

# Ecology Report

Waterways Corridor Study 2003  
Shannon Navigation and Royal Canal  
for  
The Heritage Council

January 2004

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**THE HERITAGE COUNCIL****WATERWAYS CORRIDOR STUDY 2003****SHANNON NAVIGATION AND ROYAL CANAL:  
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## **1.0 INTRODUCTION**

The study area was investigated by White Young Green to determine significant elements of the heritage of the waterways corridor in terms of its natural heritage value.

The ecological assessment comprised largely of desktop research with a short preliminary field assessment. The methodology followed the plan outlined below:

- Documentary research and consultation with regard to habitats, flora and fauna.
- Preliminary field assessment of the waterways corridor. This was conducted by barge or boat. Non-navigable sections of the canal were visited on foot or by car.
- From the above processes, key aspects of the natural heritage in the corridor were identified.
- Key aspects were assessed with regard to their significance on a local, regional, national or international level.
- Key sites and areas of highest nature conservation value on the corridor were identified, along with the most vulnerable and sensitive sites.
- 

Appendix A presents natural heritage features of the waterways corridor. These features were collated primarily from desktop research, and to a lesser extent preliminary field survey. The Royal Canal and River Shannon, though both aquatic bodies, present two very different habitat complexes.

The Royal Canal Corridor from Thomastown to Clondra constitutes a very diverse array of habitats, including aquatic, semi-aquatic and marshy habitats in the channel, calcareous, marshy and improved grasslands on its towpath and embankments and hedgerow boundaries. The narrow and linear nature of the canal is such that it represents an ecological corridor that allows a diverse flora and fauna to exist in a primarily agricultural landscape.

The River Shannon Corridor, from Lanesboro to Rooskey, has a vast floodplain in which many semi-natural habitats such as woodlands, grasslands and marshes complement the aquatic habitats found in the river corridor.

## **2.0 AREAS DESIGNATED FOR NATURE CONSERVATION**

A review of the Heritage Division, Dept. of Environment, Heritage and Local Government's database indicates that there are a number of designated sites both within and adjacent to the waterways corridor. The Royal Canal is in its entirety a proposed Natural Heritage Area (pNHA). Of the Shannon section included in this study, Lough Forbes is designated as candidate Special Area of Conservation (SAC) and Special Protection Area (SPA). Additionally, there are a number of designated areas within the wider ecological corridor, namely, Mount Hevey Bog (SAC), Lough Bawn (pNHA), Brown Bog (SAC), Clooneen Bog (SAC), Aghnamona Bog (pNHA), Lough Bofin (pNHA), Derry Lough (pNHA) and Lough Ree (SPA & SAC).

### 3.0 CONSULTATION

Consultation with relevant authorities, organisations and individuals was undertaken. A complete list of consultees contacted is contained in Appendix B. Feedback from the consultees was limited.

Submissions received include:

- flora and fauna records on the Royal Canal and Shannon (Cotton, D., *pers. comm.*),
- notice of a mollusc study conducted on the Royal and Grand Canals during the summer period 2003 (Moorkens, E., *pers. comm.*), and
- concerns about excessive and extensive strimming of bankside vegetation and widespread usage of aquatic weed-cutters. These activities have serious consequences on flora and invertebrate diversity (Breen, C., *pers. comm.*).

### 4.0 THE ROYAL CANAL CORRIDOR

#### 4.1 Habitat Overview

Information on the habitats of the Royal Canal was principally extracted from “*Ecological Survey of the Royal Canal*” (Dromey *et al.*, 1991). This study identified three major zones or units of the Royal Canal depending on its level of restoration. Unit 1 refers to the navigable section of the Royal Canal; Unit II refers to the watered section and Unit III refers to the dry sections. Since this study was carried out, considerable restoration works have been conducted on the Royal Canal. However, in general terms, the habitats of the main corridor components will remain the same.

The Dromey *et al.* (1991) identified five main components of the canal corridor:

- Boundary,
- Towpath,
- Bank,
- Channel, and
- Stonework Structures.

#### *Boundary*

The boundary is defined as the edge of canal property and the area between it and the towpath. The boundary habitats found were hedgerows, woodland, associated habitat of hedge and woodland, scrubland, fens, carr, bog, drains or ditches, nutrient-poor limestone grassland. Hedgerows/scrub and woodland are the dominant boundary habitats along the canal corridor. Fens, nutrient-poor limestone grassland, bogs and carr occur very infrequently along the canal.

#### *Towpath*

Towpath habitats comprise generally of well-used grass track or meadow. Well-used grass track will comprise of species resilient to trampling such as *Plantago major*, *Poa annua*, *P. pratensis*, *Lolium perenne* and *Trifolium repens*.

### *Bank*

The habitats on the banksides vary considerably depending on gradient, height, width, management (if any) along the length of the canal. As a result, a wide range of habitats are found. Emergent vegetation can be found at the base of banks with gentle gradients, with plants of drier habitats at the top of the bank. Small grassland habitats (meadow/nutrient-poor limestone) can be found at the top of wide banks. In parts, scrub can encroach substantially on this component of the canal corridor.

### *Channel*

The channel habitats in the Royal Canal vary widely from Unit to Unit and even within a Unit type. In the navigable section, the vegetational bands are clearly defined but are not very diverse. In Unit II, a diverse emergent band is clearly evident. Unit III presents dry terrestrial and marshy habitats. The habitats in this component of the Canal Corridor are likely to have changed substantially, especially where the navigable and watered sections have now been extended. Additionally, widespread dredging has occurred along the canal corridor.

### *Stonework Structures*

These habitats occur on the many stonework features such as locks, bridges and harbours along the Royal Canal.

## **4.2 Ecological Value of the Royal Canal**

The ecological value of the Royal Canal can be attributed to a number of factors:

- Its value as an ecological corridor,
- the diverse range of habitats and species available, and
- the number of rare and protected plant and animal species it supports.

### **4.2.1 Fauna**

The Royal Canal study corridor presents a diverse array of habitats suitable for many mammal species. Several of these such as the otter (*Lutra lutra*), badger (*Meles meles*), hedgehog (*Erinaceus europaeus*), Irish hare (*Lepus timidus hibernicus*), red squirrel (*Sciurus vulgaris*), pine martin (*Martes martes*), pygmy shrew (*Sorex minutus*), stoat (*Mustela erminea*) and bats, lesser horseshoe bat (*Rhinolophus hipposideros*), whiskered bat (*Myotis mystacinus*), Natterer's bat (*Myotis nattereri*), Daubenton's bat (*Myotis daubentoni*), Leisler's bat (*Nyctalus leisleri*), common, Nathusius' and soprano pipistrelles (*Pipistrellus pipistrellus*, *P. nathusii* and *P. pygmaeus*) and brown long-eared bat (*Plecotus auritus*), are protected. Other mammals likely to occur are wood mice (*Apodemus sylvatica*), fox (*Vulpes vulpes*), brown rat (*Rattus norvegicus*), rabbit (*Oryctolagus cuniculus*), grey squirrel (*Sciurus carolinensis*) (Hayden and Harrington, 2000).

The Royal Canal has a low diversity and density of breeding riparian birds, especially in the navigable parts, and also the dewatered sections to the West (Dromey *et al.*, 1991). Riparian species observed or known to frequent the Royal Canal include the mallard (*Anas platyrhynchos*), mute swan (*Cygnus olor*), moorhen (*Gallinula chloropus*) which favours reeds, grasses and aquatic vegetation, grey wagtail (*Motacilla cinerea*) which nests in holes or on ledges under bridges, walls or old buildings close to or over

water, sedge warbler (*Acrocephalus schoenobaenus*), grey heron (*Ardea cinerea*) which builds nests on tops of trees and in bushes and kingfisher (*Alcedo atthis*) (Dromey *et al.*, 1991).

The passerines do very well in the thick hedges that bound much of the canal's length. The more common species include robins (*Erithacus rubecula*), blackbirds (*Turdus merula*), wrens (*Troglodytes troglodytes*), willow warbler (*Phylloscopus troch*), chaffinch (*Fringilla coelebs*), song thrush (*Turdus philomelos*), chiffchaff (*Phylloscopus collybita*), and wood pigeon (*Columba palumbus*) (Dromey *et al.*, 1991). Blackcap (*Sylvia atricapilla*) was also recorded near Keenagh in 2000 (Cotton, D. *pers. comm.*).

It is likely that both the common frog (*Rana temporaria*), and smooth newt (*Triturus vulgaris*) occur across the canal corridor, both in drains, and within the channel itself in drier areas.

Intensive fish stock surveys on the Royal Canal have revealed a wide range of angling species including bream (*Abramis brama*), roach (*Rutilus rutilus*), rudd (*Scardinius erythrophthalmus*), hybrids, tench (*Tinca tinca*), carp (*Cyprinus carpio*), pike (*Esox lucius*) and eels (*Anguilla anguilla*) (Dúchas The Heritage Service, 1998).

The rare aquatic mollusc, the False Orb Pea Mussel (*Pisidium pseudosphaerium*), was recently recorded at Molly Wards Bridge, east of Allards Bridge, over the River Inny and along the stretch between Ballynacarrigy Bridge and Kiddy's Bridge (Moorkens, 2003). It lives in richly vegetated swampy habitats with clean standing water and a muddy substrate.

The canal corridor's diverse array of habitats provide for a rich diversity of invertebrate species including molluscs, dragonflies and damselflies.

#### *Fauna of International Importance*

The otter is listed as a priority species in the Habitats Directive whose conservation requires the designation of Special Areas of Conservation. Its population in Ireland is of international importance (Hayen and Harrington, 2000). Although no evidence of the otter was found during the field assessment, it likely that this species utilises the canal corridor for feeding.

Bats, protected by the Wildlife Act, 1976 and the Habitats Directive, probably utilise the Royal Canal Corridor. The habitats along the canal provide suitable feeding, roosting and hibernation sites for a number of bat species.

The kingfisher (*Alcedo atthis*) is an Annex 1 species listed in the EU Birds Directive. This species is also an amber listed species of medium conservation concern (Newton *et al.*, 1999).

Desmoulins' whorl snail (*Vertigo moulinsiana*) lives in calcareous wetlands with high vegetation, such as reedbeds bordering lakes, canals and rivers (Moorkens 1999). This species is an Annex II species under the Habitats Directive (92/43/EEC). It was observed at Savage Bridge in *Glyceria* and *Carex*-dominated vegetation within the almost dried up canal, and in a small swampy *Glyceria*-dominated fen on the south

side of the canal at Kildallan Bridge between Ballynacarrigy and Mullingar in a recent study (Moorkens, 2003).

#### **4.2.2 Fisheries**

Fish stock assessments conducted by the Central Fisheries Board in the summer of 2003 indicated that the dominant species is roach (*Rutilus rutilus*) west of Mullingar. Roach numbers were particularly high between Locks 26 (Coolnahay Harbour) and 30, suggesting that while under used by anglers, this section shows good angling potential. Exceptional stocks of tench (*Tinca tinca*) were recorded at Ballynacarrigy and Abbeyshrule. Abbeyshrule is a prime tench angling destination, regularly used by local and British anglers (Central Fisheries Board, *pers. comm.*).

The Royal Canal at Mullingar supports an excellent coarse fishery. In addition to large shoals of suitable roach (*Rutilus rutilus*) and rudd (*Scardinius erythrophthalmus*), the canal also provides excellent year-round angling for pike (*Esox lucius*) (winter) and tench (*Tinca tinca*)(summer) anglers (Central Fisheries Board, *pers. comm.*).

#### **4.2.3 Habitats and Flora**

A number of important habitats occur along the canal corridor.

##### *Dry calcareous and neutral grassland (GS1)*

The Annex I (Habitats Directive) habitat, "grasslands on calcareous substrates" (Festuco-brometalia) is recorded along the length of the canal corridor. The current status and extent of this habitat along the canal needs to be established. The quality and diversity of this habitat type is reliant on management regimes in the area. This habitat is sensitive to inappropriate mowing, and/or application of herbicides, revegetation and dumping of spoil.

##### *Peatlands*

The midlands of Ireland is renowned as being the centre of raised bog distribution in Ireland. Ireland's raised bogs are acknowledged as being of international importance. The best example of raised bog (PB1) within the study corridor is Brown Bog which is a designated SAC. Mount Hevey bog (SAC) is just outside the study corridor, located 2km southeast of Thomastown Harbour. The canal corridor passes through a number of bogs of variable size and condition. Mechanical peat extraction is ongoing at Cloondara Bog (Cutaway Bog, PB4). Some Birch regeneration was noted on the canal edge. Natural regeneration appears to be extensive on Cloonbreany Bog (Cutaway Bog, PB4), south west of Keenagh. Potential threats to raised bog habitat include harvesting of peat for fuel, and drainage for agricultural reclamation. The best examples of peatland are protected via nature conservation designations. However, most areas are still subject to damaging operations.

Whilst active raised bogs can withstand only low levels of recreational activities, the revegetated cutover bogs possess considerable opportunities for both educational and recreational facilities, such as the Corlea Trackway Visitor Centre, located within 1km of Royal Canal at southwest of Keenagh, Co. Longford.

### *Fens and Flushes (PF)*

Lough Bawn is a designated proposed Natural Heritage Area, located approximately 300m east of the Royal Canal due west of Keenagh. This a relatively small site composed of raised bog, fen, wet and dry woodland and freshwater marsh habitats. The area of fen/freshwater marsh has developed in a region formally occupied by the open waters of Lough Bawn. It is this fen area that gives the site its principal scientific interest (The Heritage Division website, [www.heritagedata.ie](http://www.heritagedata.ie)). Dromey *et al.* (1991) recorded a small number of fen/marsh habitats along the Royal Canal banks. The extent and condition of these areas needs to be established through field survey.

### *Rare Plant Species*

A number of nationally rare species were recorded within the canal corridor. These include:

The green-winged orchid (*Orchis morio*) which occurs in meadows, pastures and sandhills. It occurs occasionally in the centre of Ireland and parts of the East but is rare elsewhere (Webb *et al.*, 1996). This was previously recorded along the Royal Canal (Dromey *et al.*, 1991).

Frogbit (*Hydrocharis morsus-ranae*) was recorded by Dromey *et al.* (1991). It was more recently recorded along the canal near Keenagh (D. Cotton, *pers. comm.*). This species grows in ditches, bog-holes, marshes and slow streams, occurring occasionally in the east centre of Ireland, but very rare elsewhere (Webb *et al.*, 1996).

#### **4.2.4 *Other Areas of Ecological Significance***

Dromey *et al.*, (1991) identified a wide range of features of interest along the canal corridor, reflecting diversity, species rarity, habitat potential. The following features were selected from their report and the preliminary field assessment based on their diversity, uniqueness, or on habitat potential. As a full habitat assessment was not conducted for the purposes of this study, other habitats/features of significance may be omitted.

### *Mullawornia Rock*

This exposed limestone rock face is located south of Pake Bridge and supports pockets of species of calcareous grassland. This habitat is classified as Exposed Calcareous Rock (ER2) under Fossitt (2000).

### *North of Aghantrah Bridge (Longford Branch).*

Hazel woodland was recorded along the boundary. This woodland type is classified as Oak-Ash-Hazel-Woodland under Fossitts classification. Although this habitat type is not an annexed habitat, its extent in Ireland is very limited and as such should be considered to be of conservation importance (Fossitt, 2000).

### *Cloonbreany Bog*

Dromey *et al.*, (1991) recorded this bog as being cut at the time of their survey. Natural regeneration appears to have taken place since then. This area, classified as Cutover Bog (PB4) (Fossitt, 2000) is worthy of further survey.

*East of Ballybranigan Harbour*

This is a diverse area with calcareous species at the top of the embankment and plants typical of a wetland habitat at the toe of the embankment. Good hedgerow and a stream add to the diversity of the site.

*River Inny*

The intersection of the River Inny adds ecological value to the canal, both from botanical and wildlife perspectives.

*Baltrasna Bridge to Saunders Bridge*

Dromey *et al.* (1991) highlighted this section as high conservation value and a valuable wildlife resource. The banks comprise of species-rich meadow and mixed scrub vegetation. Feeder streams add to the diversity of the section. Green-winged orchid (*Orchis morio*), the bee orchid (*Orphrys apifera*) and carline thistle (*Carlina vulgaris*) were all recorded on south bank. At present, the section appears to be more managed and less diverse closer to Saunders Bridge.

*Footy's Bridge*

A well-drained calcareous grassland was recorded between the canal and the railway. The protected species green-winged orchid (*Orchis morio*) was previously recorded here (Dromey *et al.*, 1991).

**5.0 THE SHANNON CORRIDOR****5.1 Habitats Overview**

Browne Dunne Roche (2002) identified the habitats of the Upper Shannon Floodplain, including the corridor from Lanesboro to Rooskey, from aerial photographs and through ground validation. Habitat nomenclature followed that of the national ASI survey (Lockhart *et al.*, 1993), with reference to the classification used by the Heritage Council (Fossitt, 2000) and the EU Habitats Directive.

A total of 17 habitats were identified by Browne Dunne Roche (2002) within the River Shannon Corridor. These are listed in Table 5.1 below.

<b>Habitat Type</b>
Lakes
Rivers and streams (FW 1and FW2)
Canals (FW3)
Reedbeds and other swamps (FS1)
Freshwater marsh (GM1)
Lowland wet grassland (GS4)
Improved grassland (GA1)

Raised bog (PB1) (Active raised bogs are Priority Habitats in the EU habitats Directive).

Cutover bog (PB4)

Fens (PF1)

Heaths

Dry broadleaved semi-natural woodland (WN2)

Wet, broadleaved, semi-natural woodland (WN6, WN7\*)

Mixed woodland (WD1)

Commercial forest (WD4)

Hedge (WL1)

Scrub (WS1)

Table 5.1. Habitats within the Shannon Corridor (Browne Dunne Roche, 2002).

## 5.2 Ecological Value of the Shannon Corridor

The particular ecological value of the River Shannon can be attributed to a number of factors:

- Its importance as a habitat for a large number of birds species.
- It supports a number of rare and protected habitats, plant and animal species.
- Its significance as an ecological corridor and links to other internationally important habitats.

### 5.2.1 Fauna

The Shannon corridor provides a diverse range of habitats suitable for a variety of mammal species. Several of these such as the otter (*Lutra lutra*), badger (*Meles meles*), hedgehog (*Erinaceus europaeus*), Irish hare (*Lepus timidus hibernicus*), red squirrel (*Sciurus vulgaris*), pine martin (*Martes martes*), pygmy shrew (*Sorex minutus*), stoat (*Mustela erminea*) and bats, lesser horseshoe bat (*Rhinolophus hipposideros*), whiskered bat (*Myotis mystacinus*), Natterer's bat (*Myotis nattereri*), Daubenton's bat (*Myotis daubentoni*), Leisler's bat (*Nyctalus leisleri*), common, Nathusius' and soprano pipestrelles (*Pipistrellus pipistrellus*, *P. nathusii* and *P. pygmaeus*) and brown long-eared bat (*Plecotus auritus*), are protected. Other mammals likely to occur in the farmland habitats on the corridor's edges are wood mice (*Apodemus sylvatica*), fox (*Vulpes vulpes*), brown rat (*Rattus norvegicus*), rabbit (*Oryctolagus cuniculus*) (Hayden and Harrington, 2000).

The Upper Shannon Corridor is an important area for wildfowl, particularly over-wintering migratory species, such as the Greenland White-fronted Goose (*Anser albifrons flavirostris*). Wader species occurring on this stretch of the River Shannon include the lapwing (*Vanellus vanellus*), redshank (*Tringa totanus*) and snipe (*Gallinago gallinago*) (Colhoun, 2001). Little grebe (*Tachybaptus ruficollis*), great-crested grebe (*Podiceps cristatus*), cormorant (*Phalacrocorax carbo*), grey heron (*Ardea cinerea*), mute and whooper swans (*Cygnus olor* and *C. cygnus*), wigeon (*Anas penelope*), teal (*Anas crecca*), mallard (*Anas platyrhynchos*), pochard (*Aythya ferina*), tufted duck (*Aythya fuligula*), goldeneye (*Bucephala clangula*), moorhen (*Gallinula chloropus*) and coot (*Fulica atra*) are all known to breed within the Shannon

Corridor (Colhoun, 2001). The dipper (*Cinclus cinclus*) and grey wagtail (*Motacilla cinerea*) also occur within the Shannon study corridor (Cotton, D. *pers. comm.*).

The common frog (*Rana temporaria*) (protected under the Wildlife Act, 1976) is found across a broad range of wetland habitats in Ireland including the wet field, drains and cutover bog edges along the length of the Shannon study corridor. The Shannon Corridor also provides suitable habitats for the smooth newt (*Triturus vulgaris*).

#### *Fauna of International Importance*

The otter is listed as a priority species in the Habitats Directive whose conservation requires the designation of Special Areas of Conservation. Its population in Ireland is of international importance (Hayen and Harrington, 2000). This species is likely to be frequent in the Upper Shannon (Browne Dunne Roche, 2002).

The Greenland White-fronted Geese (*Anser albifrons flavirostris*), an Annex 1 species in the EU Birds Directive (Browne Dunne Roche, 2002) and amber listed as medium conservation concern (Newton *et al.*, 1999) is known to utilise the Shannon study corridor. Known feeding sites within the study corridor include three areas within the Lough Forbes Complex Special Area of Conservation. Formally nationally important numbers were recorded at this site in 1994. However, since then, a fluctuating but declining trend is noted from flock counts, since at least the mid 1990s or earlier, so much so that the Kilglass/Lough Forbes flock no longer qualifies for SPA status (Browne Dunne Roche, 2002).

The redshank (*Tringa tetanus*) also occurs within the Shannon corridor (Cotton, D. *pers. comm.*). This is listed in Annex II of the EU Birds Directive and is an amber listed species of medium conservation concern (Newton *et al.*, 1999).

The white clawed crayfish (*Austropotamobius pallipes*), an Annex II species listed in the Habitats Directive, is widespread in Ireland. It occurs in alkaline rivers and small lakes, including the Shannon. Crayfish occur only where water quality is good. They are particularly sensitive to heavy mental pollution and to habitat disturbance such as dredging, draining and channelisation (McCreesh, 1999).

The freshwater pearl mussel (*Margaritifera margaritifera*) is listed as an Annex II species in the EU Habitats Directive. Brown Dunne Roche (2002) cites a record of the freshwater pearl mussel upstream of our Shannon study corridor in Lough Allen. However, the status of this invertebrate in the River Shannon is unknown.

#### **5.2.2 Fisheries**

Monitoring on the Shannon Waterway is carried out by both the Central Fisheries Board and the Environmental Protection Agency. An overall improvement in water quality within the River Shannon system was observed within the River Shannon system from 1996 to 1999 (Kirk McClure Morton, 2001). Table 5.2 presents recent biological quality rating for the Camlin River and the Shannon Corridor, which includes the Shannon part of the study corridor from Rooskey to Lanesboro.

The River Shannon system hosts a mixed fishery with 23 recorded freshwater species. The major species to be found are salmon (*Salmo salar*), brown trout (*Salmo trutta*), pollan (*Coregonus antumnalis*), pike (*Esox lucius*), perch (*Persa fluviatilis*), bream (*Abramis brama*), roach (*Rutilus rutilus*), roach/bream hybrids, rudd (*Scardinius erythrophthalmus*), tench (*Tinca tinca*) and eel (*Anguilla anguilla*) (Kirk McClure Morton, 2001).

The *Hot Water Stretch* at Lanesborough is an ideal base for the coarse angler. Coarse fish species include very good stocks of bream (*Abramis brama*) and tench (*Tinca tinca*). Other coarse fish present in good numbers include roach (*Rutilus rutilus*) and hybrids (<http://www.shannon-fishery-board.ie>). Rudd, perch and eel are also found at this location. Furthermore, pike fishing is rated as good at this location (<http://www.shannon-fishery-board.ie>).

Sub-catchment	Catchment Area (km <sup>2</sup> )	Length of River Classified (km)	Classified Length of River (km)			
			Unpolluted	Slightly Polluted	Moderately Polluted	Seriously Polluted
Camlin	393	38.0	19.6	10.0	8.4	-
Shannon Corridor	2, 222	140.6	64.6	37.2	38.8	-

Table 5.2. River Length by Biological Classification (1999) – Shannon Corridor and Camlin River (Source: Kirk McClure Morton, 2001).

### 5.2.3 **Specific Zones of Conservation Importance**

Browne Dunne Roche (2002) identified three zones in terms of development in the upper Shannon floodplain.

- A. Zones of high conservation interest where development is likely to have adverse impacts.
- B. Areas of interest where proposal for any new developments should be adequately assessed.
- C. Areas that have been developed, where permissions have been granted for development or for other reasons are of low conservation interest. Developments would be assessed mainly on the basis of their impacts on adjacent areas.

In terms of this study, zones A and B are considered significant and are discussed below. Descriptions of designated areas are taken from The Heritage Division website ([www.heritagedata.ie](http://www.heritagedata.ie)). Descriptions of other areas of conservation interest are synthesised from the Browne Dunne Roche (2002) report.

Zones categorised as Zone A within the River Shannon Corridor are listed in Table 5.3 below.

<b>Area</b>	<b>Conservation Rating</b>	<b>County</b>	<b>Distance from Shannon</b>
Clooneen Bog SAC (002348)	National Importance	Longford	80 metres
Lough Forbes Complex SAC (001818)	National Importance	Longford & Roscommon	Part of Shannon
*Aghnamona Bog NHA (000422)	Regional Importance	Leitrim & Longford	0.4 km
Ballinphuill	Regional Importance	Roscommon	Adjacent
Highstreet	Regional Importance	Longford	Adjacent
Kilnacarrow	Regional Importance	Longford	Adjacent
Cloontuskert to Ballyleague	Regional Importance	Roscommon	Adjacent

\*Aghnamona Bog NHA was not within Browne Dunne Roche (2002) study area but as it is a proposed NHA is deemed of regional conservation importance and is included within the Shannon Corridor.

Table 5.3. Areas Classified as Zone A (zones of high conservation interest where development is likely to have adverse impacts) (Browne Dunne Roche, 2002).

#### Clooneen Bog SAC

This bog lies approximately 3km south-east of Rooskey, Co. Longford on the east bank of the River Shannon, just north of Lough Forbes. The site comprises areas of high bog, including bog woodland and cutover bog. Clooneen Bog is a site of high conservation importance and includes two priority habitats, raised bog and bog woodland, listed in Annex I of the EU Habitats Directive. Mechanised peat-cutting occurs to the north-west and south-west of the high bog, with adverse effects such as drainage and burning. Old cutover is naturally regenerating to the north of the site. A number of rare plant species occur within the SAC (The Heritage Division website, [www.heritagedata.ie](http://www.heritagedata.ie)).

#### Lough Forbes SAC

This site is comprised of a complex of different habitats. The aquatic habitat provided by Lough Forbes is coupled with a series of raised bogs, callows grassland and several areas of mixed deciduous woodland. The raised bogs, located on the south-eastern shores of Lough Forbes are called the Ballykenny-Fishertown complex. They are of international importance as unique examples of Shannon river edge bogs. Areas of callows along the Camlin River are also included. These wet grasslands are important for their botanical interest as well as the waterfowl they support. The Lough Forbes area is also important for

the population of Greenland White-Fronted Geese that it supports (The Heritage Division website, [www.heritagedata.ie](http://www.heritagedata.ie)).

#### Aghnamona Bog NHA

Aghnamona Bog is a site of considerable conservation significance, comprising of raised bog, a rare habitat in Europe and one that is increasingly scarce and under threat in Ireland. This site comprises a good diversity of bog habitats including hummock/hollow complexes (The Heritage Division website, [www.heritagedata.ie](http://www.heritagedata.ie)).

#### Ballinphuill

This site is located just west of Termonbarry on the west bank of the Shannon. Extensive flooding from the Feorish River occurs at this site, inundating wet grassland and scrub. This site is not intensively managed and is a good habitat for waterfowl. Browne Dunne Roche (2002) recommends a detailed survey of this site to determine the extent of callow grassland, if any, occurring at the site. They suggest that if high quality callow grassland does occur at this site, that NHA designation may be appropriate.

#### Highstreet

This site is located 2km west of Clondra, on the east bank of the Shannon. This site consists of extensive flooding of wet rush fields which may be callows. This site may be important for wildfowl with curlew (*Numenius arquata*), mute swan (*Cygnus olor*), tufted duck (*Aythya fuligula*) and great crested grebe (*Podiceps cristatus*) being observed. Browne Dunne Roche (2002) recommends a detailed survey of this site to determine the presence and extent of callow grassland with a view to NHA designation (possibly with Ballinphuill).

#### Kilnacarrow

This site is located 3km north of Lanesboro on the east bank of the Shannon. Browne Dunne Roche (2002) recommend further survey to determine conservation interest.

#### Cloontuskert to Ballyleague

This site is located just north of Lanesboro on the west bank of the Shannon and includes a mosaic of vegetation types including wet peaty grassland, marsh and dry grassland. Browne Dunne Roche (2002) recommend further survey to determine the extent of callows vegetation and its conservation importance with a view to designating the site as an NHA.

Zone B areas are areas of interest where any new development should be adequately assessed and are listed in Table 5.4.

<b>Area</b>	<b>Conservation Rating</b>	<b>County</b>	<b>Distance from Shannon</b>
Kilbarry/Newtown Bog	Local Importance	Roscommon	Adjacent
Cornollen	Local Importance	Longford	2km
Cloondara	Local Importance	Longford	About 1km
Derrycashel	Local Importance	Roscommon	Adjacent
Knappogue	Local Importance	Longford	Adjacent
Cloonkeel Bog	Local Importance	Longford	Adjacent

Table 5.4. Areas Classified as Zone B (areas of interest where any new development should be adequately assessed) (Browne Dunne Roche, 2002).

#### Kilbarry/Newtown Bog

This site is an extensive area of cutaway bog located 3km north of Termonbarry on the western shore of Lough Forbes. The bog is dominated by heather and has abundant lichens and bog cotton. The hydrology of the bog has been compromised through drainage and cutting (Browne Dunne Roche, 2002).

#### Cornollen

This site is a birch dominated woodland outside the boundary of Lough Forbes SAC, approximately 2.5km south of Lough Forbes, at the confluence of the Camlin and Fallan Rivers (Browne Dunne Roche, 2002).

#### Cloondara

This site comprises of extensive flooding along the N5, between the Camlin and Fallan Rivers and the Royal Canal (Browne Dunne Roche, 2002).

#### Derrycashel

Located 2km west of Termonbarry, on the west bank of the Shannon, this industrial cutaway bog still has some relatively intact bog left. Birch woodland and gorse are found at the edge of the bog as well as invading rhododendron. There is extensive flooding by the Shannon (Browne Dunne Roche, 2002).

#### Knappogue

This area may be important for waterfowl. Coot (*Fulica atra*), mute swan (*Cygnus olor*) and grebe were all recorded. It is located 2km south west of Clondra on the east bank of the Shannon (Browne Dunne Roche, 2002).

### Cloonkeel Bog

This is a small raised bog, appearing to be reasonably intact, 4km south west of Clondra (Browne Dunne Roche, 2002).

## **6.0 RECOMMENDATIONS**

### **6.1 Royal Canal Corridor**

#### **6.1.1 Habitat Assessment**

In order to assess all areas of significance, and threats along the Royal Canal corridor, it is recommended that a detailed habitat assessment be conducted. This assessment should be carried out as part of a baseline survey conducted before dredging and other restoration works are completed. A habitat assessment should be conducted on a five yearly basis to monitor habitat change.

#### **6.1.2 Reed Fringe Management**

The reed fringe provides an important habitat for a number of bird, invertebrate and fish species. The Annex II snail *Vertigo moulinsiana* is closely associated with this habitat. The reed fringe also plays a role in reducing bank erosion associated with boat traffic. It is recognised that the reed fringe needs to be maintained for navigation purposes. However, during site visits, reed fringe was severely cut back in places. It is recommended that:

- Reed fringe should be maintained along the canal where possible.
- Where required to facilitate navigation, reed fringe should be cut on only one side of the canal, and at the same time leaving a wide fringe on the other side intact.
- A floating dredger, rather than a hedgerow cutter should be used to cut reed fringe so as to avoid damage to the adjacent bankside vegetation.

#### **6.1.3 Hedgerows**

Hedgerows are an important ecological corridor along the length of the canal. The method and timing of hedgerow cutting is vital to maintain their ecological value. The protection of hedgerow trees and re-planting of appropriate species is also important. It is recommended that guidelines on hedgerow management presented in The Heritage Councils "*Conserving Hedgerows*" and in Dromey *et al.* (1991) be adopted.

#### **6.1.4 Grassland Management**

The diversity and quality of the species rich limestone grasslands which are common along the Royal Canal can be maintained by the appropriate use of grazing and mowing techniques as outlined in Dromey *et al.* (1991). Threats to grassland habitats along the canal corridor include dumping of spoil over grassland, excessive mowing, scrub encroachment and in-appropriate weed control.

#### **6.1.5 Locks, Bridges and Derelict Buildings**

Locks, bridges and derelict buildings along the canal provide a suitable habitat for a range of species of flora and fauna. Dromey *et al.* (1991) presents a number of guidelines regarding the removal of

vegetation from, and cleaning of bridges. It is recommended that all stone bridges and any suitable stone buildings along the canal be surveyed by qualified personnel for the presence of bat species.

#### **6.1.6 Channel Management**

The management of the navigable part of the Royal Canal includes the control of vegetative growth, dredging and water quality.

Vegetative growth on the canal is controlled using both physical and chemical means in order to allow for navigation and to prevent infilling of the canal with vegetation. It is recommended that guidelines presented in Dromey *et al.* (1991) be implemented.

#### **6.1.7 Zebra Mussel**

The zebra mussel (*Dreissena polymorpha*) was recorded as common on the canal walls at Clondra, near the River Shannon confluence (Moorkens, 2003). This species spreads easily in slow rivers, canals, docks, reservoirs *etc.* and its distribution in the Royal Canal is limited by the dried sections of the canal east of Clondra. When these sections are rewatered, it is expected that *Dreissena* will spread rapidly into the canal (Moorkens, 2003). Spread would be further facilitated by introduction through mussels attached to leisure boats from the Shannon. Moorkens (2003) cites that research is currently underway to examine methods of controlling the invasive species. Waterways Ireland and the National Parks and Wildlife Service need to work in unison to ensure the best available methods for control of this species are used when the canal is rewatered and made navigable.

#### **6.1.8 Japanese Knotweed**

Japanese knotweed (*Polygonum cuspidatum*) was noted in several places along the Royal Canal (Begnagh Bridge, south of Pake Bridge and north of Cloonbreany Bridge) but is probably more widespread. This garden escape can spread quickly forming dense thickets, excluding native vegetation. It particularly favours riparian habitats. Its removal and control poses major difficulties. An ecologist should be employed if this species is encountered during restoration/maintenance works to ensure the most appropriate method for its removal is employed.

#### **6.1.9 Fish Stocking**

Coarse fish species found in the canal include bream (*Abramis brama*), roach (*Rutilus rutilus*), rudd (*Scardinius erythrophthalmus*), hybrids, tench (*Tinca tinca*), carp (*Cyprinus carpio*), pike (*Esox lucius*) and eels (*Anguilla anguilla*). The National Biodiversity Plan objectives include that “waters are primarily stocked with indigenous species, including by reviewing the situation in regard to the translocation of fish between catchments and producing appropriate guidelines or other necessary regulations.” In accordance with this Plan, the Royal Canal should be primarily stocked with indigenous species.

### **6.2 Shannon Corridor**

#### **6.2.1 Further Vegetation Survey**

Browne Dunne Roche (2002) recommend the following sites along the Shannon Corridor be surveyed in more detail to ascertain whether they warrant NHA designation:

- Ballinphuill (near Termonbarry)
- Highstreet (west of Clondra)
- Cloontuskert to Ballyleague

Furthermore they recommend that the site at Kilnacarrow be surveyed further to determine its conservation interest.

See Browne Dunne Roche (2002) for further information.

#### **6.2.2 Faunal Surveys**

Browne Dunne Roche (2002) recommend detailed surveys on the EU protected species, greenland white-fronted geese, white-clawed crayfish and the pearl mussel.

#### **6.2.3 Development**

Browne Dunne Roche (2002) cite habitat loss or fragmentation and water quality deterioration as serious consequences of development within the Shannon corridor.

#### **6.2.4 Tourism**

Browne Dunne Roche (2002) suggest that the impact of increased boating traffic along the Shannon and its lakes could have a two-fold effect:

- Potentially cause disturbance to sensitive species such as Greenland White-fronted geese, and
- Assist in the spread of the invasive species the zebra mussel.

#### **6.2.5 Agriculture**

Agricultural practises within the Shannon corridor have the potential to have a number of adverse impacts:

- Reduction in water quality,
- Change in habitats through increased nutrient input, drainage and land reclamation. Kirk McClure Morton (2001) details the impact of agriculture on water quality within the Shannon study corridor.

#### **6.2.6 Rhododendron**

The introduced species rhododendron (*Rhododendron ponticum*) poses a threat to woodland and cutaway bog within the waterways corridor, particularly around the Castleforbes demesne (Browne Dunne Roche, 2002). Its removal to prevent further spread and to allow native species to re-establish is recommended.

#### **6.2.7 Zebra Mussel**

The zebra mussel (*Dreissena polymorpha*) has populations present within the Shannon study corridor. This introduced species, when present in large numbers can dramatically alter lake ecosystems from pelagic to benthic. This can have serious impacts on native populations of invertebrates and on fisheries (Browne Dunne Roche, 2002). Moorkens (2003) cites that research is currently underway to examine methods of controlling the invasive species. Waterways Ireland and the National Parks and Wildlife

Service need to work in unison to ensure the best available methods for control of this species are used when the canal is rewatered and made navigable.

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## 8.0 LEGISLATION

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

Council Directive 19/409/EEC of 2 April 1979 on the conservation of wild birds.

S.I No. 39/1976, Wildlife Act, 1976

Wildlife (Amendment) Act, 2000.

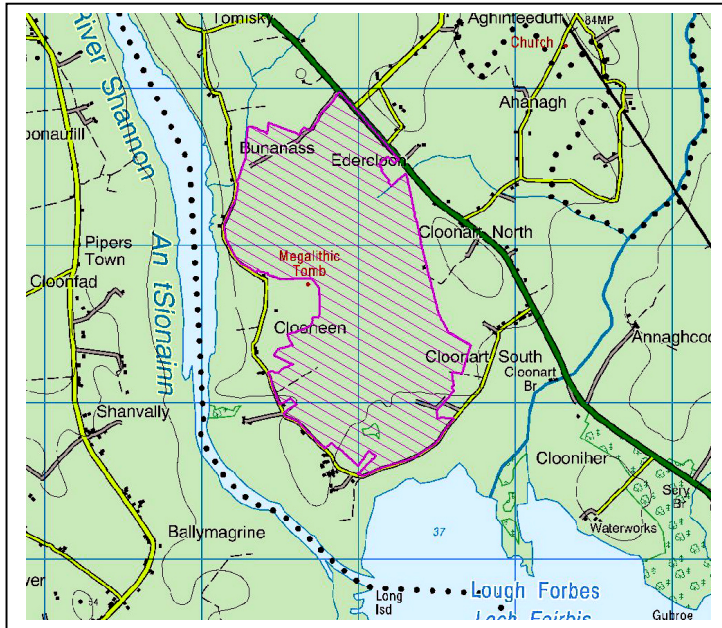
**APPENDIX A**  
NATURAL HERITAGE FEATURE RECORDS

Category / Aspect / Layer: Natural Heritage  
Recreation / Tourism      Transport / Access

Cultural Heritage  
Industry / Economy

Other?

Waterways Feature  
Record No. 1



**Location:**  
Longford

Clooneen Bog SAC (002348)

**Description:**

This bog lies approximately 3km south-east of Rooskey, Co. Longford on the east bank of the River Shannon, just north of Lough Forbes. The site comprises areas of high bog, including bog woodland and cutover bog. Old cutover is naturally regenerating to the north of the site. A number of rare plant species occur within the SAC (The Heritage Division website, [www.heritagedata.ie](http://www.heritagedata.ie)).

Feature Type. Habitat

Status/Distribution. Parts of this SAC constitutes rare habitats in Europe

Threats. Mechanised peat-cutting occurs to the north-west and south-west of the high bog, with adverse effects such as drainage and burning.

Usage / Appreciation. Clooneen Bog is a site of high conservation importance and includes two priority habitats, raised bog and bog woodland, listed in Annex I of the EU Habitats Directive.

**Value / Significance** (relative to own category / aspect, and relative to the waterway)

Local      county      regional      national      international

**Development / usage potential.** Any uses should compliment the conservation value of the site. There is the potential to utilise the site for Education purposes.

**Actions Required ()**.

**APPENDIX B**  
**LIST OF CONSULTEES**

## LIST OF CONSULTEES

Heritage Division, Eastern Regional Manager, Dúchas	Mr Sean Casey
Heritage Division, Deputy Eastern Regional Manager	Mr Val Swan
Heritage Division, Mid Western Regional Manager	Mr Tim O' Connell
Heritage Division, Mid Western Deputy Regional Manager	Dr. Enda Mooney
Heritage Division, Mid Western District Conservation Officer	Mr Pdraig O Donnell
Heritage Division, Northern Regional Manager	Mr Joe Gatins
Heritage Division, Northern Deputy Regional Manager	Mr Dave Duggan
Heritage Division, Northern District Conservation Officer	Mr M.J. Hackett
Central Fisheries Board	Dr Joe Caffrey
Central Fisheries Board	Mr Killian Farrell
Shannon Regional Fisheries Board	Mr Niall Collins
Eastern Regional Fisheries Board	Gretta Hannigan
Conservation Policy Officer, Birdwatch	Christine Croton
Irish Wildlife Trust	Ms Caren Lavine
Irish Peatland Conservation Council	Peter Foss
BSBI Westmeath	Mr C Breen
BSBI Longford	Mr S Howard
BSBI Leitrim	Dr D C F Cotton
BSBI Roscommon	Mr J J Earley
Co-author of Ecological survey of the Royal Canal (1991)	Ms Brigid Johnston
Co-author of Ecological survey of the Royal Canal (1991)	Mr Richard Nairn
Botanist and author/expert on the Shannon Callows	Mr Stephen Heery
Mollusc expert	Dr Evelyn Moorkens
Writer and broadcaster on the subject of waterways	Mr Dick Warner
Bord na Móna	Donal Wynne
Co-author of Ecological survey of the Royal Canal (1991)	Ms Marie Dromey