



N4 Realignment

Cloonamahon to Castlebaldwin

Constraints Study Report

November 2000



N4 Constraints Study Report

Executive Summary

The constraints study is carried out in accordance with the National Roads Projects Management Guidelines as published by the NRA in March, 2000. The constraints study is an exercise in collecting together as much information as possible regarding the project in order to determine what constraints (physical, legal, environmental, etc.) exist which could affect the design of the scheme, delay progress and influence the costs.

The study includes examination of the following

- Available mapping
- Land Registry Search
- Planning Search
- Drainage systems including streams, rivers, groundwater, bridges
- Fisheries requirements
- Utilities including Electricity, Telecommunications, Water Schemes, Sewerage schemes
- Archaeology
- Ecology
- Traffic History
- Accident data
- Existing road network condition
- Access constraints
- Geology
- Local economy/business/tourism
- Aesthetics
- Development Plan
- Irish/EU Legislation/Regulations relating to infrastructure, funding, environment, habitats.

A public consultation was held by means of distributing notices providing information and a map of the constraints study area and inviting comments from the public.

The principal constraints identified are as follows:

- Physical and topographical constraints

The presence of drumlins and small lakes will influence the alignment of the route options.

- **Archaeological constraints**

There are many listed archaeological sites (Map 7) within the constraints study area and every effort will be made to avoid or reduce the impact on these sites.

- **Ecological constraints**

A number of areas of ecological sensitivity have been identified (Map 8) and the North Western Regional Fisheries board have identified sensitive streams within the area (Map 3). Every effort will be made to avoid or reduce the impact on these areas.

- **Local development and land use**

The village of Castlebaldwin is the main settlement within the area and every effort will be made to avoid severance of this community and to minimise the impact on other property owners within the constraints study area.

- **Services**

All services have been identified and the principal constraint is the presence of the Sligo-Flagford 110kV line which runs along the north-east boundary of the constraints study area.

N4 Constraints Study Report

Introduction

The constraints study is carried out in accordance with the National Roads Projects Management Guidelines as published by the NRA in March, 2000. The constraints study is an exercise in collecting together as much information as possible regarding the project in order to determine what constraints (physical, legal, environmental, etc.) exist which could affect the design of the scheme, delay progress and influence the costs.

Description of Works

The N4 National Primary Route was designated as part of the East/West Road corridor linking Dublin with the town of Sligo in the north-west (O.P.T., 1994-1999).

It measures 34.8km in County Sligo of which 8km between Carraroe and Collooney is dual carriageway and 8.8km south of Castlebaldwin has been realigned to full standard. It is proposed to upgrade the remaining 11km of N4 in County Sligo.

Under the Roads Needs Study (July 1998) it was indicated that Collooney to Ballinafad had phase 2 needs i.e. it is scheduled for improvement during the years 2005-2009. Under the National Development Plan 2000-2006, Section 4.12 it is stated:

The development strategy for national roads will include further major improvements on N4 (Kinnegad to Sligo).

The following table shows the traffic volumes predicted under the National Road Needs Study.

Section	1995 AADT	HCV %	2019 AADT	HCV %	Saturation	HCV %
Collooney/Boyle	3000- 4000	11	7000- 9000	9	7500- 9500	9

The National Road Needs study recommends a standard 2 lane road for this section. Under the Irish Design Manual for Roads and Bridges a standard 2-lane road has two lanes of width 3.65m, two hard shoulders of width 2.5m and grass verges of width 3m.

Constraints Study Area

The constraints study area is determined to the north and south by the improved sections of road which terminate in Doorly to the north and Castlebaldwin to the south. As the option of bypassing Castlebaldwin is to be included in the study the constraints area commences in the townland of Drumdoney just south of Castlebaldwin. The constraints study area is confined in the north-east by the Unshin river and a line of drumlins which lie along a north-west to south-east axis. The constraints study area is confined in the north-west by Lough Corran and a line of drumlins which lie along a north-west to south-east axis. Map 1 shows the constraints study area.

Available mapping (windscreen survey and planning)

Up to date mapping at a scale of 1/2500 has been provided by Ordnance Survey and a planning search has been carried out and possible developments have been marked on the maps. A ground model for the constraints study area has also been acquired.

Land Ownership

A land registry search has been carried out and plots and land owners have been identified and mapped as shown on Map 2.

Streams, drainage etc.

The constraints study area is within the Lough Arrow/Unshin River catchment area. Flood level data has been received from OPW for the Unshin river at Ballygrania which is north of the constraints study area, near Collooney. River level and flow data has been received from the EPA for the Unshin River at Lisconny and Riverstown, which are to the east of the constraints study area, and for the Brickeen Stream, which is at the south-eastern end of the constraints study area and drains into Lough Arrow.

Much of the constraints study area is drained by the Kilmorgan stream and tributary which flows through Coolskeagh in the south-west of the area, under Kilmorgan bridge and Behy bridge on the existing N4 and joining the Unshin River just east of Drumfin. There are no flow measurements or water levels available for this stream.

There are a number of small lakes within the constraints study area, namely Aghalenane Lough, Ardloy Lough, Loughmeenaghan, and Cleavry Lough. There is also a swallow hole located in the townland of Tawnagh.

Fisheries Requirements

A discussion has been held with S. Shiels, Senior Environmental Officer of North Western Regional Fisheries Board and she provided a copy of a the Lough Arrow Fisheries Development Plan, which was recently prepared by the Central Fisheries Board on behalf of the North Western Regional Fisheries Board. Map 3 shows sections of streams which have been or are to be improved under the plan.

Railways

There are no railways within the constraints study area as the Sligo-Dublin railway lies to the south of the constraints study area and passes through Ballymote.

Utilities

All ESB lines have been identified and mapped (Map 4).

All telecommunication structures and underground lines have been identified and mapped (Map 5).

All public water schemes and group water schemes have been identified and mapped (Map 6).

All sewers and treatment plants have been identified and mapped (Map 6).

Archaeology

Co. Sligo is rich in Archaeological sites as shown on Map 7. A desk-top study has been carried out by Mr. P. Donovan, Archaeologist who identified and listed all known archaeological sites within the constraints study area and within 300m of it (Appendix 1). He identified 81 sites of which the majority are raths although there are also 2 crannogs and a megalithic and portal tomb.

Mr. Donovan recommends generally that a buffer zone of at least 25 metres should be left from the outer extent of an archaeological site or monument. Should ground disturbance prove necessary between 25 and 50 metres of the outer extent of an archaeological site or monument this should be preceded by trial-trenching. Should it prove unavoidable to undertake excavation and/or earth-moving on, or within the immediate vicinity of, a known archaeological site or monument Dúchas – The Heritage Service, will in all probability require full-scale archaeological excavations.

A meeting was held with Mr. Brian Duffy, Senior Archaeologist with Dúchas. He stated that it was difficult to rank monuments in terms of importance but that particular attention should be paid to clusters of monuments in close proximity, and that sites such as ring-forts which are particularly well-formed and prominent on the landscape should be avoided if possible because of their high amenity value.

Flora and Fauna

An ecological study of the constraints study area was carried out by Dr. Don Cotton on behalf of Sligo County Council (Appendix 2). Map 8 shows proposed Natural Heritage Areas and also ecologically sensitive areas as identified by Dr. Cotton.

Traffic History/Pedestrian Use/Schools

There are no other national primary, national secondary or regional roads within the constraints study area. There are 18 junctions with local roads on the existing N4.

The AADT for 1998 as given in "National Roads and Traffic Volumes" published by the NRA was 3867 with 12% HCV's. Further flow measurements on the N4 and local roads will be carried out over the coming months.

There is one primary school within the constraints study area which is located on a local road in Castlebaldwin. The principal pedestrian traffic in the area is within Castlebaldwin, which had a traffic calming scheme completed in 1999.

Accident Data

Accident data for years 1990–1999 have been marked on Map 9. There are a number of junctions where clusters of accidents occur with Drumfin crossroads showing the highest number of accidents.

Existing Road Network Condition

The condition of the existing N4 has been assessed both by visual assessment and by examination of SCRIM results. One of the main criteria for measuring the current condition of a road network is skid resistance and this is measured by a SCRIM machine. SCRIM measurements are carried out annually on all National Primary roads and results of the 1999 survey on the N4 are included (Appendix 3).

When interpolating SCRIM results it can be noted that high, steady readings show that a road has good skid resistance and would probably indicate a newly constructed road or newly laid surface. On the other hand low, fluctuating readings would indicate that the road is in a poor state of repair.

There have been substantial improvement works completed since the 1999 SCRIM survey on the N4. These included major redesign and overlay on the stretch just before the start of the proposed new alignment. From the start of the alignment at chainage 15100 to chainage 20500 there have been four sections of overlay work carried out during 1997, 1998, 1999 and 2000. Although the 1997 section ie 15100 to 15800 shows a decrease in skid resistance from the previous section the worst section on the road is where the 1998 work was carried out ie 15800 to 16500. On visual inspection this section also shows signs of cracking and subsidence. This is probably caused by poor ground conditions in the vicinity or poor sub base material. Another poor section which is in and around chainage 19000 has been rectified by this year's overlay. From chainage 20000 to Castlebaldwin the road is misshapen with many signs of localised subsidence. The poorest section is located just before the traffic calming in Castlebaldwin.

Access constraints

In order to improve safety every effort will be made to reduce the number of accesses to the road. This will be done by providing grade separated

junctions, by bridging local roads or closing them and providing alternate access. The number of existing houses with accesses can be reduced by providing realignments away from the existing roads. The County Development Plan sets out strict criteria for restricting new accesses onto National Primary Roads.

Geology

Geological Survey of Ireland published 'Geology of Sligo-Leitrim' in 1996 which divides Sligo-Leitrim into 7 landscape regions. The constraints study area is included in the Ballymote Lowlands which is described as follows.

"Between the Ox Mountains, the Curlew mountains to the south, and the Lough Allen Uplands to the east, is a generally low-lying area, covered with deposits of boulder-clay, sand and gravel. Drumlins occur widely, and a particularly fine group of them is seen north and east of Riverstown". Map 10 shows the constraints study area laid over an extract from Sheet 7, Geology of Sligo-Leitrim. The underlying rock in the constraints study area is Bricklieve Limestone Formation. GSI have not identified any working or disused quarries or pits within the area.

GSI identifies a major spring in the townland of Tawnagh which is within the constraints study area.

Local Economy/Business/Tourism

The area is located within a rural area which has been suffering rural decline over many years. In 1995 the Sligo Rural Renewal Project was set up and the Lough Arrow area was examined as a pilot project. The area extends east of the constraints study area to the R284, which is the Sligo/Cavan road, and south to Ballinafad. Appendix 4 is extracted from the Sligo Rural Renewal Project Summary Findings. An official of Sligo County Council was a member of the steering committee. It gives a detailed profile of the Lough Arrow area, it's demographics and economic activity.

Castlebaldwin is the only village within the constraints study area. There is a furniture factory and shop in Castlebaldwin and it also has a filling station and car dealership, Post Office, shop and public house.

There is an Art Gallery with picture framing service and art classes located beside the N4 between Castlebaldwin and Drumfin.

Tourism

The Lough Arrow area is highly scenic and rich in archaeology with the Carrowkeel Megalithic Complex located just 6km south-west of Castlebaldwin. There is a marked walk commencing in Castlebaldwin and the Miner's Way and Historical Trail, which is a waymarked long distance walking route through Counties Leitrim, Roscommon and Sligo, passes through Castlebaldwin. Lough Arrow is a well-known brown trout fishery and is undergoing continuous development by the N W Regional Fisheries board.

There is a limited amount of tourist accommodation in the area and tourism overall is still underdeveloped in the area. There is a National Field Study Centre under construction in Ballinafad at present which will be a residential facility and provide a range of courses and holiday programmes in archaeology, biology, geology, ornithology, general culture, music, dance, literature, local history and folklore.

Aesthetics

The constraints study area is set within an area which is generally classified as Normal Rural Landscape as shown on Map 11 which is an extract from the County Development Plan. It does include one area which is classified as Sensitive Rural Landscape. This is a bog area. A scenic route passes through Castlebaldwin in the southern part of the constraints study area. The map also shows a number of listed buildings and structures which are located outside the constraints study area.

The most distinctive features of the landscape within the constraints study area are drumlins and small lakes which generally lie along a north-west to south-east axis. A road which follows contours rather than cutting across them is likely to be more visually pleasing and therefore it is proposed to align the road between the drumlins rather than cutting through them. In order to reduce the impact of the road on the landscape it is proposed to provide a road which is, where possible within the constraints of IDMRB, graceful and free flowing and in harmony with the landscape. Where the road is in cut and fill it is proposed to soften the effect of steep banks by rounding the tops and bottoms of them. It is proposed that fence lines will follow a flowing alignment rather than take a sudden change of direction at cuttings and embankments.

Landscaping in rural areas will include planting of trees and shrubs similar to those native to the area and verges will be specially developed as wildflower reserves. Any areas of land not suitable for return to farmers will be planted with native hardwood trees and allowed to develop into nature reserves, if possible.

There will be no major bridges required within this area, though small bridges or underpasses may be required over local roads. There will be no major river crossings though there will be some stream crossings.

Development Plan/Zoning/Industry

The County Development Plan, 1999-2004, states that is proposed to undertake realignment of the N4 from Doorly to Castlebaldwin.

There is no specific mention of Castlebaldwin in the County Development Plan, nor is it included among those villages which are considered to be within convenient commuting distance of Sligo and are to have local area action plans prepared for them. The general settlement strategy policy for the county is to encourage new development to locate in existing towns and villages where the basic social and infrastructural services are available and where such services may be provided or expanded on an economic basis.

Irish EU Legislation

There is a considerable amount of Irish and EU Legislation which must be complied with when designing and constructing new roads. This includes the following:

- Local Government (Planning and Development) Act, 1963-1994
- Roads Act, 1993
- Roads Regulations, 1994

In relation to heritage the following acts apply

- Wildlife Act 1976
- Flora Protection Order, (S.I. No. 94 of 1999)
- Protection of Wild Animals Orders, 1980 and 1990
- Fisheries (Consolidation) Act, 1959
- EC (Quality of Salmonid Waters) Regulations 1988, (S.I. No. 293 of 1988)
- Habitats Directive 92/43/EEC
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999

At the time of CPO (Compulsory Purchase of Land) the following act applies

- Housing Act, 1966

If a mobile asphalt plant is required the following act also applies

- Air Pollution Act (1987)

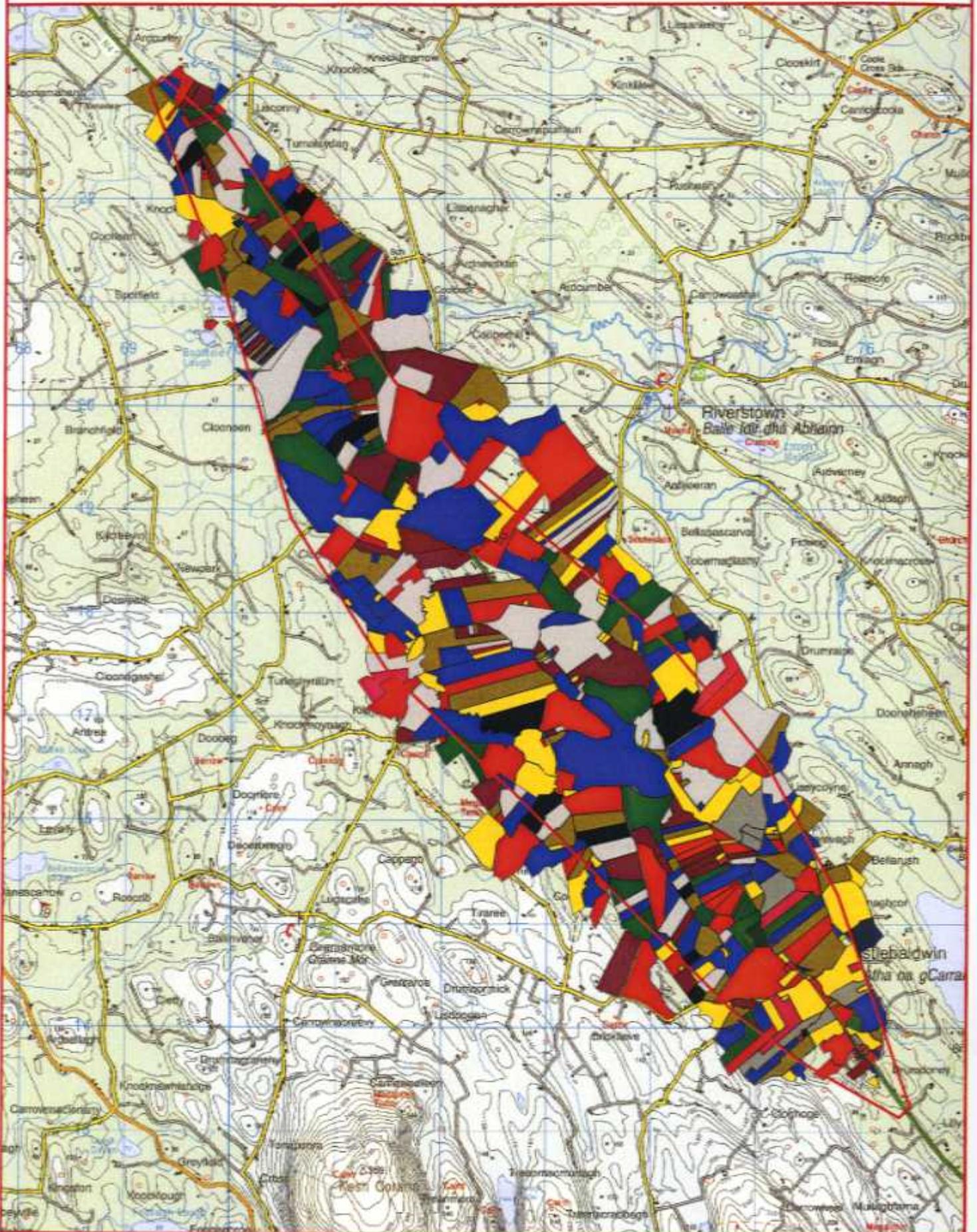
Public Consultation

A single page leaflet (Appendix 5) was distributed to nearly 200 homes and business premises within the constraints study area. These were distributed by engineering staff and discussions were held with many of the local people at that time.

Six written submissions were received. Three of these were from landowners objecting generally to any realignment which might affect their land. One was from a homeowner concerned about a road coming closer to her home and also concerned about nature in the Unshin valley. One submission referred to archaeology in the area. One submission was from a filling station owner expressing concern about a possible bypass of Castlebaldwin and stating that he had been given assurances by the NRA that such a bypass would not be considered for at least 25 years.

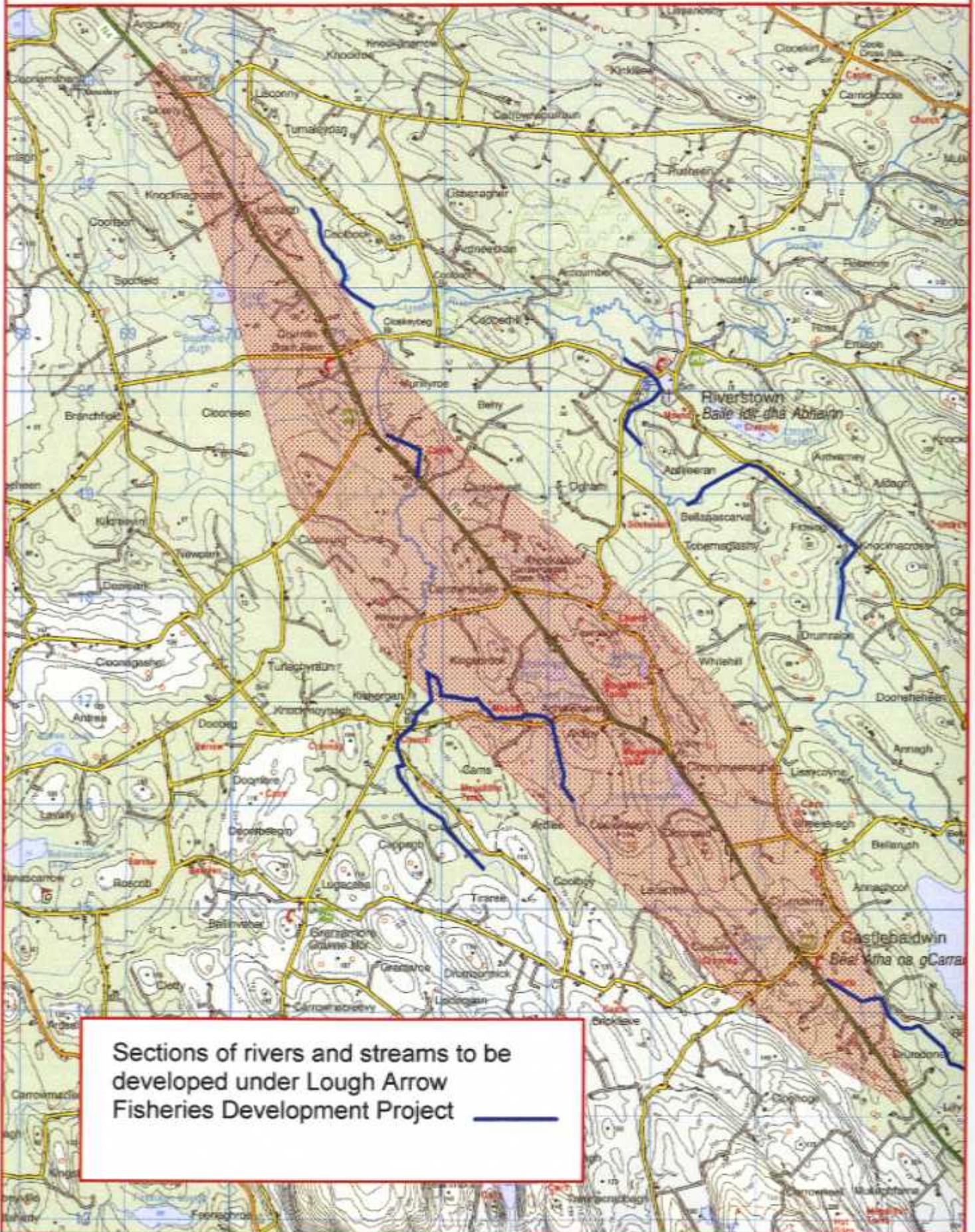
N4 Realignment - Cloonamahon to Castlebaldwin

Map 2 - Registered Land Holdings



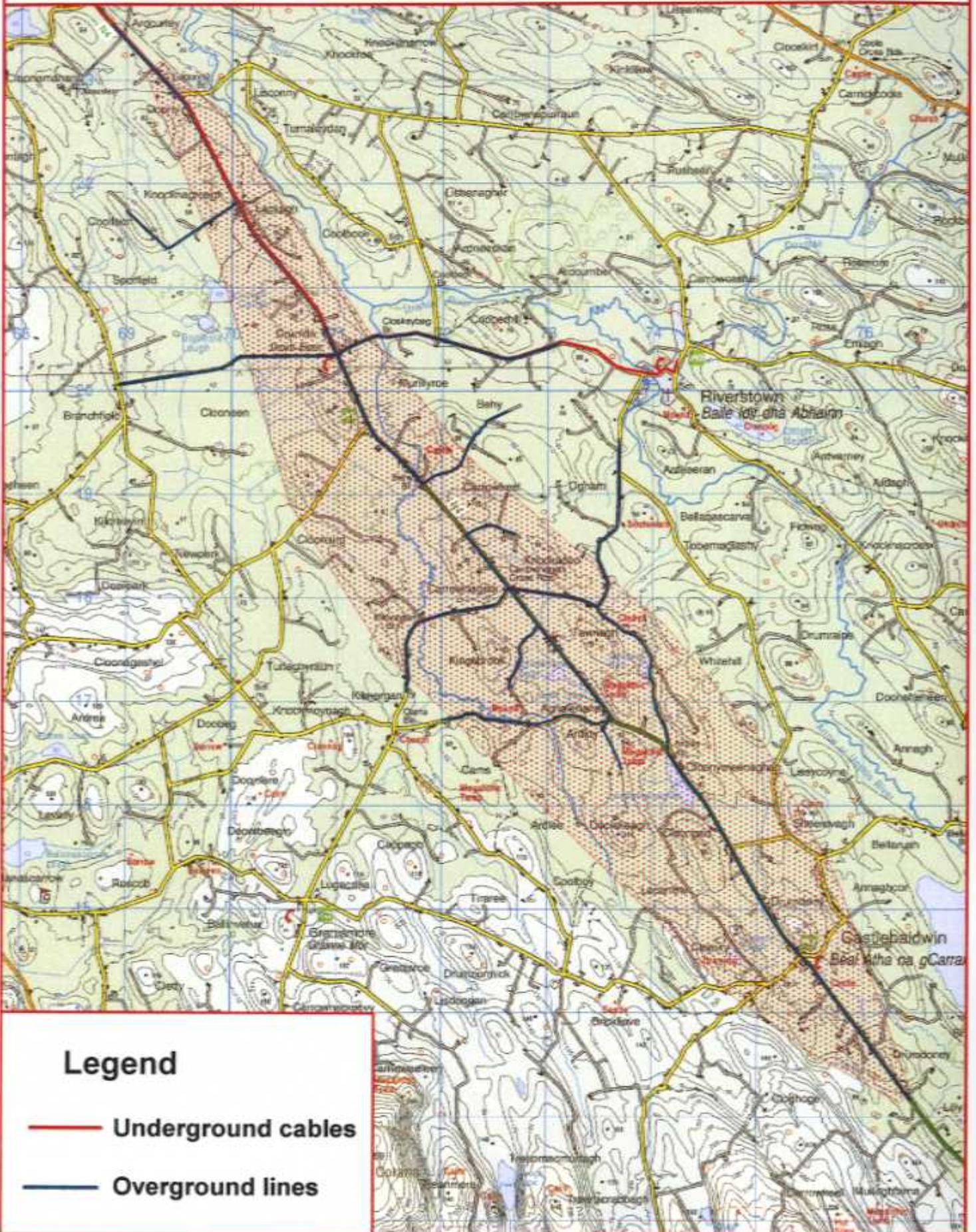
N4 Realignment - Cloonamahon to Castlebaldwin

Map 3 - Fisheries



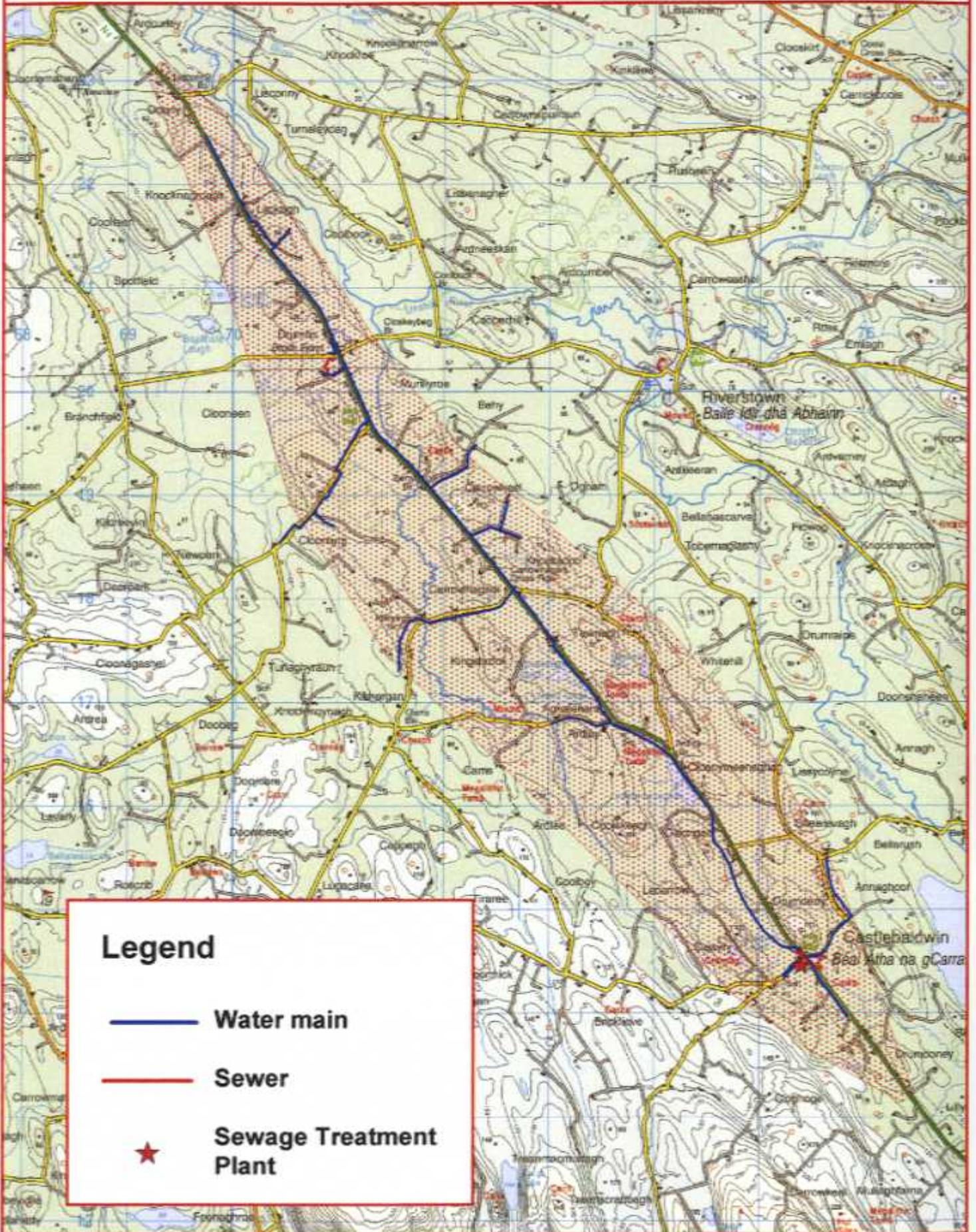
N4 Realignment - Cloonamahon to Castlebaldwin

Map 5 - Telecommunications



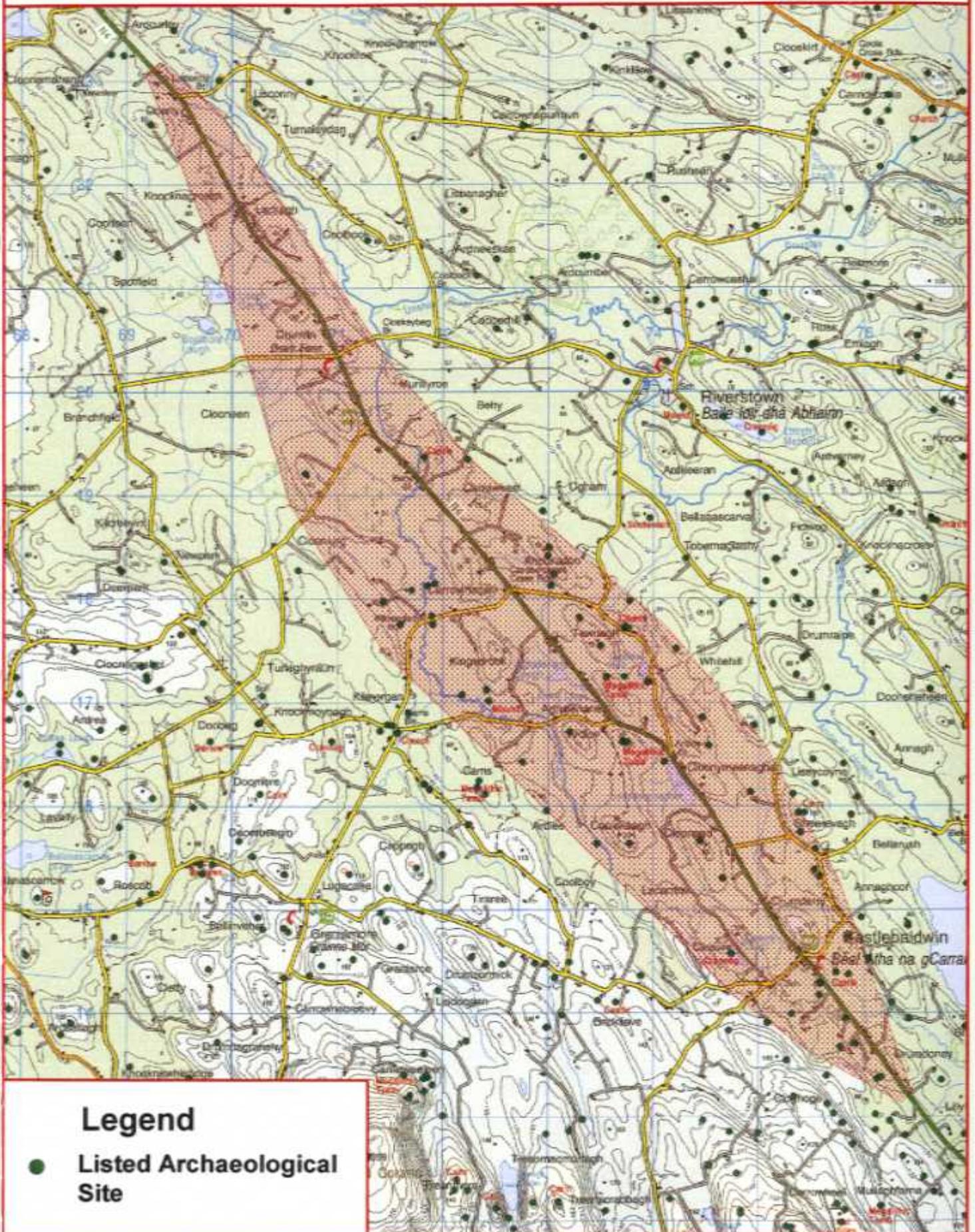
N4 Realignment - Cloonamahon to Castlebaldwin

Map 6 - Water and Sewerage



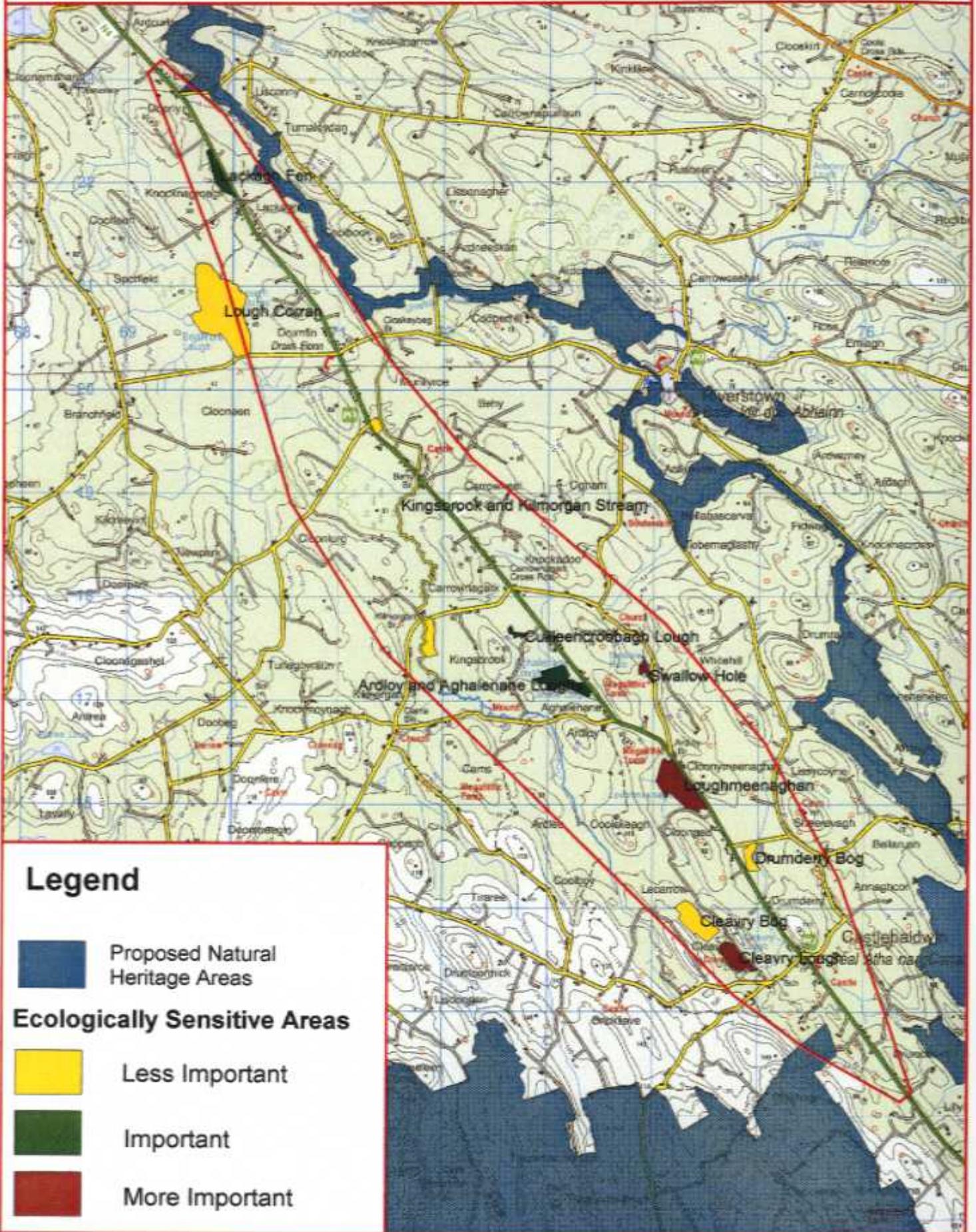
N4 Realignment - Cloonamahon to Castlebaldwin

Map 7 - Archaeology



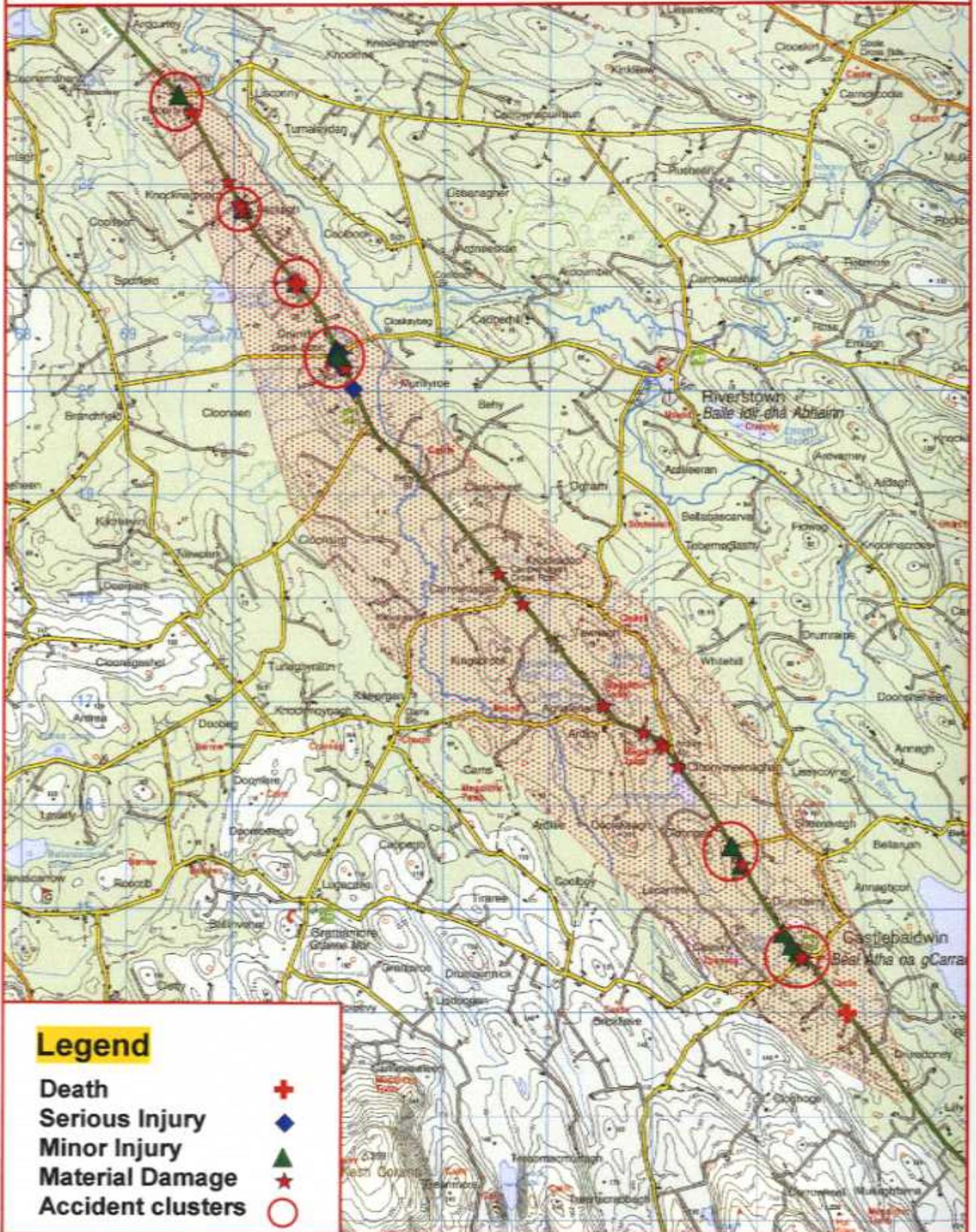
N4 Realignment - Cloonamahon to Castlebaldwin

Map 8 - Ecology



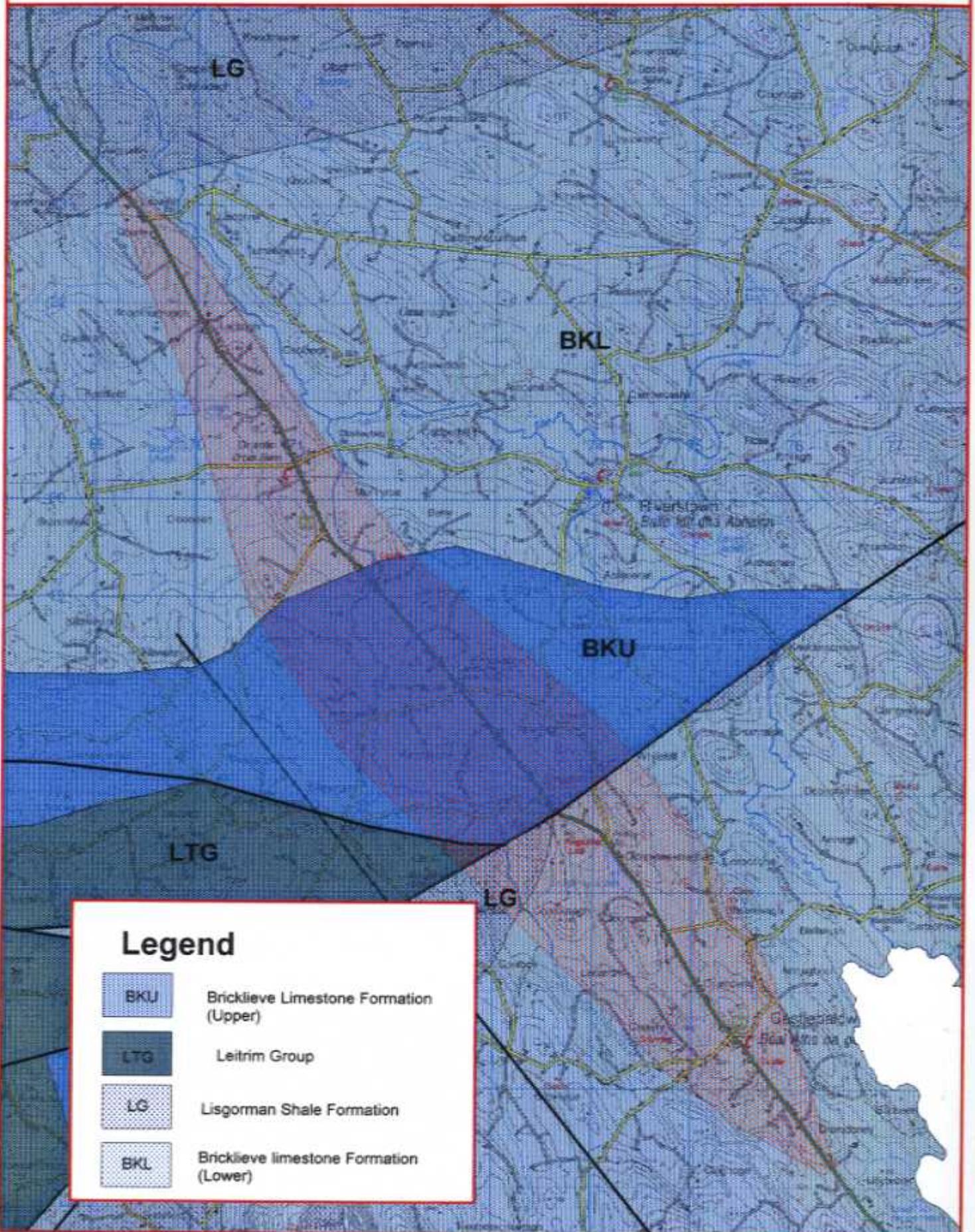
N4 Realignment - Cloonamahon to Castlebaldwin

Map 9 - Accident Data 1990 - 1999



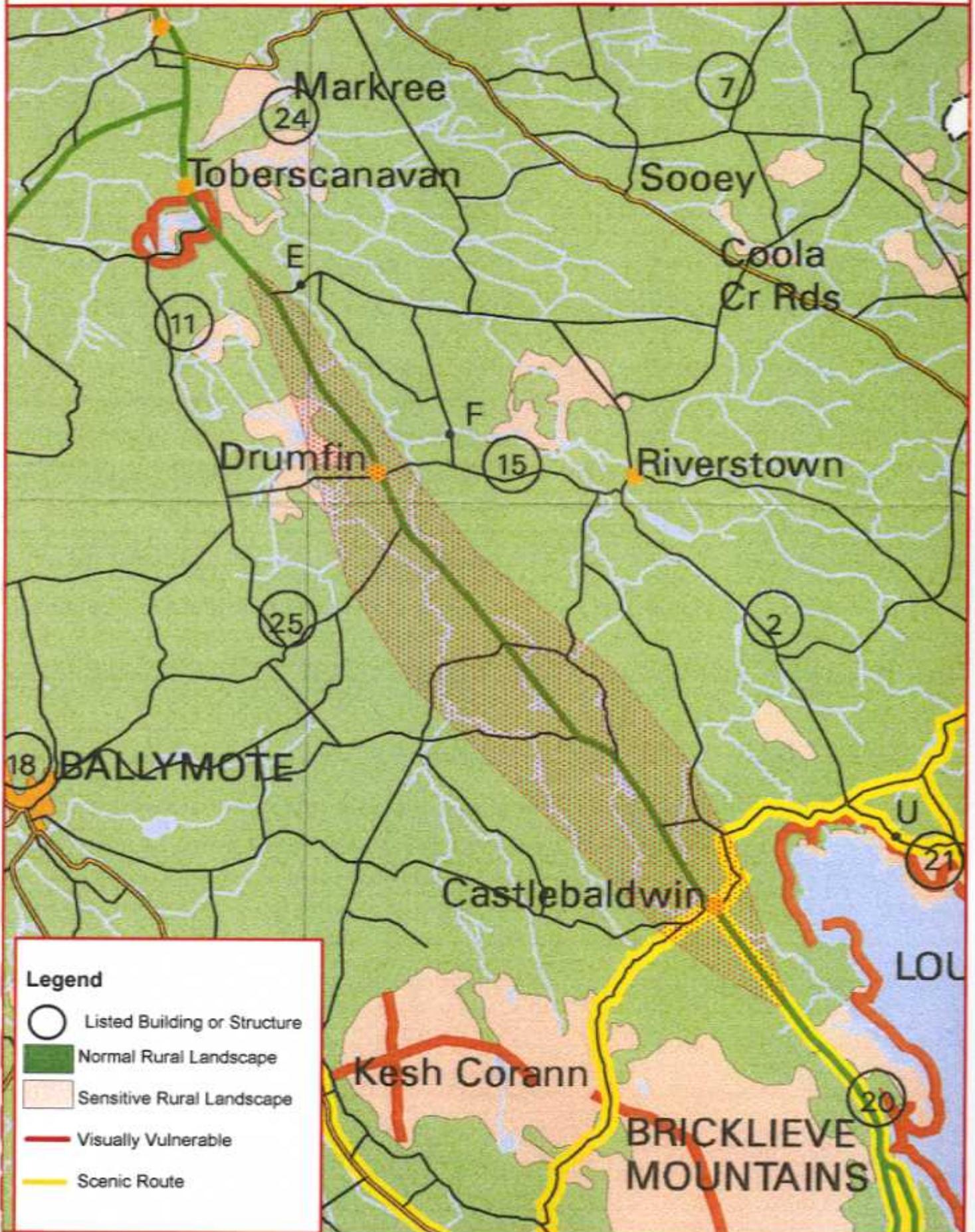
N4 Realignment - Cloonamahon to Castlebaldwin

Map 10 - Geology



N4 Realignment - Cloonamahon to Castlebaldwin

Map 11 - County Development Plan



Appendix 1

N4 Realignment Project

Baseline Study of Archaeological Assets



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N4 REALIGNMENT PROJECT
Baseline Study of Archaeological Assets

For Sligo County Council



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N4 REALIGNMENT PROJECT
Baseline Study of Archaeological Assets

Part 1: Introduction

The purpose of this archaeological assessment is to ensure that the impact on the archaeological heritage of the road realignment and of its environs is kept to a minimum. This assessment is based on a desktop study.

The desktop study is based on an examination of cartographic and aerial photographic cover and selected archaeological and historical journals & books. However the principal source is the 'Record of Monuments and Places - County Sligo' that was issued in 1995 by The Commissioners of Public Works in Ireland (National Monuments and Historic Properties Service). This listed a very considerable number of archaeological sites and monuments both within and in the vicinity of the designated corridor.

It is envisaged that once precise routes have been chosen they will be walked by an archaeologist well in advance of any works commencing. It should be pointed out that it is very possible that additional archaeological sites and/or artifacts, not identified in the desktop study, will be recognised at this stage. The resulting report will be an examination of the potential impacts of the chosen route on the archaeological heritage of the area through which it will pass. The archaeological integrity and the amenity of each site and monument will be addressed in some detail.

Buried archaeological features and/or artifacts may lie under the sod in proximity to known archaeological sites and monuments. The following general guidelines should be followed for their protection. A buffer zone of at least 25 metres should be left from the outer extent of an archaeological site or monument (as defined by a professional archaeologist). Should ground disturbance prove necessary between 25 and 50 metres of the outer extent of an archaeological site or monument (as defined by a professional archaeologist) this should be preceded by a programme of trial-trenching by a professional archaeologist approved by Dúchas – The Heritage Service. Should it prove unavoidable to undertake excavation and/or earth-moving on, or within the immediate vicinity of, a known archaeological site or monument Dúchas – The Heritage Service, will in all probability require full-scale archaeological excavations.

The amenity of an archaeological site or monument refers to its position on the landscape. It is not possible to address this important issue without visiting the individual monuments.

It should be pointed out at this stage that it is almost a certainty that archaeological features/artifacts will be uncovered during ground disturbance works. All ground disturbance must be monitored by a team of archaeologists approved by Dúchas - The Heritage Service.

All known and suspected archaeological sites and monuments are afforded a considerable degree of protection under the National Monuments Acts (1930-94). Of these the most important is Section 12 (3) of the National Monuments (Amendment) Act 1994 (Please see Appendix 1).

*
** It is very important to point out that in the event of the discovery of archaeological features and/or artifacts the monitoring archaeologist shall be empowered to halt development works. He/she must then notify the National Museum of Ireland and Dúchas - The Heritage Service of the Department of Arts, Heritage, the Gaeltacht and the Islands. In this event the developer, in this case Sligo County Council, may be legally obliged to fund resultant archaeological excavations should this be deemed necessary by Dúchas - The Heritage Service. Should monitoring or archaeological excavation reveal archaeological material, preservation 'in situ' may be required. Again the developer may be legally obliged to assume any resultant cost. See Appendix 2 for addresses of relevant authorities.

Should it prove necessary to excavate archaeological sites and/or features Sligo County Council, as the developer, must ensure that:

- (1) adequate resources are available, in terms of finance, time, staff and ancillary specialist services to carry out the work to an acceptable level.
- (2) they are aware of their responsibilities for funding, support and assistance both during the excavation itself and in post-excavation procedures.

Part 2: List of archaeological sites and monuments on or in proximity (i.e. within c.300 metres) of the corridor

The series runs from southwest to northeast. If the archaeological classification is suffixed by the term 'Site' this signifies that the monument has been levelled and that there are little or no remains surviving above ground level. However it should be stressed that there may be archaeological remains surviving *below* ground level. If the archaeological classification is suffixed by the term 'Site Of' it implies that the monument has been completely destroyed.

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:035- Oval-shaped cashel.	Carrowkeel	Cashel

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:034- Oval-shaped univallate rath.	Carrowkeel	Rath

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:113- Horse paddock.	Carrowkeel	Non-antiquity.

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:033- Univallate circular rath. House site within enclosed area.	Carrowkeel	Rath

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:192- Landscape features.	Drumdoney	3 Tree-rings

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:030- Site of possible enclosure.	Cloghoge Lwr.	Possible Enclosure Site

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:031- Spring well called <i>Tobar Mathín</i> .	Cloghoge Lwr.	Holy Well

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:021- Well preserved, oval-shaped, univallate rath.	Cloghoge Lwr.	Rath

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 040:020-	Cloghoge Lwr.	Possible Enclosure
Oval-shaped univallate enclosure of uncertain origin.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:192-	Cloghoge Lwr.	Rath
Univallate circular rath. Possible hut site within enclosed area.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:193-	Cloghoge Lwr.	Rath
Univallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:194-	Brickeen.	Rath
Circular raised rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:214-	Brickeen.	Enclosure Site
Almost completely levelled enclosure. Probably the site of a rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:191-	Cloghoge U.	Enclosure
Small oval-shaped univallate enclosure. In the vicinity are disused field boundaries of uncertain antiquity.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:190-	Cloghoge U.	Rath
Circular raised rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:189-	Cloghoge U.	Mound
Large oval-shaped mound of earth and stone.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:188-	Cloghoge U.	Barrow
Small, low, circular mound of earth and stone.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:187-	Cloghoge U.	Enclosure
Oval-shaped univallate enclosure.		

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:186-	Cloghoge U.	3 Holy Wells
Three spring wells dedicated to Brigid, Murray and Patrick respectively.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:184-	Bellanagarrigeeny or Castlebaldwin	Rath
Oval-shaped univallate rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:185-	Bellanagarrigeeny or Castlebaldwin	Fortified House
L-shaped, two-storey 17 th century fortified house.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:183-	Brickeen	Holed Stone
Limestone slab. In the lower part of the stone is a small, circular hole.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:181-	Bellanagarrigeeny or Castlebaldwin	Rath
Univallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:182-	Annaghcor	Earthwork
Oval-shaped earthwork of uncertain significance.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:180-	Cleavry	Crannóg
Small approx. oval-shaped 'island' in Cleavry Lough.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:178-	Sheerevagh	Rath & Possible Souterrain
Circular raised rath. Possible souterrain within internal area.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:177-	Sheerevagh	Enclosure Site
Depicted as a circular enclosure on the OS 1914 ed. of the 6" map. No remains surviving at ground level. Probably the site of a rath.		

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:176-	Sheerevagh	Enclosure
The north-eastern half of a circular univallate enclosure, probably a rath. The other half is occupied by a modern roadway.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:117-	Cloongad	Rath
Circular raised rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:126-	Sheerevagh	Rath
Oval-shaped univallate rath which was given the designation <i>Lisrisis</i> on the 1914 OS ed. of the 6" map.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:124-	Sheerevagh	Mound
Large circular mound of earth and stone which may cover a passage tomb.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:123-	Sheerevagh	Rath
Small, oval-shaped univallate rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:116-	Cloongad	Rath
Subcircular raised rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:121-	Sheerevagh	Enclosure Site
Depicted on the 1914 ed. of the OS 6" map as a circular enclosure. The site has been levelled. All that survives above ground level is a small mound of uncertain function.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:120-	Lissycoyne	Rath
Oval-shaped raised rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:113-	Cloonymeenaghan	Rath & Possible Souterrain
Circular raised rath. Within the enclosed area is possible rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:115-	Coolskeagh	Rath
Poorly preserved, small oval-shaped rath which was given the designation <i>Caltragh</i> on the 1911 OS ed. of the 6" map.		

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:114- A series of drains.	Coolboy	Non-antiquity
RMP No. SL 034:096- Subcircular hachured feature depicted on the OS 1914 ed. of the 6" map. It appears to have been a mound that was largely quarried out.	<u>Townland(s)</u> Whitehill	<u>Archaeological Classification</u> Possible Mound
RMP No. SL 034:095- Circular enclosure. Probably the remains of a rath.	<u>Townland(s)</u> Whitehill	<u>Archaeological Classification</u> Enclosure
RMP No. SL 034:112- Circular raised rath.	<u>Townland(s)</u> Tawnagh	<u>Archaeological Classification</u> Rath
RMP No. SL 034:111- Small approx. oval-shaped 'island' in Loughymeenaghan. It is used as a nesting place by swans.	<u>Townland(s)</u> Ardloy	<u>Archaeological Classification</u> Crannóg
RMP No. SL 034:089- Large circular univallate rath.	<u>Townland(s)</u> Tawnagh	<u>Archaeological Classification</u> Rath
RMP No. SL 034:102- Partially levelled circular univallate rath.	<u>Townland(s)</u> Ardlee	<u>Archaeological Classification</u> Rath
RMP No. SL 034:110- Oval-shaped univallate rath.	<u>Townland(s)</u> Ardloy	<u>Archaeological Classification</u> Rath
RMP No. SL 034:109- Megalithic tomb set in a low rectangular mound.	<u>Townland(s)</u> Ardloy	<u>Archaeological Classification</u> Unclassified Megalithic Tomb
RMP No. SL 034:108- Oval-shaped univallate rath. Within the internal area is a souterrain.	<u>Townland(s)</u> Ardloy	<u>Archaeological Classification</u> Rath & Souterrain

<u>RMP No.</u> SL 034:088- Portal Tomb.	<u>Townland(s)</u> Springfield	<u>Archaeological Classification</u> Portal Tomb
<u>RMP No.</u> SL 034:235- Small circular enclosure within a larger, oval-shaped enclosure.	<u>Townland(s)</u> Tawnagh	<u>Archaeological Classification</u> Enclosure
<u>RMP No.</u> SL 034:249- Depicted on the 1914 ed. of the OS 6" map as a semicircular earthwork. The site has been levelled.	<u>Townland(s)</u> Ardloy	<u>Archaeological Classification</u> Earthwork Site
<u>RMP No.</u> SL 034:087- Depicted on the 1914 ed. of the OS 6" map as a semicircular earthwork. The site has been levelled.	<u>Townland(s)</u> Springfield	<u>Archaeological Classification</u> Enclosure
<u>RMP No.</u> SL 034:101- Poorly preserved remains of large univallate enclosure, probably a rath, which was given the designation <i>Turnagechy Fort</i> on the OS 1914 ed. of the 6" map.	<u>Townland(s)</u> Cams	<u>Archaeological Classification</u> Rath
<u>RMP No.</u> SL 034:100- Two naturally-occurring springs, one largely enclosed by a bank. The wells were given the designations <i>Toberstartley</i> and <i>Tobernagalliagh</i> on the OS 1914 ed. of the 6" map.	<u>Townland(s)</u> Cams	<u>Archaeological Classification</u> 2 Holy Wells
<u>RMP No.</u> SL 034:099- Court tomb within a low, oval-shaped mound.	<u>Townland(s)</u> Cams	<u>Archaeological Classification</u> Court Tomb
<u>RMP No.</u> SL 034:086- Poorly-preserved univallate circular rath.	<u>Townland(s)</u> Springfield	<u>Archaeological Classification</u> Rath
<u>RMP No.</u> SL 034:084- Circular raised rath which was given the designation <i>Knockalassa Fort</i> on the OS 1914 ed. of the 6" map.	<u>Townland(s)</u> Tawnagh	<u>Archaeological Classification</u> Rath

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:085-	Tawnagh	Ecclesiastical Remains
Medieval church (reconstructed in the 18 th century) within a rectangular graveyard (which is an enlargement of the original). There is grave memorial dated to the 1690s within the graveyard. There is also a record of a 'tall cross'.		
SL 034:028-	Tawnagh	Holy Well
Holy well dedicated to St. Patrick.		
SL 034:013-	Tawnagh	Enclosure
Depicted as a large circular enclosure on the OS 1914 ed. of the 6" map. The site has been levelled and only its outline is now identifiable.		
SL 034:083-	Kingsbrook	Mound
Long, low, narrow mound of uncertain origin and function.		
SL 034:244-	Kingsbrook	2 Fulachta Fiadh
Two small fulachta fiadh somewhat disturbed by cattle trampling.		
SL 034:082-	Kingsbrook	Possible Holy Well
Unenclosed spring which an 1882 reference describes as having been 'formerly held in estimation as holy'.		
SL 034:243-	Knockadoo	Fulachta Fiadh & Possible Fulachta Fiadh
Well preserved fulachta fiadh. A short distance north is a mound which may represent the remains of a second.		
SL 034:081-	Kilmorgan	Ecclesiastical Remains etc.
Medieval church within a subrectangular graveyard. A short distance north of the church are the ruins of a small rectangular building which may be a mill marked on a 17 th century map. In the area surrounding the church etc. is an extensive series of disused field systems. There is also a holy well, marked <i>Tobermorgan</i> on the OS 1914 ed. of the 6" map, and largely enclosed within a circular area defined by a stone wall.		

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:012-	Knockadoo	Rath
Large circular raised rath.		
SL 034:005-	Knockadoo	Earthwork
Length of earthen bank of uncertain function and origin.		
SL 034:004-	Ogham	Rath
Poorly-preserved circular raised rath.		
SL 034:011-	Kingsbrook	Enclosure & Possible Hut Site
Univallate circular rath. Within the enclosed area is a possible hut site.		
SL 034:010-	Carrownagark	Holy Well
Spring well, now largely enclosed with a concrete structure, which an 1882 reference describes as having been 'formerly held in estimation as holy'.		
SL 034:009-	Cloonlurg/Kilmorgan	Rath
Partially levelled univallate circular rath.		
SL 034:003-	Ogham	Rath
Oval-shaped raised rath which was given the designation <i>Lisdongelagh</i> on the OS 1914 ed. of the 6" map.		
SL 034:008	Carrownagark	Enclosure Site Of
Circular enclosure marked on the OS 1914 ed. of the 6" map. The site has been quarried out.		
SL 034:007-	Cloonlurg	Earthwork
Poorly preserved oval-shaped earthwork of uncertain origin and function.		

<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:006-	Cloonlurg	Rath
Poorly preserved univallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:024-	Tobernaglashy	Holy Well
Naturally-occurring spring within a modern concrete structure.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:002-	Carrowkeel	Rath
Large univallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 034:001-	Behy	Castle
Largely ruined medieval castle. Built into a farm building nearby is a sheela-na-gig.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 033:023-	Cloonlurg	Rath
Large bivallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 026:105-	Lisconny	Rath
Small univallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 026:103-	Doorly	Rath
Bivallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 026:104-	Lisconny	Rath
Univallate circular rath.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 026:076-	Cloonamahan	Enclosure Site Of
Depicted on the 1914 ed. of the OS 6" map as a circular earthwork. The site has been destroyed and is now occupied by a modern roadway and a monastery.		
<u>RMP No.</u>	<u>Townland(s)</u>	<u>Archaeological Classification</u>
SL 026:078-	Ardcurley	Rath
Oval-shaped univallate rath.		

Part 4: Appendices:

Appendix 1:

Section 12 (3) of the National Monuments (Amendment) Act 1994

When the owner or occupier (not being the Commissioners) of a monument or place which has been recorded under subsection (1) of this section or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.

A person contravening this requirement for two months notification to the Commissioners of Public Works in Ireland of proposed works at or in relation to a recorded monument or place shall (under Section 13 of the Act) be guilty of an offence and be liable on summary conviction to a maximum penalty of a IR£1000 fine and 12 months imprisonment and on conviction on indictment to a maximum penalty of a IR£50,000 fine and 5 years imprisonment.

Appendix 2:

Addresses and telephone numbers of authorities to be contacted in the event of the discovery of archaeological remains/artifacts

The Chief Archaeologist
Dúchas - The Heritage Service,
Department of Arts, Culture, the Gaeltacht and the Islands
51 St. Stephen's Green,
Dublin 2.
Tel. 01:6473000

The Duty Officer
The National Museum Of Ireland,
Kildare Street,
Dublin 2.
Tel. 01:6777444

Appendix 2
N4 Realignment Project
Ecological Report



SLIGO COUNTY COUNCIL

N.4 Realignment

Cloonamahon to Castlebaldwin

CONSTRAINTS STUDY

Ecological Report

by Dr D.C.F. Cotton,

Institute of Technology, Sligo.

prepared for :

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County Engineer
Sligo County Council

August 2000

N4 CONSTRAINTS STUDY

ECOLOGICAL REPORT

1.0 SUMMARY

This short report and accompanying map identifies sites of ecological interest that fall within the Constraints Study Area for the N4 Realignment (Cloonamahon to Castlebaldwin) as identified by engineering staff of Sligo County Council.

A literature search for publications of relevance to the flora and fauna of the area was undertaken which included the identification of areas designated by Duchas (the Heritage Service) as being of ecological importance (pNHA's, pCSAC's).

A privately held database of unpublished records was also accessed which holds records of some uncommon and rare species that are known from within the Constraints Study Area.

A meeting was held with an official of the wildlife section of Duchas to help identify habitats, species and issues that should be addressed by this report.

Field work was undertaken during the months of June and July 2000 to visit previously known ecological sites and identify other pieces of habitat that might hold interesting species or that are valuable in their own right. As a result, this report describes three parts of 'proposed Candidate Special Areas of Conservation' (pCSAC's) that come within the Constraints Study Area and in addition identifies nine areas that have not previously been officially recognised for their ecological interest.

Two, and possibly all three of the areas within pCSAC boundaries are considered to extend beyond the ecologically sensitive area and a case could be made for their boundaries to be re-drawn. On the other hand, six of the newly recognised areas are good enough to be considered for NHA status. Boundaries for all twelve ecological sites have been marked on the accompanying map which can now be entered on the County Council Geographical Information System to assist in route selection. To assist in interpretation, the sites are classified as "Very Important", "Important" and "Less Important" and colour-coded on the map to reflect this provisional status.

2.0 INTRODUCTION

2.1 Aims and objectives

The primary aim of this study is to ensure that habitats of ecological interest are identified before routes are selected for the re-alignment of the N.4 between Cloonamahon and Castlebaldwin. The main outcome of this report is an ecological constraints map showing the boundaries of such ecological sites.

2.2 Sources of information

Scientific publications concerning the natural environment of Counties Sligo and Leitrim have been thoroughly researched by the author over the past 20 years and out of over 1800 papers sourced relevant information has been abstracted that makes reference to locations within the constraints study area.

A computer data base containing almost 60,000 observations of flora and fauna in the Sligo/Leitrim region has also been established by the author and a number of records were found to be of relevance.

Unpublished sources like the reports on *Areas of Scientific Interest* (An Foras Forbartha 1972, 1978 & 1981) and information on the *proposed Candidate Special Areas of Conservation* and *proposed Natural Heritage Areas* (Heritage Service 1997) have been checked. Small parts of two pCSAC's fall within the constraints study area, namely the Unshin River (pCSAC 1898) and the Bricklieve Mountains (pCSAC 1656). The north-western corner of Lough Arrow (pNHA 1673) is not far away from the constraints study area but it is considered by the author that it will not be affected by road building operations.

Parties known to be interested in the environment were also contacted i.e. Sligo Branches of An Taisce and BirdWatch Ireland, Sligo Field Club and the Sligo County Recorder (for botany). A minuted briefing meeting was held on 17 April 2000 with Mr David Duggan of The National Parks and Wildlife Service of Duchas who provided detailed maps of the Unshin River pCSAC (dated 17/08/1999).

One can never guarantee that every potential source of information has been tapped or that the area hasn't been visited by a naturalist/ecologist and the results not published. Serious deficiencies can be overcome by field visits and so between June and July 2000 field work was undertaken to thoroughly cover this extensive area which included visits to each of the proposed pCSAC's just mentioned.

3.0 ENVIRONMENTAL SETTING

3.1 Introduction

This section is intended to give a simple environmental overview for someone who is unfamiliar with the general area where the improved road will run between Cloonamahon (G6923) and Castlebaldwin (G7613) (Discovery Series 1:50,000 Sheet 25). The approximate area involved is 16.7 square kilometers (c.13 km long x c.1.3 km wide). It identifies potential ecological sites and species that might be in the area, or are already known in the area, through which the new road may be routed. Special consideration is given to sites and species protected by legislation.

3.2 Geology & Geomorphology

The underlying hard rock geology of this area is very simple in that it is entirely composed of the Bricklieve Limestone Formation of Carboniferous age (Dinantian) which dates from about 300 million years ago. This rock is very nearly horizontally bedded as can be seen from a diagram showing a cross-section of the rock strata in this area (section C-D) on the map accompanying Macdermot, Long & Harney (1996). The original data for this map largely come from the field work of Dixon (1965 & 1972).

The hard rock is little exposed within the constraints study area because it is overlain by a layer of glacial deposits of recent origin (c.20,000 years old) and which are of variable thickness. The most obvious glacial formations are the drumlins that are aligned from south-east to north-west reflecting the direction of the Midlandian ice movement. At Castlebaldwin a drumlin has been excavated opposite to the petrol filling station which reveals the unconsolidated nature of these deposits.

The course of the current N4 road is largely dictated by the alignment of the drumlins and the new route will likewise be greatly influenced by this topography.

3.3 Natural drainage

The drainage of this area is dictated by the trend of the glacial deposits with the result that there are a number of lakes, fens and bogs in the inter-drumlin hollows which align in a south-east to north-west direction e.g. Cleavry Lough and bog and Loughmeenaghan. The streams all drain to the north-west and into the Unshin River which is a part of the Ballysadare River catchment. The influence of the underlying limestone has resulted in a few swallow holes, temporary winter ponds (turloughs) and springs, especially in the southern part of the constraints study area where the Bricklieve Mountains form the border of the study area.

Water quality in the area is generally quite good but signs of eutrophication were present in many of the streams around Kingsbrook and feeding into

Boathole Lough. The two small Ardloy Loughs and Aghalenane Lough had a very bad smell when visited on 10 July and the water was seen to be black in colour. These lakes appear to be seriously organically polluted.

3.4 Landscape

The Bricklieve Mountains are a highly scenic area and are listed in the inventory of outstanding landscapes (An Foras Forbartha 1977). The most recent County Development Plan also identified them as being of a high landscape character and to be protected through stringent planning criteria (Sligo County Council 2000).

3.5 Flora and fauna

During the field work, a majority of the area was dismissed as being of no especial ecological interest. This was because the area is intensively farmed with most fields being improved pasture separated by hedgerows of hawthorn (*Crataegus monogyna*) or blackthorn (*Prunus spinosa*) of a young age and of a poor ecological diversity. Places that held promise were noted on the map and a closer inspection was made of them. These locations include lakes, marshes, fens, turloughs, raised bogs, hedgerows, unimproved pasture, mature trees, bridges and old buildings.

A special watch was kept for rare species that might potentially be expected in the area. Hedgerow shrubs such as spindle (*Euonymus europaeus*), guelder rose (*Viburnum opulus*), buckthorn (*Rhamnus catharticus*); invertebrates such as freshwater crayfish (*Austropotamobius pallipes*), vertigo snails, marsh fritillary butterfly (*Euphydryas aurinia*), hairy dragonfly (*Brachytron pratense*), black-tailed skimmer (*Orthetrum cancellatum*), scarce blue-tailed damselfly (*Ischnura pumilio*); birds like whinchat, lapwing, owls; and mammals like otter, pine martin, red squirrel and signs of bats.

Especial ecological habitats are dealt with in more detail in Section 4 of this report and results of field surveys are in the Appendix.

3.6 Habitats and species covered by legislation

There are no Important Bird Areas (IBA's) or Special Protection Areas (SPA's) as designated under the EU Bird's Directive (79/409/EEC) within many kilometres of any of the proposed options. There are no National Nature Reserves (NNR's) anywhere in the vicinity.

In the original reports on Area of Scientific Interest (ASI's) (An Foras Forbartha 1972, 1978 & 1981), the Bricklieve Mountains and parts of Lough Arrow are listed as being of ecological interest. These areas both fall close to the constraints study area. The original ASI's are now being replaced by 'proposed Natural Heritage Areas' (pNHA's) and if of relevance to the European Union Habitats Directive (92/43/EEC) they may also be listed as 'proposed Candidate Special Areas of Conservation' (pCSAC's). The

Bricklieve Mountains are designated as pCSAC 1656 and the Unshin River is designated as pCSAC 1898. Lough Arrow is designated as pNHA 1673 but is too far away to be affected by the route selection so is considered no further in this report.

The Irish Red Data Book for Vascular Plants (Curtis & McGough 1988) and the Flora Protection Order (1987) list no species that are known from this area or were found during the recent field work.

The Irish Red Data Book for vertebrates (Whilde 1993) includes quite a number of species that are fairly common and widespread in Ireland and could be affected by almost any large-scale proposal such as a road. The Red List of bird species is currently being extended to include a further six species bringing it up to eighteen species (Newton *et al.* in press). The following list of species which most likely all occur in the vicinity of the proposed realignment of the N4 are presented for the sake of making this report fully comprehensive :

Common name	Scientific name	Red Data Book category
Hedgehog	<i>Erinaceus europaeus</i>	Internationally important
Daubenton's bat	<i>Myotis daubentonii</i>	Internationally important
Pipistrelle	<i>Pipistrellus pipistrellus</i>	Internationally important
Brown long-eared bat	<i>Plecotus auritus</i>	Internationally important
Irish hare	<i>Lepus timidus hibernicus</i>	Internationally important
Badger	<i>Meles meles</i>	Internationally important
Otter	<i>Lutra lutra</i>	Internationally important
Common frog	<i>Rana temporaria</i>	Internationally important

Whilst there are no recent records, lapwing and barn owl are red-listed species that could be breeding in this area.

It would not be practical to take serious measures to protect such species as the common frog, badger, hedgehog, pipistrelle bat or Irish hare. However, some of these species should really be given careful consideration when examining the potential impact of this road realignment. These include the otter (and its holts) and the Daubenton's bat that are uncommon and are associated with rivers like the Unshin.

4.0 BRIEF DESCRIPTION OF ECOLOGICAL SITES WITHIN THE CONSTRAINTS STUDY AREA

4.1 Introduction

This section is designed to give a simple outline of the ecological value of sites identified within the constraints study area. It is a compilation of notes and observations made during field work that have been integrated with any published information to produce short descriptive accounts. An attempt is made to indicate the degree of interest of each site by classifying it as either 'Very Important', 'Important' or 'Less Important'. In some instances the description points to locations within a site that are of particular value.

4.2 Lisconny Bridge near Collooney (Unshin River pCSAC) (G695229)

At the very northern end of the constraints study area the boundary cuts through a triangular area of the Unshin River proposed Candidate SAC. On the ground the area is defined on one side by the passage of a high voltage electricity line, on another side by a minor county road and on the third side by a hedgerow between fields. The site was surveyed in detail and in ideal conditions on 17 July 2000. It was observed that the area comprises of two pasture fields of a very ordinary appearance within the area being considered for this constraints study. The list of species includes no interesting flora or fauna. The higher (western) area is dominated by common meadow grasses with some rushes (*Juncus effusus*) and ragwort (*Senecio jacobaea*). The lower pasture field was being grazed by horses, and in the section within the constraints study area, was dominated by yellow flag (*Iris pseudacorus*), meadowsweet (*Filipendula ulmaria*), creeping thistle (*Cirsium arvense*), docks (*Rumex* spp.) and ragworts (*S.aquaticus* & *S.jacobaea*). The lower part of the same field, which is downhill from the electricity line, was not surveyed but was observed to hold an interesting flora running down to the Unshin River and its riparian zone. It is considered that the pCSAC boundary in this area could be realigned to de-designate the area to the west of the power lines and that the location could be considered for road construction. If this becomes necessary then the County Council would have to be very aware that there would be no buffer zone between the rich and diverse flora of the remaining pCSAC and the road and special precautions would be needed during road construction. This area is considered 'Less Important' as an ecological site for this constraints study.

4.3 Lackagh Fen near Drumfin (G6922)

This previously unrecognised ecological site has a diverse and rich flora dominated by sedges. The most common sedge present was lesser tussock sedge (*Carex diandra*) which is actually quite uncommon in north-west Ireland. Whilst there were no rare plants or animals found in the site, the area involved is quite large and the floral diversity is such that this habitat is a good example of a sedge fen and should be protected. It is recommended

that Duchas consider this location as a Natural Heritage Area of Local Importance.

It is worth noting that the wettest part of the site is along the north-eastern boundary close to the existing N4 road and this is also the most valuable area to wildlife. It was also noted that there appears to be a clinal change from a more alkaline flora to a more acid flora as one goes from south-east to north-west. There may well be a ground water source at the south-eastern end of the site where meadow thistle (*Cirsium dissectum*), yellow rattle (*Rhinanthus minor*), early marsh orchid (*Dactylorhiza incarnata incarnata*), carnation sedge (*Carex panicea*), congested rush (*Juncus conglomeratus*) and marsh lousewort (*Pedicularis palustris*) are found. Marsh fritillary butterfly (*Euphydryas aurinia*) has been noted here in the past. The site drains to the north-west.

This area is considered 'Important' as an ecological site for this constraints study and is worthy of NHA status.

4.4 Unshin River bank at Lackagh (Unshin River pCSAC) (G702221)

This site runs from the herb-rich bank of the Unshin River up hill to a typical pasture field. The entire field has been included in the Unshin River pCSAC and so the part of the field within the constraints study area was surveyed in some detail at the end of July 2000. This is bounded by the high voltage electricity supply line which runs parallel to the river and only the upper part (up hill of the electricity line) of the pasture was examined. It was concluded that there are no species here that are uncommon or rare and that the vegetation is typical of many of the less intensively managed fields of the region. A spring arises in the north-eastern corner of the site that feeds through an overgrown ditch directly into the Unshin River. This marshy area holds some ecological interest and should be protected if possible.

This area is considered 'Less Important' as an ecological site for this constraints study. It is reasonable to suggest that the pCSAC could have its boundaries redrawn to exclude the part of the field within the constraints study area for the N4 road.

4.5 Boathole Lough & Lough Corran, Drumfin (G6920)

Most of this site is outside of the constraints study area. The part of the site that bulges into the potential area for route selection is a lake and so it is unlikely that this will be filled for road building. If the lake is avoided then the bog to the south of the lake will also be safe from development and no ecological damage will ensue. A full floral survey was not carried out as the most interesting part of the site was outside of the constraints study area. A diverse bird fauna was noted which included whinchat (*Saxicola rubetra*), sedge warbler (*Acrocephalus schoenobaenus*), whitethroat (*Sylvia communis*)

and redpoll (*Acanthis flammea*). It is anticipated that these lakes will be good sites for overwintering wildfowl.

The land falling within the constraints study area is considered as 'Less Important' as an ecological site but the lakes, the bog and reed beds outside of the constraints study area should be examined by Duchas for consideration as an NHA.

4.6 Kingsbrook and Kilmorgan (G7117)

A meandering stream with several feeder channels passes through this area. Some parts of the stream are flanked by marshes and there is generally a good riparian zone. There are also patches of herb-rich limestone grassland. It is not possible to simply draw a line around this area and define a particular habitat type as the interest is very general. The location would not qualify as a Natural Heritage Area, but it is worthwhile flagging the area as of a higher than average biodiversity with some interesting species such as a good population of early purple orchid (*Orchis mascula*), mossy saxifrage (*Saxifraga hypnoides*) and shining crane's-bill (*Geranium lucidum*) on rock outcrops and birds such as grey wagtail (*Motacilla cinerea*) and sedge warbler near the river banks. It was observed that water in streams and ditches was crystal clear but filamentous algae were common and the stream beds are very silted. If the new road is routed through this area then a degree of sensitivity to the wildlife value of the location could be achieved with a small amount of specific ecological advice.

This area is considered 'Less Important' as an ecological site for the purpose of this constraints study.

4.7 Cuilleencroobagh Lough (G727176)

This site is not shown on the 1:50,000 map but does appear on the old 25 inch sheet. The lake has now almost become overgrown with marsh vegetation which has formed a quaking bog or scraw which is very dangerous to traverse. The area is also crossed by several wide and deep herb-rich ditches that are an attempt to drain the marshy fields. No full species list was prepared for this small site but it was considered as being of ecological value and is almost an extension of the "Ardloy Loughs and Aghalenane Lough" site that is described in the next section. This site falls in the 'shadow' of nearby Aghalenane Lough and so will not be affected if the larger lough is avoided during road planning.

This area is considered 'Important' as an ecological site and should be examined by Duchas for consideration as an NHA in conjunction with the next site.

4.8 Ardloy Loughs and Aghalenane Lough (G7317)

This site is a chain of two tiny lakes each of less than 0.5 ha. followed downstream by Aghalenane Lough which is slightly larger at about 1.5 ha. All three lakes are surrounded by reeds (*Phragmites australis*) with some bulrush (*Schoenoplectus lacustris*) and a selection of willow bushes (*Salix* spp.). Meadows adjacent to the lakes are marshy and have a diverse flora with sedges (*Carex* spp.) often as dominant members of the community. In most places the flora indicates that the meadows are neutral to slightly acidic, but there are some fenny places that are more lime-rich, and below (to the north of) Aghalenane Lough there is a bog with heather (*Calluna vulgaris*) and other acid-loving plants. There is thus a good diversity of habitats and species within this site and it includes several species that are uncommon in County Sligo including greater spearwort (*Ranunculus lingua*), great fen sedge (*Cladium mariscus*), lesser tussock sedge (*Carex diandra*) and both species of butterfly orchid (*Platanthera chlorantha* and *P. bifolia*).

This area is considered 'Important' as an ecological site and should be examined by Duchas for consideration as an NHA in conjunction with the previous site called Cuilleencroobagh Lough.

During the site visit it was noted that the water of the two Ardloy Loughs was organically polluted because it was of a black colour, had a very bad smell, and was clearly anaerobic. It was also noted that weedkiller had been applied along the shore of the lough next to the main N4 road and that a large pile of grass cuttings were left rotting right at the water's edge.

4.9 Swallow Hole near Riverstown (G739174)

This small pond and reed bed has been studied by Sligo Branch of BirdWatch Ireland for several winters because it occasionally holds whooper swans (*Cygnus cygnus*) and a variety of other waterfowl. Habitat used by the whooper swan is specifically protected by the EU Bird's Directive. A botanical survey in July 2000 found a good diversity of marsh and reed bed flora including marsh yellow-cress (*Rorippa palustris*), lesser marshwort (*Apium inundatum*), cowbane (*Cicuta virosa*), large amounts of blue water-speedwell (*Veronica anagalis-aquatica*) and nodding bur-marigold (*Bidens cernua*). All of these plants are uncommon in County Sligo and are more commonly encountered further south in the Shannon catchment of south County Leitrim. Five species of dragonfly were also noted on the same date and it is believed that more would be recorded if the lake were visited at other seasons.

It is felt that this small site is ecologically valuable for its diversity across different plant and animal groups, so if possible should be protected. It may be worthy of NHA status and is to be regarded as a 'Very Important' site for the purpose of this constraints study.

4.10 Loughmeenaghan (G743162)

Loughmeenaghan is the largest lake within the constraints study area and is surrounded by habitats including reed beds, fen, marshes and alder-willow carr. Substantial amounts of charophytes (stoneworts) grow in the waters and this lake may qualify as a "Hard oligo-mesotrophic water with benthic vegetation of *Chara* formations" which is a habitat listed for conservation under the EU Habitats Directive (Natura 2000 code 3140). If this is the case then it has to be designated as a Special Area of Conservation (SAC). In addition to this there is a pondweed that may be *Potamogeton x fluitans* which would be a first Irish record for this hybrid, and around the lake edge there are several beds of great fen sedge (*Cladium mariscus*).

Most of the current field work concentrated on the strip of fen and grassland that lies between the current N4 and the lake shore. Several uncommon plants were found here including five species of orchid i.e. frog orchid (*Coeloglossum viride*), early marsh orchid (*Dactylorhiza incarnata*), fragrant orchid (*Gymnadaenia conopsea*), twayblade (*Listera ovata*) and common spotted orchid (*Dactylorhiza fuchsii*). This is a special piece of habitat, and as it runs right next to the current N4 road it means that if this fen habitat is to survive then it would preclude the N4 being widened at this point.

The lake was visited on several occasions from late May to late July resulting in nine species of dragonfly being observed which is more than one-third of all Irish species and included the uncommon hairy dragonfly (*Brachytron pratense*). Whooper swan (*Cygnus cygnus*) has been seen here in the winter and sedge warbler (*Acrocephalus schoenobaenus*) and reed bunting (*Emberiza schoeniclus*) are amongst the breeding species.

This area is considered 'Very Important' as an ecological site and should be a high priority for consideration as an NHA by Duchas. It is surprising that this is not already an NHA but in the report by Goodwillie *et al.* (1992) which was the basis for NHA's in this area, little attention was paid to Loughmeenaghan by the botanists eventhough the ornithologist made observations from this location. The site would deserve further study and the alder-willow carr habitat on the opposite side of the lake should then be looked at in some detail.

4.11 Drumderry near Castlebaldwin (G749155)

A small boggy area at this location holds similar species to other sites already described (e.g. Lackagh Fen and Cuilleencroobagh Lough) but doesn't have the diversity of these other habitats or the physical size. Grasshopper warbler (*Locustella neavia*) which is an amber listed bird species, breeds here (Newton *et al.* in press). It is an ecological site but is only rated as being 'Less Important' for this constraints study.

4.12 Cleavry Bog, Lough and hedgerow (G7414)

Three distinctly different pieces of habitat are all found together at this location, namely a piece of bog, a lake with reed beds and fen, and a mature hedgerow. They are treated as one site for this report as they are more or less contiguous.

The small bog is not of great ecological interest but adds diversity to the site. It is divided into two parts separated by a shallow ditch. The northern end is acid grassland with peat cuttings. It has some very wet patches with *Sphagnum* mosses and herbs such as bog asphodel (*Nartecium ossifragum*) and round-leaved sundew (*Drosera rotundifolia*). There are also higher drier areas with gorse bushes (*Ulex europaeus*). There is almost no heather but there are bog plants such as heath rush (*Juncus squarrosus*) and hare's-tail cottongrass (*Eriophorum vaginatum*). The southern end of this bog is dominated by heather (*Calluna vulgaris*) which is quite deep in places. There is a good bit of *Sphagnum* and other mosses forming a spongy mat and some *Cladonia* lichens as well as deergrass (*Trichophorum cespitosum*), hare's-tail cottongrass (*E. vaginatum*) and cross-leaved heath (*Erica tetralix*). Around the edges more soft rush (*Juncus effusus*), brambles (*Rubus fruticosus* agg.) and gorse (*U. europaeus*).

The lake and associated reed bed and fen are very interesting with two rare insects breeding here viz. the Irish damselfly (*Coenagrion lunulatum*) and the marsh fritillary butterfly (*Euphydryas aurinia*) which would be red data book species if Ireland had a red data book for insects. The flora of the lake is also of interest with cowbane (*Cicuta virosa*), many-stalked spike rush (*Eleocharis multicaulis*) and lesser pond-sedge (*Carex acutiformis*), all rare in Sligo but quite common here. A good diversity of water birds has been recorded here over the years with 28 pochard (*Aythya ferina*) on one occasion.

A shady mature hedgerow with a diverse and abundant fern flora acts as a buffer zone to the lake. This hedge includes no rare species but does have several large trees and a selection of herbs that suggest the hedge is of a great age. On the negative side two introduced species; snowberry (*Symphoricarpos albus*) and garden hedge honeysuckle (*Lonicera nitida*); are invading this hedgerow.

This is a 'Very Important' ecological site that has not previously been officially recognised by Duchas. The marsh below the lough was recently damaged by agricultural activity (May 2000) with more than half of it being lost and at the same time a large area of limestone grassland was ploughed up. The area needs to be considered for NHA status as a matter of priority.

4.13 Cloghoge near Castlebaldwin (Bricklieve Mountains pCSAC) (G756136)

This area would not have been included in this discussion of ecological sites had it not been designated as a part of the Bricklieve Mountains pCSAC.

The part of the pCSAC that falls within the constraints study area are marshy pasture fields that flood in the winter time. The simple flora of this area is clearly adapted to flooding with silverweed (*Potentilla anserina*) and amphibious bistort (*Persicaria amphibia*) completely dominating the area. Two uncommon species for Sligo were also observed, namely marsh yellow-cress (*Rorippa palustris*) and common water-crowfoot (*Ranunculus aquatilis*). This area could be classified as a turlough which is a habitat type listed in the EU Habitats Directive (Turloughs (Ireland) Natura 2000 code 3180). A local resident informed me that few waterfowl come to the area in the winter and there is no shooting of duck there.

The land immediately to the south-west of the turlough is steep with an interesting area of hazel scrub, limestone outcrops and limestone grassland. These are all habitats that make the Bricklieve Mountains a valuable Special Area of Conservation. It would seem impossible for this area to be considered suitable for road construction and it appears to lie just outside of the constraints study area.

This area is considered 'Important' as an ecological site because it is a turlough, but having said that, there is a low botanical diversity and no special invertebrates or birds were noted on my visit in July 2000. If the area is needed for road construction then Duchas should be requested to re-assess the location with a view to re-drawing the pCSAC boundaries.

4.14 Summary of findings

Twelve ecological sites have been identified within the constraints study area. Three of the sites are a part of 'proposed Candidate Special Areas of Conservation' but all three of these locations are on the fringes of their pCSAC's and a strong case could be made to Duchas to redraw the boundaries of two and possibly all three of the sites to allow road construction to proceed if the need were to arise.

Of the nine new sites described in this report, three are considered to be 'Very Important' ecological sites that should be avoided when planning the new route. Duchas should consider these locations for designation as new Natural Heritage Areas. A further four sites are considered as 'Important' and these might also be worthy of NHA status (one is already a part of a pCSAC). The remaining five sites are classified as 'Less Important' and included here are two of the pCSAC areas that really have no habitats or species of interest. The other three are identified as having ecological value and should be avoided if at all possible, but the main constraint might be to request that the road design goes some way to lessen the impact if the site can not be avoided.

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Appendices

**Ecological data relevant to sites visited during this study
for the area between Cloonamahon and Castlebaldwin.**

Sites are presented in the following sequence :-

Lisconny Bridge near Collooney (Unshin River pCSAC) (G695229)

Lackagh Fen near Drumfin (G6922)

Unshin River bank at Lackagh (Unshin River pCSAC) (G702221)

Boathole Lough & Lough Corran, Drumfin (G6920)

Kingsbrook and Kilmorgan (G7117)

Cuilleencroobagh Lough (G727176)

Ardloy Loughs and Aghalenane Lough (G7317)

Swallow Hole near Riverstown (G739174)

Loughmeenaghan (G743162)

Drumderry near Castlebaldwin (G749155)

Cleavry Bog, Lough and hedgerow (G7414)

Cloghoge near Castlebaldwin (Bricklieve Mountains pCSAC) (G756136)

Lisconny Bridge near Collooney
Sligo
G 695229

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Phytolacca sp.</i>	Hart's-tongue fern		Uncommon.	Don Cotton	17/07/2000
<i>Asplenium trichomanes</i>	Maidenhair spleenwort		Frequent on wall.	Don Cotton	17/07/2000
<i>Asplenium ruta-muraria</i>	Wall-oe		Frequent on wall.	Don Cotton	17/07/2000
<i>Ceterach officinarum</i>	Rustyback		Frequent on wall.	Don Cotton	17/07/2000
<i>Dryopteris affinis</i>	Scaly male-fern		Occasional.	Don Cotton	17/07/2000
<i>Ranunculus acris</i>	Meadow buttercup		Frequent.	Don Cotton	17/07/2000
<i>Ranunculus repens</i>	Creeping buttercup		Frequent.	Don Cotton	17/07/2000
<i>Urtica dioica</i>	Common nettle		Occasional.	Don Cotton	17/07/2000
<i>Stellaria graminea</i>	Lesser stitchwort		Occasional.	Don Cotton	17/07/2000
<i>Cerastium fontanum</i>	Common mouse-ear		Frequent.	Don Cotton	17/07/2000
<i>Sagina procumbens</i>	Prostrate pearlwort		Uncommon.	Don Cotton	17/07/2000
<i>Rumex acetosa</i>	Common sorrel		Occasional.	Don Cotton	17/07/2000
<i>Rumex crispus</i>	Curled dock		Occasional.	Don Cotton	17/07/2000
<i>Rumex conglomeratus</i>	Clustered dock		Frequent.	Don Cotton	17/07/2000
<i>Filipendula ulmaria</i>	Meadowweet		Common.	Don Cotton	17/07/2000
<i>Rubus fruticosus</i> agg.	Common bramble		Common.	Don Cotton	17/07/2000
<i>Potentilla anserina</i>	Silverweed		Frequent.	Don Cotton	17/07/2000
<i>Geum rivale</i>	Water avens		Occasional.	Don Cotton	17/07/2000
<i>Crataegus monogyna</i>	Hawthorn		Common.	Don Cotton	17/07/2000
<i>Vicia sepium</i>	Bush vetch		Frequent.	Don Cotton	17/07/2000
<i>Lathyrus pratensis</i>	Meadow vetchling		Frequent.	Don Cotton	17/07/2000
<i>Trifolium repens</i>	White clover		Frequent.	Don Cotton	17/07/2000
<i>Trifolium pratense</i>	Red clover		Occasional.	Don Cotton	17/07/2000
<i>Epilobium montanum</i>	Broad-leaved willowherb		Occasional.	Don Cotton	17/07/2000
<i>Epilobium obscurum</i>	Short-fruited willowherb		Uncommon.	Don Cotton	17/07/2000
<i>Acer pseudoplatanus</i>	Sycamore		Uncommon.	Don Cotton	17/07/2000
<i>Geranium robertianum</i>	Herb-Robert		Occasional.	Don Cotton	17/07/2000
<i>Anthriscus sylvestris</i>	Cow parsley		Frequent.	Don Cotton	17/07/2000
<i>Heracleum sphondylium</i>	Common hogweed		Occasional.	Don Cotton	17/07/2000
<i>Torilis japonica</i>	Upright hedge-parsley		Occasional.	Don Cotton	17/07/2000
<i>Prunella vulgaris</i>	Selfheal		Occasional.	Don Cotton	17/07/2000
<i>Plantago lanceolata</i>	Ribwort plantain		Frequent.	Don Cotton	17/07/2000
<i>Fraxinus excelsior</i>	Ash		Uncommon.	Don Cotton	17/07/2000
<i>Veronica chamaedrys</i>	Germander speedwell		Uncommon.	Don Cotton	17/07/2000
<i>Euphrasia</i> agg.	eyebright sp.		Frequent.	Don Cotton	17/07/2000
<i>Odonites vernus</i>	Red bartisia		Occasional.	Don Cotton	17/07/2000
<i>Galium verum</i>	Lady's bedstraw		Frequent.	Don Cotton	17/07/2000
<i>Galium aparine</i>	Cleavers		Occasional.	Don Cotton	17/07/2000
<i>Cirsium palustre</i>	Marsh thistle		Frequent.	Don Cotton	17/07/2000
<i>Cirsium arvense</i>	Creeping thistle		Common.	Don Cotton	17/07/2000
<i>Centaurea nigra</i>	Common knapweed		Frequent.	Don Cotton	17/07/2000
<i>Lapsana communis</i>	Nipplewort		Frequent.	Don Cotton	17/07/2000
<i>Sonchus asper</i>	Prickly sow-thistle		Occasional.	Don Cotton	17/07/2000
<i>Crepis capillaris</i>	Smooth hawk's-beard		Frequent.	Don Cotton	17/07/2000
<i>Bellis perennis</i>	Daisy		Occasional.	Don Cotton	17/07/2000
<i>Leucanthemum vulgare</i>	Oxeye daisy		Occasional.	Don Cotton	17/07/2000
<i>Senecio jacobaea</i>	Common ragwort		Frequent.	Don Cotton	17/07/2000
<i>Senecio aquaticus</i>	Marsh ragwort		Frequent.	Don Cotton	17/07/2000
<i>Juncus articulatus</i>	Jointed rush		Frequent.	Don Cotton	17/07/2000
<i>Juncus acutiflorus</i>	Sharp-flowered rush		Occasional.	Don Cotton	17/07/2000
<i>Juncus inflexus</i>	Hard rush		Occasional.	Don Cotton	17/07/2000
<i>Juncus effusus</i>	Soft rush		Common.	Don Cotton	17/07/2000
<i>Carex ovalis</i>	Oval sedge		Frequent.	Don Cotton	17/07/2000
<i>Carex flacca</i>	Glaucous sedge		Frequent.	Don Cotton	17/07/2000
<i>Lolium perenne</i>	Perennial rye-grass		Common.	Don Cotton	17/07/2000
<i>Cynosurus cristatus</i>	Crested dog's-tail		Frequent.	Don Cotton	17/07/2000
<i>Anhenatherum elatius</i>	False oat-grass		Common.	Don Cotton	17/07/2000
<i>Holcus lanatus</i>	Yorkshire-fog		Common.	Don Cotton	17/07/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass		Common.	Don Cotton	17/07/2000
<i>Agrostis capillaris</i>	Common bent		Common.	Don Cotton	17/07/2000
<i>Alopecurus geniculatus</i>	Marsh foxtail		Frequent.	Don Cotton	17/07/2000
<i>Phleum pratense</i>	Timothy		Frequent.	Don Cotton	17/07/2000
<i>Iris pseudacorus</i>	Yellow iris		Common.	Don Cotton	17/07/2000
<i>Dactylorhiza fuchsii</i>	Common spotted orchid		Occasional.	Don Cotton	17/07/2000
<i>Succisa pratensis</i>				Don Cotton	17/07/2000
<i>Helix aspersa</i>		1		Don Cotton	17/07/2000
<i>Calopteryx splendens</i>		1		Don Cotton	17/07/2000
<i>Oncostema viridulus</i>	Common green	c5		Don Cotton	17/07/2000
<i>Pieris napi</i>	Green-veined white	1		Don Cotton	17/07/2000

Lackagh fen near Drumfin

Sligo
G 699218

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Equisetum fluviale</i>	Water horsetail		Frequent.	Don Cotton	20/06/2000
<i>Equisetum palustre</i>	Marsh horsetail		Frequent.	Don Cotton	20/06/2000
<i>Dryopteris dilatata</i>	Broad buckler-fern		Uncommon.	Don Cotton	26/06/2000
<i>Caltha palustris</i>	Marsh marigold		Frequent.	Don Cotton	20/06/2000
<i>Ranunculus acris</i>	Meadow buttercup		Frequent.	Don Cotton	20/06/2000
<i>Ranunculus flammula</i>	Lesser spearwort		Frequent.	Don Cotton	20/06/2000
<i>Stellaria uliginosa</i> (=alsine)	Bog stitchwort		Occasional.	Don Cotton	20/06/2000
<i>Stellaria graminea</i>	Lesser stitchwort		Occasional.	Don Cotton	20/06/2000
<i>Cerastium fontanum</i>	Common mouse-ear		Occasional.	Don Cotton	20/06/2000
<i>Lychnis flo-cuculi</i>	Ragged-robin		Common.	Don Cotton	20/06/2000
<i>Rumex acetosa</i>	Common sorrel		Frequent.	Don Cotton	20/06/2000
<i>Salix purpurea</i>	Purple willow		Occasional along margin of bog with main road.	Don Cotton	26/06/2000
<i>Salix viminalis</i>	Osier		Occasional along margin of bog with main road.	Don Cotton	26/06/2000
<i>Salix cinerea alba</i>	Rusty willow		Occasional.	Don Cotton	20/06/2000
<i>Salix aurita</i>	Eared willow		Uncommon.	Don Cotton	20/06/2000
<i>Rorippa microphylla</i>	Narrow-fruited		Locally common.	Don Cotton	20/06/2000
<i>Cardamine pratensis</i>	Lady's-smock		Frequent.	Don Cotton	20/06/2000
<i>Galium vulgare</i>	Ling (plant)		Local and uncommon.	Don Cotton	26/06/2000
<i>Filipendula ulmaria</i>	Meadowweet		Common.	Don Cotton	20/06/2000
<i>Potentilla palustris</i>	Marsh cinquefoil		Occasional.	Don Cotton	26/06/2000
<i>Potentilla anserina</i>	Silverweed		Frequent.	Don Cotton	20/06/2000
<i>Potentilla erecta</i>	Tormentil		Frequent.	Don Cotton	20/06/2000
<i>Geum rivale</i>	Water avens		Uncommon.	Don Cotton	20/06/2000
<i>Crataegus monogyna</i>	Hawthorn		Uncommon.	Don Cotton	20/06/2000
<i>Vicia cracca</i>	Tufted vetch		Frequent.	Don Cotton	20/06/2000
<i>Vicia sepium</i>	Bush vetch		Uncommon.	Don Cotton	20/06/2000
<i>Lathyrus pratensis</i>	Meadow vetchling		Frequent.	Don Cotton	26/06/2000
<i>Trifolium repens</i>	White clover		Frequent.	Don Cotton	20/06/2000
<i>Trifolium pratense</i>	Red clover		Frequent.	Don Cotton	20/06/2000
<i>Hydrocotyle vulgaris</i>	Marsh pennywort		Common.	Don Cotton	20/06/2000
<i>Angelica sylvestris</i>	Wild angelica		Common.	Don Cotton	20/06/2000
<i>Mycositis laxa</i>	Tufted forget-me-not		Occasional.	Don Cotton	20/06/2000
<i>Ajuga reptans</i>	Bugle		Uncommon.	Don Cotton	26/06/2000
<i>Mentha aquatica</i>	Water mint		Frequent.	Don Cotton	20/06/2000
<i>Hippuris vulgaris</i>	Mare's-tail		Occasional.	Don Cotton	20/06/2000
<i>Piantago lanceolata</i>	Ribwort plantain		Frequent.	Don Cotton	20/06/2000
<i>Fraxinus excelsior</i>	Ash		Locally along road verges.	Don Cotton	26/06/2000
<i>Veronica chamaedrys</i>	Germander speedwell		Uncommon.	Don Cotton	20/06/2000
<i>Veronica scutellata</i>	Marsh speedwell		Uncommon.	Don Cotton	20/06/2000
<i>Veronica beccabunga</i>	Brooklime		Occasional.	Don Cotton	26/06/2000
<i>Rhinanthus minor</i>	Yellow-rattle		Occasional.	Don Cotton	20/06/2000
<i>Pedicularis palustris</i>	Marsh lousewort		Occasional.	Don Cotton	20/06/2000
<i>Galium palustre</i>	Common marsh-bedstraw		Frequent.	Don Cotton	20/06/2000
<i>Sambucus nigra</i>	Elder		Occasional along margin of bog with main road.	Don Cotton	26/06/2000
<i>Valeriana officinalis</i>	Common valerian		Occasional.	Don Cotton	20/06/2000
<i>Cirsium dissectum</i>	Meadow thistle		Locally frequent.	Don Cotton	20/06/2000
<i>Cirsium palustre</i>	Marsh thistle		Frequent.	Don Cotton	20/06/2000
<i>Hypochaeris radicata</i>	Calf's ear		Uncommon.	Don Cotton	20/06/2000
<i>Triglochin palustris</i>	Marsh arrowgrass		Frequent.	Don Cotton	20/06/2000
<i>Lemna minor</i>	Common duckweed		In main drainage ditch.	Don Cotton	26/06/2000
<i>Lemna trisulca</i>	Hy-leaved duckweed		In main drainage ditch.	Don Cotton	26/06/2000
<i>Juncus inflexus</i>	Hard rush		Uncommon.	Don Cotton	20/06/2000
<i>Juncus effusus</i>	Soft rush		Frequent.	Don Cotton	20/06/2000
<i>Juncus conglomeratus</i>	Compact rush		Common.	Don Cotton	20/06/2000
<i>Luzula multiflora</i>	Heath wood-rush		Occasional. Subspecies <i>congesta</i> also found.	Don Cotton	20/06/2000
<i>Eriophorum angustifolium</i>	Common cottongrass		Occasional.	Don Cotton	20/06/2000
<i>Eleocharis palustris</i>	Common spike-rush		Locally abundant.	Don Cotton	26/06/2000
<i>Schoenoplectus lacustris</i>	Common club-rush		One small patch noted right in middle of bog	Don Cotton	26/06/2000
<i>Carex paniculata</i>	Greater tussock-sedge		Uncommon along main drainage ditch.	Don Cotton	26/06/2000
<i>Carex diandra</i>	Lesser tussock-sedge		Locally abundant.	Don Cotton	20/06/2000
<i>Carex disticha</i>	Brown sedge		Frequent.	Don Cotton	20/06/2000
<i>Carex echinata</i>	Star sedge		Frequent.	Don Cotton	20/06/2000
<i>Carex rostrata</i>	Bottle sedge		Common.	Don Cotton	20/06/2000
<i>Carex flacca</i>	Gluccous sedge		Frequent.	Don Cotton	20/06/2000
<i>Carex panicea</i>	Carnifon sedge		Frequent.	Don Cotton	20/06/2000
<i>Carex viridula brachyrrhyncha</i>	Long-stalked		Occasional.	Don Cotton	20/06/2000
<i>Carex nigra</i>	Common sedge		Common.	Don Cotton	20/06/2000
<i>Carex pulcaris</i>	Flea sedge		Occasional.	Don Cotton	20/06/2000
<i>Festuca ovina</i>	Sheep's-fescue		Frequent.	Don Cotton	20/06/2000

Lackagh fen near Drumfin

Sligo

G 699218

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Cynosurus cristatus</i>	Crested dog's-tail		Uncommon.	Don Cotton	20/06/2000
<i>Dactylis glomerata</i>	Cock's-foot grass		Occasional.	Don Cotton	20/06/2000
<i>Glyceria fluitans</i>	Floating sweet-grass		Locally along main drainage ditch.	Don Cotton	26/06/2000
<i>Helictotrichon pubescens</i>	Downy oat-grass		Locally common.	Don Cotton	20/06/2000
<i>Holcus lanatus</i>	Yorkshire-fog		Common.	Don Cotton	20/06/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass		Abundant.	Don Cotton	20/06/2000
<i>Typha latifolia</i>	Reed-mace		Locally frequent.	Don Cotton	20/06/2000
<i>Iris pseudacorus</i>	Yellow iris		Locally frequent.	Don Cotton	20/06/2000
<i>Platanthera bifolia</i>	Lesser butterfly-orchid	1	Near middle of bog.	Don Cotton	26/06/2000
<i>Dactylorhiza fuchsii</i>	Common spotted orchid		Occasional.	Don Cotton	20/06/2000
<i>Dactylorhiza incarnata</i>	Incarnata Early marsh-orchid	c20	Occasional.	Don Cotton	20/06/2000
<i>Phyteuma fontinalis</i>			Frequent.	Don Cotton	26/06/2000
<i>Pyrrhosoma nymphula</i>				Don Cotton	26/06/2000
<i>Ischnura elegans</i>		c20		Don Cotton	26/06/2000
<i>Cataglyphis teminata</i>	Small china-mark		Many.	Don Cotton	26/06/2000
<i>Maniola jurtina</i>	Meadow brown	1	First of 2000.	Don Cotton	20/06/2000
<i>Maniola jurtina</i>	Meadow brown			Don Cotton	26/06/2000
<i>Coenonympha pamphilus</i>	Small heath	c10		Don Cotton	20/06/2000
<i>Coenonympha pamphilus</i>	Small heath	1		Don Cotton	26/06/2000
<i>Phalacrotopa potatoria</i>	The drinker	1	Adult.	Don Cotton	26/06/2000
<i>Tyria jacobaeae</i>	Cinnabar moth	1		Don Cotton	26/06/2000
<i>Autographa gamma</i>	Silver Y	2		Don Cotton	20/06/2000
<i>Autographa gamma</i>	Silver Y	1		Don Cotton	26/06/2000
<i>Rhyngia campestris</i>		c5		Don Cotton	20/06/2000
<i>Bombus pascuorum</i>				Don Cotton	26/06/2000
<i>Rana temporaria</i>	Common frog	c10		Don Cotton	20/06/2000
<i>Rana temporaria</i>	Common frog		Abundant.	Don Cotton	26/06/2000
<i>Gallinago gallinago</i>	Snipe	1		Don Cotton	26/06/2000
<i>Hirundo rustica</i>	Swallow	2	Flying over area.	Don Cotton	20/06/2000
<i>Anthus pratensis</i>	Meadow pipit	2	At least two displaying.	Don Cotton	20/06/2000
<i>Anthus pratensis</i>	Meadow pipit	c3		Don Cotton	26/06/2000
<i>Erithacus rubecula</i>	Robin	1		Don Cotton	26/06/2000
<i>Saxicola torquata</i>	Stonechat	3	Juveniles.	Don Cotton	20/06/2000
<i>Saxicola torquata</i>	Stonechat	2	Male and female.	Don Cotton	26/06/2000
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	1	Singing in hedgerow.	Don Cotton	20/06/2000
<i>Carduelis chloris</i>	Greenfinch	1	Singing in hedgerow.	Don Cotton	20/06/2000
<i>Carduelis cannabina</i>	Linnit	1		Don Cotton	26/06/2000
<i>Acanthis flammea</i>	Redpoll	1	Flying over area calling.	Don Cotton	20/06/2000
<i>Acanthis flammea</i>	Redpoll	1	Flying overhead.	Don Cotton	26/06/2000
<i>Emberiza schoeniclus</i>	Reed bunting	2	At least two males singing.	Don Cotton	20/06/2000
<i>Emberiza schoeniclus</i>	Reed bunting	2		Don Cotton	26/06/2000

Unshin River bank at Lackagh

Sligo
G 702221

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Equisetum fluviatile</i>	Water horsetail		Occasional.	Don Cotton & Monica	31/07/2000
<i>Equisetum palustre</i>	Marsh horsetail		Frequent.	Don Cotton & Monica	31/07/2000
<i>Calla palustris</i>	Marsh marigold		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Ranunculus acris</i>	Meadow buttercup		Occasional.	Don Cotton & Monica	31/07/2000
<i>Ranunculus flammula</i>	Lesser spearwort		Occasional.	Don Cotton & Monica	31/07/2000
<i>Urtica dioica</i>	Common nettle		Occasional.	Don Cotton & Monica	31/07/2000
<i>Stellaria graminea</i>	Lesser stitchwort		Occasional.	Don Cotton & Monica	31/07/2000
<i>Cerastium fontanum</i>	Common mouse-ear		Occasional.	Don Cotton & Monica	31/07/2000
<i>Rumex acetosa</i>	Common sorrel		Occasional.	Don Cotton & Monica	31/07/2000
<i>Rumex crispus</i>	Curled dock		Occasional.	Don Cotton & Monica	31/07/2000
<i>Rumex obtusifolius</i>	Broad-leaved dock		Occasional.	Don Cotton & Monica	31/07/2000
<i>Salix alba</i> var. <i>alba</i>	White willow		One tree.	Don Cotton & Monica	31/07/2000
<i>Salix purpurea</i>	Purple willow		Occasional.	Don Cotton & Monica	31/07/2000
<i>Salix aurita</i>	Eared willow		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Rorippa nasturtium-aquaticum</i>	Common water-cress		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Cardamine pratensis</i>	Lady's-smock		Occasional.	Don Cotton & Monica	31/07/2000
<i>Primula vulgaris</i>	Primrose		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Samolus valerandi</i>	Brookweed		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Filipendula ulmaria</i>	Meadowsweet		Frequent.	Don Cotton & Monica	31/07/2000
<i>Rubus fruticosus</i> agg.	Common bramble		Occasional.	Don Cotton & Monica	31/07/2000
<i>Potentilla palustris</i>	Marsh cinquefoil		Occasional.	Don Cotton & Monica	31/07/2000
<i>Potentilla erecta</i>	Tormentil		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Crataegus monogyna</i>	Hawthorn		Occasional.	Don Cotton & Monica	31/07/2000
<i>Lotus corniculatus</i>	Bird's-foot trefoil		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Vicia cracca</i>	Tufted vetch		Occasional.	Don Cotton & Monica	31/07/2000
<i>Vicia sepium</i>	Bush vetch		Occasional.	Don Cotton & Monica	31/07/2000
<i>Lathyrus pratensis</i>	Meadow vetchling		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Trifolium repens</i>	White clover		Frequent.	Don Cotton & Monica	31/07/2000
<i>Tribolium pratense</i>	Red clover		Occasional.	Don Cotton & Monica	31/07/2000
<i>Epilobium palustre</i>	Marsh willowherb		Frequent.	Don Cotton & Monica	31/07/2000
<i>Linum catharticum</i>	Fairy flax		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Geranium robertianum</i>	Herb-Robert		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Hedera helix</i>	Ivy		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Aplium nodiflorum</i>	Foot's water-cress		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Angelica sylvestris</i>	Wild angelica		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Myosotis laxa</i>	Tufted forget-me-not		Rare.	Don Cotton & Monica	31/07/2000
<i>Prunella vulgaris</i>	Selfheal		Occasional.	Don Cotton & Monica	31/07/2000
<i>Plantago lanceolata</i>	Ribwort plantain		Occasional.	Don Cotton & Monica	31/07/2000
<i>Ligustrum vulgare</i>	Wild privet		Occasional.	Don Cotton & Monica	31/07/2000
<i>Scrophularia nodosa</i>	Common figwort		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Veronica chamaedrys</i>	Germander speedwell		Occasional.	Don Cotton & Monica	31/07/2000
<i>Veronica beccabunga</i>	Brooklime		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Gallium palustre</i>	Common marsh-bedstraw		Frequent.	Don Cotton & Monica	31/07/2000
<i>Valeriana officinalis</i>	Common valerian		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Cirsium palustre</i>	Marsh thistle		Occasional.	Don Cotton & Monica	31/07/2000
<i>Cirsium arvense</i>	Crawling thistle		Occasional.	Don Cotton & Monica	31/07/2000
<i>Centaurea nigra</i>	Common knapweed		Occasional.	Don Cotton & Monica	31/07/2000
<i>Hypochaeris radicata</i>	Car's-ear		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Crepis paludosa</i>	Marsh hawk's-beard		Occasional.	Don Cotton & Monica	31/07/2000
<i>Bellis perennis</i>	Daisy		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Lemna minor</i>	Common duckweed		Occasional.	Don Cotton & Monica	31/07/2000
<i>Juncus articulatus</i>	Jointed rush		Frequent.	Don Cotton & Monica	31/07/2000
<i>Juncus acutiflorus</i>	Sharp-flowered rush		Common.	Don Cotton & Monica	31/07/2000
<i>Juncus inflexus</i>	Hard rush		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Juncus effusus</i>	Soft rush		Common.	Don Cotton & Monica	31/07/2000
<i>Juncus conglomeratus</i>	Compact rush		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Carex disticha</i>	Brown sedge		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Carex echinata</i>	Star sedge		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Carex flacca</i>	Glaucous sedge		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Carex viridula</i> oedocarpa	Common yellow-sedge		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Carex nigra</i>	Common sedge		Occasional.	Don Cotton & Monica	31/07/2000
<i>Carex pulicaris</i>	Flea sedge		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Lolium perenne</i>	Perennial rye-grass		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Cynosurus cristatus</i>	Crested dog's-tail		Occasional.	Don Cotton & Monica	31/07/2000
<i>Deschampsia glomerata</i>	Cock's-foot grass		Occasional.	Don Cotton & Monica	31/07/2000
<i>Coeleria macrantha</i>	Crested hall-grass		Rare.	Don Cotton & Monica	31/07/2000
<i>Holcus lanatus</i>	Yorkshire-fog		Common.	Don Cotton & Monica	31/07/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass		Common.	Don Cotton & Monica	31/07/2000
<i>Phleum pratense</i>	Timothy		Frequent.	Don Cotton & Monica	31/07/2000

Unshin River bank at Lackagh
Sligo
G 702221

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>No.</u>	<u>NOTES</u>	<u>OBSERVER(S)</u>	<u>DATE</u>
<i>Iris pseudacorus</i>	Yellow Iris		Occasional.	Don Cotton & Monica	31/07/2000
<i>Diptychotis fuchsii</i>	Common spotted orchid		Occasional.	Don Cotton & Monica	31/07/2000
<i>Pteris napi</i>	Green-veined white	c10		Don Cotton & Monica	31/07/2000
<i>Mariola jurtina</i>	Meadow brown	2		Don Cotton & Monica	31/07/2000
<i>Aphantopus hyperantus</i>	Ringlet	c5		Don Cotton & Monica	31/07/2000

nr Boathole Lough and Lough Corran, Drumfin

Sligo
G 698206

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Caltha palustris</i>	Marsh marigold			Don Cotton & Martin Cotton	06/05/2000
<i>Drosera rotundifolia</i>	Round-leaved sundew		Occasional.	Don Cotton & Martin Cotton	13/05/2000
<i>Cardamine pratensis</i>	Lady's-smock			Don Cotton & Martin Cotton	06/05/2000
<i>Geum rivale</i>	Water avens		First of 2000 in flower. Two clumps where stream enters lake.	Don Cotton & Martin Cotton	06/05/2000
<i>Menyanthes trifoliata</i>	Bogbean			Don Cotton & Martin Cotton	06/05/2000
<i>Lemna minor</i>	Common duckweed		Common.	Don Cotton & Martin Cotton	06/05/2000
<i>Carex paniculata</i>	Greater tussock-sedge		First of 2000 in flower. Two clumps near where stream enters lake.	Don Cotton & Martin Cotton	06/05/2000
<i>Carex rostrata</i>	Bottle sedge		Common.	Don Cotton & Martin Cotton	06/05/2000
<i>Phragmites australis</i>	Common reed		Common.	Don Cotton & Martin Cotton	06/05/2000
<i>Typha latifolia</i>	Reed-mace		Occasional.	Don Cotton & Martin Cotton	06/05/2000
<i>Lymnaea stagnalis</i>		c10	Common.	Don Cotton & Martin Cotton	06/05/2000
<i>Pyrhosoma nymphula</i>		c20		Don Cotton & Martin Cotton	06/05/2000
<i>Enallagma cyathigerum</i>		c10		Don Cotton	29/07/1981
<i>Ischnura elegans</i>		3		Don Cotton	29/07/1981
<i>Pieris napi</i>	Green-veined white	c20		Don Cotton & Martin Cotton	06/05/2000
<i>Anthocharis cardamines</i>	Orange-tip	c8		Don Cotton & Martin Cotton	06/05/2000
<i>Anthocharis cardamines</i>	Orange-tip	c4		Don Cotton & Martin Cotton	06/05/2000
<i>Aglais urticae</i>	Small tortoiseshell	2		Don Cotton & Martin Cotton	06/05/2000
<i>Aglais urticae</i>	Small tortoiseshell	3		Don Cotton & Martin Cotton	06/05/2000
<i>Inachis io</i>	Peacock	3		Don Cotton & Martin Cotton	06/05/2000
<i>Inachis io</i>	Peacock	5		Don Cotton & Martin Cotton	06/05/2000
<i>Saturnia pavonia</i>	Emperor moth	c30	Mainly flying over bog.	Don Cotton & Martin Cotton	06/05/2000
<i>Bombus pratorum</i>		1	Queen.	Don Cotton & Martin Cotton	06/05/2000
<i>Bombus hortorum</i>		1	Queen. 3 yellow bands with white rear.	Don Cotton & Martin Cotton	06/05/2000
<i>Pera flaviventris</i>	Perch		Small shoal.	Don Cotton	29/07/1981
<i>Rana temporaria</i>	Common frog	1		Don Cotton & Martin Cotton	06/05/2000
<i>Podiceps cristatus</i>	Great crested grebe	1	Total wildfowl count.	Don Cotton & Martin Cotton	06/05/2000
<i>Phalacrocorax carbo</i>	Common cormorant	1	Total wildfowl count.	Don Cotton & Martin Cotton	06/05/2000
<i>Cygnus olor</i>	Mute swan	1	Total wildfowl count. Male. Swam to Lough Corran.	Don Cotton & Martin Cotton	06/05/2000
<i>Cygnus olor</i>	Mute swan	1	Total wildfowl count. Male. Swam from Boathole Lough.	Don Cotton & Martin Cotton	06/05/2000
<i>Anas platyrhynchos</i>	Mallard		Female with ducklings.	Don Cotton & Martin Cotton	06/05/2000
<i>Anas platyrhynchos</i>	Mallard	8	Total wildfowl count. 7 males and 1 female. Males flew to Lough Corran.	Don Cotton & Martin Cotton	06/05/2000
<i>Anas platyrhynchos</i>	Mallard	7	Total wildfowl count. 7 males. Flew from Boathole Lough.	Don Cotton & Martin Cotton	06/05/2000
<i>Chasianus colchicus</i>	Pheasant	1		Don Cotton & Martin Cotton	06/05/2000
<i>Gallinula chloropus</i>	Moorhen	1	Total wildfowl count. Heard.	Don Cotton & Martin Cotton	06/05/2000
<i>Fulica atra</i>	Coot	1	Total wildfowl count.	Don Cotton & Martin Cotton	06/05/2000
<i>Gallinago gallinago</i>	Snipe	1	Flushed from bog.	Don Cotton & Martin Cotton	06/05/2000
<i>Cuculus canorus</i>	Cuckoo	1	Calling.	Don Cotton & Martin Cotton	06/05/2000
<i>Alauda arvensis</i>	Skylark	2	Singing.	Don Cotton & Martin Cotton	06/05/2000
<i>Riparia riparia</i>	Sand martin	c15	Nesting in overhang of stream bank.	Don Cotton & Martin Cotton	06/05/2000
<i>Riparia riparia</i>	Sand martin	6	Feeding over water.	Don Cotton & Martin Cotton	06/05/2000
<i>Hirundo rustica</i>	Swallow	2		Don Cotton & Martin Cotton	06/05/2000
<i>Anthus pratensis</i>	Meadow pipit	c10		Don Cotton & Martin Cotton	06/05/2000
<i>Troglodytes troglodytes</i>	Wren	1	Singing.	Don Cotton & Martin Cotton	06/05/2000
<i>Troglodytes troglodytes</i>	Wren	1		Don Cotton & Martin Cotton	06/05/2000
<i>Saxicola rubetra</i>	Whinchat	2	First of 2000. Male and female.	Martin Enright	06/05/2000
<i>Saxicola torquata</i>	Stonechat	1	Male.	Don Cotton & Martin Cotton	06/05/2000
<i>Saxicola torquata</i>	Stonechat	2	Male and female.	Don Cotton & Martin Cotton	13/05/2000
<i>Turdus philomelos</i>	Song thrush	2		Don Cotton & Martin Cotton	06/05/2000
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	4	Singing. Another two at other side of bog in G72.	Don Cotton & Martin Cotton	06/05/2000
<i>Sylvia communis</i>	Whitethroat	1	Singing.	Don Cotton & Martin Cotton	06/05/2000
<i>Phylloscopus trochilus</i>	Willow warbler	4	Singing.	Don Cotton & Martin Cotton	06/05/2000
<i>Carduelis cannabina</i>	Linnet	4		Don Cotton & Martin Cotton	06/05/2000
<i>Acanthis flammea</i>	Redpoll	4		Don Cotton & Martin Cotton	06/05/2000
<i>Emberiza schoeniclus</i>	Reed bunting	4		Don Cotton & Martin Cotton	06/05/2000

Kingsbrook and Kilmorgan near Riverstown

Sligo
G 718176

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Asplenium ruta-muraria</i>	Wall-rue			Don Cotton & Martin Cotton	13/05/2000
<i>Najas lutea</i>	Yellow water-lily			Don Cotton & Martin Cotton	13/05/2000
<i>Caltha palustris</i>	Marsh marigold		Common.	Don Cotton & Elaine Cotton	10/05/2000
<i>Caltha palustris</i>	Marsh marigold			Don Cotton & Martin Cotton	13/05/2000
<i>Ranunculus ficaria</i>	Lesser celandine			Don Cotton & Martin Cotton	13/05/2000
<i>Urtica dioica</i>	Common nettle			Don Cotton & Martin Cotton	13/05/2000
<i>Stellaria uliginosa</i> (=alsine)	Bog stitchwort			Don Cotton & Martin Cotton	13/05/2000
<i>Vicia riviniana</i>	Common dog-violet			Don Cotton & Martin Cotton	13/05/2000
<i>Populus tremula</i>	Aspen			Don Cotton & Martin Cotton	13/05/2000
<i>Alliaria petiolata</i>	Garlic mustard		Small patch along road verge.	Don Cotton & Elaine Cotton	10/05/2000
<i>Arabisopsis thaliana</i>	Thale cress		First of 2000 in flower. Along base of stone wall.	Don Cotton & Elaine Cotton	10/05/2000
<i>Cardamine pratensis</i>	Lady's-smock			Don Cotton & Elaine Cotton	10/05/2000
<i>Cardamine pratensis</i>	Lady's-smock		Frequent.	Don Cotton & Martin Cotton	13/05/2000
<i>Primula vulgaris</i>	Primrose			Don Cotton & Martin Cotton	13/05/2000
<i>Saxifraga hypnoides</i>	Mossy saxifrage		First of 2000 in flower. On rock.	Don Cotton & Elaine Cotton	10/05/2000
<i>Saxifraga hypnoides</i>	Mossy saxifrage			Don Cotton & Martin Cotton	13/05/2000
<i>Filipendula ulmaria</i>	Meadowsweet			Don Cotton & Martin Cotton	13/05/2000
<i>Potentilla palustris</i>	Marsh cinquefoil			Don Cotton & Martin Cotton	13/05/2000
<i>Potentilla anserina</i>	Silverweed			Don Cotton & Martin Cotton	13/05/2000
<i>Potentilla erecta</i>	Tormentil			Don Cotton & Martin Cotton	13/05/2000
<i>Gaum rivale</i>	Water avens			Don Cotton & Martin Cotton	13/05/2000
<i>Crataegus monogyna</i>	Hawthorn			Don Cotton & Martin Cotton	13/05/2000
<i>Lotus corniculatus</i>	Bird's-foot trefoil			Don Cotton & Martin Cotton	13/05/2000
<i>Vicia sepium</i>	Bush vetch			Don Cotton & Martin Cotton	13/05/2000
<i>Trifolium campestre</i>	Hop trefoil			Don Cotton & Martin Cotton	13/05/2000
<i>Ulex europaeus</i>	Gorse			Don Cotton & Martin Cotton	13/05/2000
<i>Geranium ludicum</i>	Shining crane's-bill			Don Cotton & Elaine Cotton	10/05/2000
<i>Coropodium majus</i>	Pigtail			Don Cotton & Martin Cotton	13/05/2000
<i>Oenanthe fluviatilis</i>	River water-dropwort			Don Cotton & Martin Cotton	13/05/2000
<i>Apium nodiflorum</i>	Foot's water-cress			Don Cotton & Martin Cotton	13/05/2000
<i>Symphytum x uplandicum</i>	hybrid comfrey		First of 2000 in flower. At cross-roads.	Don Cotton & Elaine Cotton	10/05/2000
<i>Ajuga reptans</i>	Bugle		Stream bank.	Don Cotton & Elaine Cotton	10/05/2000
<i>Ajuga reptans</i>	Bugle			Don Cotton & Martin Cotton	13/05/2000
<i>Mentha spicata</i>	Spear mint		1988. NCR. Described as "Unshin River streams at Kilmorgan"	Roger Goodwillie, California	
<i>Plantago lanceolata</i>	Ribwort plantain			Don Cotton & Martin Cotton	13/05/2000
<i>Veronica chamaedrys</i>	Germander speedwell			Don Cotton & Martin Cotton	13/05/2000
<i>Pedicularis sylvatica</i>	Common lousewort			Don Cotton & Martin Cotton	13/05/2000
<i>Bellis perennis</i>	Daisy			Don Cotton & Martin Cotton	13/05/2000
<i>Achillea millefolium</i>	Yarrow			Don Cotton & Martin Cotton	13/05/2000
<i>Petasites hybridus</i>	Butterbur			Don Cotton & Martin Cotton	13/05/2000
<i>Potamogeton crispus</i>	Curled pondweed			Don Cotton & Martin Cotton	13/05/2000
<i>Juncus effusus</i>	Soft rush			Don Cotton & Martin Cotton	13/05/2000
<i>Luzula multiflora</i>	Heath wood-rush			Don Cotton & Martin Cotton	13/05/2000
<i>Eriophorum angustifolium</i>	Common cottongrass			Don Cotton & Martin Cotton	13/05/2000
<i>Carex paniculata</i>	Greater tussock-sedge			Don Cotton & Martin Cotton	13/05/2000
<i>Carex flacca</i>	Glaucous sedge			Don Cotton & Martin Cotton	13/05/2000
<i>Carex panicea</i>	Carnation sedge			Don Cotton & Martin Cotton	13/05/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass.			Don Cotton & Martin Cotton	13/05/2000
<i>Iris pseudacorus</i>	Yellow iris		Stream bank.	Don Cotton & Elaine Cotton	10/05/2000
<i>Iris pseudacorus</i>	Yellow iris			Don Cotton & Martin Cotton	13/05/2000
<i>Orchis mascula</i>	Early-purple orchid		Many plants along bank beside marsh and stream.	Don Cotton & Elaine Cotton	10/05/2000
<i>Bithynia tentaculata</i>				Don Cotton & Martin Cotton	13/05/2000
<i>Pyrhosoma nymphula</i>		2		Don Cotton & Elaine Cotton	10/05/2000
<i>Pieris napi</i>	Green-veined white	c30		Don Cotton & Elaine Cotton	10/05/2000
<i>Pieris napi</i>	Green-veined white	c10		Don Cotton & Martin Cotton	13/05/2000
<i>Anthocharis cardamines</i>	Orange-tip	c10		Don Cotton & Elaine Cotton	10/05/2000
<i>Anthocharis cardamines</i>	Orange-tip			Don Cotton & Martin Cotton	13/05/2000
<i>Aglais urticae</i>	Small tortoiseshell	1		Don Cotton & Elaine Cotton	10/05/2000
<i>Inachis io</i>	Peacock	1		Don Cotton & Elaine Cotton	10/05/2000
<i>Inachis io</i>	Peacock	2		Don Cotton & Martin Cotton	13/05/2000
<i>Pararge aegeria</i>	Speckled wood	2		Don Cotton & Elaine Cotton	10/05/2000
<i>Pararge aegeria</i>	Speckled wood	3		Don Cotton & Martin Cotton	13/05/2000
<i>Rhyngia campestris</i>				Don Cotton & Martin Cotton	13/05/2000
<i>Bombus pascuorum</i>				Don Cotton & Elaine Cotton	10/05/2000
<i>Coccinella 7-punctata</i>	7-spot ladybird	1		Don Cotton & Martin Cotton	13/05/2000
<i>Salmo trutta</i>	Brown trout			Don Cotton & Martin Cotton	13/05/2000
<i>Gasterosteus aculeatus</i>	Three-spined stickleback			Don Cotton & Martin Cotton	13/05/2000
<i>Rana temporaria</i>	Common frog	4		Don Cotton & Martin Cotton	13/05/2000
<i>Phasianus colchicus</i>	Pheasant	1	Heard.	Don Cotton & Elaine Cotton	10/05/2000

Kingsbrook and Kilmorgan near Riverstown
Sligo
G 72 16

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>No.</u>	<u>NOTES</u>	<u>OBSERVER(S)</u>	<u>DATE</u>
<i>Hirundo rustica</i>	Swallow	2		Don Cotton & Elaine Cotton	10/05/2000
<i>Anthus pratensis</i>	Meadow pipit	2		Don Cotton & Elaine Cotton	10/05/2000
<i>Motacilla cinerea</i>	Grey wagtail	1	Male.	Don Cotton & Elaine Cotton	10/05/2000
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	2		Don Cotton & Elaine Cotton	10/05/2000
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	1	Singing.	Don Cotton & Martin Cotton	13/05/2000
<i>Phylloscopus trochilus</i>	Willow warbler	04		Don Cotton & Elaine Cotton	10/05/2000
<i>Phylloscopus trochilus</i>	Willow warbler	1	Singing.	Don Cotton & Martin Cotton	13/05/2000
<i>Regulus regulus</i>	Goldcrest	1	Singing.	Don Cotton & Martin Cotton	13/05/2000
<i>Parus ater</i>	Coal tit	2	Nesting in hole in wall of bridge.	Don Cotton & Martin Cotton	13/05/2000
<i>Carduelis carduelis</i>	Goldfinch	1		Don Cotton & Elaine Cotton	10/05/2000
<i>Carduelis carduelis</i>	Goldfinch	3		Don Cotton & Martin Cotton	13/05/2000
<i>Emberiza schoeniclus</i>	Reed bunting	2		Don Cotton & Elaine Cotton	10/05/2000

Cuilleencroobagh Lough near Riverstown
Sligo
G 727176

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>No.</u>	<u>NOTES</u>	<u>OBSERVER(S)</u>	<u>DATE</u>
<i>Equisetum fluviatile</i>	Water horsetail		Dominant.	Don Cotton & Monica	31/07/2000
<i>Lychnis flos-cuculi</i>	Ragged-robin		Occasional.	Don Cotton & Monica	31/07/2000
<i>Salix cinerea oleifolia</i>	Rusty willow		Frequent.	Don Cotton & Monica	31/07/2000
<i>Potentilla palustris</i>	Marsh cinquefoil		Frequent.	Don Cotton & Monica	31/07/2000
<i>Epilobium palustre</i>	Marsh willowherb		Frequent.	Don Cotton & Monica	31/07/2000
<i>Angelica sylvestris</i>	Wild angelica		Frequent.	Don Cotton & Monica	31/07/2000
<i>Menyanthes trifoliata</i>	Bogbean		Common.	Don Cotton & Monica	31/07/2000
<i>Mentha aquatica</i>	Water mint		Occasional.	Don Cotton & Monica	31/07/2000
<i>Gallium palustre</i>	Common marsh-bedstraw		Frequent.	Don Cotton & Monica	31/07/2000
<i>Valeriana officinalis</i>	Common valerian		Occasional.	Don Cotton & Monica	31/07/2000
<i>Carex paniculata</i>	Greater tussock-sedge		Occasional.	Don Cotton & Monica	31/07/2000
<i>Carex disticha</i>	Brown sedge		Occasional.	Don Cotton & Monica	31/07/2000
<i>Carex rostrata</i>	Bottle sedge		Frequent.	Don Cotton & Monica	31/07/2000
<i>Carex viridula brachyrrhyncha</i>	Long-stalked		Uncommon.	Don Cotton & Monica	31/07/2000
<i>Phragmites australis</i>	Common reed		Abundant.	Don Cotton & Monica	31/07/2000
<i>Anas platyrhynchos</i>	Mallard	3		Don Cotton & Monica	31/07/2000

Ardloy Loughs & Aghalenane Lough

Sligo

G 73 17

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Equisetum fluviatile</i>	Water horsetail		Frequent.	Don Cotton & Monica	10/07/2000
<i>Equisetum arvense</i>	Field horsetail		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Equisetum palustre</i>	Marsh horsetail		Occasional.	Don Cotton & Monica	10/07/2000
<i>Nymphaea alba</i>	White water-lily		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Nuphar lutea</i>	Yellow water-lily		Occasional.	Don Cotton & Monica	10/07/2000
<i>Galtra palustris</i>	Marsh marigold		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Ranunculus acris</i>	Meadow buttercup		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Ranunculus repens</i>	Creeping buttercup		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Ranunculus lingua</i>	Greater spearwort		Occasional.	Don Cotton & Monica	10/07/2000
<i>Ranunculus flammula</i>	Lesser spearwort		Frequent.	Don Cotton & Monica	10/07/2000
<i>Urtica dioica</i>	Common nettle		Occasional.	Don Cotton & Monica	10/07/2000
<i>Stellaria uliginosa</i> (=alsine)	Bog stitchwort		Occasional.	Don Cotton & Monica	10/07/2000
<i>Stellaria graminea</i>	Lesser stitchwort		Occasional.	Don Cotton & Monica	10/07/2000
<i>Cerastium fontanum</i>	Common mouse-ear		Occasional.	Don Cotton & Monica	10/07/2000
<i>Sagina nodosa</i>	Knotted pearlwort		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Lychnis vis-cuculi</i>	Ragged-robin		Occasional.	Don Cotton & Monica	10/07/2000
<i>Rumex acetosella</i>	Sheep's sorrel		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Rumex acetosa</i>	Common sorrel		Occasional.	Don Cotton & Monica	10/07/2000
<i>Hypericum tetrapetrum</i>	Square-stalked		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Hypericum pulchrum</i>	Slender St. John's-wort		Occasional.	Don Cotton & Monica	10/07/2000
<i>Populus tremula</i>	Aspen		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Salix viminalis</i>	Osier		Occasional.	Don Cotton & Monica	10/07/2000
<i>Salix caprea</i> x <i>viminalis</i>		2	Uncommon.	Don Cotton & Monica	10/07/2000
<i>Salix cinerea olortolia</i>	Rusty willow		Occasional.	Don Cotton & Monica	10/07/2000
<i>Salix aurita</i>	Earl willow		Frequent.	Don Cotton & Monica	10/07/2000
<i>Salix repens</i>	Creeping willow		Frequent.	Don Cotton & Monica	10/07/2000
<i>Cardamine pratensis</i>	Lady's-smock		Occasional.	Don Cotton & Monica	10/07/2000
<i>Calluna vulgaris</i>	Ling (plant)		Locally common.	Don Cotton & Monica	10/07/2000
<i>Erica tetralix</i>	Cross-leaved heath		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Filipendula ulmaria</i>	Meadowweet		Frequent.	Don Cotton & Monica	10/07/2000
<i>Rubus fruticosus</i> agg.	Common bramble		Frequent.	Don Cotton & Monica	10/07/2000
<i>Potentilla palustris</i>	Marsh cinquefoil		Occasional.	Don Cotton & Monica	10/07/2000
<i>Potentilla anserina</i>	Silverweed		Locally frequent.	Don Cotton & Monica	10/07/2000
<i>Potentilla erecta</i>	Tormentil		Frequent.	Don Cotton & Monica	10/07/2000
<i>Crataegus monogyna</i>	Hawthorn		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Vicia cracca</i>	Tufted vetch		Frequent.	Don Cotton & Monica	10/07/2000
<i>Vicia sepium</i>	Bush vetch		Occasional.	Don Cotton & Monica	10/07/2000
<i>Lathyrus pratensis</i>	Meadow vetchling		Frequent.	Don Cotton & Monica	10/07/2000
<i>Trifolium repens</i>	White clover		Occasional.	Don Cotton & Monica	10/07/2000
<i>Trifolium pratense</i>	Red clover		Frequent.	Don Cotton & Monica	10/07/2000
<i>Ulex europaeus</i>	Gorse		Occasional.	Don Cotton & Monica	10/07/2000
<i>Epilobium hirsutum</i>	Great willowherb		Occasional.	Don Cotton & Monica	10/07/2000
<i>Epilobium perfoliatum</i>	Hairy willowherb		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Polygala sarpollifolia</i>	Heath milkwort		Occasional.	Don Cotton & Monica	10/07/2000
<i>Hydrocotyle vulgaris</i>	Marsh pennywort		Occasional.	Don Cotton & Monica	10/07/2000
<i>Apium nodiflorum</i>	Food's water-cress		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Angelica sylvestris</i>	Wild angelica		Occasional.	Don Cotton & Monica	10/07/2000
<i>Menyanthes trifoliata</i>	Bogbean		Frequent.	Don Cotton & Monica	10/07/2000
<i>Myosotis laxa</i>	Tufted forget-me-not		Occasional.	Don Cotton & Monica	10/07/2000
<i>Prunella vulgaris</i>	Selfheal		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Mentha aquatica</i>	Water mint		Occasional.	Don Cotton & Monica	10/07/2000
<i>Hippuris vulgaris</i>	Mare's-tail		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Plantago lanceolata</i>	Ribwort plantain		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Fraxinus excelsior</i>	Ash		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Veronica scutellata</i>	Marsh speedwell		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Veronica anagallis-aquatica</i>	Blue water-speedwell		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Rhynchos minor</i>	Yellow-rattle		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Pedicularis palustris</i>	Marsh lousewort		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Pedicularis sylvatica</i>	Common lousewort		Occasional.	Don Cotton & Monica	10/07/2000
<i>Galium palustre</i>	Common marsh-bedstraw		Frequent.	Don Cotton & Monica	10/07/2000
<i>Galium saxatile</i>	Heath bedstraw		Frequent.	Don Cotton & Monica	10/07/2000
<i>Galium aparine</i>	Cleavers		Frequent.	Don Cotton & Monica	10/07/2000
<i>Valeriana officinalis</i>	Common valerian		Frequent.	Don Cotton & Monica	10/07/2000
<i>Succisa pratensis</i>	Devil's-bit scabious		Common.	Don Cotton & Monica	10/07/2000
<i>Cirsium palustre</i>	Marsh thistle		Occasional.	Don Cotton & Monica	10/07/2000
<i>Cirsium arvense</i>	Creeping thistle		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Centaurea nigra</i>	Common knapweed		Common.	Don Cotton & Monica	10/07/2000
<i>Bellis perennis</i>	Daisy		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Senecio aquaticus</i>	Marsh ragwort		Occasional.	Don Cotton & Monica	10/07/2000

Ardloy Loughs & Aghalenane Lough

Sligo

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SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Triglochin peltatus</i>	Mareh arrowgrass		Occasional.	Don Cotton & Monica	10/07/2000
<i>Juncus squarrosus</i>	Heath rush		Frequent.	Don Cotton & Monica	10/07/2000
<i>Juncus effusus</i>	Soft rush		Common.	Don Cotton & Monica	10/07/2000
<i>Juncus conglomeratus</i>	Compact rush		Common.	Don Cotton & Monica	10/07/2000
<i>Luzula multiflora congesta</i>	Congested heath		Frequent.	Don Cotton & Monica	10/07/2000
<i>Eriophorum angustifolium</i>	Common cottongrass		Occasional.	Don Cotton & Monica	10/07/2000
<i>Schoenoplectus lacustris</i>	Common club-rush		Common.	Don Cotton & Monica	10/07/2000
<i>Cladium mariscus</i>	Great fan-sedge		Occasional.	Don Cotton & Monica	10/07/2000
<i>Carex paniculata</i>	Greater tussock-sedge		Occasional.	Don Cotton & Monica	10/07/2000
<i>Carex diandra</i>	Lesser tussock-sedge		Common.	Don Cotton & Monica	10/07/2000
<i>Carex disticha</i>	Brown sedge		Occasional.	Don Cotton & Monica	10/07/2000
<i>Carex ovalis</i>	Oval sedge		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Carex echinata</i>	Star sedge		Occasional.	Don Cotton & Monica	10/07/2000
<i>Carex rostrata</i>	Bottle sedge		Common.	Don Cotton & Monica	10/07/2000
<i>Carex flacca</i>	Glaucous sedge		Frequent.	Don Cotton & Monica	10/07/2000
<i>Carex panicea</i>	Canada sedge		Frequent.	Don Cotton & Monica	10/07/2000
<i>Carex viridula brachytryncha</i>	Long-stalked		Occasional.	Don Cotton & Monica	10/07/2000
<i>Carex rigra</i>	Common sedge		Frequent.	Don Cotton & Monica	10/07/2000
<i>Carex pulicaris</i>	Flea sedge		Occasional.	Don Cotton & Monica	10/07/2000
<i>Cynosurus cristatus</i>	Crested dog's-tail		Occasional.	Don Cotton & Monica	10/07/2000
<i>Dactylis glomerata</i>	Cock's-foot grass		Occasional.	Don Cotton & Monica	10/07/2000
<i>Glyceris rotata</i>	Plicate sweet-grass		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Deschampsia cespitosa</i>	Tufted hair-grass		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Holcus lanatus</i>	Yorkshire-fog		Frequent.	Don Cotton & Monica	10/07/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass		Frequent.	Don Cotton & Monica	10/07/2000
<i>Alpeyurus pratensis</i>	Meadow foxtail		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Phleum pratense</i>	Timothy		Uncommon.	Don Cotton & Monica	10/07/2000
<i>Molinia caerulea</i>	Purple moor-grass		Occasional.	Don Cotton & Monica	10/07/2000
<i>Phragmites australis</i>	Common reed		Frequent.	Don Cotton & Monica	10/07/2000
<i>Typha latifolia</i>	Reed-mace		Occasional.	Don Cotton & Monica	10/07/2000
<i>Narthecium ossifragum</i>	Bog asphodel		Occasional.	Don Cotton & Monica	10/07/2000
<i>Platanthera chlorantha</i>	Greater butterfly-orchid	3	Uncommon.	Don Cotton & Monica	10/07/2000
<i>Platanthera bifolia</i>	Lesser butterfly-orchid	c6	Occasional.	Don Cotton & Monica	10/07/2000
<i>Dactylorhiza fuchsii</i>	Common spotted orchid		Frequent.	Don Cotton & Monica	10/07/2000
<i>Dactylorhiza maculata</i>	Heath spotted orchid		Locally common.	Don Cotton & Monica	10/07/2000
<i>Pyrhosoma nymphula</i>		c10		Don Cotton	20/06/1981
<i>Coenagrion pulchellum</i>		c10		Don Cotton	20/06/1981
<i>Coenagrion pulchellum</i>		c20		Don Cotton & Monica	10/07/2000
<i>Enallagma cyathigerum</i>		1		Don Cotton	20/06/1981
<i>Enallagma cyathigerum</i>				Don Cotton	31/07/1981
<i>Ischnura elegans</i>		c50		Don Cotton	20/06/1981
<i>Ischnura elegans</i>				Don Cotton	31/07/1981
<i>Ischnura elegans</i>		c10		Don Cotton & Monica	10/07/2000
<i>Aeschna grandis</i>		1		Don Cotton & Monica	10/07/2000
<i>Sympetrum striolatum / nigrescens</i>		c10		Don Cotton	31/07/1981
<i>Omocestus viridulus</i>	Common green			Don Cotton	31/07/1981
<i>Omocestus viridulus</i>	Common green	c5		Don Cotton & Monica	10/07/2000
<i>Pieris napi</i>	Green-veined white	c3		Don Cotton & Monica	10/07/2000
<i>Maniola jurtina</i>	Meadow brown	c15		Don Cotton & Monica	10/07/2000
<i>Aphantopus hyperantus</i>	Ringlet	c40		Don Cotton & Monica	10/07/2000
<i>Haematopota pluvialis</i>	Common cleg	c5		Don Cotton & Monica	10/07/2000
<i>Chrysotoxum biondum</i>		1		Don Cotton & Monica	10/07/2000
<i>Anas platyrhynchos</i>	Mallard	2		Don Cotton & Monica	10/07/2000
<i>Accipiter nisus</i>	Sparrowhawk	1		Don Cotton	20/06/1981
<i>Accipiter nisus</i>	Sparrowhawk		Breeding.	Don Cotton	31/07/1981
<i>Gallinula chloropus</i>	Moorhen		Nest photographed.	Don Cotton	20/06/1981
<i>Gallinula chloropus</i>	Moorhen		With family.	Don Cotton & Monica	10/07/2000
<i>Riparia riparia</i>	Sand martin	1		Don Cotton & Monica	10/07/2000
<i>Troglodytes troglodytes</i>	Wren	1	Heard.	Don Cotton & Monica	10/07/2000
<i>Sialia torquata</i>	Stonechat	4	Family.	Don Cotton & Monica	10/07/2000
<i>Acrocephalus schoenobaenus</i>	Sedge warbler			Don Cotton	20/06/1981
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	1	Singing.	Don Cotton & Monica	10/07/2000
<i>Phylloscopus trochilus</i>	Willow warbler	1		Don Cotton & Monica	10/07/2000
<i>Carduelis cannabina</i>	Linnet	2		Don Cotton & Monica	10/07/2000
<i>Emberiza schoeniclus</i>	Reed bunting		Singing.	Don Cotton & Monica	10/07/2000

Swallow Hole near Riverstown
Sligo
G 739174

SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Aeschna grandis</i>		1		Don Cotton & Martin Cotton	25/07/2000
<i>Sympetrum striolatum</i>		1		Don Cotton & Martin Cotton	25/07/2000
<i>Pieris napi</i>	Green-veined white	c50		Don Cotton & Martin Cotton	25/07/2000
<i>Aglais urticae</i>	Small tortoiseshell	c3		Don Cotton & Martin Cotton	25/07/2000
<i>Pararge aegeria</i>	Speckled wood	2		Don Cotton & Martin Cotton	25/07/2000
<i>Maniola jurtina</i>	Meadow brown	c3		Don Cotton & Martin Cotton	25/07/2000
<i>Aphantopus hyperantus</i>	Ringlet	c5		Don Cotton & Martin Cotton	25/07/2000
<i>Tyria jacobaeae</i>	Cinnabar moth		Caterpillars.	Don Cotton & Martin Cotton	25/07/2000
<i>Haemotopota pluvialis</i>	Common deg	1		Don Cotton & Martin Cotton	25/07/2000
<i>Pyrophaena granditarsa</i>		c10		Don Cotton & Martin Cotton	25/07/2000
<i>Cygnus olor</i>	Mute swan	2	Adults.	Don Cotton	18/12/1994
<i>Cygnus olor</i>	Mute swan	2	Adults.	Don Cotton	13/02/1995
<i>Cygnus olor</i>	Mute swan	2	Total wildfowl count. Adults.	Don Cotton	05/01/1996
<i>Cygnus olor</i>	Mute swan	2	Total wildfowl count. Adults.	Don Cotton & family	17/01/1998
<i>Cygnus olor</i>	Mute swan	5	Total wildfowl count. 2 adults and 3 juveniles.	Don Cotton, Noel Rafferty &	01/01/1999
<i>Cygnus cygnus</i>	Whooper swan	28	Juveniles 3	Don Cotton, Noel Rafferty &	03/01/1994
<i>Cygnus cygnus</i>	Whooper swan	4	Adults. No rings.	Don Cotton	18/12/1994
<i>Cygnus cygnus</i>	Whooper swan	4	Total wildfowl count. 2 adults and 2 juveniles.	Don Cotton & family	17/01/1998
<i>Cygnus cygnus</i>	Whooper swan	5	Total wildfowl count. 2 adults and 3 juveniles.	Don Cotton, Noel Rafferty &	01/01/1999
<i>Anas penelope</i>	Wigeon	2	1 male and 1 female.	Don Cotton	18/12/1994
<i>Anas penelope</i>	Wigeon	11		Don Cotton & Noel Rafferty	18/11/1995
<i>Anas penelope</i>	Wigeon	12	Total wildfowl count.	Don Cotton	10/12/1995
<i>Anas penelope</i>	Wigeon	2	Total wildfowl count.	Don Cotton & family	21/12/1996
<i>Anas penelope</i>	Wigeon	8	Total wildfowl count.	Don Cotton & Noel Rafferty	13/02/2000
<i>Anas crecca</i>	Teal	11		Don Cotton & Neil Muggan	24/12/1994
<i>Anas crecca</i>	Teal	2		Don Cotton & Noel Rafferty	18/11/1995
<i>Anas crecca</i>	Teal	21	Total wildfowl count.	Don Cotton	10/12/1995
<i>Anas crecca</i>	Teal	24	Total wildfowl count.	Don Cotton & Noel Rafferty	16/12/1995
<i>Anas crecca</i>	Teal	2	Total wildfowl count.	Don Cotton	05/01/1996
<i>Anas crecca</i>	Teal	1	Total wildfowl count.	Don Cotton & Noel Rafferty	08/12/1996
<i>Anas crecca</i>	Teal	25	Total wildfowl count.	Don Cotton & family	21/12/1996
<i>Anas crecca</i>	Teal	16	Total wildfowl count.	Don Cotton & Noel Rafferty	13/02/2000
<i>Anas platyrhynchos</i>	Mallard	11	Total wildfowl count. Lake 50% frozen.	Don Cotton & Monica	15/01/2000
<i>Gallinula chloropus</i>	Moorhen	1		Don Cotton, Noel Rafferty &	03/01/1994
<i>Gallinula chloropus</i>	Moorhen	2		Don Cotton	18/12/1994
<i>Gallinula chloropus</i>	Moorhen	1		Don Cotton & Neil Muggan	24/12/1994
<i>Gallinula chloropus</i>	Moorhen	3		Don Cotton	13/02/1995
<i>Gallinula chloropus</i>	Moorhen	2	Total wildfowl count.	Don Cotton	10/12/1995
<i>Gallinula chloropus</i>	Moorhen	4	Total wildfowl count.	Don Cotton	05/01/1996
<i>Gallinula chloropus</i>	Moorhen	4	Total wildfowl count. Only this species.	Don Cotton & Noel Rafferty	18/03/1996
<i>Gallinula chloropus</i>	Moorhen	4	Total wildfowl count.	Don Cotton & Noel Rafferty	08/12/1996
<i>Gallinula chloropus</i>	Moorhen	3	Total wildfowl count.	Don Cotton & family	17/01/1998
<i>Gallinula chloropus</i>	Moorhen	3	Total wildfowl count.	Don Cotton	17/02/1998
<i>Gallinula chloropus</i>	Moorhen	2	Total wildfowl count.	Don Cotton, Noel Rafferty &	01/01/1999
<i>Gallinula chloropus</i>	Moorhen	2		Don Cotton & Martin Cotton	25/07/2000
<i>Gallinago gallinago</i>	Snip	1		Don Cotton & Noel Rafferty	18/11/1995
<i>Gallinago gallinago</i>	Snip	1	Total wildfowl count.	Don Cotton	10/12/1995
<i>Gallinago gallinago</i>	Snip	1	Total wildfowl count.	Don Cotton & Noel Rafferty	16/12/1995
<i>Gallinago gallinago</i>	Snip	2		Don Cotton & Martin Cotton	25/07/2000
<i>Numenius arquata</i>	Curlew	29		Don Cotton	18/12/1994
<i>Numenius arquata</i>	Curlew	1		Don Cotton	13/02/1995
<i>Numenius arquata</i>	Curlew	1	Total wildfowl count.	Don Cotton	10/12/1995
<i>Numenius arquata</i>	Curlew	12	Total wildfowl count.	Don Cotton	05/01/1996
<i>Numenius arquata</i>	Curlew	1	Total wildfowl count.	Don Cotton & Noel Rafferty	08/12/1996
<i>Hirundo rustica</i>	Swallow	2		Don Cotton & Martin Cotton	25/07/2000
<i>Arthus pratensis</i>	Meadow pipit	1	Heard.	Don Cotton & Martin Cotton	25/07/2000
<i>Saxicola torquata</i>	Stonechat	1		Don Cotton & Martin Cotton	25/07/2000
<i>Carduelis carduelis</i>	Goldfinch	2	Heard.	Don Cotton & Martin Cotton	25/07/2000

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SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
Chara sp.				Don Cotton & Elaine Cotton	30/05/2000
Equisetum fluviatile	Water horsetail		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Equisetum palustre	Marsh horsetail		Frequent.	Don Cotton & Monica	04/07/2000
Nymphaea alba	White water-lily		Occasional.	Don Cotton & Monica	04/07/2000
Nuphar lutea	Yellow water-lily		Occasional.	Don Cotton & Monica	04/07/2000
Caltha palustris	Marsh marigold		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
Ranunculus aoris	Meadow buttercup		Occasional.	Don Cotton & Monica	04/07/2000
Alnus glutinosa	Alder		Occasional.	Don Cotton & Siobhan Ryan	12/06/2000
Stellaria media	Common chickweed		Occasional.	Don Cotton & Monica	04/07/2000
Stellaria graminea	Lesser stitchwort		Frequent.	Don Cotton, Martin Cotton &	14/07/2000
Cerastium fontanum	Common mouse-ear		Occasional.	Don Cotton & Siobhan Ryan	12/06/2000
Lychnis flos-cuculi	Ragged-robin		Common at southern end of lake.	Don Cotton & Siobhan Ryan	12/06/2000
Rumex acetosa	Common sorrel		Occasional.	Don Cotton & Siobhan Ryan	12/06/2000
Salix viminalis	Osier		One tree.	Don Cotton & Siobhan Ryan	12/06/2000
Salix cinerea oleifolia	Rusty willow		Occasional.	Don Cotton & Monica	04/07/2000
Salix aurita	Eared willow		Occasional.	Don Cotton & Monica	04/07/2000
Salix repens	Creeping willow		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Rorippa nasturtium-aquaticum	Water-cress spp.		Small amount near well below road.	Don Cotton & Siobhan Ryan	12/06/2000
Cardamine pratensis	Lady's-smock		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
Spiraea salicifolia	Bridgwort		One bush in marsh at southern end of lake.	Don Cotton, Martin Cotton &	14/07/2000
Filipendula ulmaria	Meadowsweet		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Potentilla palustris	Marsh cinquefoil		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Potentilla anserina	Silverweed		Frequent.	Don Cotton & Monica	04/07/2000
Potentilla erecta	Tormentil		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Lotus corniculatus	Bird's-foot trefoil		Occasional.	Don Cotton & Elaine Cotton	30/05/2000
Lotus pedunculatus	Greater bird's-foot trefoil		Uncommon at southern end of lake.	Don Cotton & Siobhan Ryan	12/06/2000
Vicia cracca	Tufted vetch		First of 2000 in flower. Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Lathyrus pratensis	Meadow vetchling		Frequent.	Don Cotton & Monica	04/07/2000
Trifolium pratense	Red clover		Occasional.	Don Cotton & Monica	04/07/2000
Epilobium palustre	Marsh willowherb		Frequent.	Don Cotton, Martin Cotton &	14/07/2000
Urtica cathartica	Fairy fax		Occasional.	Don Cotton & Monica	04/07/2000
Geranium dissectum	Cut-leaved crane's-bill		Growing beside well below road.	Don Cotton & Siobhan Ryan	12/06/2000
Angelica sylvestris	Wild angelica		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Menyanthes trifoliata	Bogbean		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
Prunella vulgaris	Selfheal		Occasional.	Don Cotton & Monica	04/07/2000
Veronica chamaedrys	Germander speedwell		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Pinguicula vulgaris	Common butterwort		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
Gallium palustre	Common marsh-bedstraw		Frequent.	Don Cotton & Monica	04/07/2000
Valeriana officinalis	Common valerian		Occasional at northern end of lake.	Don Cotton & Siobhan Ryan	12/06/2000
Succisa pratensis	Devil's-bit scabious		Frequent.	Don Cotton & Monica	04/07/2000
Cirsium dissectum	Meadow thistle		Three flowering plants.	Don Cotton & Monica	04/07/2000
Cirsium palustre	Marsh thistle		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Centaurea nigra	Common knapweed		Frequent.	Don Cotton & Monica	04/07/2000
Sonchus asper	Prickly sow-thistle		Small amount near well below road.	Don Cotton & Siobhan Ryan	12/06/2000
Crepis paludosa	Marsh hawk's-beard		First of 2000 in flower. Occasional. About 10 plants noted.	Don Cotton & Siobhan Ryan	12/06/2000
Polamogeton lucens	Shining pondweed	1	Occasional.	Don Cotton, Martin Cotton &	14/07/2000
Juncus inflexus	Hard rush		Uncommon.	Don Cotton & Monica	04/07/2000
Juncus conglomeratus	Compact rush		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Luzula multiflora congesta	Congested heath		Uncommon.	Don Cotton & Elaine Cotton	30/05/2000
Eriophorum angustifolium	Common cottongrass		Common at southern end of lake.	Don Cotton & Siobhan Ryan	12/06/2000
Cladium mariscus	Great fen-sedge		At least three clumps each of a few square meters.	Don Cotton & Elaine Cotton	30/05/2000
Carex paniculata	Greater tussock-sedge		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
Carex diandra	Lesser tussock-sedge		Occasional.	Don Cotton & Monica	04/07/2000
Carex disticha	Brown sedge		Common.	Don Cotton & Elaine Cotton	30/05/2000
Carex rostrata	Bottle sedge		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
Carex flacca	Glaucous sedge		Common.	Don Cotton & Monica	04/07/2000
Carex panicea	Carnation sedge		Frequent.	Don Cotton & Siobhan Ryan	12/06/2000
Carex viridula brachyrhyncha	Long-stalked		Occasional.	Don Cotton & Monica	04/07/2000
Carex vixida oedocarpa	Common yellow-sedge		Occasional.	Don Cotton & Monica	04/07/2000
Carex nigra	Common sedge		Occasional.	Don Cotton & Siobhan Ryan	12/06/2000
Festuca arundinacea	Tall fescue		Frequent.	Don Cotton & Monica	04/07/2000
Cynurus cristatus	Crested dog's-tail		Common.	Don Cotton & Monica	04/07/2000
Briza media	Quaking grass		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
Dactylis glomerata	Cock's-foot grass		Common.	Don Cotton & Siobhan Ryan	12/06/2000
Helictotrichon pubescens	Dowry oat-grass		Locally common.	Don Cotton & Siobhan Ryan	12/06/2000
Holcus lanatus	Yorkshire-fog		Common.	Don Cotton & Monica	04/07/2000
Anthoxanthum odoratum	Sweet vernal-grass		Common.	Don Cotton & Monica	04/07/2000
Phleum pratense	Timothy		Occasional.	Don Cotton, Martin Cotton &	14/07/2000
Molinia caerulea	Purple moor-grass		Uncommon.	Don Cotton & Monica	04/07/2000

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SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Phragmites australis</i>	Common reed		Common.	Don Cotton & Siobhan Ryan	12/06/2000
<i>Sparganium erectum</i>	Branched bur-reed		Rare. Just one plant seen.	Don Cotton, Martin Cotton &	14/07/2000
<i>Iris pseudacorus</i>	Yellow iris		Frequent.	Don Cotton & Elaine Cotton	30/05/2000
<i>Lisera ovata</i>	Common twayblade		Frequent. About 30 plants noted.	Don Cotton & Siobhan Ryan	12/06/2000
<i>Gymnadenia conopsea</i>	Fragrant orchid	1	Rare.	Don Cotton, Martin Cotton &	14/07/2000
<i>Coeloglossum viride</i>	Frog orchid		First of 2000 in flower. Three.	Don Cotton & Monica	04/07/2000
<i>Dactylocteniza fuchsii</i>	Common spotted orchid		Common.	Don Cotton & Monica	04/07/2000
<i>Dactylocteniza incarnata</i>	Early marsh-orchid	1	Partly submerged in lake.	Don Cotton & Siobhan Ryan	12/06/2000
<i>Lymnaea stagnalis</i>				Don Cotton & Monica	04/07/2000
<i>Lesia sponsa</i>		1	First of 2000. Female.	Don Cotton, Martin Cotton &	14/07/2000
<i>Pythosoma nymphula</i>		1		Don Cotton	20/06/1981
<i>Pythosoma nymphula</i>		c10		Don Cotton & Elaine Cotton	30/05/2000
<i>Pythosoma nymphula</i>		1		Don Cotton & Siobhan Ryan	12/06/2000
<i>Coenagrion puella</i>		1		Don Cotton & Siobhan Ryan	12/06/2000
<i>Coenagrion pulchellum</i>		c5		Don Cotton, Martin Cotton &	14/07/2000
<i>Enallagma cyathigerum</i>		c10		Don Cotton	20/06/1981
<i>Enallagma cyathigerum</i>		c20		Don Cotton & Elaine Cotton	30/05/2000
<i>Enallagma cyathigerum</i>		c10		Don Cotton & Siobhan Ryan	12/06/2000
<i>Ischnura elegans</i>		1		Don Cotton	20/06/1981
<i>Ischnura elegans</i>		c5		Don Cotton & Elaine Cotton	30/05/2000
<i>Aeschna grandis</i>		2		Don Cotton & Monica	04/07/2000
<i>Brachytron pratense</i>		1		Don Cotton & Elaine Cotton	30/05/2000
<i>Libellula quadrimaculata</i>		1		Don Cotton	20/06/1981
<i>Libellula quadrimaculata</i>		3		Don Cotton & Elaine Cotton	30/05/2000
<i>Omocestus viridulus</i>	Common green	2		Don Cotton & Monica	04/07/2000
<i>Pieris napi</i>	Green-veined white	1		Don Cotton & Elaine Cotton	30/05/2000
<i>Pararge aegeria</i>	Speckled wood	1		Don Cotton & Monica	04/07/2000
<i>Maniola jurtina</i>	Meadow brown	c8		Don Cotton & Monica	04/07/2000
<i>Coenonympha pamphilus</i>	Small heath			Don Cotton	20/06/1981
<i>Aphantopus hyperantus</i>	Ringlet	c10		Don Cotton & Monica	04/07/2000
<i>Xanthoche montanata</i>	Silver-ground carpet	1		Don Cotton & Siobhan Ryan	12/06/2000
<i>Eustrotia uncula</i>	Silver hook	2		Don Cotton & Monica	04/07/2000
<i>Rivula sericealis</i>	Straw dot	c5		Don Cotton & Monica	04/07/2000
<i>Siocis femigineus</i>		1	This species assuming there are no others similar species in genus.	Don Cotton, Martin Cotton &	14/07/2000
<i>Haematopora pluvialis</i>		3		Don Cotton & Monica	04/07/2000
<i>Chrysopa relicta</i>		1		Don Cotton, Martin Cotton &	14/07/2000
<i>Tibellus maritimus</i>		1	Female.	Don Cotton, Martin Cotton &	14/07/2000
<i>Rana temporaria</i>	Common frog	c30		Don Cotton & Siobhan Ryan	12/06/2000
<i>Ardea cinerea</i>	Grey heron	1	Total wildfowl count.	Don Cotton	10/12/1995
<i>Cygnus olor</i>	Mute swan	2	Adults.	Don Cotton & Niall Muggan	24/12/1994
<i>Cygnus olor</i>	Mute swan	2	Adults.	Don Cotton & Noel Rafferty	18/11/1995
<i>Cygnus olor</i>	Mute swan	2	Total wildfowl count. Adults.	Don Cotton	10/12/1995
<i>Cygnus olor</i>	Mute swan	2	Total wildfowl count. Adults.	Don Cotton & Noel Rafferty	08/12/1996
<i>Cygnus olor</i>	Mute swan	1	Total wildfowl count. Adult.	Don Cotton	17/02/1998
<i>Cygnus olor</i>	Mute swan	5	Total wildfowl count. Lake 75% frozen. 3 adults and 2 juveniles.	Don Cotton & Monica	15/01/2000
<i>Cygnus olor</i>	Mute swan	8	6 adults and 2 juveniles.	Noel Rafferty and Fergal	15/01/2000
<i>Cygnus cygnus</i>	Whooper swan	6	Total wildfowl count. Adults. On water. No neck rings.	Don Cotton	05/01/1996
<i>Anas platyrhynchos</i>	Mallard	4	2 males and 2 females.	Don Cotton & Niall Muggan	24/12/1994
<i>Anas platyrhynchos</i>	Mallard	2	Total wildfowl count.	Don Cotton & Noel Rafferty	08/12/1996
<i>Anas platyrhynchos</i>	Mallard	5	Total wildfowl count.	Don Cotton	17/02/1998
<i>Mergus semitor</i>	Red-breasted merganser	2	Breeding pair. Watched at 100 yards from a car on the Collooney to	R.J. Ussher	10/06/1891
<i>Accipiter nisus</i>	Sparrowhawk	1		Don Cotton & Niall Muggan	24/12/1994
<i>Gallinula chloropus</i>	Moorhen	1		Don Cotton, Noel Rafferty &	03/01/1994
<i>Gallinago gallinago</i>	Snipe	c10		Don Cotton & Niall Muggan	24/12/1994
<i>Gallinago gallinago</i>	Snipe	52	Total wildfowl count. Lake 75% frozen. All in one small marsh and flew up as	Don Cotton & Monica	15/01/2000
<i>Numenius arquata</i>	Curlew	6	Total wildfowl count.	Don Cotton	05/01/1996
<i>Apus apus</i>	Swift	1	Flying over lake.	Don Cotton, Martin Cotton &	14/07/2000
<i>Delichon urbica</i>	House martin	1		Don Cotton & Siobhan Ryan	12/06/2000
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	2	At least 2 males holding territory.	Don Cotton & Siobhan Ryan	12/06/2000
<i>Emberiza schoeniclus</i>	Reed bunting		Singing.	Don Cotton & Elaine Cotton	30/05/2000
<i>Emberiza schoeniclus</i>	Reed bunting	2	At least 2 males holding territory.	Don Cotton & Siobhan Ryan	12/06/2000

Drumderry near Castlebaldwin
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<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>No.</u>	<u>NOTES</u>	<u>OBSERVER(S)</u>	<u>DATE</u>
<i>Athyrium filix-femina</i>	Lady-fern		Occasional.	Don Cotton	17/07/2000
<i>Stellaria graminea</i>	Lesser stitchwort		Frequent.	Don Cotton	17/07/2000
<i>Salix cinerea oleifolia</i>	Rusty willow		Frequent.	Don Cotton	17/07/2000
<i>Filipendula ulmaria</i>	Meadowsweet		Common.	Don Cotton	17/07/2000
<i>Potentilla palustris</i>	Marsh cinquefoil		Occasional.	Don Cotton	17/07/2000
<i>Potentilla erecta</i>	Tormentil		Common.	Don Cotton	17/07/2000
<i>Vicia cracca</i>	Tufted vetch		Frequent.	Don Cotton	17/07/2000
<i>Lathyrus pratensis</i>	Meadow vetchling		Frequent.	Don Cotton	17/07/2000
<i>Epilobium palustre</i>	Marsh willowherb		Frequent.	Don Cotton	17/07/2000
<i>Angelica sylvestris</i>	Wild angelica		Frequent.	Don Cotton	17/07/2000
<i>Triglochin palustris</i>	Marsh arrowgrass		Occasional.	Don Cotton	17/07/2000
<i>Luzula multiflora</i>	Heath wood-rush		Occasional.	Don Cotton	17/07/2000
<i>Carex paniculata</i>	Greater tussock-sedge		Frequent.	Don Cotton	17/07/2000
<i>Carex diandra</i>	Lesser tussock-sedge		Common.	Don Cotton	17/07/2000
<i>Carex disticha</i>	Brown sedge		Frequent.	Don Cotton	17/07/2000
<i>Carex panicea</i>	Common sedge		Occasional.	Don Cotton	17/07/2000
<i>Pararge aegeria</i>	Speckled wood	1		Don Cotton	17/07/2000
<i>Aphantopus hyperantus</i>	Ringlet	3		Don Cotton	17/07/2000
<i>Locustella naevis</i>	Grasshopper warbler		Singing.	Don Cotton	17/07/2000

Cleavry bog, Castlebaldwin
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SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Pteridium aquilinum</i>	Bracken		Locally dominant in bog.	Don Cotton	02/07/2000
<i>Athyrium filix-femina</i>	Lady-fem		Frequent around margins.	Don Cotton	02/07/2000
<i>Dryopteris filix-mas</i>	Male-fem		Uncommon in bog.	Don Cotton	02/07/2000
<i>Ranunculus acris</i>	Meadow buttercup		Occasional in boggy pasture.	Don Cotton	02/07/2000
<i>Ranunculus flammula</i>	Lesser spearwort		Uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Betula pubescens</i>	Downy birch		Occasional in bog.	Don Cotton	02/07/2000
<i>Stellaria uliginosa</i> (reineke)	Bog stitchwort		Uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Cerastium fontanum</i>	Common mouse-ear		Occasional in boggy pasture.	Don Cotton	02/07/2000
<i>Rumex acetosella</i>	Sheep's sorrel		Occasional in boggy pasture.	Don Cotton	02/07/2000
<i>Drosera rotundifolia</i>	Round-leaved sundew		Frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Salix cinerea</i> tripartita	Rusty willow		Uncommon in bog.	Don Cotton	02/07/2000
<i>Salix aurita</i>	Earad willow		Frequent in bog.	Don Cotton	02/07/2000
<i>Rhododendron ponticum</i>	Rhododendron		Uncommon in bog.	Don Cotton	02/07/2000
<i>Calluna vulgaris</i>	Ling (plant)		Dominant in bog, uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Erica tetralix</i>	Cross-leaved heath		Occasional.	Don Cotton	02/07/2000
<i>Vaccinium myrtillus</i>	Bilberry		Frequent around margins.	Don Cotton	02/07/2000
<i>Rubus fruticosus</i> agg.	Common bramble		Frequent around margins.	Don Cotton	02/07/2000
<i>Potentilla erecta</i>	Tomrentil		Frequent in bog and boggy pasture.	Don Cotton	02/07/2000
<i>Trifolium repens</i>	White clover		Frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Trifolium pratense</i>	Red clover		Uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Ulex europaeus</i>	Gorse		Frequent around margins.	Don Cotton	02/07/2000
<i>Polygala serpyllifolia</i>	Heath milkwort		Uncommon in bog.	Don Cotton	02/07/2000
<i>Digitalis purpurea</i>	Foxglove		Occasional in boggy pasture.	Don Cotton	02/07/2000
<i>Veronica serpyllifolia</i>	Thyme-leaved speedwell		Uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Pedicularis sylvatica</i>	Common lousewort		Uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Gallium saxatile</i>	Heath bedstraw		Occasional in boggy pasture.	Don Cotton	02/07/2000
<i>Succisa pratensis</i>	Devil's-bit scabious		Frequent in bog.	Don Cotton	02/07/2000
<i>Senecio aquaticus</i>	Marsh ragwort		Uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Juncus squarrosus</i>	Heath rush		Frequent in bog and boggy pasture.	Don Cotton	02/07/2000
<i>Juncus effusus</i>	Soft rush		Frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Luzula multiflora</i> congesta	Congested heath		Frequent in bog and boggy pasture.	Don Cotton	02/07/2000
<i>Eriophorum vaginatum</i>	Hare's-tail cottongrass.		Frequent in bog and boggy pasture.	Don Cotton	02/07/2000
<i>Trichophorum cespitosum</i>	Deergrass		Common in bog and frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Carex echinata</i>	Star sedge		Frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Carex panicea</i>	Carnation sedge		Frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Carex nigra</i>	Common sedge		Occasional in boggy pasture.	Don Cotton	02/07/2000
<i>Lolium perenne</i>	Perennial rye-grass		Uncommon in boggy pasture.	Don Cotton	02/07/2000
<i>Cynosurus cristatus</i>	Crested dog's-tail		Occasional in boggy pasture.	Don Cotton	02/07/2000
<i>Holcus lanatus</i>	Yorkshire-fog		Common in boggy pasture.	Don Cotton	02/07/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass		Frequent.	Don Cotton	02/07/2000
<i>Molinia caerulea</i>	Purple moor-grass		Common in bog and frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Narthecium ossifragum</i>	Bog asphodel		Frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Diptychandra maculata</i>	Heath spotted orchid		Frequent in boggy pasture.	Don Cotton	02/07/2000
<i>Pythecia nymphula</i>		c5		Don Cotton	02/07/2000
<i>Enallagma cyathigerum</i>		c30		Don Cotton	02/07/2000
<i>Sympetrum sanguineum</i>		1	First of 2000. Terminal male.	Don Cotton	02/07/2000
<i>Parus major</i>	Speckled wood	1		Don Cotton	02/07/2000
<i>Merula julina</i>	Meadow brown	2		Don Cotton	02/07/2000
<i>Lasiocampa quercus cellunae</i>	Northern egger	c8		Don Cotton	02/07/2000
<i>Ematurga atomaria</i>	Common heath moth	c10		Don Cotton	02/07/2000
<i>Haematopota pluvialis</i>	Common dog	5		Don Cotton	02/07/2000
<i>Pythocera granditarsis</i>		1		Don Cotton	02/07/2000
<i>Vespa rufa</i>	Red wasp	1		Don Cotton	02/07/2000
<i>Nicrophorus vespilloides</i>	Saxton or burying beetle	1	Collected.	Don Cotton	02/07/2000
<i>Anthus pratensis</i>	Meadow pipit	2	Singing.	Don Cotton	02/07/2000
<i>Troglodytes troglodytes</i>	Wren	1	Singing.	Don Cotton	02/07/2000
<i>Scoliolela torquata</i>	Stonechat	3	Family.	Don Cotton	02/07/2000
<i>Turdus merula</i>	Blackbird	1		Don Cotton	02/07/2000
<i>Sylvia communis</i>	Whitethroat	1	Singing. Heard on previous visits a week earlier.	Don Cotton	02/07/2000
<i>Phylloscopus trochilus</i>	Willow warbler	2	Singing.	Don Cotton	02/07/2000
<i>Acerthis flammea</i>	Redpoll	1	Flying overhead.	Don Cotton	02/07/2000
<i>Emberiza schoenicus</i>	Reed bunting	1	Singing.	Don Cotton	02/07/2000

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SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Equisetum fluviatile</i>	Water horsetail		Frequent.	Don Cotton	27/06/2000
<i>Galium palustre</i>	Marsh marigold		Frequent.	Don Cotton	27/06/2000
<i>Ranunculus flammula</i>	Lesser spearwort		Occasional.	Don Cotton	27/06/2000
<i>Stellaria uliginosa</i> (raisins)	Bog stichwort		Occasional.	Don Cotton	27/06/2000
<i>Lychnis fox-cuculi</i>	Ragged-robin		Frequent.	Don Cotton	27/06/2000
<i>Salix viminalis</i>	Osier		Occasional.	Don Cotton	27/06/2000
<i>Salix cinerea oleifolia</i>	Rusty willow		Occasional.	Don Cotton	27/06/2000
<i>Rorippa nasturtium-aquaticum</i>	Water-cress egg.		Frequent.	Don Cotton	27/06/2000
<i>Cardamine pratensis</i>	Lady's-smock		Frequent.	Don Cotton	27/06/2000
<i>Filipendula ulmaria</i>	Meadowweet		Frequent.	Don Cotton	27/06/2000
<i>Rubus fruticosus</i> agg	Common bramble		Occasional.	Don Cotton	27/06/2000
<i>Potentilla palustris</i>	Marsh cinquefoil			Martin Cawley and Don	12/06/1992
<i>Potentilla palustris</i>	Marsh cinquefoil		Occasional.	Don Cotton	27/06/2000
<i>Potentilla anserina</i>	Silene-weed		Occasional.	Don Cotton	27/06/2000
<i>Potentilla erecta</i>	Tomantil		Frequent.	Don Cotton	27/06/2000
<i>Crataegus monogyna</i>	Hawthorn		Occasional.	Don Cotton	27/06/2000
<i>Vicia cracca</i>	Tufted vetch		Frequent.	Don Cotton	27/06/2000
<i>Vicia sepium</i>	Bush vetch		Occasional.	Don Cotton	27/06/2000
<i>Trifolium repens</i>	White clover		Occasional.	Don Cotton	27/06/2000
<i>Trifolium pratense</i>	Red clover		Occasional.	Don Cotton	27/06/2000
<i>Ulex europaeus</i>	Gorse		Occasional.	Don Cotton	27/06/2000
<i>Epilobium palustre</i>	Marsh willowherb		Frequent.	Don Cotton	27/06/2000
<i>Hydrocotyle vulgaris</i>	Marsh pennywort		Common.	Don Cotton	27/06/2000
<i>Cicuta virosa</i>	Cowbane		Common.	Don Cotton	27/06/2000
<i>Angelica sylvestris</i>	Wild angelica		Frequent.	Don Cotton	27/06/2000
<i>Maryanthes trifoliata</i>	Bogbean		Common.	Don Cotton	27/06/2000
<i>Mycotic laxa</i>	Tufted forget-me-not		Occasional.	Don Cotton	27/06/2000
<i>Mentha aquatica</i>	Water mint		Frequent.	Don Cotton	27/06/2000
<i>Callitriche</i> agg	water-starwort		Occasional.	Don Cotton	27/06/2000
<i>Veronica scutellata</i>	Marsh speedwell		Frequent.	Don Cotton	27/06/2000
<i>Veronica beccabunga</i>	Brooklime		Uncommon.	Don Cotton	27/06/2000
<i>Rhinanthus minor</i>	Yellow-rattle		Frequent.	Don Cotton	27/06/2000
<i>Pedicularis palustris</i>	Marsh lousewort		Occasional.	Don Cotton	27/06/2000
<i>Galium palustre</i>	Common marsh-bedstraw		Common.	Don Cotton	27/06/2000
<i>Ornithogalum palustre</i>	Marsh thistle		Occasional.	Don Cotton	27/06/2000
<i>Triglochin palustris</i>	Marsh arrowgrass		03/06/1999 Present.	Don Cotton	27/06/2000
<i>Potamogeton natans</i>	Broad-leaved pondweed		Occasional.	Don Cotton	27/06/2000
<i>Lemna minor</i>	Common duckweed		Frequent.	Don Cotton	27/06/2000
<i>Lemna trisulca</i>	Ivy-leaved duckweed		Frequent.	Don Cotton	27/06/2000
<i>Juncus effusus</i>	Soft rush		Frequent.	Don Cotton	27/06/2000
<i>Luzula multiflora</i>	Heath wood-rush		Occasional.	Don Cotton	27/06/2000
<i>Eriophorum angustifolium</i>	Common cottongrass			Don Cotton	03/06/1999
<i>Blechnum palustre</i>	Common spike-rush		Frequent.	Don Cotton	27/06/2000
<i>Blechnum spicatum</i>	Many-stalked spike-rush		Locally frequent.	Don Cotton	27/06/2000
<i>Carex diandra</i>	Lesser tussock-sedge		Common.	Don Cotton	27/06/2000
<i>Carex echinata</i>	Star sedge		Occasional.	Don Cotton	27/06/2000
<i>Carex acutiformis</i>	Lesser pond-sedge		Locally abundant. Substantial stand near where stream enters lake at	Don Cotton	27/06/2000
<i>Carex rostrata</i>	Butte sedge		Frequent.	Don Cotton	27/06/2000
<i>Carex nigra</i>	Common sedge		Occasional.	Don Cotton	27/06/2000
<i>Cynodon dactylon</i>	Crested dog's-tail		Frequent.	Don Cotton	27/06/2000
<i>Dactylis glomerata</i>	Cock's-foot grass		Frequent.	Don Cotton	27/06/2000
<i>Glyceria declinata</i>	Small sweet-grass		Occasional.	Don Cotton	27/06/2000
<i>Holcus lanatus</i>	Yorkshire-fog		Common.	Don Cotton	27/06/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass		Common.	Don Cotton	27/06/2000
<i>Alpeyurus geniculatus</i>	Marsh foxtail		Occasional.	Don Cotton	27/06/2000
<i>Phragmites australis</i>	Common reed		Common.	Don Cotton	27/06/2000
<i>Sparganium angustifolium</i>	Branched bur-reed		Occasional.	Don Cotton	27/06/2000
<i>Typha latifolia</i>	Reed-mace		Occasional.	Don Cotton	27/06/2000
<i>Iris pseudacorus</i>	Yellow iris		Frequent.	Don Cotton	27/06/2000
<i>Dactyloctenium aegyptium</i>	Common spotted orchid		Occasional.	Don Cotton	27/06/2000
<i>Dactyloctenium maculatum</i>	Heath spotted orchid		Uncommon.	Don Cotton	27/06/2000
<i>Pyrrhosoma nymphula</i>				Martin Cawley and Don	12/06/1992
<i>Coenagrion lunulatum</i>			Colony	Martin Cawley and Don	12/06/1992
<i>Coenagrion puella</i>				Martin Cawley and Don	12/06/1992
<i>Coenagrion puella</i>				Don Cotton	03/06/1999
<i>Coenagrion puella</i>		2		Don Cotton	27/06/2000
<i>Coenagrion pulchellum</i>				Don Cotton	03/06/1999
<i>Enallagma cyathigerum</i>				Martin Cawley and Don	12/06/1992
<i>Enallagma cyathigerum</i>				Don Cotton	27/06/2000

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SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Icthyura elegans</i>				Martin Cawley and Don	12/06/1992
<i>Icthyura elegans</i>				Don Cotton	27/06/2000
<i>Brachytron pratense</i>				Martin Cawley and Don	12/06/1992
<i>Libellula quadrimaculata</i>				Martin Cawley and Don	12/06/1992
<i>Libellula quadrimaculata</i>		1		Don Cotton	03/06/1999
<i>Libellula quadrimaculata</i>		c5	Drain feeding into lake.	Don Cotton	27/06/2000
<i>Haematopota crassicornis</i>	Black dog	1	Collected.	Don Cotton	27/06/2000
<i>Catadictya lamnata</i>	Small china-mark	c5		Don Cotton	27/06/2000
<i>Leptidea sinapis</i>	Wood white			Martin Cawley and Don	12/06/1992
<i>Pieris napi</i>	Green-veined white	3		Don Cotton	27/06/2000
<i>Anthocharis cardamines</i>	Orange-tip	1	Egg on <i>Cardamine pratensis</i> .	Don Cotton	03/06/1999
<i>Lycena phlaeas</i>	Small copper			Martin Cawley and Don	12/06/1992
<i>Vanessa atalanta</i>	Red admiral	1		Don Cotton	27/06/2000
<i>Eurodryas aurinia</i>	Marsh fritillary	c10		Martin Cawley and Don	12/06/1992
<i>Aphantopus hyperantus</i>	Ringlet	2		Don Cotton	02/07/2000
<i>Tyria jacobaeae</i>	Cinnabar moth			Martin Cawley and Don	12/06/1992
<i>Eucrotia uncula</i>	Silver hook			Martin Cawley and Don	12/06/1992
<i>Autographa gamma</i>	Silver Y	>5		Don Cotton	27/06/2000
<i>Helophorus pendulus</i>				Martin Cawley and Don	12/06/1992
<i>Pyrophanta granditarsis</i>				Don Cotton	27/06/2000
<i>Bombus pascuorum</i>		1		Don Cotton	27/06/2000
<i>Perca fluviatilis</i>	Perch			Local information pers	27/06/2000
<i>Esox lucius</i>	Pike			Local information pers	27/06/2000
<i>Ardea cinerea</i>	Gray heron	1		Martin Cawley and Don	12/06/1992
<i>Cygnus olor</i>	Mute swan	1		Don Cotton, Noel Rafferty &	03/01/1994
<i>Cygnus olor</i>	Mute swan	1	Total wildfowl count.	Don Cotton	28/01/1994
<i>Cygnus olor</i>	Mute swan	2	Total wildfowl count. Adults.	Don Cotton & family	17/01/1998
<i>Cygnus olor</i>	Mute swan	4	Total wildfowl count. 2 adults and 2 juveniles.	Don Cotton & Noel Rafferty	20/12/1998
<i>Cygnus olor</i>	Mute swan	4	Total wildfowl count. 2 adults and 2 juveniles.	Don Cotton, Noel Rafferty &	01/01/1999
<i>Cygnus olor</i>	Mute swan	2		Don Cotton	03/06/1999
<i>Cygnus olor</i>	Mute swan	2	Total wildfowl count. Adults.	Don Cotton & Noel Rafferty	17/10/1999
<i>Cygnus olor</i>	Mute swan	2	Total wildfowl count.	Martin Enright	17/01/2000
<i>Cygnus olor</i>	Mute swan	2	2 adults and 2 cygnets.	Don Cotton	27/06/2000
<i>Cygnus cygnus</i>	Whooper swan	1	Adult	Don Cotton	04/01/1987
<i>Anas crecca</i>	Tail	8		Don Cotton	04/01/1987
<i>Anas platyrhynchos</i>	Mallard	2		Don Cotton	01/01/1993
<i>Anas platyrhynchos</i>	Mallard	3	Total wildfowl count.	Don Cotton	28/01/1994
<i>Anas platyrhynchos</i>	Mallard	2	Total wildfowl count.	Don Cotton & Noel Rafferty	20/12/1998
<i>Anas platyrhynchos</i>	Mallard	1	Total wildfowl count.	Don Cotton, Noel Rafferty &	01/01/1999
<i>Anas platyrhynchos</i>	Mallard	7		Don Cotton	26/06/2000
<i>Aythya ferina</i>	Pochard	26		Don Cotton	12/01/1986
<i>Aythya ferina</i>	Pochard	2		Don Cotton, Noel Rafferty &	03/01/1994
<i>Aythya ferina</i>	Pochard	1	Total wildfowl count. Male	Don Cotton	28/01/1994
<i>Aythya fuligula</i>	Tufted duck	1		Don Cotton	12/01/1986
<i>Aythya fuligula</i>	Tufted duck	1		Don Cotton	04/01/1987
<i>Aythya fuligula</i>	Tufted duck	3		Don Cotton	01/01/1993
<i>Aythya fuligula</i>	Tufted duck	2	Total wildfowl count. Both males	Don Cotton	28/01/1994
<i>Aythya fuligula</i>	Tufted duck	2	Total wildfowl count. Male and female.	Don Cotton & family	17/01/1998
<i>Rallus aquaticus</i>	Water rail		Heard	Martin Cawley and Don	12/06/1992
<i>Rallus aquaticus</i>	Water rail	1	Heard at very close quarters	Don Cotton	27/06/2000
<i>Gallinula chloropus</i>	Moorhen	4		Don Cotton	04/01/1987
<i>Gallinula chloropus</i>	Moorhen		Heard	Martin Cawley and Don	12/06/1992
<i>Gallinula chloropus</i>	Moorhen	2	Total wildfowl count.	Don Cotton	05/01/1996
<i>Gallinula chloropus</i>	Moorhen	3	Total wildfowl count.	Don Cotton & Noel Rafferty	20/12/1998
<i>Gallinula chloropus</i>	Moorhen	2	Total wildfowl count.	Don Cotton, Noel Rafferty &	01/01/1999
<i>Gallinula chloropus</i>	Moorhen	2	Total wildfowl count.	Don Cotton & Noel Rafferty	17/10/1999
<i>Gallinula chloropus</i>	Moorhen	2		Don Cotton	27/06/2000
<i>Gallinula chloropus</i>	Moorhen	3	1 adult and 2 juveniles in small willow at water's edge	Don Cotton	02/07/2000
<i>Fulica atra</i>	Coot	1		Don Cotton	12/01/1986
<i>Fulica atra</i>	Coot	1	Total wildfowl count.	Don Cotton & family	17/01/1998
<i>Fulica atra</i>	Coot	2		Don Cotton	27/06/2000
<i>Gallinago gallinago</i>	Snip	1		Don Cotton	27/06/2000
<i>Riparia riparia</i>	Sand martin	c20	Feeding over water.	Don Cotton	02/07/2000
<i>Hirundo rustica</i>	Swallow	c10		Don Cotton	27/06/2000
<i>Hirundo rustica</i>	Swallow	c15	Feeding over water.	Don Cotton	02/07/2000
<i>Oedipoda urbana</i>	House martin	1		Don Cotton	27/06/2000
<i>Anthus pratensis</i>	Meadow pipit			Don Cotton	27/06/2000
<i>Acrocephalus schoenobaenus</i>	Sedge warbler	2	Singing	Don Cotton	27/06/2000
<i>Emberiza schoeniclus</i>	Reed bunting	1	Singing	Don Cotton	27/06/2000

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SCIENTIFIC NAME	COMMON NAME	No.	NOTES	OBSERVER(S)	DATE
<i>Equisetum arvense</i>	Field horsetail		Locally abundant.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Phyllitis scolopendrium</i>	Hair's-tongue fern		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Athyrium filix-femina</i>	Lady-fern		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Polystichum setiferum</i>	Soft shield-fern		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Dryopteris filix-mas</i>	Male-fern		Common.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Dryopteris affinis</i>	Scaly male-fern		Common.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Dryopteris dilatata</i>	Broad buckler-fern		Common.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Ranunculus acris</i>	Meadow buttercup		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Urtica dioica</i>	Common nettle		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Silene dioica</i>	Greater stitchwort		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Hypericum androsaemum</i>	Tutsan		Occasional.	Don Cotton	02/07/2000
<i>Viola riviniana</i>	Common dog-violet		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Salix cinerea atrofolia</i>	Rusty willow		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Primula vulgaris</i>	Primrose		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Lysimachia nemorum</i>	Yellow pimpernel		Uncommon.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Filipendula ulmaria</i>	Meadowsweet		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Rubus fruticosus</i> agg.	Common bramble		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Potentilla anglica</i>	Trailing tormentil		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Fragaria vesca</i>	Wild strawberry		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Gaum urbanum</i>	Wood avens		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Rosa</i> spp.	rose sp.		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Crataegus monogyna</i>	Hawthorn		Common.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Vicia sepium</i>	Bush vetch		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Lathyrus pratensis</i>	Meadow vetchling		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Ulex europaeus</i>	Gorse		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Epilobium parviflorum</i>	Hairy willowherb		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Ilex aquifolium</i>	Holly		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Acer pseudoplatanus</i>	Sycamore		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Geranium robertianum</i>	Herb-Robert		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Hedera helix</i>	Ivy		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Conopodium majus</i>	Pignut		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Agropodium podagraria</i>	Ground-elder / Goutweed		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Heracleum sphondylium</i>	Common hogweed		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Taraxacum officinale</i>	Upright hedge-parsley		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Fraxinus excelsior</i>	Ash		Common.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Scrophularia nodosa</i>	Common figwort		One plant.	Don Cotton	02/07/2000
<i>Digitalis purpurea</i>	Foxglove		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Veronica chamaedrys</i>	Gemander speedwell		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Sambucus nigra</i>	Elder		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Symphoricarpos albus</i>	Snowberry		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Lonicera nitida</i>	garden hedge		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Onium palustre</i>	Marsh thistle		Uncommon.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Lapsana communis</i>	Nipplewort		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Sonchus asper</i>	Prickly sow-thistle		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Bellis perennis</i>	Daisy		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Achillea millefolium</i>	Yarrow		Occasional.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Dactylis glomerata</i>	Cock's-foot grass		frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Alopecurus pratensis</i>	False oat-grass		Common.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass		Common.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Alopecurus pratensis</i>	Meadow foxtail		Frequent.	Don Cotton, Elaine Cotton &	29/06/2000
<i>Raphanus sativus</i>	Large white	2		Don Cotton, Elaine Cotton &	29/06/2000
<i>Pararge aegeria</i>	Speckled wood	c10		Don Cotton, Elaine Cotton &	29/06/2000
<i>Xanthoxylum montanum</i>	Silver-ground carpet	1		Don Cotton, Elaine Cotton &	29/06/2000
<i>Hemiptera pluvialis</i>	Common cleg	4		Don Cotton	02/07/2000
<i>Coccinella 7-punctata</i>	7-spot ladybird	1		Don Cotton	02/07/2000
<i>Falco tinnunculus</i>	Kestrel	1	Believed to be nesting in conifers near house.	Don Cotton	27/06/2000
<i>Columba palumbus</i>	Wood pigeon	1		Don Cotton, Elaine Cotton &	29/06/2000
<i>Troglodytes troglodytes</i>	Wren	1	Singing	Don Cotton, Elaine Cotton &	29/06/2000
<i>Erithacus rubecula</i>	Robin	1	Singing	Don Cotton, Elaine Cotton &	29/06/2000
<i>Turdus philomelos</i>	Song thrush	Family		Don Cotton, Elaine Cotton &	29/06/2000
<i>Phylloscopus trochilus</i>	Willow warbler	1	Singing	Don Cotton, Elaine Cotton &	29/06/2000
<i>Regulus regulus</i>	Goldcrest	1	Singing	Don Cotton, Elaine Cotton &	29/06/2000

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<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>No.</u>	<u>NOTES</u>	<u>OBSERVER(S)</u>	<u>DATE</u>
<i>Ranunculus aquatilis</i>	Common water-crowfoot		Frequent.	Don Cotton & Martin Cotton	25/07/2000
<i>Pensicaria amphibia</i>	Amphibious bistort		Common.	Don Cotton & Martin Cotton	25/07/2000
<i>Rorippa palustris</i>	Marsh yellow-cress		Occasional.	Don Cotton & Martin Cotton	25/07/2000
<i>Potentilla anserina</i>	Silverweed		Common.	Don Cotton & Martin Cotton	25/07/2000
<i>Isoplepis selago</i>	Bristle club-rush		Occasional.	Don Cotton & Martin Cotton	25/07/2000

Appendix 3

N4 Realignment Project

Results of SCRIM test

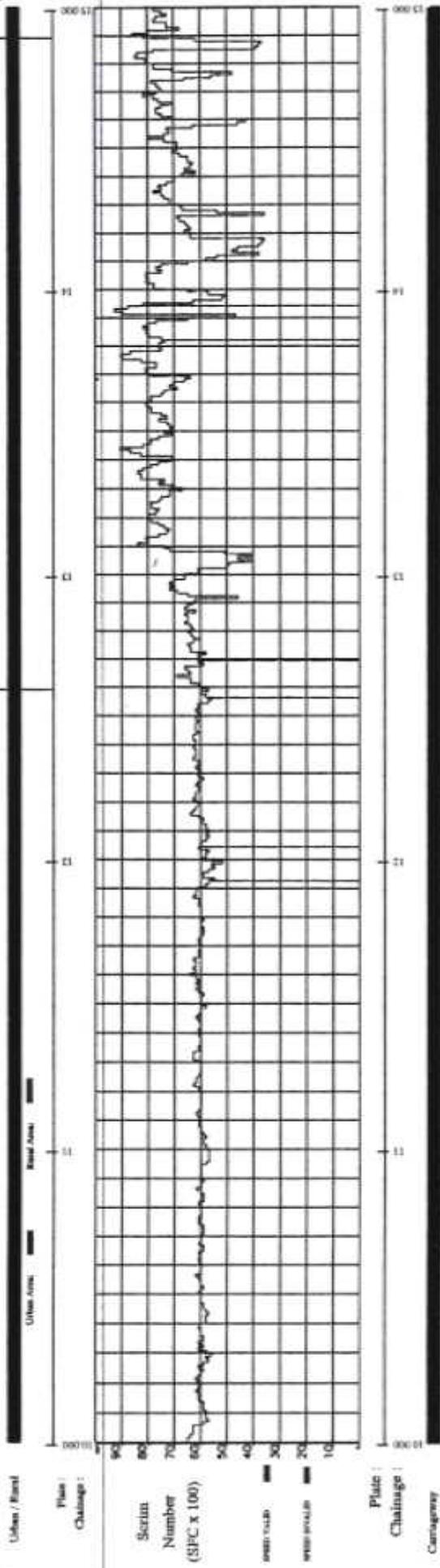


1999 Scrim Survey

2nd Roundabout

Plate 98

ROAD N04 DIR 2 SLIGO CO CO 10.0 - 15.0



Indicates survey carried out in direction of increasing Plate Number

Direction 2

Indicates survey carried out in direction of increasing Plate Number

Direction 1

One way access road



1999 Scrim Survey

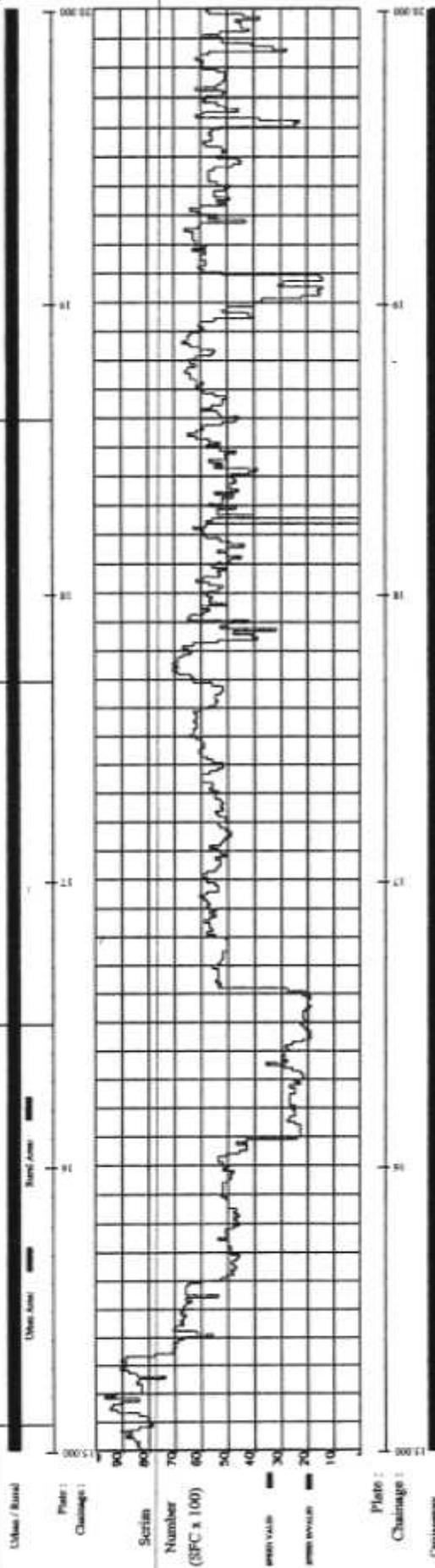
Start of Alignment

Bridge Tavern

Start of 2000 Surfacing

Drumfin Crossroads

ROAD N04 DIR. 2 SLIGO CO CO 15.0 - 20.0



Urban / Rural: Urban Area Rural Area
 Plate: Plate 1
 Challenge: Challenge 1
 Scrim Number (SFC x 100): Scrim Number
 Area Value: Area Value
 Plate: Plate 2
 Challenge: Challenge 2
 Carriageway Type: Carriageway Type
 Direction: Direction 1

Indicate survey started out in direction of increasing Plate Number
 Indicate survey started out in direction of decreasing Plate Number

End of 2000 Surfacing

Plate 138

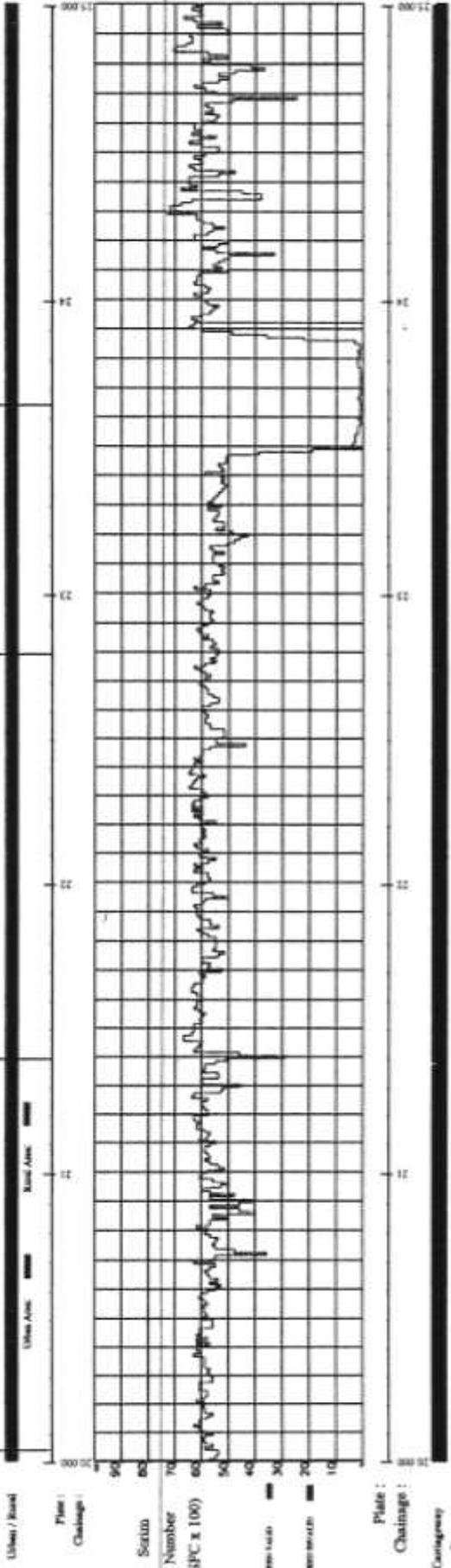
Accident Blackspot

Plate 153



1999 Scrim Survey

ROAD N04 DIR. 2 SLIGO CO CO 20.0 - 25.0



Indicates survey started out in direction of increasing Plate Number

Direction 3

Indicates survey started out in direction of decreasing Plate Number

Direction 3

Start of Traffic Calming in Castlebaldwin

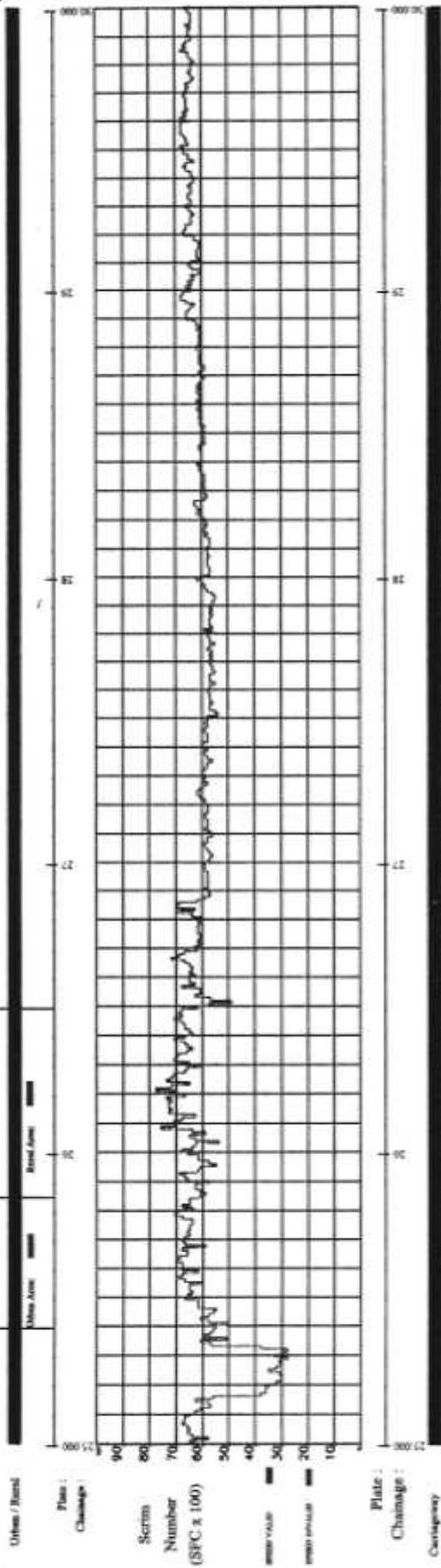
Plate 167

End of Traffic Calming in Castlebaldwin



1999 Scrim Survey

ROAD N04 DIR. 2 SLIGO CO CO 25.0 - 30.0



Indicates survey carried out in direction of increasing Plate Number

Indicates survey carried out in direction of decreasing Plate Number

Appendix 4

Extract from Sligo Rural Renewal Project

Profile of Lough Arrow Region

Profile of the Lough Arrow Region

Lough Arrow is a region suffering from the visible signs of rural decline. Persistent migration and emigration have resulted in changes to the demographic structure of the population. These changes have resulted in a declining and ageing population. This rural decline is manifested throughout the region in many ways.

The Lough Arrow Region is situated in South East Sligo. It is a rural area with outstanding natural beauty and is rich in archaeology and steeped in history and mythology. The area also has many natural resources, lakes, rivers, mountains and forests, making it one of the most scenic locations in Co. Sligo.

It covers an area of approximately 100 square miles and has five community bases. The area consists of nine District Electoral Divisions (DEDs) which are socially, economically and culturally based around five community bases: Castlebaldwin, Ballinafad, Highwood, Glean and Geevagh.

The area does not have any towns or even large villages and indeed the three villages in the area are merely "cross-roads". However even though the area is rural it is more or less enclosed on both sides by two major routes, the N4 which connects Dublin and Sligo and the R284 which is the Sligo/Cavan Road. Consequently the area is readily accessible by road, being just an average of eighteen miles from Sligo, ten from Boyle, six from Ballymote and 100 miles from Dublin. Each town mentioned has a railway station and also has the advantage of being close to Knock International Airport and Strandhill airport which services domestic flights away. The area has many links with each of the above towns and would be mainly dependant on them for many services.

Demographics

The region had a population of 2267 in 1996. The population of the region has been in **steady decline** over the years. Between 1986 and 1991 the population declined by almost 8%. From 1991 to 1996 this declined slowed considerably to just over 2%. It is significant to note that the region was experiencing this decline at a time when Sligo town's population increased by 2%.

Those who have left the region have been from the 15-44 age cohorts. The result of this movement away from the region is an ageing population profile. Figures show a disproportionate number of people who live in the area are aged over 65. In total there are 8% more people in the region in the 44-65+ age cohorts. These changes have had manifestations on the demand for services for this age group. Also, over a quarter of those aged 65+ live alone. The area according to 1996 census figures had 9% fewer people aged from 0-44 than did Sligo County or Ireland as a whole. In essence the population of the region is ageing.

There are 763 households in the region. Of these 33 belong to, or are in the process of tenant purchase agreements from Sligo County Council. The remainder are privately owned. Although identified as a serious problem in the region, the extent of dereliction has not been comprehensively surveyed. One study conducted by ACE, however, revealed that in a two mile radius of Castlebaldwin (an area typical of the region as a whole) there were 24 vacant houses and 6 holiday homes. A voluntary housing association RESPOND has built 14 houses to facilitate persons on the Local Authority housing list.

This results of the region's declining and ageing population is manifested in many ways. There are a large number of derelict sites in the area and large numbers of people living alone, particularly those aged over 65. Small retail businesses such as shops and post offices are closing. Schools are also closing. Farming is in severe decline and many houses are vacant and being used as holiday homes.

Economic Activity

Unemployment in the area is relatively low. However, the precise level of unemployment is difficult to assess due to the number working non-viable farms, farming part-time and people moving from the area to find work elsewhere. Another factor is the large number of people employed on FAS Community Employment Schemes.

The region is traditionally dependent on **agriculture** for its economic survival. There is a growing and worrying trend towards non-farm employment in Sligo or Boyle as farms have become non-viable. The drumlin landscape and heavy marshy low-lying land is typical of the region. Almost 4 in 10 farms are between 10 and 20 hectares, showing the difficulty for these farmers to depend on full-time farming for their income. There are few alternative agricultural enterprises in the area. Already the 'exodus from the land' has resulted in 'blanket forestry', closed dwellings, holiday homes and elderly people living alone.

There is very little **industrial** activity in the area apart from mushroom growing, the manufacture of monumental sculptures, and furniture manufacturing.

Despite the suitability of the area to tourism development it is only in recent years that accommodation, services and leisure activities have been developed in this regard. There exists much potential for the development of tourism related enterprise and private individuals are responding to funding opportunities available for this development.

While some businesses have closed in recent years notably grocery shops and post offices, there has also been an upsurge in the number of new businesses which have been facilitated by EU supports for their development.

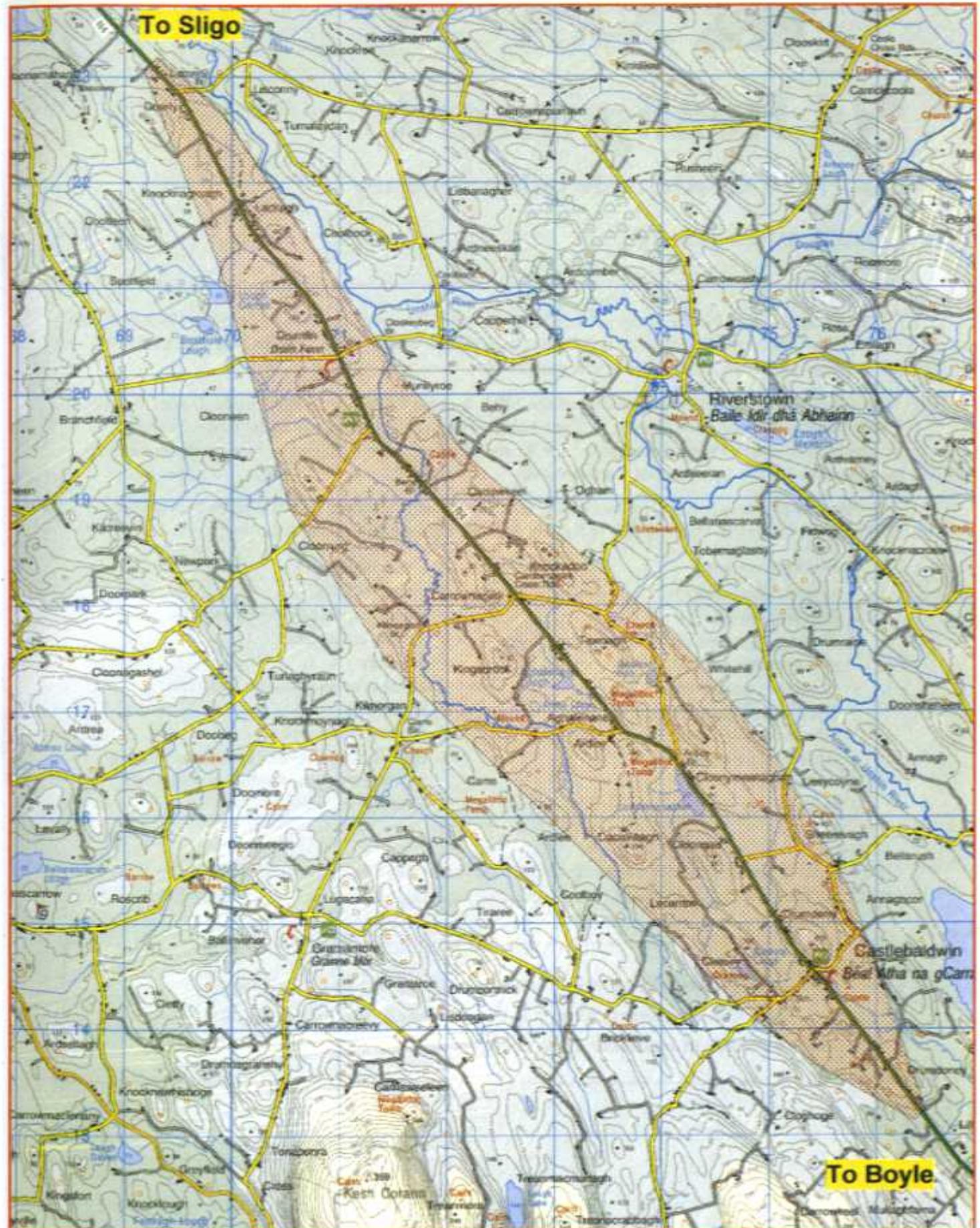
A survey undertaken by the Sligo Rural Renewal Project identified over 130 non-farming full and part-time micro-enterprises operating in the region.

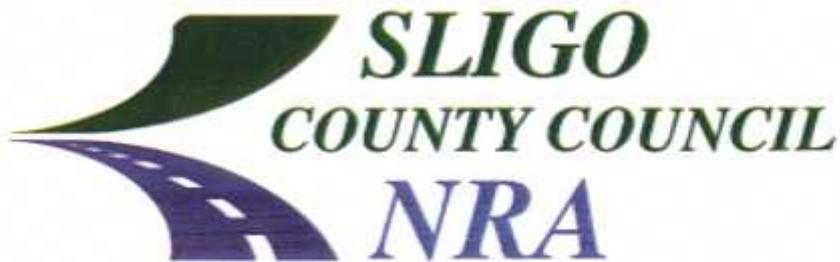
Appendix 5

N4 Realignment

Leaflet distributed as part of Constraints Study

N4 Realignment - Doorly to Castlebaldwin/Drumdoney Constraints Study Area





N4 Realignment

Doorly to Castlebaldwin/Drumdoney

Constraints Study

The National Road Needs Study published by the NRA (National Roads Authority) in 1998 indicated that the unimproved section of the N4 in County Sligo would not be able to maintain an inter-urban speed of 80 kph (50mph) after the year 2004.

Sligo County Council, with the approval of the NRA, is preparing a Constraints Study Report for the realignment of the N4 from Doorly to Castlebaldwin/Drumdoney. This will be followed by design of route options and Public Consultation for Route Selection later in the year. Among the options to be considered is the bypassing of Castlebaldwin.

The constraints study is being carried out in accordance with National Roads Project Management Guidelines published in March 2000. The study includes examination of the following:

- Available mapping
- Land Registry Search
- Planning Search
- Drainage systems including streams, rivers, groundwater, bridges
- Fisheries requirements
- Utilities including Electricity, Telecommunications, Water Schemes, Sewerage schemes
- Archaeology
- Ecology
- Traffic History
- Accident data
- Existing road network condition
- Access constraints
- Geology
- Local economy/business/tourism
- Aesthetics
- Development Plan
- Irish/EU Legislation/Regulations relating to infrastructure, funding, environment, habitats

Sligo County Council wishes to take into consideration any views the public may have at this stage in relation to the area being examined. Please note that route options are not yet available for viewing.

**Submissions or observations may be made in writing to
Co. Secretary, Sligo County Council, Riverside, Sligo
to be received not later than 5.00pm on Thursday, 31st August 2000.**