately makes sense to the public whilst respecting the character of the adjacent environment.

The guidance is presented in a logical, step-by-step manner leading the reader through the questions to be asked and the processes to be followed for successful road furniture management. Sensible application of the document should help practitioners to more effectively balance the traffic management needs of the road against the inherent value of the surrounding landscape.



2 The Approach

- There is a logical, step-by-step process to follow
- This section presents the outline of the process, which is developed in the rest of the guide
- A checklist is presented to guide readers through the process

A large, stylized number '2' is centered in the bottom right quadrant of the page. The number is rendered in a light, semi-transparent pink color, matching the overall aesthetic of the page. It is set against a background of overlapping, wavy, semi-transparent pink shapes that create a layered, mountain-like effect.



The approach follows a logical step-by-step process, the main elements of which are presented below. The flow chart explains how the steps are related to one another and where different levels of detail are applied.

1 Elements of the planning and design process

The main elements of the planning and design process, explained in greater detail in later sections, are as follows:

- **Is road furniture necessary?** The first step of the process is to ask the question 'Is road furniture necessary?'. This may apply to an audit of existing furniture or to the proposed provision of one or more new items.
- **Objective analysis.** The question can be considered from three aspects: There could be a traffic management problem requiring additional or adapted road furniture. There could be an issue regarding road safety which may be resolved through a review of existing and proposed furniture provision. It may be that there is a perceived lack of information for the road user, leading to the potential for increased risk. In each case an objective analysis of the need for road furniture must be undertaken as part of a strategy for reducing risk. Where potential hazards are likely it may be necessary to undertake a Risk Assessment to determine the appropriate road furniture provision.
- **The road furniture vision and audit.** This is a means of developing a strategy or framework that combines safety requirements, information needs and the likely visual impact for a particular location, section of road, or an entire route or network area.

Visions should be available for all areas but will be particularly appropriate for stretches of new or upgraded road where a completely new road furniture package is to be put in place, or for major stretches of road in landscapes of high scenic quality used by large numbers of tourists.

One of the main benefits of a vision is to provide a consistency of approach balanced with full consideration of the receiving environment.

The road furniture audit consists of a survey of the existing road furniture provision with an analysis of where and why it is needed, how well it functions, what is missing and what can be removed. Such an audit can be carried out as part of implementing a vision for an existing area or as a stand-alone project where no road furniture vision is in place.

- **Option development.** Following on from the vision and audit (including any risk assessment) is the decision on the level and type of provision, if any. This is where the flexibility contained in the rules and regulations should be utilised and consideration given to relaxing standards where appropriate.



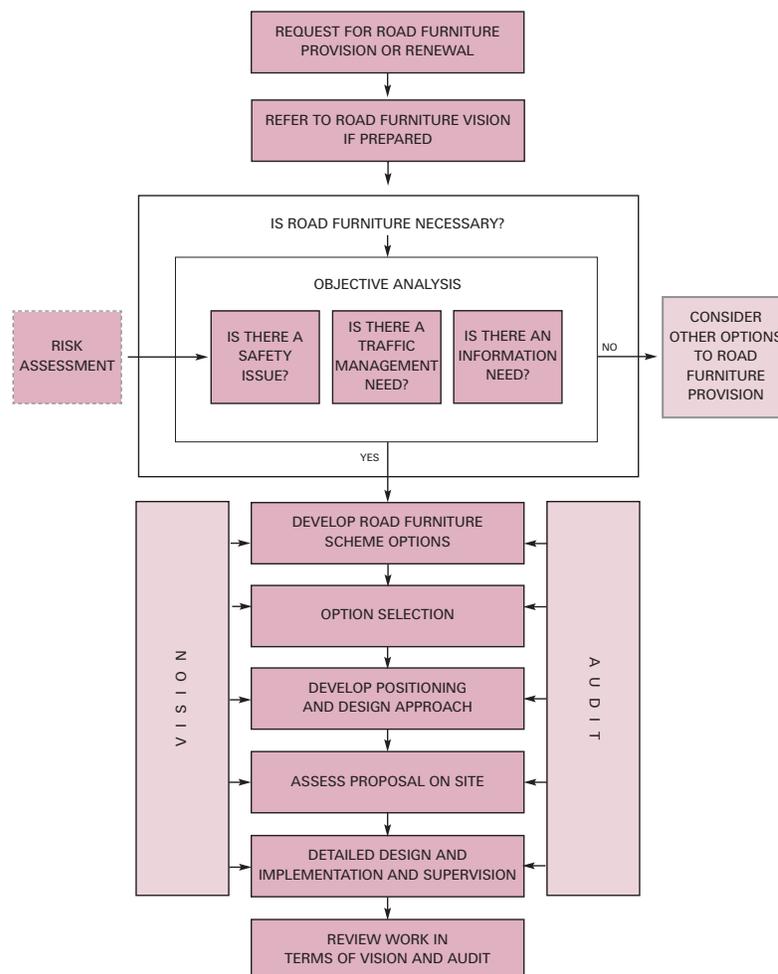
- **Detailed design aspects.** Once the level and type of provision has been decided upon the choice of design for the various elements of furniture, its precise location and a number of design details need to be worked out. If a vision has been prepared, this will set local guidelines on design.

2 Application of the approach to different situations

The approach can be used as a general guide or in more rigorous detail depending on several factors such as:

- Whether it is a new road scheme or an existing one.
- Whether a small or large-scale project is being undertaken.
- The landscape setting of the road and the sensitivity of the surrounding environment.
- The position of the road in the hierarchy.
- The importance of the road as a tourist route.

Generally, the bigger or more sensitive the scheme, the more appropriate it will be to apply the full process. It is up to road designers to decide how to get the best out of the approach in each particular situation.





3 Use of the checklist

To help apply this guidance as effectively as possible, the following checklist has been developed. This should be used to ensure that nothing is omitted from consideration. Following the checklist does not guarantee the correct solution; it is not intended as a substitute for rigorously applying the process. Each part of the checklist is expanded upon in the following sections.

CHECKLIST

Context

1. Establish reason for road furniture proposal
2. Confirm problems to be addressed and objectives to be met
3. Establish if furniture provision is warranted

4. Undertake objective analysis and, if necessary, an appropriate risk assessment

5. Consider request against road furniture vision
6. Establish if tangible benefits will result
7. Confirm if provision is justified or if alternative methods of meeting needs are appropriate

Provision

8. Site visit
 - record existing furniture provision (including type, location, condition any other relevant details)
 - review local functional context
 - review local landscape and visual context
 - identify any special problems at the particular location
9. Outline range of potential options
10. Consider alternative options in relation to furniture vision and audit
11. Check level of provision at similar locations on route
12. Select most appropriate option for detailed development

Positioning and Design

13. Establish all relevant positional and design parameters:
 - distance from edge of carriageway
 - linear spacing criteria
 - mounting or fixing heights
 - material options
 - design/type options
 - size/shape/colour criteria
14. Consider potential for use of backdrop to minimize visual impact
15. Consider detailed positioning in relation to existing provision
16. Co-ordinate new elements with existing provision
17. Consider potential for amalgamation with existing elements
18. Consider potential for use of customization or non-standard element, if appropriate
19. Develop detailed design proposals and review on site – modify as necessary/desirable
20. Prepare appropriate drawings/specifications
21. Implement
22. Check work on site

3 Is Road Furniture Necessary?

- Is there a traffic management need?
- Is there a safety issue?
- Is there an information need?
- If information is necessary can it be provided in other ways?
- Other parties need to be involved in this process





In this section the key question 'Is the road furniture necessary?' is addressed. Surprisingly, the answer to this question is not always 'Yes'. The question should be asked as part of a full scale project approach, or when considering small-scale additions or alterations to existing furniture.

The single most important way to minimize visual impact along roads in the countryside is by avoiding unnecessary road furniture. Therefore, establishing whether it is needed in the first place has to be the most important decision. This applies to existing road furniture as much as to proposed new elements, and there should always be a presumption against introducing new items unless a need has been clearly established.

1 What are the criteria to be applied?

There are four interacting criteria all of which come under the term 'traffic management'. Traffic management is required to direct and inform traffic and to ensure the safety of those using the roads. We must therefore ask:

→ **Is there a traffic direction need?** Many signs are erected in order to direct traffic. Are they all entirely necessary? The regulations may suggest that sets of signs should be erected but there might be flexibility to vary the number and size in certain circumstances. Consider the road management from the driver's perspective. What management information is needed to travel along that stretch of road without getting lost or confused?

These signs and other elements of road furniture are provided mainly for traffic management purposes. Several occur in quick succession. Could some be amended or combined to reduce the number? Is the crossroads warning sign really needed? – the junction already has direction signs. Would an appropriate village gateway remove the need for the HGV speed limit reminders? Are verge marker posts and snow poles required on both sides of the road? Could the x-height of the advanced direction sign be reduced or its mounting height and/or layout modified?



→ **Is there a safety issue?** There is often pressure to provide extra furniture, such as signs or barriers, following accidents. It is important to stand back and carry out a thorough evaluation to ensure that only the minimum extra provision is made, if any is necessary at all. Too much road furniture can encourage complacency by drivers and reduce the expected increase in safety; it could even contribute to accident risk.

→ **Is there an information need?** There are pressures from businesses, road users and tourism agencies to erect more and more information signs alongside roads. More signs may not be the answer. Road and tourist authorities should consider the effectiveness of existing signs, or whether the information is necessary in the first place.



- **If information is necessary, can it be provided in other ways?**
 Instead of erecting additional signs or other furniture, would it be possible, for example, to use road markings instead?



a

The answers to these questions may not solely be provided by the road authorities. It can be a complex subject involving a variety of other parties including local interest groups, politicians and various agencies, all who may feel that their needs are paramount or self-evident and who may apply considerable pressure. An objective assessment will help to ensure that undue pressures do not have an unbalancing effect.

2 What options for road furniture types and designs are available?

Once the need for road furniture has been established it is important to look at the choices of type and design available. Some types may be more or less suitable, not only for fulfilling the management, safety and information requirements, but also to fit into the landscape setting. Section 6 on the choice of design, location and detailed design provides guidance on this.



- a This sign, the chevron boards and the verge marker posts are there to improve safety at a sharp bend. They possibly represent the minimum number of elements necessary, although the impact on the landscape could be further reduced by omitting the grey backing board.



b

- b Whilst there is scope for taking account of local characteristics, tourist sign sizes and layouts should conform to the same design standards as all other signs unlike this poor example.

Simply providing a warning message on the road surface may be sufficient.



4 Risk Assessment

- The need for risk assessment
- It is important to determine the real problem
- Road furniture may reduce or increase risk, depending on its design and location





1 The need for risk assessment

The provision, siting and design of most elements of Road Furniture can be determined through careful and objective analysis of the intended purpose of the particular element coupled with an assessment of the character and arrangement of the receiving site. To assist in this process the guidance document suggests the use of a road furniture audit and vision, the purpose, development and use of which is covered in the next section.

Where it is considered that a sufficiently severe problem or hazard exists at a particular location, it may be necessary to undertake a Risk Assessment. Such an assessment can help establish whether the situation requires new road furniture provision, or an adaptation of the current solution. It can also determine whether the introduction of road furniture would in itself create a hazard.

2 Main elements of a risk assessment

Risk assessment can be carried out as an independent activity related to a specific traffic management or safety situation. If this task is undertaken, it can be used to inform the development of the road furniture audit and vision. It can be a complex process depending on the size of the area under study and the nature of the potential hazards to be considered.

There are a number of accepted ways of undertaking risk assessment and different organisations will have their own tried and tested methods. This document, therefore, does not describe the risk assessment process in any great detail beyond highlighting the main elements involved.

The purpose of the process is to make a critical appraisal of particular situations to establish the following:

- If a potential hazard to road users is present
- The probability of harm actually occurring
- The severity of its consequences
- The number of people exposed to the consequence

It is important to determine what the real problems are that have to be addressed, as opposed to perceived problems that are not real. From this it will be possible to see what effect, if any, is likely to be achieved in terms of reducing risk by providing road furniture, and also to determine what alternatives are available.

This example shows where a series of bends is not obvious to oncoming traffic. A risk assessment identifies the nature and severity of the hazard and the probability of harm, leading to mitigating measures which, in this case, are reasonably low key and produce little adverse visual impact. Is the warning sign required in this situation? Would the road markings and chevron boards alone be sufficient?



5 The Road Furniture Vision and Audit

- A vision is a set of principles to guide furniture provision
- A vision has many uses
- Functional issues should be evaluated as part of the context
- Landscape character sets the scene for the design
- A vision has 3 levels with different principles applying to each
- An audit is used as part of the vision or independently
- An audit can help with the design and implementation of new road furniture as well as with the replacement or removal of existing elements





A road furniture vision presents a set of guiding principles for the level and type of road furniture to be applied to a particular area or along a specific route in order to meet a set of objectives. An audit is used to assess the current level of provision before deciding whether to change it by addition, removal or replacement of elements of road furniture.

1 Road furniture vision

A vision can be developed at different levels, ranging from a national vision, through regional and area level visions to visions for individual routes or sections of route. In each case the vision provides the framework within which the level, location and design of furniture is set.

A road furniture vision has a number of uses:

- Setting a framework for considering requests for new furniture provision.
- Helping to ensure the most efficient and effective use of resources.
- Setting the context for considering different options for furniture provision.
- Providing consistency of provision on a route by route and area by area basis.
- Encouraging public utility companies to consider the visual impact of plant in roadside verges and to fully consult upon their utility proposals.

The development and delivery of a road furniture vision involves:

- Setting objectives
- Setting the context
- The vision: its development and preparation
- Undertaking the road furniture audit (including regular review)
- Implementation

Setting objectives: the purpose of this guidance document is to reduce visual intrusion from road furniture. Objectives should, therefore, define what this means for the area covered by the vision. Objectives might include:

- A presumption against new furniture unless there are clear, identifiable benefits.
- A commitment to provide the minimum of information necessary for the safe and efficient operation of the road.
- To provide the least amount of furniture needed to meet functional requirements.
- To ensure the size of signs is kept to the minimum possible.
- To make the most of the flexibility contained in the regulations.
- To recognize important landscapes.
- To remove redundant furniture.



Setting the context: before the vision can be developed the context for it must be set. Two components are used for this: functional issues and landscape character.

Functional issues include:

- The extent of the area, network, road(s) or length of route to be covered by the vision.
- The nature of the road hierarchy involved.
- The role of different routes in the road hierarchy, i.e. the type of users, associated traffic volumes, designated tourist routes and trunk roads which extend beyond the boundaries of the vision area.
- The need for, and importance of, a consistent and unambiguous message for road users.
- Any issues arising from route action plans or similar strategies.

Landscape character, and the way in which it varies through an area or along a route, is a major part of the vision since it affects the level of provision, and the type and design of furniture, especially furniture other than road signs. A starting point is the relevant Landscape Character Assessment available from Scottish Natural Heritage. From this the following aspects can be considered:

- The degree of physical or visual enclosure in the landscape.
- The degree to which human or natural elements dominate character.
- The use of particular materials and colours.
- Landscape quality, expressed by designations such as National Scenic Areas or Areas of Great Landscape Value, including National Parks.
- The sensitivity of different landscape characters to road furniture provision, e.g. its effect on local distinctiveness and spirit of place.

The vision is developed through consideration of the objectives and context. A matrix can be used to relate road furniture provision principles to combinations of road hierarchy and landscape character and sensitivity.

For an area-based vision, three levels of approach should be developed. This ensures that differences between levels are reinforced while consistency is ensured within each level and local circumstances can be taken into account. This in turn enables drivers to be aware of changes in the road hierarchy and reflects changes in landscape character through the use of different designs. The three levels are as follows:



A trunk road: within a vision, Level 1 objective would apply here, where the consistent application of national standards is important.



- Level 1: the objective is to provide a consistently high standard of road furniture provision that imparts unambiguous and full information along the whole route for all road users. Compliance with national standards and the use of consistent high-quality products are principles to follow.

An 'A' road passing through attractive scenery. In a vision, Level 2 would apply here, where local circumstances have more of an influence.



- Level 2: nationally accepted standards form the basis but with interpretation to fit into local circumstances and a reduced level of provision compared with Level 1.

A grade 'B'/'C' or 'U' road running through attractive countryside is an example of a Level 3 road, where conservation of landscape character is the main issue.



- Level 3: the objective is conservation of landscape character. Furniture does not dominate and it is limited in extent, low key in design and not necessarily consistent in appearance.



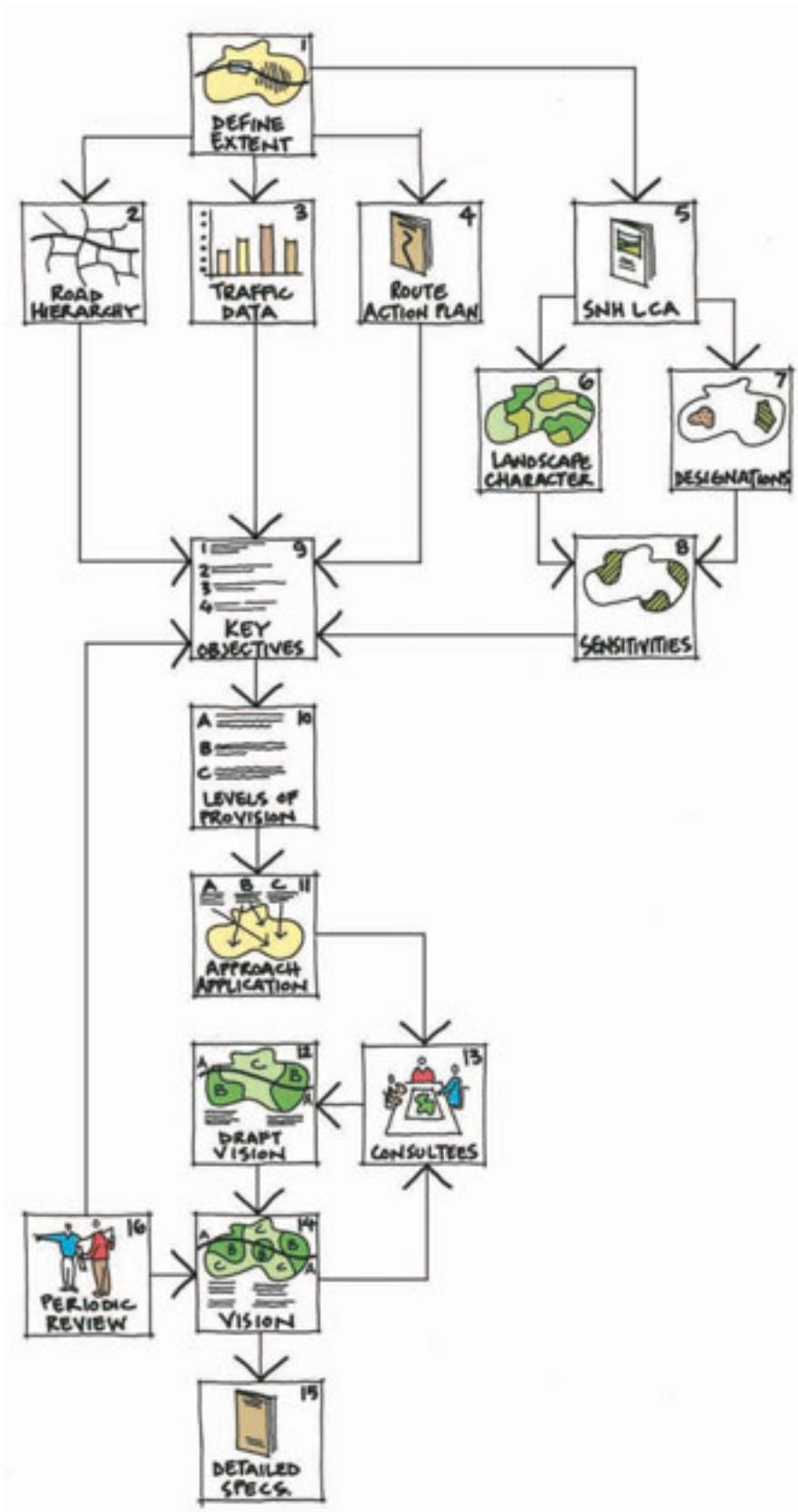
The vision should be accompanied by a map or route plan of the area depicting the application of each level. There should also be a set of specifications for various items of furniture when these are not of standard design; these should also specify where and how they should be used so as to take local circumstances into account.

Where designated landscapes such as National Parks form part of the vision area, they are expected to have a major influence on the scale and type of provision. It may be possible for limitations to be placed on certain types of road furniture or some might be removed, subject to an appropriate risk assessment, so as to enhance or restore its special character. Other agencies besides the roads authority may have an interest in developing the vision in such circumstances.

The vision should be presented in a clear way, illustrating the principles employed. It should be widely consulted upon before being adopted, since the broadest possible support will ensure its wide implementation and acceptance.

In order that the vision continues to work it must be periodically reviewed. It is suggested that it should be assessed in the light of changing circumstances at a minimum of every 10 years to check if it remains relevant or should be updated.

To assist in the preparation of a vision, a step-by-step guide, in the form of a flowchart and accompanying notes is presented overleaf.





Preparing a vision

Background/Data Collection

1. Define extent of vision –
 - area based (e.g. local authority area)
 - part area based (e.g. National Park)
 - route based (e.g. trunk road or primary distributor route)
 - part route based (e.g. A82 through Glencoe).
2. Establish road hierarchy for area/position of route in hierarchy.
3. Establish traffic volumes/types and other relevant information, i.e. types of users, daily/annual flow rates, designated routes.
4. Refer to Route Action Plan if relevant/available.
5. Obtain relevant SNH landscape character assessment.
6. Establish key landscape character boundaries and differences in character, e.g. Lowland River Valley/Plateau Moorlands/Rolling Farmlands, etc.
7. Identify any landscape designations, e.g. National Parks, National Scenic Areas or Areas of Great Landscape Value, etc.
8. Establish sensitivity of landscape to road furniture provisions, e.g. open landscapes with little tree cover or remote areas with limited influence of man would be more sensitive to new road furniture provision.

Vision

9. Establish key objectives for road furniture provision, e.g. conserve unspoilt character of open moorlands/always utilize smallest signs feasible/apply national standards to 'A' class strategic routes.
10. Establish appropriate levels of road furniture provision, probably on 3-level approach for an area-based vision including supporting text.
11. Considering the objectives and functional/landscape context, apply particular levels of approach to the route network.
12. Prepare draft vision statement, i.e. outline in graphic and written terms the aspirations and long-term objectives of the vision.
13. Circulate draft vision statement to appropriate consultees for comment including route managers, area planning officers, SNH local offices, local tourist boards, police, road user organisations (RAC, AA), etc.
14. Finalize vision statement.
15. Develop detailed specifications as to how the vision objectives are interpreted, i.e. what detailed level of furniture provision should be adopted consistently at different levels of the vision to achieve the long-term objectives.
16. Monitor and review vision periodically.



2 Road furniture audit

The completion of an audit can be either an independent activity or an essential element in the preparation and management of a road furniture vision. It can be a means of assessing existing road furniture before removing redundant items, replacing damaged or non-functional elements or providing alternatives to standard road furniture.



a This collection of signs could be improved by simplifying the structure and arrangement and by lowering the overall height to link them visually to the hedge bank and vegetation.

b A number of signs that have accumulated in an ad hoc fashion like this might be identified in an audit to be replaced by a better layout and design.



As part of the vision, an audit is essential for identifying how, where and when aspects of the vision can be achieved. By way of a thorough assessment of the scale, type and location of existing furniture in the area, a baseline can be established against which to set targets for the implementation of the vision. The results of the audit can feed into the preparation of the vision as well as being used to help identify, prioritize and programme measures for implementing it.

A road furniture audit has four functions:

- Removal of unnecessary furniture.
- Replacement of inadequate or inappropriate furniture.
- Provision of new, necessary furniture.
- Support of a road furniture vision.

An audit should include the following components:

- Map-based plans showing all items of road furniture, their type, specification and location in the area or route covered by the audit.
- The existing condition of each item.
- The purpose of the provision.
- An approximate date of installation.
- Who is responsible for the furniture.
- The timescale for its replacement.
- Maintenance requirements and timescales.
- Photographs recording the state at the time of the audit.

Given the type and scale of the information it would be ideal to record the audit data on a geographical information system (GIS) with an accompanying database for ease of access and updating.



For each element or set of furniture the question *'Is this still needed?'* should be asked and answered rigorously. If the answer is *'No'* the items should be placed on a list for removal, with a note of the reasons for redundancy. If the answer is *'Yes'* the next step is to assess functionality and whether alternative means of provisions are possible.

Furniture can be inadequate or inappropriate for a number of reasons:

- It may be in a poor condition due to damage or wear and tear, or be of a design that is considered confusing, out of date or defective.
- It may be poorly designed, badly positioned or redundant in the information it conveys.
- It may be designed and located so that it creates a negative visual impact in its setting.



These signs have developed in an *ad hoc* fashion. The tourist sign is not easy to see and partly obscures the view of the Commando Memorial. The large advanced direction sign breaks the skyline and the sign forbidding parking on the verge may well be redundant. The verge marker posts are also visually intrusive and the roadside edge is worn and unattractive. The following sketches suggest alterations with different implications.



In this option the side road ahead warning sign has been removed. The large advanced direction sign has been reduced in size, lowering it to below the skyline. The tourist sign has also been lowered to prevent it obscuring the monument. However, the verge marker posts, the verge and the tourist sign continue to present an intrusive image.



In this option a new tourist sign that properly conforms to the regulations has been placed beyond the road direction sign, which also removes it from the view of the Memorial. In addition, the verge marker posts have been replaced by reflective studs and a kerb has been installed to tidy the road edge and verge. The effect of the kerb on surface water drainage would need to be considered.



This final option offers a further simplification by placing both signs on a single structure. This increases the height and breaks the skyline but presents a lower impact overall.



It is quite straightforward to use photographs of problem areas and, with tracing paper, to sketch possible options for improvement. Removal or replacement of furniture elements and the design of new signs can be tested both for adherence to regulations, communicability and visual effect.

The solution can mean replacing the item with a new version, providing an alternative or redesigning and relocating it. Several options might need to be considered, especially in a visually sensitive location or where road safety is a particular issue.

New, essential furniture should only be considered at the same time as dealing with redundant, inadequate or inappropriate furniture. The audit may show gaps in provision or new requirements may emerge due to changes to the road system or as a result of undertaking a risk assessment.

The audit is likely to become out of date over time as requirements change. Therefore it would be wise to carry out an overall review every 10 years, as a minimum, to bring the audit up to date. This may be most useful in cases where there is no road furniture vision because, in such circumstances, there is a greater likelihood of *ad hoc* accumulation of furniture with no overall guidance.

6 Choice of Design, Location and Detailed Design Aspects

- Design has to fit the landscape setting
- The countryside has many facets that change with the seasons and through time
- Form and materials need to be chosen to fit into each unique landscape
- Landscapes have their own colour palettes
- In certain situations the use of custom design can be appropriate
- Mixing past and contemporary designs can be a problem
- Sign position and size matters
- Safety fencing should be used judiciously
- Road lighting can attract objections in rural areas
- Many other roadside features besides signs have an impact





1 Introduction

This section looks at the principles of design in the countryside and then explores general issues of furniture design, the location of elements in the countryside and, finally, a number of detailed aspects of design. It is intended to raise awareness of the role of design in achieving an integration of function and aesthetics. It provides practitioners with ideas for using standard elements in ways that are less intrusive visually. It also demonstrates the use of non-standard designs, perhaps developed for a specific location or setting.

An example of a large-scale, open, wild landscape in Sutherland. Human elements such as the croft houses tend to emphasize the scale while features such as the peak of Suilven are major focal points in the scene. Road furniture should be kept to an absolute minimum in this setting and where it is provided it should be positioned and designed with the utmost consideration for the views.



The design of certain elements of road furniture, such as some categories of road sign, has become highly standardized through the application of various national and international regulations and no changes to these are suggested. Other elements, including some types of sign, use standard components in different ways and there are improvements that can be made. In other cases there is much more flexibility, either in the choice of 'off the shelf' designs or bespoke solutions.

2 Principles of design in the countryside

The countryside is an amalgam of the natural processes of geology, climate and vegetation, overlaid by a long history of human activity including settlement, agriculture and forestry.

This scene is typical of Scottish landscapes. Hills form a backdrop but the valleys and glens contain many more features. Trees and woods enclose views and reduce the scale in places while larger scale views are also available. This landscape structure helps to contain road furniture which should, nonetheless, be kept to a minimum.





This agricultural landscape in Orkney is completely open and most elements are man-made using local materials. As a result, certain types of road furniture, such as large signs, would look out of place and would break the skyline. Signs should be kept small, be short and related to existing structures wherever possible.



This is a small-scale, strongly enclosed landscape where the large numbers of trees break up views. The greenery also provides many opportunities to backdrop signs and to reduce the cumulative impact of large numbers of furniture elements.

The way in which people absorb the landscape can be either a simple experience or it can engage the full range of the senses. Various road users travel through the countryside at various speeds. Those in a vehicle are, to some extent, deprived of the full sensory involvement as they are enclosed by the vehicle and generally passing through the countryside very quickly. However, the vehicle user's visual experience may be complemented by the sense of movement, especially on winding country roads, and heightened by the sequential unfolding of different views and vistas.

Varying landscapes have different characters due to the combination of rock, soil, landform, vegetation, land use and building styles. These have been defined for Scotland in the series of Landscape Character Assessments available from Scottish Natural Heritage.

Different places often have a special sense of local distinctiveness. This can be particularly sensitive to change and to the addition of various items of road furniture. The use of local styles and materials should be something to consider in these locations.



- a. In this summer scene the trees, in full leaf, provide a sense of mass and enclosure, screening parts of the landscape. Elements can be more easily blended into the scene at this time of year.
- b. By contrast, this winter landscape, where the trees are leafless, presents a more open, less enclosed landscape. As a result, elements appear to be less tied into the landscape.



The countryside also changes according to the weather and the seasons so that elements can look very different and have greater or lesser impacts, depending on the prevailing conditions. Colours, textures and spatial qualities all vary throughout the year. The sense of enclosure provided by deciduous trees, for example, can change as they lose their foliage and their crowns become 'transparent'.

Good design in the countryside must be based on an understanding of all the influences affecting a particular area. For example there is a marked contrast between a large scale, openly mountainous landscape in the Highlands with its semi-natural moorland vegetation and that of a small scale scene in the Lowlands, where trees and woodland enclose views and the landscape is one of fields, crops and livestock. The same sign used in each situation may have a very different impact.

3 Forms and materials

Compared with the urban scene, the countryside is dominated by a combination of natural and man-made features. These include landforms, rocks, trees, dykes, vernacular buildings and estate structures. Materials are mostly:

- Natural stone – used in walls, on roofs, in dykes or occurring as part of road cuttings;
- Wood – either round or sawn, often in a natural or weathered state;
- Natural or agricultural vegetation – with ornamental plants in villages and gardens;
- Metal – whether galvanized, painted or in a rusty condition;

In this example the materials, textures and colours used in the countryside can be seen: stone, slate, corrugated iron, wood, etc. all blend well together.



These materials have colours and textures associated with them that should be used to advantage. Where possible, furniture (other than road sign-faces that must be highly visible), should blend into the local character by being based on the forms and materials either naturally occurring or traditionally used.



4 Position

Elements should be positioned to minimize their visual impact. One way of achieving this is by locating objects close to existing features such as rock outcrops, trees or bushes so that they do not stand out as prominent silhouettes. If possible, signs should be fixed to an existing structure. It is also worth remembering that signs positioned against the sky may be difficult to read from a distance if the sun shines from behind them. This can be especially so in winter.

In open landscapes where there are few features, emphasis should be given to avoiding elements breaking the skyline, particularly for long stretches of view. Using local variations of topography will help to fit elements into the scene.



Although this is quite a large sign for the scale of the landscape, it has been set against a backdrop of trees which helps to tie it into the scene and keeps its impact to a minimum.



This scene at a junction in the Highlands is spoilt by an uncoordinated mass of signs.



While the whole junction would benefit from rationalization, this option simplifies the layout while retaining the level of information provided.

It could be questioned whether the illuminated bollards are required at all in this location.



The position of different elements near to one another can have unfortunate consequences unless there is a degree of unity between them, for instance similarity of shape, colour, size and spacing. Clustering signs together can reduce the overall impact but produce confusion in the messages. An alternative approach is to separate different parts of a sign cluster to prevent such a cumulative impact.

The signs at this junction to a single track road with passing places present a confusing clutter of elements and messages. The following sketches present some options for providing the same information while reducing the visual impact.



In this option the road direction sign is placed on the side of the road from where the view is taken. The remaining signs are redesigned, re-sited or removed, to avoid unnecessary duplication. The reverse of the remaining signs are painted a dull brown to reduce their impact further.



In this option the impact has been reduced further by combining the 'give way' and weight limit signs into one double-sided structure.



In situations where new or additional elements are to be added to a group of existing furniture the cumulative impact should be evaluated and different options tested. It may be better to amalgamate several signs into one or expand an existing sign to avoid the visual impact of extra elements.

The intervisibility of different elements can affect position, for example where the view of one sign may be blocked by another, or one feature may be seen over the top of another. Sketches, photomontages or computer simulations of particularly complicated furniture layouts should help reduce this type of impact.



These signs are badly positioned so that they screen each other and are difficult to read. The growth of the hedge along the roadside also partly blocks the view. The problem lies in the location of two junctions in quick succession.



This option simplifies the signage by amalgamating most of the information onto one sign.

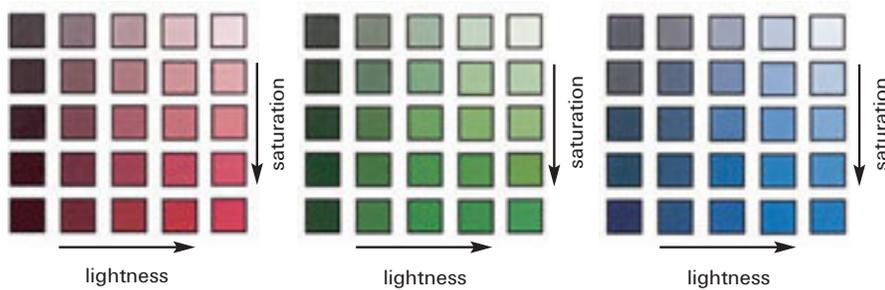


5 Colour

Colour in the rural scene is less diverse and more subdued than in most urban settings. Colour can be described in terms of three components:

- Hue, that is the actual colour (red, green, blue, etc.);
- Saturation or chroma, the strength or brightness of the colour;
- Lightness or value, that is the tone of the colour.

These charts show how a basic colour can be varied in terms of its degree of saturation (chroma) and lightness (value).



Countryside colours tend to be of a limited range of hues – browns, greens, greys, russets, etc., of low saturation (apart from crops of oilseed rape, for example) and of a range of values. The kinds of colours used by the army for camouflage, such as olive green, dark grey, or dark earth, are natural hues that consequently blend easily into our rural environment. Natural rock, weathered wood, soil and vegetation have colours that are associated with different localities depending on the geology, micro-climate and land use. These differences can be seen in comparisons between the red sandstone found in the buildings and soils of East Lothian and the mixed greys of Ballachulish slate or flecked bluey grey Aberdeenshire granite.

Greens are particularly difficult to use in the countryside. Frequently greens are chosen that are too pure, too bright and contain a strong blue component: these are the least suitable. Olives and khaki greens are to be preferred. Other suitable colours are greys, sometimes with a slight purple tinge, rusty browns or grey browns and black (which is lost against dark backdrops). Rusty reds and greenish blues are sometimes acceptable on small buildings such as bus shelters, while there is also a place for occasional spots of bright, primary 'accent' colours such as pillar-box red on post boxes and telephone kiosks.

This chart shows the kind of colours that fit into most countryside situations, in the range of olive greens to reddish browns, earth and warm greys. All are of low saturation and mostly of dark tone.





A scene in East Lothian where the colours of rocks, soil and vegetation are very distinctive and characteristic of the area.



This landscape in the Cairngorms has a very different range of colours in the rocks (granite) and the semi-natural vegetation of heather and Scots pine.



a This safety fence has been painted a dull brown colour, reflecting one of the colours shown as suitable for the countryside. It removes the impact of a bright, galvanized finish.

b This parapet railing, around a culvert, has been painted a very dark green colour, which blends well with the backdrop of trees and bushes in this open, remote, highland landscape.

Regulations relating to consistency and the need for visibility and readability mean that it is not possible to change the colour of sign-faces. However, the use of yellow backdrops and day-glo bend chevrons should be used sparingly or they lose their effect. Elements that do not need to be particularly visible, such as sign supports, balustrades and barriers, safety fences and lighting poles, etc. should all be coloured to blend into the surroundings. There is scope to select colours to match local varieties instead of using standard shades everywhere. Sometimes a natural finish, such as weathered galvanized steel will eventually tone down quite acceptably.



This litter bin, painted a bright pink, is highly intrusive in this rural landscape.



Painting the bin a dark, warm grey dramatically reduces its impact.



6 Standard versus custom designs

There are arguments for using standard designs for signs and other elements from a point of view of cost and familiarity to road users. Their use is only to be questioned when their design and siting causes visual problems. In other circumstances, such as where there is a strong local sense of place in a small-scale landscape, there can be a case for using custom designs to fit the special qualities. There are not many examples on the road network, but agencies such as the Forestry Commission and Scottish Natural Heritage have used their own designs, often with local variations. Operators of tourist establishments are often keen to use their own designs. While such signs are normally outwith the road boundary, they are often part of the road corridor landscape and may create visual impact or affect safety.

- a A customised design by Scottish Natural Heritage. This lies outside the road boundary, but is seen as part of the roadside landscape by travellers. It succeeds in advertising the nature reserve while reflecting the character of the scenery.
- b An example of a Forestry Commission sign, also outside the road boundary, which combines corporate identity and standard components with a reflection of the local landscape and the use of colours that fit well into the countryside, especially the forest.



While most road signs may offer few opportunities for custom design, many other elements such as tourist trail signing, bus shelters, litter bins and village gateway features provide ample opportunities. Aspects to consider include:

- General form, size/scale, style;
- Materials, colours;
- Identity such as logos or coats of arms;
- Lettering, information symbols.

This customised design for a village gateway incorporates both a unique emblem and the standard 30mph roundel. The resulting structure sits well in the landscape, positioned against a small knoll with trees behind.



Examples from other countries show how wood can be used to clad metal safety barriers reducing their visual impact without affecting their performance. Wood can, in fact, be used for signs under the Traffic Sign Regulations and General Direction, but is little used, perhaps due to maintenance concerns and safety. More use of wood is to be encouraged, especially in forest/wooded landscapes where wood is commonly used for fences, buildings and other structures. Current regulations do not permit the use of new wooden fences within 2 metres of the roadway. There are concerns about safety if wooden structures are hit by vehicles and shatter into splinters, so the location of wooden structures needs careful consideration.

While customized designs are to be encouraged, such designs should not be over-elaborate. Simplicity is better than fussy solutions, although a light-hearted approach to graphics may have a place from time to time. A road furniture vision is an ideal tool for establishing the place, design and extent of custom designs.

7 Traditional road furniture

The design of road furniture has evolved over the past century to meet the changing circumstances of road use and the network, resulting in a wide range of styles. Traditional road furniture can often contribute to local character, for example in the case of finger posts or milestones.



To reflect the value of traditional road furniture the following principles should be followed:

- Wherever possible retain and use traditional elements, restoring damaged or worn parts such as broken finger posts. This is most relevant on country lanes where concerns over the readability of signs may be less important because the road user has more time in which to assimilate the information.
- Avoid combining traditional signposts with modern components as these are rarely compatible.
- Do not retain the old signs while erecting new ones nearby. This produces too much clutter. Either re-use the old ones or remove them and replace with the new.



This customized sign, advertising a hotel, uses a fussy typeface that is difficult to read from a moving vehicle. The blue colour is also out of keeping with the wild setting.



- a This example shows a new sign alongside an intact traditional fingerpost sign. If the road is a quiet country lane it might be better to repaint and restore the old sign rather than replace it. If it is not appropriate to restore or keep the old sign it should be removed to reduce the amount of clutter.
- b This unfortunate combination of a traditional finger post with a modern sign element shows the problems of trying to combine the two.
- c This example at a junction of quiet lanes shows that the traditional style complements the landscape while remaining functional. It is also well maintained.



This sign located out in the countryside brings a fussy, urban quality with it. Since there is no strict rule governing its location, it would be better placed nearer to a settlement or built-up area.

- a This sign at the approach to a junction is well 'backclothed' by vegetation but is also quite large in scale for the landscape.
- b Painting the supports a dark tone helps it to appear to 'float' in the scene, which reduces its impact.

8 Signs

Traffic signs are the most numerous type of road furniture found in the countryside and have the potential to create visual effects almost everywhere. When considering signage provision the following principles should be applied:

- 'The fewest possible signs of the smallest adequate size in the clearest and simplest form' – Dame Sylvia Crowe, 1955 (as relevant today as then!)
- Signs should appear to 'float', through the appropriate design of supports, the use of backdrops and colour.
- Increasing the number of signs at a hazard can cause more ambiguity and confusion without solving the problem.



Once it has been established that providing one or more signs is the best solution, detailed consideration needs to be given to position, height, number, size, and fixing. Guidance on position has been given earlier in the section.

The mounting height of signs and position are closely related and should be considered together. Generally, signs should be as low as possible, the range of 900mm to 1500mm from ground level to the lower edge of the sign being optimal (where cyclists or pedestrians do not pass under the sign). The advantages and disadvantages of this are:

Advantages:

- Reduced visibility of the supports.
- Greater chance of the sign being set against a backdrop.
- Lower chance of the sign breaking the skyline.
- Less likely to be seen by non-road users outwith the road corridor.
- Best level of visibility relative to drivers' eye height and headlight level.
- Less use of materials in foundations and support posts leading to potential cost savings.

Disadvantages:

- Forward visibility for drivers may be reduced.
- May form a barrier to pedestrians.
- More chance of being covered in salt spray and mud, especially on the outside of bends.
- More chance of being obscured by vegetation.
- Stationary vehicles may hide the sign.



a This sign is unnecessarily tall for its location.



b This option shows how lowering it reduces its impact while retaining its function.



c A further option reduces both the height and size of the sign, while providing adequate information. The safety fence can also be removed since the diameter of the posts has been reduced.



The number of signs can make a large impact. Having many signs in one place can be ineffective, create ambiguity and confusion for drivers and look visually intrusive. Good positioning is more important than quantity. Two signs that are poorly positioned can be less effective than one that is well positioned. Drivers can only absorb a limited amount of information while moving, so overload can lead to confusion and the possibility of drivers executing dangerous manouvres, thus it is better to provide fewer signs of better quality.

- a This example shows the impact of an accumulation of signs.



- b Rationalizing the signs and revising the way the messages are presented has resulted in a simpler, less cluttered set of signs which are easier to understand and less intrusive in the landscape.

A further improvement would have been made if the three individual tourist signs had been grouped together to match the brown sign of the left.



There are ways to reduce the number of signs currently in use:

- Paired signs, where the same sign is repeated on both sides of the road, should only be used where special circumstances demand it. The regulations generally allow one sign only to be used as long as it is positioned to be properly visible.
- Impact signing, where multiple signs are used to convey a single message, is a dubious practice and sets a bad precedent. It is expensive and, if over-used, its effectiveness is reduced. Impact signing needs special consideration whilst other means such as carriageway marking may be as effective while having less visual impact.
- Where several potential problems occur at one location, large numbers of hazard signs can be confusing and less effective than a single, well designed and positioned sign and can deflect attention from the real problem.



- In terms of their relative positioning, signs should be separated as far apart as possible so as to be read more easily. Stacking many signs together may reduce the overall number and the extent of area affected, but shape, size and colour must be coordinated to reduce a cluttered appearance.
- Over-use of particular warning signs reduces their effectiveness and increases visual impact. The Traffic Signs Manual 2004, Chapter 4, expressly advises that warning signs should be used sparingly to maintain their function.
- There currently exists a plethora of unauthorized and out-of-date tourist signs that should be removed or rationalized. The new Tourist Signposting Policy, to be published by Transport Scotland in summer 2006, will provide a framework for better and more consistent tourist signing, which should help reduce clutter in the countryside.

- a The use of paired signs such as this must be very carefully considered. If one of these were to be removed, what difference would it make to safety? The visual impact at this point would be considerably reduced. As it happens, in this case the signs have reduced accidents, so their use may be justified and the intrusion on the scene acceptable – but could it have been done differently?
- b These impact signs present a high degree of visual intrusion and may overstate the degree of risk. Their over-use may also be counterproductive in terms of reducing accidents – their continued presence should be reviewed in the context of any subsequent improvements to the road network and in accordance with the relevant road furniture vision.



- a This stack of signs of different purpose and colour has become cluttered.
- b This option simplifies the design and clarifies the messages.

The size of signs seems to be increasing as a method of emphasizing new installations. This is counterproductive, reducing the effectiveness of existing signs and setting an unnecessary precedent. Such signs can have a large adverse impact, especially in small-scale landscapes.



This sign, at the approach to a roundabout where traffic is already slowing down, could be considered unnecessarily large for the scale of the landscape and the amount of information it presents.

The juxtaposition with the telephone post is also unfortunate.



This sign has two poles and a backing board that help to increase its impact in this small-scale landscape. The two fixings help to prevent the sign turning in strong winds. A simple triangle sign could, however, be mounted on a single square section pole instead.

In all cases the size of signs should be kept to a minimum. Normal practice should be to size signs according to the 85 percentile speed of vehicles as opposed to the legal speed limit. Where road geometry reduces the speed of traffic, signs can be smaller while remaining effective and reducing the visual impact. This approach is recommended in the Traffic Signs Manual, Chapter 1. The position of the road in the route hierarchy will also influence sign sizing.

Where a smaller size than the regulations normally permit can be justified on functional and aesthetic grounds and this can be supported by an appropriate risk assessment, it may be possible to obtain special authorization from the road authority.



This sign, with one pole and no backing board presents a lower visual impact.

Sign design may be manipulated in order to reduce its size or change its shape, although any flexibility to do so is directly related to the actual site conditions and type of information to be provided. Map type signs, though they are better understood, generally produce much larger signs.

Fixing signs may seem a minor detail but it can have an affect on the appearance and visual impact of the sign. The following principles should apply:

- No part of the supporting pole should protrude above the top of the sign except to support a light.
- Cantilevered signs look awkward and should be avoided if at all possible.
- One pole is preferable to two or more where functional factors such as strength of the sign in high winds allow. It is also cheaper. Square section poles are stronger and better able to be used singly although their flat faces reflect more light and are consequently more visible than round section supports.
- Back-to-back signs are to be encouraged to cut down on the number of individual installations, but they should be designed as a set so that no part of the rear of one can be seen.



The use of a yellow backing board undoubtedly increases the visibility of this sign but also adds to the visual intrusion. Such signs should be used very sparingly, both to retain their impact and to

reduce visual intrusion. The supporting poles should not, in any case, protrude above the sign board.

- Backing boards should be used sparingly; over-use reduces their effectiveness.
- While grey is the commonly used colour for poles and the back of signs, other colours, such as dark olive greens, some browns or darker greys, might be more appropriate in some settings, depending on the local colour palette – this would allow the sign to appear to float more easily. Wooden poles should also be considered for use in the countryside, where safety considerations permit, either left to weather naturally or stained a suitable colour.
- If a sign location allows it to be fixed to another structure this should be encouraged, as long as it is visually appropriate. This may also be cheaper.

Recent amendments to the regulations governing post diameter size have reduced to 89mm the dimension above which a safety barrier would be required around the installation.

This makes it even more important that careful consideration is taken when determining the level, design and positioning of some elements of road furniture in order to avoid, where possible, the additional impact on the receiving landscape of excessive lengths of safety barrier.

For existing elements of road furniture where the post size falls outwith the new regulations and there is currently no associated safety fencing, any retro-fitting of such protection should be undertaken by means of a risk-assessment approach, taking account of the specific location involved, a cost-benefit analysis and a thorough consideration of the surrounding landscape.



- a The grey backs of these signs stand out in the scene because they are too light.
- b This adjusted image shows how a lower visual impact could be achieved by using dark olive green instead of light grey.



- c This sign has been mounted on a lighting standard, thus removing the need for another pole to be erected.
- d This small sign is mounted on two poles when it could just as effectively be located on the back of the larger sign behind.



- a This recently erected Advanced Direction Sign illustrates the large size and potential visual impact of a bilingual sign. A reduced x-height and a re-design of the sign face would have helped reduce the impact.
- b The requirement for bilingual replacements would have offered an ideal opportunity to rationalize all the signing at this awkward junction as well as integrating the tourist sign. In both this and the example above, the supporting poles are too long.



This Route Confirmatory Sign has now been replaced by a bilingual sign.



The replacement sign has used the same x-height letters and has included each place name in both English and Gaelic resulting in a sign that is 90% larger than the original.



By reducing the x-height in line with the regulations, and by not including English place names that are easily recognisable in Gaelic, the same sign could have been limited to being approx. 35% larger than the original.



The use of bilingual signs on some west highland trunk roads has now been approved by the Scottish Executive in recognition of the importance of the Gaelic language as part of Scotland’s cultural heritage and in support of present day Gaelic-speaking communities.

The practice of showing each name in two languages will clearly have an affect on the size of signs on the selected routes and this, in turn, will increase the potential visual impact on the adjacent landscape. In addition, an increase in sign size will, in some cases, require the erection of new safety fencing which will further increase the impact on the environment.

It is vital, therefore, that those involved in the bilingual signing programme take full cognisance of the flexibility within the design rules when considering the plate-design. Of particular importance is the siting criteria and the permitted variations in x-heights (lettering size). If the lettering remained at the same size as the existing sign the plate size for a replacement bilingual sign would increase by 90%, whereas if x-heights were minimized (in accordance with Local Transport Note 1/94) the bilingual sign would be 50% larger than the existing. This increase in signplate size could be further reduced if any English place names easily recognisable in Gaelic were omitted. Such a reduction in lettering size would also deliver a considerable saving on the cost of a replacement bilingual sign.



This shows a very long length of continuous safety fencing which, while necessary, also has a visual impact on the scene beyond. The impact could be reduced by painting the fence a duller, more neutral colour.

These are examples of different designs and treatments of safety fence:

- a Box beam, here painted black and white to emphasize the corner.
- b Corrugated beam, here interrupting the view and silhouetted against the water.
- c Wire rope safety fence, frequently a more “transparent”, less intrusive option, which presents less of a visual barrier.

9 Safety fences

Safety fencing is provided to protect road users, infrastructure and property belonging to adjacent third parties. Vehicle containment can be important for reducing injury, as well as limiting risk and damage to adjacent buildings, people and other infrastructure.

Long stretches of safety fencing can detract from the visual appearance of the road while increasing the visual impact of the road on the surrounding landscape. It can also block out views from the road and make travelling in a vehicle a monotonous experience. Conversely, random short sections can be visually disruptive. Safety fences should be planned with safety, cost and visual appearance in mind.

Various types of safety fencing are available, each having different constraints on where it can be used. There are also specific requirements for its location and construction such as distance to be set back from the road edge, clearance from objects and minimum length needed for functional purposes. It is important that function is appraised together with the cost and visual appearance of each option before a final decision is made. Safety fences also need to be coordinated with other elements of road furniture.

Safety fencing is often used because of space constraints and the desire to reduce the overall footprint of the road, thus bringing obstacles such as signs closer to the traffic. The design process should be used to find the least obtrusive solution that is practical and cost effective.

On new roads or stretches where reconstruction is underway it may be possible to reduce major embankments to less than 6 metres, the critical height at which safety barriers are normally erected on straight, or nearly straight sections of road (the figure can be lower for curves or where additional protection is required). This is in keeping with the approach in Fitting Roads, where more flexible guidance on alignment design is promoted.

Long stretches of safety fence can be visually intrusive and should be avoided if possible. At the same time, however, intermittent lengths of safety fence concentrated over a particular stretch of road can also be visually detracting. A balanced approach is required, taking full consideration of the surrounding landscape and the views from the road but without comprising driver safety.



This sign with large diameter posts is close to the road, requiring a stretch of safety fence to be erected, thus adding to the visual intrusion of furniture along this section of road.





a



b

- a This example shows how the narrow space between rock cut and roadway has resulted in the need for a safety fence that reduces the unity of road and landscape.
- b In this example the cut and fill of the road has been generous enough to obviate the need for safety fencing, resulting in a better visual appearance.

A design for sign supports using a lattice construction, which collapses if hit by a moving vehicle, thus presenting less risk of injury and removing the need for a safety fence.

Whilst the lattice construction is more translucent than a "solid" pole it could be argued that it also has a more inherently urban feel and will not be suitable in all situations. Their use is also restricted where displacement of the detached sign or posts is likely to affect an adjacent carriageway or footway thereby representing a secondary risk to the public.

Potential hazards likely to need safety fencing should be identified at an early stage in road alignment planning and, if possible, adjustments made to avoid direct impacts. This might involve extra landtake or have consequences for severance issues, so a balanced view should be taken. A risk assessment would help to define those cases where safety fencing must be installed.

On curves of less than 850m radius, or embankments, the risk of traffic leaving the carriageway should be assessed. On many single carriageway roads the criteria used to control curvature, in relation to speed, are comfort of travel or driveability, so the use of curves of this order should not have a significant impact. Thus, there are circumstances where safety fences may be unnecessary. Each case should be considered separately in the light of local conditions.

Bridge piers, abutments, large diameter traffic supports and other sizeable elements of road furniture may pose a personal injury risk to road users and significant financial liability to the road authority in the event of a vehicle impact. Where space is available such elements should be positioned outside the zone of possible impact. Once again, a balance of considerations is needed to ensure the effectiveness of the particular element is not compromised. More aesthetically acceptable options may include the development of 'soft zones' to trap and stop errant vehicles, though there are maintenance implications with this approach. An example of this kind of solution is to infill rock traps with soft peat and avoid a safety fence altogether.

In order to avoid the need for safety fences around traffic signs, posts of lattice construction could be used. These are designed to shear at the base if a vehicle collision occurs, thereby reducing the risk of serious injury to the driver and any passengers. Whilst such "passively safe" signposts are clearly more transparent in appearance they also present an inherently urban feel and will not be suitable in all situations. Other similar products, manufactured from fibre-reinforced polymer composite, are now available for sign/lighting supports which provide the same safety benefits as the lattice construction but which appear more like traditional, solid posts. This design is more likely to suit the characteristics of most rural road corridors, particularly within the more sensitive landscapes.



10 Lighting

Road lighting is used as a safety measure to reduce accidents and also for amenity purposes. The need for it is determined by cost benefit analysis which compares the whole life cost of provision with the benefits accrued from accident reductions. Lighting in the countryside is generally limited to isolated locations, sometimes being installed at accident blackspots. Road lighting at roundabouts is regarded as an essential safety measure.

Lighting can be visually intrusive in rural locations, by both day and night. Light pollution in rural areas can adversely impact upon its character. As part of the road design, alignment options should be examined, with a view to choosing solutions that avoid the need for road lighting. If unavoidable, the most appropriate form of lighting that balances function, visual impact and cost should be selected. The aim should be to minimise the amount of light pollution.



As well as road lighting, many traffic signs are illuminated, resulting in further light pollution and increasing the intrusiveness of the sign. The current widespread practice of making signs from highly reflective materials that need no associated lighting is ideal. Generally, an audit should be undertaken to ensure that traffic signs are illuminated only where it is considered an essential requirement.

If possible, road and traffic sign lighting should be coordinated, so as to ensure the least level of provision consistent with meeting appropriate luminance levels.

Road lighting types should be selected to take account of:

- Luminance level and uniformity requirements.
- Glare control requirements.
- Special light control in the vicinity of locations such as navigable waterways, railways, environmentally sensitive areas, conservation areas, docks, astronomical observatories and areas where 'light spill' may be unacceptable and visually intrusive.
- Visual appearance by both day and night.

The performance of lighting systems relates to the type and height of columns, the distance they are from the carriageway, the lantern type, angle, projection and maintenance. These elements also influence the visual effect of lighting.



These lighting columns, along a stretch of road leading into a village, spoil the view of the hills beyond. If lighting is needed, perhaps fewer and lower columns should have been used instead.

Visual pollution created by lighting in a rural location.



These lights of a very urban design along this rural road look completely out of place.

These signs have been illuminated with two light fittings mounted above them. The current practice of using reflective materials on the surface of the signs would mean that the lights could be removed.





Current advice suggests that lighting should be provided where safety is anticipated to be an issue. Typical locations include junctions (especially roundabouts), lengths of road with poor geometry, short lengths between lit sections, and inside underpasses or bridged sections. Locations prone to fog may also require to be provided with lighting. In all cases, before a decision is made to provide lighting, all relevant functional, economic and environmental issues should be considered and balanced. In remote rural areas where traffic volumes are low, lighting may not be justified if safety concerns are not a major issue.

The designer should adopt the following principles to minimize the need for intrusive lighting:

- Select alignments that are uncomplicated and obvious to road users, without the aid of road lighting, where possible.
- Design the most appropriate form of lighting giving due consideration to function, economics and the environment. It is important that whole life costs are considered.

This use of low-level lighting along the bridge provides effective illumination while significantly reducing visual impact to the scene.



The alternatives to providing lighting are limited. There may be situations where objective analysis or a risk assessment shows that any possible negative results of omitting lighting can be reduced, for example, by using reflective signs and road markings to help to improve the definition of the road layout. Future technological improvements to the reflective characteristics of materials may enable these methods to be used more widely.

Lower level lighting should be used where taller columns have a visual impact on nearby houses or on significant views. Their choice should be balanced against the need for more shorter columns or lighting bollards in order to satisfy the required luminance criteria. Also, there may be situations where a reduced visual impact results from using a single large lighting mast instead of a number of standard height columns.

Layout improvements at junctions may be better at reducing risks at accident blackspots, compared with simply illuminating the existing layout.

11 Variable message signs

Variable message signs are being increasingly used on roads to provide motorists with a variety of information about their journeys, such as warnings about traffic problems or weather hazards ahead. However, some examples present a visually unbalanced form, a massive support base and an over-large scale. This gives them a dominating presence demanding special care in their positioning to minimize their visual impact.

The location of variable message signs on the network does not fall into the scope of the regulatory requirements of other road signs. The information they provide is not usually related to the road layout but to other aspects of road use and the inter-relationship of various routes and junctions. Thus it should be possible to find the optimum location so as to minimize the visual impact, especially in remote, open or small-scale landscapes. Perhaps, in certain situations it may be possible to erect these signs on existing structures such as bridges or gantries. If they have to be free standing they should be sited with a backdrop of local landform or trees and be prevented as far as possible from being silhouetted against the sky, especially on north-south alignments. In the long term, work is being undertaken to consider more sympathetic variable message sign design and looking at other ways of passing on the information they display.

- a This variable message sign is mounted at a low height and is 'backclothed' by the trees in the middle distance so that its visual impact is reduced.
- b A larger example of a variable message sign on a taller post that stands squarely against the sky where its silhouette causes quite a serious impact in a small-scale landscape.



12 Verge marker posts

Verge marker posts are used to emphasize the road alignment or to highlight particular hazards alongside the road. However, it is important to ensure that their use is based on a consistent approach in relation to different levels of hazard along a route. If verge marker posts are used too frequently, drivers may falsely assume that stretches of road without them are completely safe.

In many cases, verge marker posts are being overused, resulting in long stretches of them, which can be visually intrusive, expensive to install and create problems for verge maintenance operations.

A thorough evaluation of the need for, and function of, verge marker posts should be undertaken to ensure that their introduction is fully justified and forms part of a consistent response to highlighting potential hazards.



The large numbers of verge marker posts have a considerable visual impact in this small scale rural landscape.

13 Bus shelters

Standardized bus shelters used in urban areas are usually unsuitable for use in the countryside because they are generally very urban in character and in any case may not provide adequate shelter in more exposed areas. Styles of shelter more suited to rural environments should be developed to fit into different types of countryside landscape. In some locations bespoke designs may be needed for particular local settings.



This glass and steel bus shelter of urban design looks completely out of place in this remote, open landscape. Its position on the edge of a steep slope also serves to increase its intrusiveness.



A design for a bus shelter that fits into the rural scene well, in terms of its proportion, and the use of colour and materials.



A good example of a seat at a lay-by constructed from squared timber and local stone, incorporated into the hillside.

A stone structure, which has become part of the landscape, used to support an interpretative panel at a lay-by.

Shelter designs should be simple and unobtrusive, using locally available materials such as stone or timber. Profile steel sheeting is also a suitable roofing material. In some situations, glass shelters may increase the feeling of personal safety of people using them and so may be the most suitable solution, depending on the setting, although most tend to have an urban character. Distinctive designs responding to local characteristics in terms of form, material and colour are to be encouraged. In certain circumstances, for example, a shelter can be formed by using appropriate complementary material to adapt an existing wall, thereby negating the need to install a completely new structure. Colours should follow the guidance described above, although some brighter 'accent' colours could be adopted to highlight parts of the structure.



14 Interpretation signs and other local elements

Elements of road furniture that provide interpretation of local features of interest are gradually appearing on the rural road network. There are also other elements such as seats, tables and litter bins at rest sites and lay-bys.

In rural settings, there is no technical, economic or visual justification for using standard products, which usually have little relationship to the site under consideration. Locally appropriate designs can be developed using typical materials without costing any more than standard products.

15 Snow poles

Snow poles are commonly used in Scotland to demarcate the edge of carriageway in locations likely to be affected by snow and other wintry conditions.

Due to the considerable annual cost associated with the seasonal removal and repositioning of the snow poles, current practice is to leave them in place throughout the year. However, these poles can result in a significant visual intrusion which is particularly noticeable during the summer months when there is no discernable need for their presence within the road corridor.

In view of the financial considerations involved perhaps a sensible compromise would be to identify the more sensitive landscapes affected by this issue and target roads in these areas for removal of snow poles during the summer.

16 Telephone kiosks

Telephone kiosks are generally located where there is a specific need and, therefore, their detailed siting has not always been fully considered in relation to their surroundings.

There is a range of different kiosk designs which have been used in rural settings over the years. In some places, the traditional red kiosks are being phased out and replaced by more contemporary styles of urban materials and finishes which often appear out of place in the countryside. In some relatively undisturbed rural locations, the traditional red kiosk is a valued part of the local character, and is sometimes listed. Designs of primarily glass construction, which are visually less solid than other styles, can sometimes be absorbed into rural locations as long as there is a strong small-scale landscape structure to contain them, although lettering and graphics of bright primary colours can often be intrusive.

Siting telephone boxes in open landscapes, especially remote and wild ones, can be difficult if there are no features such as walls or trees to set them against. Boxes seen against the skyline are particularly awkward. The best method in most landscapes is to ensure that telephone boxes are set against buildings, walls, clumps of trees or other structures that enable them to be tied into the scene.



Red traditional telephone kiosks have become an established part of the landscape.



This standard, modern steel and glass telephone box looks completely out of place in this remote, wild landscape. It would be better positioned against a backdrop such as a stone wall or larger clump of vegetation.

17 Control pillars and cabinets

Although these are relatively small elements, control pillars, traffic monitoring units and other service boxes can be prominent in the road corridor if not well designed and positioned. In order to minimize the visual effect of these elements, the following principles should be adopted:

- Wherever possible, site pillars at the back of the road verge where they can more readily be set against a backdrop. Isolated pillars in the middle of the verge have a greater visual effect and are more dangerous.
- Use a wall, hedge, fence or other vegetation as a backdrop, setting the finished height of the pillar at or below its top.
- Match the colour of the pillar to the backdrop, in the case of walls and fences, or to the tones found in the landscape, so as to reduce its visual prominence.
- If possible, use or develop a design for control pillar of predominantly horizontal form rather than vertical. Being shorter, the horizontal form should have a lower impact.



These control pillars are painted a dull grey which matches well with the stone wall behind.



By contrast, no attempt has been made to integrate these utility plant marker posts with the road landscape.



A simple solution to a potentially clumsy detail for joining a safety fence to a bridge railing.



A well executed junction where the stone pillar connects the wall and fence simply and unobtrusively.

18 Junctions between elements

There are many situations where different elements of road furniture join together, for example safety fences and bridge parapets. In such circumstances individual consideration should be given to forms, materials and colours to be co-ordinated.

Consideration should be given to the following issues:

- Always use simple solutions based on careful attention to detail. Fussy and complicated solutions are inappropriate in rural settings.
- Co-ordinate the form, texture and colour of materials used in the different elements.
- Pay particular care to ensuring that horizontal and vertical elements are properly aligned to produce a clean, crisp and neat result. Horizontal alignments, for example where a safety fence connects to a bridge parapet, are important to ensure visual continuity.
- Scale, height, form and depth of the different elements to be connected also need to be considered. In some situations, specially designed fixings may be needed to achieve a satisfactory visual appearance.

19 Maintenance issues

Maintenance of vegetation. There are many situations where vegetation either fully or partially obscures road signs, so that they fail in their purpose of providing warning or information to drivers. Since vegetation, such as trees and shrubs, is continually growing and increasing in stature, new signs should be sited to take this into account to avoid future problems.

Any pruning or trimming of vegetation should be undertaken following good arboricultural practice. Sometimes removing the vegetation may be the most appropriate solution, although other options should be considered before doing so. Where the vegetation is a valuable feature of the landscape it may be better to move the sign instead, perhaps only a few metres.

Redundant poles. These are scattered throughout the countryside and frequently detract from the visual quality of the surroundings. They may also be hazardous to road users.

While it is unlikely that a special programme to remove redundant poles will be economic, there may be opportunities for work teams undertaking other operations to remove them when working nearby.

Where redundant poles or complete signs are to be removed, it is preferable that the whole structure, including the foundation, should be uplifted. It is acceptable for the foundation to be left in situ but only when it is completely underground. If the foundation is to be left on site the redundant poles should be cut off flush with the concrete surface so that no part protrudes above ground where it could create a maintenance problem and a potential hazard to road users.



This pole has clearly not been used to support a sign for some time. Such redundant items merely clutter up the countryside and should be removed.

7 Application of the Approach

→ Existing situations

→ New roads





This section aims to briefly integrate all the guidance given previously and present the ways in which it should be adopted in different circumstances. There are two main circumstances to examine: existing situations, where the main issues are management of, and additions to, current road furniture, and new roads, where a completely new package of furniture is needed.

1 Existing situations

Following a request for a new item of road furniture, or changes to the existing provision, a rigorous and thorough examination of all relevant issues should be made before considering the detail of design and position. As part of this examination, it may also be appropriate to review existing furniture provision more widely. It is acknowledged that there will often be financial constraints affecting the decision to rationalize road furniture in any particular location. However, where planned maintenance operations are programmed there may well be opportunities to capitalize on this investment and include a review of the road furniture provision at the same time.

An initial assessment of need should be undertaken, based on an analysis of the local context and, if necessary, a risk assessment. This process should demonstrate that the need is, or is not, justified and record it for future reference.

Where a road furniture vision has previously been prepared, an assessment of the current state of road furniture should be undertaken to compare it with the vision. Any new or changed provision should be made to comply with the vision.

The road furniture audit, if one has been completed, should be used to evaluate the effectiveness of the existing furniture. This assessment should be used to help in checking that the proposed new furniture or the changes to the existing furniture are warranted as part of the overall pattern of provision. This might identify other improvements or suggest that with other changes the proposed new furniture might not be needed.

Once the need and the appropriateness of road furniture provision have been established, the proposed location should be visited and appraised. The setting for the furniture, existing signs and other objects, localised landscape features and potential sites should be evaluated. The information obtained in the appraisal should be used to identify the final choice of site and to develop the detailed design to balance the traffic management or other needs with the visual considerations using the full flexibility contained within the relevant rules and regulations.

It is fundamental to the future environment of our roads that no part of the process of road furniture renewal and rationalization is left to chance. This includes ensuring that construction work is carried out as the designer intends.



2 New roads

The Fitting Roads Approach, which provides guidance on route option assessment and the detailed design of road improvements in rural areas, includes the consideration of landscape context as part of the process.

With new road schemes, the consideration of road furniture should not be left until after the main design decisions have been made. It should be an integral part of design and considered at an early stage in the process.

With all new road schemes, the aim should be to provide the minimum amount of furniture consistent with the safe and efficient operation of the road. This objective should be borne in mind throughout the main design decisions. An analysis of the range and type of provision on adjacent sections of road should also be undertaken and considered when determining the appropriate level of furniture provision. Decisions on route alignment, horizontal and vertical geometry and earthworks can have a direct effect on the level of furniture provision required for different scheme options.

In developing the amount and type of furniture to be provided, a road furniture vision should be used. An audit of the surrounding road system, should also be referred to, as existing furniture may need to be changed. For locations where it is considered potentially severe hazards exist, an appropriate risk assessment procedure should also be followed to identify options for the precise level and type of provision.

It is important to remember that the overall level of furniture provision has a strong influence on the character of a new road and its impact on the local environment. The emphasis should be to use geometry, surfacing and road markings and studs, assisted by roadside landscaping that can be easily read to guide drivers, rather than relying too much on furniture. Early consideration of the location, type and form of furniture in relation to road layout and local character needs to be undertaken.

In order to demonstrate that furniture provision has been fully considered as part of the overall design process, the position of each element of road furniture, with notes on its detailed design, should be included on, or compared directly with, the proposed landscape drawings, indicating its relationship to other design elements. A written statement should outline the rationale for the extent and type of road furniture being proposed.

Once road construction has been completed the detailed siting of each element of furniture should be assessed on the ground and any adjustments made once the actual setting can be seen. Again, no aspect of road furniture provision should be left to chance. Only by such an integrated 'total' approach can the visual environment of our roads be protected and enhanced for the enjoyment of all.



8 Appendix

→ References and further reading





APPENDIX: References and Further Reading

Roads, Bridges and Traffic in the Countryside – A Review for Discussion – The Scottish Office 1992

Fitting Roads – The Scottish Office 1997

Rural Road Hierarchy and Lorry Routeing – The Scottish Office 1997

Design Manual for Roads and Bridges – various volumes – Overseeing Departments

Traffic Signs Manual – HMSO (latest edition)

Traffic Signs Regulations and General Directions 2002

Road Lighting and the Environment – Department of Transport

Guidelines for Rural Safety Management – Institution of Highways and Transportation 1999

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Roads in the Countryside – Countryside Commission

The Cluttered Countryside – Council for the Protection of Rural England

Landscape Character Assessments (various) – Scottish Natural Heritage

SODD Circular 27/95 ‘Tourist Signposting’

Local Transport Note 1/94 – July 1994

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