# GUIDELINES FOR THE TREATMENT OF OTTERS PRIOR TO THE CONSTRUCTION OF NATIONAL ROAD SCHEMES

NRA
National Roads Authority
*An tÚdarás um Bóithre Náisiúnta*

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ENVIRONMENTAL SERIES ON CONSTRUCTION IMPACTS

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## INTRODUCTION

The Eurasian otter *(Lutra lutra)* is relatively common and ubiquitous on rivers and streams in Ireland but the species has suffered a decline in numbers in many parts of Europe. Its protection in Ireland is an issue of considerable conservation importance.

The otter is one of the larger members of the Mustelid family of mammals, which, in Ireland, also includes badgers, Irish stoats, pine martens and the introduced American mink. It occurs on most Irish watercourses, lakes, marshes, coasts, and on many offshore islands. It is carnivorous, feeding principally on fish and crustaceans, including crayfish and crabs, whilst occasionally taking other prey, such as frogs, small mammals, and waterfowl.

Many watercourses or areas of open water serve as foraging habitat or as wildlife corridors for otters. They are often present within urban areas - along canals or rivers that pass through many Irish towns. Whilst the otter may occasionally travel overland and will cross farmland, bogs or upland areas, it generally confines its movements close to waterways, lakes or wetlands. Otters are common along many of Ireland's coasts also, but they do need access to fresh water nearby to wash saltwater from their fur.

Each adult otter has its own home range, which it marks with its faeces (spraints) at prominent locations. When groups of otters are evident, they usually consist of a female and her young. Range sizes vary widely according to the quality of the foraging habitat and other resources, such as suitable sites for otter dens (holts). Their ranges may alter seasonally to include sites of abundant prey. The average distribution density of otters is approximately one otter per 10 km on many Irish watercourses, but this will vary from as little as one otter per 50 km of river to, perhaps, as much as one otter per 2 km of river or coastline.

Otters occasionally dig out their own burrows but, more commonly, they make use of existing cavities as resting places or for breeding sites. Holts are often situated within eroded riverbanks, under trees alongside rivers, under fallen trees, within rock piles, or even within dry drainage pipes or culverts, etc. In peaty upland or coastal areas, larger holts may consist of a more complex tunnel and chamber system similar to that of a badger sett. Otters often lie out above ground, especially on small islands or within reed beds, making use of available vegetation to create bedding shaped into small 'couches'. Holts and couches used by breeding females are often in secluded areas away from the main river or waterbody.

Otter births occur predominately between May and August but otter cubs may be born at any time of year. There are usually two or three cubs in each litter and cubs are reared over a period of approximately 6 to 12 months.

Bridges are very commonly marked by otters, with spraints deposited on ledges or on prominent rocks within the watercourse (as in this illustration).

# IMPACT OF ROAD SCHEMES

Whilst otters may be widespread in Ireland, they usually exhibit a low-density distribution. Their populations are, therefore, susceptible to habitat fragmentation and, in particular, to mortalities on existing or new roads. Where the provision of access under roads at rivers and streams crossings is inadequate, otters will often endeavour to cross roads. In the UK, road casualties have been observed to peak during November and December and again in March and April.

Given the linear shape and substantial extent of otter home ranges, the loss of small portions of aquatic habitat (e.g. streams, rivers, ponds, etc.) associated with the construction of national road schemes will not usually impact significantly on the overall area and quality of otter habitat. However, where a scheme results in a loss of access to important portions of their foraging habitat, such loss can lead to a decline in breeding success and a diminution of otter numbers in the locality.

Otter holts and couches are not frequently encountered. However, wherever occupied holts are directly impacted, construction works can cause the mortality of adult otters or cubs. Construction works can also cause indirect impacts (through disturbance) to breeding holts close to a planned road scheme.

Construction operations can, sometimes, cause diminution in water quality either through pollution or sedimentation incidents. Whilst such impacts can result negatively on habitat quality, such impacts are usually temporary in nature.

A coastal otter holt, within a small cave on a rocky shore.



# LEGISLATION FOR THE PROTECTION OF OTTERS

Otters, along with their breeding and resting places, are protected under the provisions of the Wildlife Act, 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive, which is transposed into Irish law in the European Communities (Natural Habitats) Regulations (S.I. 94 of 1997), as amended.

Otters are also listed as requiring strict protection in Appendix II of the Berne Convention on the Conservation of European Wildlife and Natural Habitats and are included in the Convention on International Trade of Endangered Species (CITES). Many of Ireland's rivers, lakes, canals, and coastal areas, provide good habitat for otters in Ireland: such areas include wildlife conservation areas (designated as Natural Heritage Areas or Special Areas of Conservation).

It is important that best practice mitigation measures are put in place to ensure that otters, and their populations, are not impacted during the construction and operation of national road schemes. Normally, such measures will require the provision of adequately designed culverts and bridges that allow for the free passage of otters. In addition, mammal-resistant fencing either side of these crossings is usually recommended at watercourse crossings used by otters. Otters may need to be evacuated from affected holts and, where necessary, alternative (artificial) holts will need to be created.

The removal of otters from affected holts, and the subsequent destruction of these holts, must be conducted under a Section 25 derogation under the 1997 Habitats Regulations. The National Parks and Wildlife Service (NPWS), of the Department of the Environment, Heritage and Local Government, is responsible for processing these licenses. An application for a Section 25 derogation should be submitted to the NPWS along with the relevant ecological information from otter surveys. At least three weeks is normally required to process a derogation application. Conditions will usually be attached to each derogation granted in respect of otters and operations at holts or in their vicinity. Closure of holts requires a monitoring period to ensure that there is no current otter activity at the holt. Derogations may not be provided by the NPWS for the closure of holts containing a breeding female or young otters. Derogations are also required for any works likely to cause disturbance (e.g. piling and blasting) to active breeding holts (when present within c.150m of a scheme).

It should be noted that all activity related to otter surveys, evacuation procedures, and holt destruction should only be undertaken by personnel with adequate expertise in otter ecology.

Many of Ireland's rivers, lakes, canals, and coastal areas, provide good habitat for otters in Ireland.

# PRE-CONSTRUCTION OTTER SURVEYS

Holts and otter activity on affected rivers, streams, and other waterbodies, as well as mitigation measures relevant to otters, will already have been reported within the Environmental Impact Statement (EIS) for the respective scheme. At pre-construction stage, additional otter surveys will usually be required, and will often be undertaken at the same time as pre-construction surveys in relation to badgers. There are no seasonal constraints for otter survey, but any dense vegetation (especially in summer) can reduce success in the identification of otter holts or couches.

Pre-construction otter surveys should be undertaken prior to the commencement of any works in order to identify any changes in otter activity, holt locations, etc., since the original EIS surveys. This will ensure that the prescribed mitigation measures in the EIS remain adequate to address possible impacts on otters. It is also important to ensure that no new holts have been created in the intervening period.

The pre-construction survey should be conducted no more than 10-12 months in advance of construction. This will ensure that there will be sufficient time to comply with all licensing requirements and that the necessary actions can be undertaken to protect otter populations prior to the commencement of construction.

The pre-construction survey will aim to ensure that adequate mitigation is provided at each watercourse crossing (or other habitat of value to otters) affected by the scheme. Where necessary, there may be a need to modify the number of, and the design of, culverts and bridges and to adjust the extent of mammal fencing required to protect otters at locations used by otters.

The survey should be supplemented by a further inspection of the development area, immediately prior to site clearance, to ensure that no new holts have been created in the intervening period and to check if any of the previously identified holts are in active use by breeding females or have otter cubs present.

Where more than 36 months has elapsed between the time of a statutory approval of a road scheme and the initiation of the construction phase, an appropriate level of resurvey will be required - because the baseline data may have altered during the intervening period. This will allow adjustments to be made to the mitigation strategy specified in the EIS, where appropriate.

An active otter holt below the roots of a large tree. The slide leads to the river situated close by.

Any dense vegetation (especially in summer) can reduce success in the identification of otter holts or couches.



# EXCLUSION OF OTTERS FROM DEVELOPMENT SITES

Otters are likely to be present on most watercourses in Ireland and their home ranges are often large. While it may be possible to exclude otters from their holts, it is very difficult to exclude them entirely from a development site. Adequate mitigation measures will ensure that impacts on watercourses are limited during the construction phase and that severance of otter home ranges, resulting from any road scheme is only temporary.

The detailed provisions for the excavation and destruction of an otter holt will vary according to the nature of otter activity observed at the affected holt.

# EXCLUSION PROCEDURES IN RELATION TO OTTER HOLTS

On occasion, otter holts may be directly affected by the scheme. To ensure the welfare of otters, they must be evacuated from any holts present prior to any construction works commencing.

For otter holts that may be located near the fenceline, the treatment of otter holts should acknowledge that there may be other developments in the vicinity. Careful communication with the relevant parties outside the fenceline of the scheme is required to prevent conflicting timing of construction works

The Environmental Impact Statement may, sometimes, prescribe that, as mitigation, an artificial otter holt be constructed to replace the loss of an otter breeding holt. Surveys at pre-construction stage may also advise that artificial otter holts, in addition to any mitigation measures outlined the EIS, be constructed. It must be noted that the recommendation of such a requirement at later stages creates numerous difficulties - which may include the need to purchase suitable land by agreement. Emphasis should therefore be given at EIS and Preliminary Design stages to including otter holt areas, adjacent to the proposed scheme and within lands being compulsorily acquired, so that otters may be afforded adequate mitigation.

Where destruction of holts is unavoidable, a series of procedures is advised - these are similar to those advised for evacuation and removal of badger setts (refer *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes*, National Roads Authority, 2005). The detailed provisions for the evacuation and destruction of an otter holt will vary according to the nature of otter activity observed at the affected holt.

Otter breeding may take place at any season of the year, so breeding activity at holts will need to be determined on a case by case basis.

## DISUSED AND INACTIVE HOLTS

Exclusion of otters from disused, or currently inactive, holts within the landtake for a road scheme may be entertained during any season. Confirming that a holt is inactive will usually require a period of monitoring (e.g. five or more days of checking activity at the holt either with sticks or with sand pads to identify footprints). Where holts have been verified as inactive, and to prevent their reoccupation, the entrances may be lightly blocked with vegetation and a light application of soil (soft blocking). If the entrances remain undisturbed for five days, the holt may then be destroyed immediately using a mechanical digger, under the supervision of the holder of the NPWS derogation.

## ACTIVE HOLTS

Otters do not tolerate disturbance at or near holts that are in active use by them. To evacuate otters from non-breeding holts, general disturbance (e.g. vegetation clearance) and use of approved chemical deterrents is recommended. After a period of monitoring (as above), the holt entrances may be lightly blocked - as for inactive holts.

Should there be any delay in holt destruction, the soft blocked entrances (if remaining inactive) should be hard-blocked and the holt then destroyed as soon as possible, again under the supervision of the licensee. Hard-blocking is best achieved using buried fencing materials and compacted soil with further fencing materials laid across and firmly fixed to blocked entrances and surrounds.

Whilst the use of one-way gates is normally a procedure adopted in relation to the exclusion of badgers from setts, and not a standard procedure for the exclusion of otters from holts, this method may be used, in some circumstances, with gates being left in place for a period of 21 days as advised in relation to badgers.

However, where breeding females or cubs are present, it is imperative that no evacuation procedures of any kind should be undertaken until the otters have vacated the holt (this will be established by the otter surveyor undertaking otter monitoring operations).

Otter breeding may take place at any season of the year, so breeding activity at holts will need to be determined on a case by case basis. The period over which pregnant females and cubs are present in a holt can be up to 21 or more weeks. The gestation period is nine weeks and the cubs remain inside the holt for about seven weeks before venturing into the open. The cubs are weaned when aged three to four months.

Once the female and her cubs have vacated the breeding holt, the holt should be monitored and the otters then permanently excluded from the holt following the procedures already outlined.

# DESTRUCTION OF HOLTS

Consideration should always be given to the possibility of otters remaining within a holt where its destruction is planned. Suitable equipment should be available on hand to deal with otters present within the holt or any otters injured during destruction of the holt. Destruction of a holt would usually be undertaken with a tracked 12-25 tonne digger, commencing at c. 15m from outer holt entrances and working towards the centre of the holt. Exposed tunnels should be checked for recent otter activity with a view to ensuring the safety of any otters potentially remaining. Once it is ensured that no otters are present, the remainder of the holt may then be destroyed and the entire area back-filled and made safe. Excavation of an otter holt will rarely require more than one working day. A report detailing evacuation procedures, holt excavation and destruction, and any other relevant issues, should be submitted to NPWS, in fulfilment of usual derogation conditions. Construction activities within the vicinity of directly impacted holts may commence once they have been evacuated and destroyed under derogation.

Suitable equipment should be available on hand to deal with otters present within the holt or any otters injured during destruction of the holt.



# GUIDELINES FOR SITE WORKS IN THE VICINITY OF ACTIVE OTTER HOLTS

Until such time as otters have been successfully evacuated from active holts, the following provisions should apply to all construction works:

- No works should be undertaken within 150m of any holts at which breeding females or cubs are present. Following consultation with NPWS, works closer to such breeding holts may take place - provided appropriate mitigation measures are in place, e.g. screening and/or restricted working hours on site.
- No wheeled or tracked vehicles (of any kind) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence.
- The prohibited working area associated with otter holts should, where appropriate, be fenced with temporary fencing prior to any possibly invasive works. Fencing should be in accordance with Clause 303 of the NRA's *Specification for Roadworks* (National Roads Authority). Appropriate awareness of the purpose of the enclosure should be conveyed through notification to site staff and sufficient signage should be placed on each exclusion fence.
  All contractors or operators on site should be made fully aware of the procedures pertaining to each affected holt.
- Where holts are present in close proximity to invasive construction works but are determined not to require destruction, construction works may commence once recommended alternative mitigation measures to address otters have been complied with.

No works should be undertaken within 150m of any holts at which breeding females or cubs are present.

# WATER CROSSINGS

The welfare of otters on road schemes in Ireland will be ensured mainly by the provision of continued safe access for otters to their ranges and foraging habitats.

Otters use rivers, streams, and small drains, as corridors of access to their home ranges. Adequate provision for otters at affected watercourse crossings is required to allow the species to retain continued access to their foraging areas. The spanning of larger rivers or larger watercourses normally results in only limited disruption to otter activity. Attention has to be paid to crossings over smaller watercourses.

Ledges will be required at watercourse crossings used by otters. Where ledges cannot be provided, other mammal underpasses might be substituted. In most instances, provisions for otters at watercourse crossings will usually serve for badgers and other mammalian species also (provisions such as ledges, underpasses, fencing etc.).

Where badger-resistant fencing has been recommended to restrict movement of badgers across a road scheme, this will also serve to keep otters from crossing the road scheme. Otters will often cross roads even where there appears to be more than adequate access provided within the watercourse by a well-designed bridge or culvert. The erection of wildlife fencing (to ensure that otters use the watercourse rather than attempting to cross the road) is, therefore, always recommended, see mammal fencing on page 12.

Watercourses provide important habitat for many floral and faunal species. The correct treatment of watercourses is an important element of planning of road schemes in Ireland (refer to the *Guidelines for the Crossing of Watercourse during the Construction of National Road Schemes*, National Roads Authority, 2005). These guidelines detail best practice at larger watercourse crossings and will provide, in most instances, adequate mitigation for otters. However, otter surveys at EIS or pre-construction stage may reveal that smaller streams and drains are also being used as wildlife corridors by otters. The overall mitigation requirements for otters affected by a road scheme will then need to include additional provision for otters at these locations. Such measures might include construction of a box culvert, with ledges for otters, rather than a pipe culvert, for example.

**Watercourses provide important habitat for many floral and faunal species.**



## CULVERTS OVER SMALLER RIVERS, STREAMS AND DRAINS

The use of cylindrical culverts, on smaller watercourses in use by otters, should not be considered other than in exceptional circumstances. As such culverts fill rapidly after rainfall, leading to high water speeds, otters will often be averse to using them. Cylindrical culverts or boxed culverts have to be oversized to allow for the provision of ledges.

Where water levels in the culverts are high, otters will tend to cross over the new road, potentially resulting in mortalities. Where such culverts are necessary, an alternative underpass should be provided. Obstacles to mammal passage, such as weirs and sluice gates, should allow for ledges or steps by which mammals may avoid them. Refer to the *Guidelines for the Crossing of Watercourse during the Construction of National Road Schemes* (National Roads Authority, 2005) for culvert specifications.

## LEDGES AT WATER CROSSINGS

Ledges are walkways that allow mammals to cross under a road scheme at water crossings where there is inadequate provision for dry-ground passage at bridges and culverts. Ledges shall be at least 500mm wide, constructed at least 150mm above the 1 in 5 year flood event, and allow at least 600mm headroom. They are usually constructed of solid concrete on one or both sides of a bridge or culvert, but they may also be made of wooden or metal planks, sometimes bolted onto the structure's sides. It may be an option to install prefabricated culverts with integrated ledges.

Whilst a ledge on both sides of a water crossing is usually recommended, only one ledge might be feasible within a particular bridge or culvert. Where this is the case, reference to the badger survey is advised - as it may indicate a preference for the ledge to be on one particular side of the water crossing. There must be adequate access to any ledges provided from the riverbank next to the ledge. Ledges transversing the crossing can also be included to allow mammals from either side of the watercourse to reach and utilise a single ledge incorporated into the bridge or culvert. The ledges and mammal access paths should be linked and landscaped appropriately so that otters, badgers, and other mammals will use them.

## UNDERPASSES FOR OTTERS AND BADGERS

Otters are disinclined to use water-filled culverts without dry pathways. Where circumstances do not allow for adequate provision of ledges or larger culverts, an alternative is to provide underpasses (tunnels) next to the watercourse crossing. Such underpasses for otters will be similar to those for badgers. The underpass should be composed of 600mm diameter concrete pipes. See *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes*, National Roads Authority, 2005. Ramps may be required to ensure accessibility to the wildlife underpass. These tunnels should be kept as short and as straight as possible and, where feasible, daylight should be visible through the underpass. Drainage should be adequate to prevent water-logging at the entrances and within the underpass. The tunnels should be constructed as close to the watercourse as possible, with animals guided to them by walls (or fencing) and appropriate landscaping.

# cont... WATER CROSSINGS

## MAMMAL FENCING

Otters will often cross roads some distance from watercourses. Mammal-resistant fencing should be incorporated on either side of all watercourses at which otter presence is known and should stretch to at least 25m and preferably to 50m or more either side of the crossing. Often, badger-resistant fencing will also have been recommended at locations along the route, including, possibly, at water crossings; such fencing is more than adequate for otters. Those constructing mammal resistant fencing should adhere to the relevant specifications set out in Figure 1 Mammal Fencing.

## MAINTENANCE OF RIPARIAN COVER AND LANDSCAPING

Construction works at water crossings will impact on the existing riparian vegetation cover. Where practicable, such cover, using the same native species, should be restored as soon as possible after construction so as to limit short-term and longer-term impacts on the use of watercourses by faunal species. Riparian habitats can often be improved by additional planting along the affected watercourses. The aim of landscaping should be to ensure, in so far as is possible, maintenance of a vegetated wildlife corridor along all watercourses affected by any scheme (refer *A Guide to Landscape Treatments for National Road Schemes in Ireland*, National Roads Authority, 2006). Access to ledges and underpasses must be provided by appropriate levelling and landscaping, thereby ensuring free movement by mammals to the underpass entrances or mammal walkways. Care must be taken to ensure that planting does not obscure entrances to wildlife underpasses or limit access to wildlife ledges provided at bridges and culverts - either in the short-term or the long-term.

**Access to ledges and underpasses must be provided by appropriate levelling and landscaping, thereby ensuring free movement by mammals to the underpass entrances or mammal walkways.**



# POST-CONSTRUCTION MONITORING AND MITIGATION

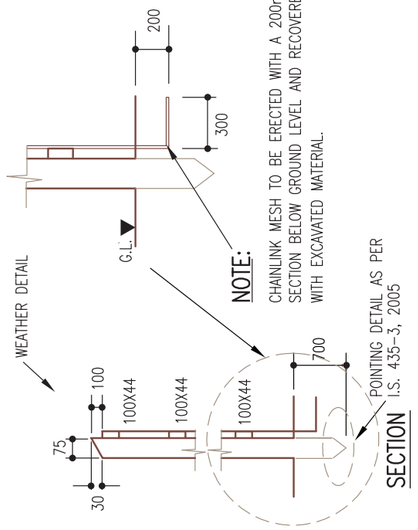
Depending on the type of contract, post-construction monitoring requirements should be stipulated in the Employer's Requirements or Maintenance requirements for local authorities. Maintenance of otter underpasses and means of access by otters to ledges at bridges and culverts is necessary at regular intervals. Obstacles, such as accumulated debris and branches, or, excessive growth of woody vegetation, that could impede passage of otters and other mammals, may need to be removed from underpass tunnels, culverts, etc.

Upon completion of the road construction, quarterly monitoring should be carried out over a period of at least one year to determine the success of the measures employed in an effort to ensure protection of otter populations. The principal measure of success is a continued use of the affected watercourses by otters at water crossings known to be used by otters.

Any deficiencies in the measures should be reported to the relevant authority and corrected where possible.

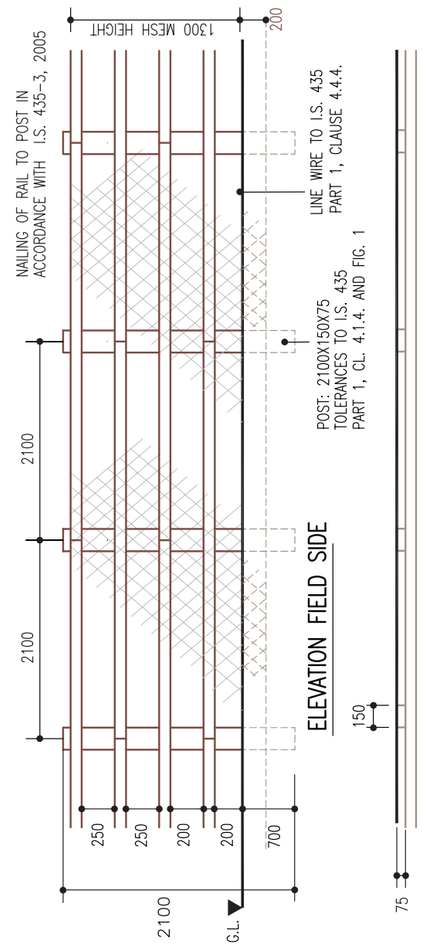
Where necessary otter mitigation measures may have also been provided outside of the landtake of the scheme. Monitoring to assess the effectiveness of such measures can only be undertaken with the permission of the landowner.

FIGURE 1: SPECIFICATION FOR MAMMAL RESISTANT FENCING




NOTES A:

1. FENCES SHALL BE CONSTRUCTED AND ERECTED IN ACCORDANCE WITH IS. 435: 2005 EXCEPT WHERE OTHERWISE SHOWN.
2. ANY LENGTH OF FENCING (INCLUDING BRANCHES AND SPURS) SHALL START WITH A POST AND END WITH A POST. AN ADDITIONAL POST SHALL BE PROVIDED AT FENCE JUNCTIONS AND AT FENCE CORNERS.
3. POST HOLES FALLING IN ROCK SHALL BE EXCAVATED TO THE DEPTH SHOWN ON THIS DRAWING OR, WITH THE ENGINEER'S APPROVAL, TO A DEPTH OF 500mm, AND SHALL BE BACKFILLED WITH MIX ST2 CONCRETE. WHERE A REDUCED DEPTH OF HOLE IS ACCEPTED BY THE ENGINEER, THE TOP OF THE POST SHALL BE SUITABLY CUT AND TREATED IN ACCORDANCE WITH THE RECOMMENDATIONS OF IS.435: 2005.
4. FENCE POST AND RAIL SHALL BE TREATED WITH PRESERVATIVE IN ACCORDANCE WITH THE REQUIREMENTS OF SERIES 300 OF THE SPECIFICATIONS FOR ROAD WORKS AND APPENDIX B OF IS.435-1: 2005.
5. CONCRETE FOUNDATIONS TO POSTS SHALL BE PROVIDED WHERE STATED IN APPENDIX 1/3 OR AS DIRECTED BY THE ENGINEER.




NOTES B:

CHAINLINK MESH SHALL BE 1800mm WIDE, 60mm MESH MADE OF 2.25/3.15mm DIAM. PLASTIC COATED GALVANISED MILD MESH STEEL WIRE TO IS EN 10223-6.

FIXING.

FIXING IN ACCORDANCE WITH I.S. 435-3:2005, NOTES 13 AND 14 AND SECTION 4.4 OF I.S. 435-1, 2005

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# CONTACT

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# ACKNOWLEDGEMENTS

The Authority wishes to express its appreciation to the National Parks and Wildlife Service (Department of the Environment, Heritage and Local Government), NATURA, and Scott Cawley and Associates, for providing constructive comments.

## NOTES



## NOTES

81559/07/08/x2