

# Environmental Handbook



2010



# Foreword

Roads Service is the sole road authority in NI with responsibility for a network of just over 25,000 km of public roads, 9,000 km of footways, 5,800 bridges, 263,000 street lights and 370 public car parks. Our aim is to ensure the provision of a safe and effective road network throughout Northern Ireland, recognising the need to protect the quality of the environment. Our main functions are to:

- Maintain the road infrastructure to keep it safe, effective and reliable;
- Improve the Strategic road network;
- Manage the road network to promote its safe and efficient operation; and
- Deliver quality services for our customers and our stakeholders in a fair and equitable way.

We must exercise our responsibilities with a firm commitment to environmental management and environmental legislation. Every aspect of our work impacts on either the natural or the built environment.

In Roads Service we encourage our staff to practice good environmental design and management of the public road network, respecting the special character of each individual location.

Previous versions of the Roads Service Environmental Handbook were produced with the help of professional environmental advice and after much consultation both within Roads Service and with Environment and Heritage Service in 1998. Version three is an electronic document and builds on the good practice introduced in previous versions and also advice from the Northern Ireland Environment Agency and the Department of Agriculture and Rural Development.

I am confident that in the course of their work our staff are sensitive to the needs of the environment. This electronic Handbook will maintain our awareness and practices in this important area.

**Bob Cairns**

Director of Engineering.



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## Acknowledgements

Version three of the Roads Service Environmental Handbook (2010) builds on the achievements of Version one and Version two printed in 1998 and in 2001 respectively

Version three has been produced by Roads Service's Engineering Policy Branch, in consultation with the Northern Ireland Environment Agency and the Department of Agriculture and Rural Development for Northern Ireland.



# 1.0

## Introduction

Roads are a vital part of our landscape and every road impacts on the countryside or built environment through which it passes. Roads Service encourages good environmental design and management of the public road network, respecting the special character of each individual location.

Roads Service seeks to ensure that, where possible, its activities are compatible with sustaining Northern Ireland's many environmental assets, including natural habitats and species, the landscape, built heritage, air and water quality.

This handbook helps to identify the impact of roads on the environment and offers advice on how to control or minimise the effects. Everyone within Roads Service with a role in designing or managing roads and verges should read this handbook. Initial advice is given in this handbook on the planting of trees, the treatment of road boundaries as well as on matters relating to the protection of wildlife and the built heritage.

Sources of further and more detailed guidance are given in the appendices. In addition each Roads Service Division/Area has appointed an Environmental Officer as the main focus for co-ordinating relevant information and ensuring environmental awareness.

For information beyond the scope of this handbook in relation to environmental aspects and impacts of road design and management see The Design Manual for Roads and Bridges.



# 2.0

## General Principles

### 2.1 New Works and Maintenance

Good environmental practice is important both in the construction of new works, (whether major or minor), and in the maintenance and management of the existing network. Both types of activity can have significant environmental effects, and the same basic approach applies;

- **a. environment** - establish what is there?
- **b. impact** - how will our work affect this?
- **c. assessment** - are these effects harmful or not?
- **d. mitigation** - if they are, can they be prevented or mitigated?
- **e. enhancement** - what improvements can be made?

For all work, the advice in this handbook provides a good basis for appropriate environmental practice, and may be supplemented as necessary by information in the Good Roads Guide (Volume 10 of the Design Manual for Roads and Bridges). That publication is particularly relevant for new major schemes, where full environmental assessments will be required.

### 2.2 Rural Roads

Every effort should be made to protect and where practicable enhance the natural and built heritage in the rural environment, taking account of the likely impact of new road schemes on conservation areas or archaeological sites.

Wherever practicable project design should consider opportunities for providing off-road parking and picnic sites along scenic routes in conjunction with the district council.

The size and siting of road signs should be such as to minimise their impact on distant views. However, the first priority must always be traffic management and road safety.

Road markings should be kept to the minimum level needed for traffic management and road safety.

### 2.3 Urban roads

Road patterns in urban areas are an integral part of the built environment and have evolved over many years. Such patterns form part of the character of the towns and villages. Project design should take account of the present road layout and the likely impact of change on the built environment, including any listed buildings.



Roads Service will normally have input to Environmental Improvement Schemes. Consultation with the public, their representatives on Councils or local community groups regarding agreement on lighting, street furniture and green spaces, for example, in such schemes, is essential. If necessary professional advice can be obtained from a landscape architect. Responsibilities for future maintenance should be recorded at the outset.

## **2.4 The Urban - Rural interface**

### **2.4.1 Ring roads & Distributor Roads**

Planting can soften the environmental impact of a large road in a residential area, helping to improve the reduction of dust, fumes and headlamp glare, for example. Where sufficient land is available trees and shrubs may be planted. Such planting should be away from structure foundations and the road edge. It should neither impede access for regular maintenance or inspections nor should it conflict with traffic management or road safety.

There is minimal wildlife value in such planting schemes, therefore plant species should be chosen for their ability to thrive in stressed conditions. The frequency of maintenance should also be a factor in plant selection.

Litter clearance is a statutory duty undertaken by local councils.

Project design should consider whether road schemes will offer views of the town or village on the approach roads or views of open country on the exit road. This should not be used to justify locating roads through environmentally sensitive areas. A close working relationship with the Planning Service is particularly necessary in these areas.

### **2.4.2 Linear growth**

Linear development may result in changes of hedge or boundary fence and a diversity of roadside treatment. Planting to a formal plan, if possible, will help to create a more cohesive appearance. Although such development may put pressure on Roads Service for street lighting, kerbs and pavements normal design criteria should be applied.

A good example from Roads Service can encourage good design by developers and private householders.



# 3.0

## Roadside Verges

### 2.4.3 Roundabouts and Traffic Islands

There is little conservation value in traffic islands, dual carriageway central reserves and roundabouts. They should be designed for low maintenance to minimise risks to workforce and traffic. Low growing ground cover plants are suitable, or trees where open visibility is not a priority. However trees should be carefully positioned to ensure that they will not present a hazard to an errant vehicle (application of TD19/06 – Requirements for Road Restraint systems may otherwise identify the need for barrier protection)

Privately sponsored planting schemes are to be welcomed, providing traffic management and road safety are not compromised. The erection of small acknowledgement signs is permitted.

### 3.1 General

In a countryside which is increasingly being developed for housing and agriculture, the presence of road verges can mean survival for some wild plants and animals. The road edge will vary from a small strip between road surface and hedge to a broad motorway verge. The choice of plant species are influenced by a variety of factors, both natural and built.

Northern Ireland has a large proportion of minor country roads, with many under increasing pressure from large vehicles, new housing and associated services. It is desirable to maintain a rural feel to these roads for the benefit of public perception and to promote natural wildlife. The use of urban features such as kerbs should be discouraged in rural areas, except where it is necessary for drainage or edge protection reasons on high traffic roads, such as primary routes.

Road edges reflect the surrounding countryside and should not be developed to have a standard appearance. Vernacular roadside boundaries, whether hedges, walls or banks are worth preserving.

Hedges are inappropriate where roads cross largely uninhabited land or in upland areas dominated by earth/sod banks with only an occasional shrub or tree. While forests may





come close to the road edge sufficient space is needed to take account of traffic management and road safety.

Road verges are an important safety feature. Tree planting schemes must ensure that tree growth will not interfere with traffic management and road safety in its lifetime. For further details on trees and shrubs see section 6.0.

### 3.2 New verges

When verges are being created as part of new road scheme, the original topsoil should be re-used wherever possible. This will reduce the amount of topsoil having to be disposed off-site

To prevent the spread of potato disease, it is necessary to consult with the Department of Agriculture and Rural Development (DARD) Quality Assurance Branch about the movement of soil from one area to another.

The growth of wild flowers should be encouraged by reducing topsoil usage and other grass treatments in landscaping works. If necessary, professional advice may be obtained from a landscape architect.

### 3.3 Verges without planting

Not all verges are suitable for planting. Planting is not appropriate along upland and coastal road verges.

An assessment should be made, taking account of farming, local field patterns, the presence of trees and hedges, climate, prevailing winds and soil type. Advice, if needed, can be obtained from Department of Agriculture and Rural Development and the Northern Ireland Environment Agency.

Where peat predominates; new verges should be left for natural regeneration. Sandy soils should be left bare and may be sown with wildflower seed. Coastal locations are ideal for allowing natural wild flowers to develop. On bare rock cuttings and stony road verges vegetation will also develop naturally.

### 3.4 Verge Maintenance

Roads Service's normal practice is to cut grass;

- a. in rural areas, up to twice a year over 1 swathe width and visibility splays,
- b. in urban areas, up to five times a year across the entire adopted area.

CCuts should be well spaced throughout the season. Roadside verges, particularly along minor roads and in the uplands, can be very species rich containing a high number of wild flowers. Cutting should preferably take place before May and then not until August or later to allow the wild flowers to set seed. If the verge must be cut more regularly than this then cutting should extend



only a short distance into the verge, leaving a margin on the field side uncut.

Roads Service accepts that there is nothing wrong with leaving some areas of grass uncut. The uncut verge areas can remain so unless the grass grows tall and proves unpopular with neighbouring landowners. In these cases, subject to availability of funds, cutting should extend from the road edge over the entire verge. This should be limited to problem sections only and repeated every two or three years. Care should be taken not to clear all roadside vegetation in any one season.

Section staff should liaise with district councils prior to grass cutting, particularly in high litter areas.

See **Section 5.0** for advice on noxious weeds  
See **Section 7.1** for advice on wild flower areas.

# 4.0

## Roadside Boundaries

### 4.1 Planting and Replacing Hedges

In most areas hedges are the usual boundary. Although many hedges are planted in hawthorn, other species of hedge or shrub may be used. Plant at least five woody species throughout the length of the hedge, using a mixture of 75% hawthorn and 25% other species such as blackthorn, hazel, holly, dog rose, whin, beech, guilder rose and willow. Ensure that a mix of species is planted along the full length of the hedge. Wherever possible the existing hedges or shrubs should be matched.

Hedges associated with rock or earth banks are visually interesting and valuable for wildlife. Always try to retain them as they are difficult and costly to reinstate properly.

Efforts should be made to preserve established healthy hedges by lifting whole sections of the hedge out for replanting into large trenches. The exercise should be executed quickly and once replanted the hedge must be well watered.

Whenever hedges are removed in the course of roadwork's they should normally be replaced or replanted on the landowner's ground. The landowner will be responsible for the future upkeep of any replacement hedges.

Good advice about planting replacement hawthorn hedges is available from the County Agricultural Advisory Officer of Department of Agriculture and Rural Development.



## 4.2 Maintaining Hedges

Roads Service is responsible for hedge maintenance on its own land or in the first three years of new and replacement hedges at accommodation works. Most roadside hedges are the responsibility of the adjacent landowner. Landowners / farmers who are in receipt of direct agricultural support from DARD including Single Farm Payment must ensure that hedges are not cut between 1st March and 31st August. This is to avoid damaging the birds, nests or chicks and complies with the Wildlife (Northern Ireland) Order 1985. Hedge cutting between 1st March and 31st August will only be permitted where health and safety is an issue, for example, roadside hedges. Hedgerow trees may be removed if there are health and safety reasons unless a tree preservation order is in place and may be removed on rotation for timber, provided young saplings are left to grow as replacement trees in the hedge.

Removal of field boundaries (dry stone walls, ditches, hedges, earth banks) is not permitted except by prior written permission from DARD. This includes infilling or laying drainage pipes in open sheughs. Contact the local DARD Countryside Management office for further advice.

Landowners should be encouraged to care for new hedges. Care in the early years of development will ensure a strong and lasting

hedge for the future. Good thick hedges will provide food and shelter for a wide variety of wildlife. Newly planted hedges will suffer if weeds are not properly controlled during the first few years after planting. Weed control can be achieved by using black polythene sheeting or landscape fabric, mulches, residual herbicides or hand weeding. Care should be taken when applying herbicides to newly planted hedges and it is best to use an herbicide approved for use along hedges available in liquid or granular form.

Where there are road safety implications Roads Service will enforce hedge cutting in accordance with the Roads Order. Hedge cutting is best carried out before 1st March which allows hedges to provide winter food and shelter but avoids the bird nesting season from late March to mid-September.

## 4.3 Fences

The use of concrete posts and wire mesh fences may be appropriate in limited circumstances, e.g. at industrial premises, but its widespread use is discouraged. This is particularly important in Areas of Outstanding Natural Beauty (AONBs). Where practical, Roads Service encourages the replacement of boundaries in the vernacular style.

In negotiating accommodation works, some landowners may have a preference for timber post and rail, but this is discouraged for road safety



reasons. The preferred option is for strong timber posts with sheep or bull wire on the road side and barbed wire, if necessary, on the field side. Where practical fences should be supplemented by hedge planting on the field side.

#### 4.4 Walls

Wherever possible, walls should be rebuilt in the local vernacular style, retaining historic features such as gateposts, gates, stone stiles and pillars. These features are particularly important in AONBs but should not be ignored in the general countryside.

Where listed buildings and their settings, including walls, may be affected early consultation should take place with the Planning Service and NIEA - Historic Buildings Unit.

#### 4.5 Rock

The geology of Northern Ireland is extremely varied. While road cuttings through soft ground may be planted or left to vegetate naturally, hard cuttings will expose the underlying rock, providing a local feature.

## 5.0 Weed Control

Most weeds, requiring control under the Noxious Weeds (NI) Order 1977, seed late into the growing season. Cutting them early in the season (before mid-July) should stop their growth and control their spread. They include; curled or broad-leafed dock, ragwort, wild oat and spear or creeping thistle. The health and safety controls are detailed in the Roads Service Operational Safety Controls and risk assessments. An alternative approach is to plant shrubs and trees which will shade out problem species.

Chemical control of weeds is necessary for kerbed and paved areas where plant growth is not acceptable. Care must be taken to ensure application at the right time and at the correct concentration, and to avoid wet weather.

Herbicides must be kept within the area to be treated and not allowed to drift to adjacent vegetation. All health, safety and environmental requirements must be observed during the handling and application of herbicide as well as during disposal of any excess.

Special efforts are required to control both Giant Hogweed and Japanese Knotweed by poisoning. Advice is available from the Northern Ireland Environment Agency and the Department of Agriculture and Rural Development.



# 6.0

## Trees And Shrubs

### 6.1 Tree planting

The choice of tree species must relate to the soil type and conditions. Native trees, grown from locally collected seed, should always be the first choice of species to plant. Suitable species for wet sites include alder, birch, native willow and guilder rose, for dry sites include crab apple, oak and Scots Pine, for exposed sites include birch and rowan, for lowland sites include birch rowan, wild cherry, crab apple, blackthorn and hawthorn. Trees should not be planted where the line of vision could be obstructed, at dangerous bends or where they may present a hazard to an errant vehicle (application of TD19/06 – Requirements for Road Restraint Systems may otherwise identify a need for a barrier system)

While native species should be chosen in rural settings it may be suitable to introduce more exotic species in built-up areas.

Trees may be planted directly into subsoil, but will establish more successfully if planted in individual pits with good topsoil or compost. The roots should be encouraged to spread out to achieve maximum stability.

Road embankments are heavily compacted and pits require drainage to prevent root water logging. Cutting the pit into the side slope usually ensures adequate drainage.

There is no need to sow grass or other seed around trees since they thrive best in bare ground. A mulch of woodchips/bark helps to retain moisture and reduce competitive plant growth. Where it is decided that grass will be sown in the proximity of trees then low-grow grass should be used.

Tree planting schemes should ensure that sightlines, road signs and street lighting will not be obstructed by the presence of trees. Care should also be taken to ensure that the tree's roots do not interfere with underground services.

Trees should not be planted on land of special conservation value or where there is a good range of natural wild flowers. Where native or ornamental shrubs exist there is no advantage in replacing them with trees.

### 6.2 Care of Young Trees

Young trees grow much better if they have no competition from grass or weeds. Spot application of herbicide or clearing strips of land before planting gives them a good start. Re-growth of grass should be prevented in the tree planting area.

Grass should not be cut around young trees. When cutting grass between trees care must be taken to avoid damage. Strimmers should not be allowed to come into contact with the trees.



Water is vital to all young plants including trees. Although seldom a problem, lack of moisture may occur on raised banks of recently excavated free-draining soil or in exceptionally dry seasons. The cost of watering in these circumstances could off-set tree replacement costs.

Groups of small trees or 'whips' may be planted close together when some failure is acceptable. Such young trees often develop better than mature specimens, which often are set back when moved.

Occasionally trees planted in dense groups will require thinning. This should be predicted by the landscape architect or contractor at the time and included in the cost of the contract.

Tree shelters are needed in an exposed situation or where there is a risk of grazing by rabbits. Shelters of 1m are usually adequate although some trees, such as birch, beech and pine are not suited to shelters.

Supporting posts may be used for trees planted in isolation. Ties must be loosened each season to support the tree without restricting growth.

### 6.3 Shrubs

In many areas shrubs are the preferred option in planting schemes. They form a dense healthy growth requiring infrequent maintenance.

One of the most common native shrubs is gorse (whin) which will naturally colonise well drained road banks. While they provide an excellent habitat for many wildlife species, landscape architects caution against planting whin adjacent to roads since it is considered to be a fire hazard in dry weather. Pruning is necessary about every ten years in winter. Scrub control should not be undertaken between 1st March and 31st August.

Blackthorn and bramble are a good alternative to whin, providing dense shrub growth which is good for wildlife. They also have a low maintenance requirement.

### 6.4 Tree & Shrub Maintenance

Trees and shrubs which encroach on traffic or obscure traffic signs or street lights will need to be cut back. Most shrub species will survive rigorous pruning while care must be taken where tree pruning is concerned. Trees or shrubs should not be pruned between 1 March and 31 August unless there are health and safety reasons. The following advice will act as a guide, although the services of a landscape architect may be required to make the final decision.

- a. Individual branches may be lopped (cut off) on most trees, especially beech, oak and elm,



- b. Trees may be pollarded (all branches cut back near the trunk), for example willow and lime, and
- c. Trees such as alder, ash and willow can be coppiced (cut back to a stump).

Approximately 60% of Northern Ireland's broadleaf trees are situated in hedgerows. They make an important contribution to the landscape and should be regarded as significant for wildlife. The removal of mature or semi-mature trees should only be considered if absolutely unavoidable on road safety grounds. It should be noted that some trees are subject to preservation orders.

Most roadside trees are part of the hedgerow and as such are the responsibility of the landowner.

Roads Service retains responsibility for trees planted in areas such as verges and roundabouts etc. Care must be taken in the cultivation and maintenance of new and young trees to ensure a high degree of successful growth.

For conservation reasons minimal cutting is preferred leaving, where possible, dead standing timber to become habitats for insects, birds and bats. Dead or dying trees often provide habitat for wildlife protected under the Wildlife Order 1985. Trees with hollows or crevices can protect many important species

such as bats which may be protected. Before proceeding with any works to trees containing protected plants or wildlife consult the Northern Ireland Environment Agency.

Further information on the management of roadside hedges and trees can be found in the Department of Agriculture and Rural Development publication "**Field Boundaries - Managing Roadside Hedges**".



# 7.0

## Flora And Fauna

### 7.1 Wild Flowers

It is difficult to establish wild flowers on new verges unless the soil is naturally poor. The ability of some species to help increase the nitrate levels in poor soil acts to the detriment of many species.

The most successful management of wild flowers is by sympathetic maintenance of verges where such flowers already occur naturally.

Road verges can sustain a rich variety of wild flowers when they have not been cultivated and re-seeded, grazed intensively or treated with pesticides. These species rich verges are a valuable resource and should be retained and appropriately managed (see section 3.4).

Roadside verges that have been designed and sown with wild flower seed need to be managed to maintain them. One high cut to 400 - 500 mm should be carried out in April/ May followed by a short cut in the autumn. Where possible, cuttings should be removed to prevent soil enrichment.

### 7.2 Wildlife – General

Roads Service consults appropriate experts on wildlife issues relating to deer, badgers, and wild birds for example. The first point of contact will normally be the Northern Ireland Environment Agency Wildlife Officer.

### 7.3 Deer

There are 3 deer species in Northern Ireland. At one time they were associated with private estates, but now the deer population has spread through forests and their population is increasing.

Warning signs for motorists should be erected at known trouble spots. Deer crossing roads at night can be helped by roadside reflectors which warn of approaching traffic by reflecting vehicle headlights. If these are necessary they are usually erected at 20m centres.

### 7.4 Badgers and Otters

Otter are protected under the Conservation (Nature Habitats, etc.) Regulations (Northern Ireland) 1995 and holts close to a road scheme would be rare, however any road works near to riverside woodland should be examined carefully. Additional advice may be obtained from the Northern Ireland Environment Agency Environment – Biodiversity Unit.

Badgers are protected under the Wildlife Order (NI) 1985 and their setts must not be disturbed or damaged.

Badger setts may be found close to roads. Where badgers have tunnelled under the road, causing weakness to the road surface Northern Ireland Environment Agency Environment – Biodiversity Unit will advise on the appropriate method of reinstatement.





New road works crossing badger territories should include a tunnel beneath the road. Badger proof fencing will also be required to guide the animals towards the tunnel. Consideration should also be given to the erection of reflectors at known crossing points on existing roads (see section 7.3).

### **7.5 Bats**

Bats and their roosts are protected by law. Bats will move between roosts during the year. A bat roost remains under legal protection even when bats are not present. Identifying bat roosts is a difficult and technical task which may require the services of a bat expert.

The underside of bridges is an attractive habitat for bats and additional measures can be provided to encourage them (see section 10.2).

### **7.6 Birds**

Roadside hedges and verges provide valuable feeding areas for birds. Native plant species support the greatest variety of insects and other invertebrates which provide food for birds.

Roadside hedges and woodland are somewhat limited in their appeal for nesting birds due to traffic noise. Safe nesting can be encouraged by allowing dense growth of scrub, thick hedges and trees of differing height and species. Traffic management and road safety

should never be compromised.

The underside of bridges is an attractive habitat for birds and additional measures can be provided to encourage them where their presence is not likely to cause extensive damage (e.g. to paintwork or bearing plinths). Refer also to section 10.2.

### **7.7 Amphibians: Frogs and Newts**

Frogs are more commonly seen in NI than newts, which have full protection under the Wildlife (NI) Order 1985. Road schemes should avoid interfering with areas of freshwater and create new ponds if possible.

### **7.8 Fish**

Rivers and Loughs supporting game and coarse fish require oxygenated water, a range of water plants and aquatic insects. Very small upstream tributaries may be used for spawning, and these are particularly vulnerable to pollution. Care must be exercised to avoid damaging the water environment during road works, approval may be required from The Department of Agriculture and Rural Development if the work affects the watercourse.

Banks of rivers and Loughs affected by road works should be reinstated with planting of appropriate water plants.



# 8.0

## Sustainable Drainage Systems (SuDS)

SuDS are made up of one or more elements built to manage surface water runoff. Their purpose is to help control flooding and pollution. Drainage for road schemes should be designed with reference to DMRB Standard HD45 Road Drainage and the Water Environment. This will highlight any need for SuDS. Any SuDS features should then be provided and designed in accordance with the guidance in DMRB. Typical SuDS features acceptable under DMRB are:

- Soakaways
- Grassed channels and swales
- Filter drains
- Basins ponds and wetland areas

These controls should be located as close as possible to where the rainwater falls, providing attenuation for the runoff. They also provide varying degrees of treatment for surface water, using the natural processes of sedimentation, filtration, absorption and biological degradation.

SuDS may require sophisticated design techniques and significant investment in terms of budget and land. On the other hand simple actions like clearing out sheughs or gripes may enable existing field drainage to continue to operate satisfactorily. Existing drainage systems of this type should not be piped unless it is really necessary to do so.

SuDS can be designed to function in most settings, from hard-surfaced areas to soft landscaped features. The variety of design options available allows designers and planners to consider local land use, land take, future management and the needs of local people when undertaking the drainage design, going beyond simple drainage and flood control. The range of options means that active decisions have to be made that balance the wishes of different stakeholders and the risks associated with each option.



# 9.0

## Pollution

Pollutants from vehicles (such as fuel and tyres) as well as salt and pesticides damage the environment.

Roads Service aims to minimise salt pollution by using the minimum amount of salt necessary to deal with forecast conditions along the salted network. In addition, grit piles for use on a self-help basis contain a low proportion of salt to minimise damage.

The use of pesticides is also kept to the minimum necessary to control unattractive weeds, mainly in urban areas.

Run-off from filling stations and vehicle washing areas are the responsibility of the landowner and should be directed into the sewerage system. The landowner must clean all silt traps and oil interceptors regularly and dispose of the material in a manner approved by the local authority.

In major new road works schemes, careful consideration must be given to the method of dealing with run-off. All reasonable efforts should be made to avoid pollution during construction.

New road drainage works should be designed with reference to DRMB Standard HD45 Roads Drainage and the Water Environment (DMRB). This should ensure compliance with the EU Water Framework and Floods Directives. Where run-off may enter sensitive natural habitats, especially those designated for their nature conservation importance, contact Northern Ireland Environment Agency – Water Quality Unit at project design stage.



# 10.0

## Areas Of Conservation Value

### 10.1 General

Sites of exceptional conservation importance may be the subject of statutory designation such as Areas of Outstanding Natural Beauty, Areas of Special Scientific Interest, Historic Monuments and Conservation Areas. The impact road schemes might have on sites or areas subject to statutory designations must be very carefully considered. Consultation with the Northern Ireland Environment Agency and the Planning Service, in the case of Conservation Areas, will be necessary during project design.

Landowners / farmers who are in receipt of direct agricultural support from DARD including Single Farm Payment must ensure that they retain all semi-natural habitats (woodland, scrub, moorland, wetlands, species-rich grasslands), ponds, shelterbelts, trees protected under the Tree Preservation Order, archaeological features and earth science sites. To ensure compliance with DARD Environmental Impact Assessment (Agriculture) Regulations (Northern Ireland) 2007 farmers / landowners must not undertake new drainage works, ploughing, clearing, levelling, re-seeding or cultivations on uncultivated land or semi-natural habitats without prior approval from DARD.

There are many areas within NI with no statutory designation which also have

environmental importance. Every effort should be made to minimise the impact on all areas of natural and built heritage.

### 10.2 Woodland

The destruction of woods should be avoided since Ireland has little natural woodland of any kind. Where damage to woodland is unavoidable clearance should be kept to a minimum and the edge treated sensitively. Before felling any individual tree, groups of trees or woodland consult with the Planning Service to ensure that they are not protected by a Tree Preservation Order.

Individual trees or groups of trees can be replaced with native species found growing naturally in the locality and this should be done as routine. New groups of trees should straddle the road boundary in order to blend the roadway into the countryside where an accommodation can be reached between Roads Service and the landowner.

### 10.3 Water and Wetlands

Wet areas including Loughs, rivers, streams, bogs and roadside wetland have special conservation interest since they support plants and animals not found elsewhere.

Coastal roads should not encroach on the natural shoreline. Where rock armouring or other



# 11.0

## Bridges

strengthening is required the Northern Ireland Environment Agency Environment - Countryside and Coast section should be consulted.

### 10.4 Built Heritage

All reasonable efforts should be made to avoid Areas of Significant Archaeological Interest, listed buildings and other historic monuments during road works. Archaeological objects or structures, such as souterrains, discovered during road construction or maintenance must be reported to Northern Ireland Environment Agency - Historic Monuments Unit.

Where historic finds occur they should be reported immediately to the Northern Ireland Environment Agency - Protecting Historic Buildings Unit and/or Historic Monuments Units, whose staff provide advice and make any appropriate arrangements.

Under the requirements of article 42 of the Historic Monuments and Archaeological Objects (NI) Order 1995 anyone finding archaeological objects is obliged to report the find to a relevant authority within 14 days. Relevant authorities include the police, Ulster Museum and Northern Ireland Environment Agency - Protecting Historic Unit.

### 11.1 Bridges – General

Increased traffic and heavier vehicles have meant the strengthening and repair for many bridges. Widening may be necessary to facilitate modern vehicular traffic or increased pedestrian use. Alternatively, foot bridges may be constructed alongside the original structure.

Many bridges are listed as historic buildings. Ideally such bridges should not be changed or destroyed, but in real life they have to be maintained, strengthened or occasionally replaced. This will require discussions between Roads Service and the Northern Ireland Environment Agency - Historic Buildings Unit who will generally wish to see reinstatement in keeping with the original.

Land around bridges, such as approach embankments, may offer opportunities for environmental improvement schemes and planting. However care must be taken to ensure planting does not affect the bridge's structural stability or any future bridge maintenance. In urban areas it may be appropriate to consider decorative tiles or murals underneath bridges.



## 11.2 Bridges and Wildlife

Bridges can provide good nesting sites and shelter for birds and bats. These may be in cavities which have developed naturally over the years. Bridge maintenance or strengthening could involve techniques such as re-pointing, or sprayed concrete which will threaten these sites. So, when a bridge is surveyed before remedial work, attention should be paid to any signs of nesting.

Since it is often difficult to find evidence of bat inhabitants it is worth having the site inspected by the Ulster Museum's vertebrate recorder. Such inspections should be carried out as early as practicable to allow for the timing of remedial work to accommodate wildlife considerations.

The needs of wildlife should be considered both in new bridges and major strengthening or maintenance of existing bridges.

Providing the structure will not be weakened minor work on bridges may be adapted to leave existing holes or create nest sites. More extensive work involving injection or sprayed concrete is potentially more damaging for wildlife.

Where the bridge's structural strength will not be compromised it may be possible to create a potential wildlife habitat. This could involve such measures as forming small ridges or holes on the underside of the central arch or span

to encourage use by bats. Special bat bricks are now available. For birds, nest holes in the sides of the arch are preferable, but if this is not possible a raised ledge could be provided. The best location is about 1m inside the bridge arch, above high water level. A ledge of about 150mm is adequate, and shallow side walls for shelter are desirable. These will be ideal for dippers and grey wagtails. More detailed specialist advice is available from the Ulster Museum's vertebrate recorder.

## 11.3 Replacement

Construction of a new bridge may involve demolition of the previous structure. The design should give consideration to including facilities which encourage wildlife habitation (see section 10.2).

Adjacent river banks may also have a wildlife value. Bare vertical banks are suitable for kingfisher nest tunnels while shallow swampy edges may attract waterside flora and associated insects such as dragonflies. 45 degree grassed slopes should be avoided

Where the bridge requires screening, native trees such as willow and alder should be planted at a distance which will not impede the bridge's structural stability or any future maintenance.



Contact the Northern Ireland Environment Agency – Historic Buildings Unit at the early planning stage where demolition of a listed building is envisaged.

#### **11.4 Redundant Bridges**

Where old bridges have been abandoned, but preserved (such as Shaw's Bridge, Belfast) there may be opportunities for environmental improvement around the old structure. District councils or the Rivers Agency may wish to become involved in such developments.

#### **11.5 Bird Problems**

In urban locations where starlings and pigeons may cause extensive damage to paintwork or bearing plinths preventive measures may be necessary. A build up of bird droppings may be a source of health hazards which could affect staff and members of the public. When considering deterrents to prevent roosting, advice should be sought from the Northern Ireland Environment Agency.

#### **11.6 Canals**

Due consideration should be taken of the possible future use of a canal when deciding how best to take a new bridge over it. Advice should be obtained from DCAL where a road scheme may impact upon a canal which has a statutory designation.

## 12.0

### Street Lighting

#### **12.1 Siting**

The choice and siting of street lights in towns and villages should depend upon suitable design, especially where listed buildings or Conservation Areas are involved.

#### **12.2 Energy efficiency**

There is increasing concern over the efficiency of lights, the precise direction of lighting and the prevention of light pollution. Light pollution, being the term associated with excessive illumination or light directed skywards, decreases visibility for astronomers and causes disturbance to wildlife in their natural nocturnal environment.

A significant portion of Roads Service's budget is taken up with the energy costs associated with lighting. The long-term environmental costs of energy generation are global factors which impact on local decisions. Roads Service has criteria to control the spread of lighting in rural areas to those sites where it is justified in terms of road safety and population density.



# 13.0

## Re-Cycling

Roads Service does not normally lift grass cuttings. Where this is possible in special circumstances they should be fed into an appropriate composting scheme.

Tree and shrub trimmings can be fed through a chipper and used as mulch around new planting.

It is Government policy to protect peat lands therefore no peat should be used in horticultural schemes. Peat-free alternatives are available.

Cut stone such as granite kerbstones should be re-used in situ or elsewhere, if possible.

The principle of recycling should also be applied to blacktop, hard rubble and other inert materials where appropriate. The Specification for Road and Bridge Works includes alternative clauses for use where the contractor opts to provide materials produced from reclaimed/ recycled sources.

Roads Service shall endeavour to:

- provide via RSTC relevant CIWM certified waste awareness training for appropriate staff involved in the management of waste.
- segregate waste in to reusable and/or recyclable waste streams.

- reuse in-house or via approved contractors any reusable/recyclable material generated by its own in-house operations.
- dispose of all residual recyclable and non-recyclable waste via certified, licensed and approved waste contractors to certified and licensed disposal/treatment/transfer sites.
- use the Roads Service/Disposal Services Agency Service Level Agreement for the disposal of all in-house generated residual recyclable and non-recyclable wastes.
- hold all "Controlled Waste Transfer and Consignment Notes" on site for the required time periods as defined under the "Duty of Care" Regulations.
- procure materials and supplies with the maximum recycled content as permitted by the current Specification for Highway Works.
- procure materials, supplies and services from suppliers certified to an accredited environmental standard.





# 14.0

## Appendices

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- Roads Service: COSHH Assessment Manual, Latest edition.
- Roads Service: Guidelines for Road Maintenance, Latest edition.
- SEPA: Engineering in the Water Environment Good Practice Guide.

## Contact Names and Addresses

Organisation	Specialist topic	Address
Northern Ireland Environment Agency Head Office	Policy matters on conserving the natural and built heritage and on environmental protection.	Klondyke Building 10 Cormac Avenue Lower Ormeau Belfast BT7 2JA Tel: 0845 30 20008
Northern Ireland Environment Agency Countryside and Coast	Nature, earth science, landscape conservation and designated sites. Reinforcing of coast roads.	Klondyke Building 10 Cormac Avenue Lower Ormeau Belfast BT7 2JA Tel: 028 9056 9576
Northern Ireland Environment Agency Conservation Science	Protected species such as Otters and badgers.	Klondyke Building 10 Cormac Avenue Lower Ormeau Belfast BT7 2JA Tel: 028 9056 9639
Northern Ireland Environment Agency Historic Buildings	Listed buildings and their settings, listed bridges and canals.	5-33 Hill Street BELFAST BT1 2LA Tel: 028 9054 3095
Northern Ireland Environment Agency Historic Monuments Unit	Historic monuments and archaeological sites, historic demesnes, parks and gardens.	5-33 Hill Street BELFAST BT1 2LA Tel: 028 9054 3037
Northern Ireland Environment Agency Water Management Unit	Run-off and new road drainage works.	17 Antrim Road Lisburn BT283AL Tel: 028 9262 3100
Northern Ireland Environment Agency Biodiversity Unit	Vertebrate recorder - Bats and breeding birds in bridges	Klondyke Building 10 Cormac Avenue Lower Ormeau Belfast BT7 2JA Tel: 028 9056 9605
Planning Service	Development control and enforcement	Millennium House 17-25 Great Victoria St Belfast BT2 7BN Tel: 028 9054 0540

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