

## **Appendix 3D Ecology**



**N5 Strategic Corridor**  
**Route Corridor Ecology Report**

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## INTRODUCTION

The National Roads Design Office, Roscommon, commissioned the authors of this Report, Dr M. A. Farragher and Professor J. Whelan, both retired from the School of Biology and Environmental Science, University College Dublin, to identify potential Route Corridors for the realignment of the N5 in County Roscommon. The commission involved making an assessment of the Ecological Impact of those chosen for the realignment. The initial scheme proposed by the NRDO Roscommon involved four Route Corridors. This number of Options was increased to seven following early assessment of the scheme subsequent to helicopter fly-overs by various consultants, as well as during the iterative consultation processes including three workshop meetings.

This Draft Final Route Corridor Selection Report will be used to identify a *Preferred Route* for the scheme, reflecting Ecological Impact concerns. Our assessment will be combined with studies by other consultants including those concerned with property values, cultural heritage, noise, landscape and visual impacts.

This Report focuses solely on predicted Ecological Impact and does not comment upon other possible impacts such as those mentioned above. However, we have reviewed the Hydrology and Hydrogeology prepared for the Route Selection Report particularly in relation to groundwater dependant ecosystems (Bellanagare Bog pNHA cSAC SPA, Cloonshanville Bog pNHA cSAC and Annaghmore Lough pNHA cSAC) The overall object of this Report is to present a comparative overview of the likely Impact of the Options.

## SOURCES OF INFORMATION AND METHODOLOGY

- **National Roads Authority:** Many sources of information were utilised during our study. In particular, the many publications listed in *Appendix 5* of the *Guidelines for Assessment of Eco-logical Impacts of National Roads Schemes* (NRA, 2006) were read.
- **Maps:** We availed of Ordnance Survey Mapping – Discovery Series, Orthophoto, 1:2500 vector, Study Area, and Route Corridor Options overlaid on Ordnance Survey Mapping by the NRDO. Also, the Department of Environment, Heritage and Local Government provided maps showing the location of designated sites within the study area.
- **N5 Strategic Corridor Constraints Report:** This was another major source of information. It gives numerous sites of ‘Potential Ecological Value’ within the study area. Those sites within or contiguous with the corridors were given special attention.
- **Other:** Data provided by the National Parks and Wildlife was also used.
- **‘Fly-over’:** Initially, we were aided in our work by availing of a ‘helicopter fly-over’ - arranged by the NRDO, Roscommon - of all seven corridors. The information gathered from these aerial surveys, gave us a very good ‘overview’ and indications as to what important areas needed close scrutiny.
- **Visits:** Areas deemed important from the ‘fly-over’ were visited on several occasions during most of 2007. Many sites were revisited during the summer of 2008. In addition, sites which appeared to be of ecological interest, based on our preliminary ‘drive-over’ of all corridors, and those referred to in the ‘Constraints Report (Natura, 2005)’ mentioned above, were visited and all relevant data was recorded. Many areas were investigated on more than one occasion. All seven corridors were assessed for areas/sites of ecological importance.
- We also met and had discussions with many members of the local community, throughout the Strategic Corridor, who provided us with some invaluable information.

## GENERAL DESCRIPTION OF THE STUDY AREA

The study area for this report was generally through the centre of County Roscommon, and ran from east of Tibohine to east of Strokestown. Seven corridors were examined. Each corridor is approximately thirty-four kilometres long and five hundred metres wide. Overall, the study area is generally of agricultural grassland of varying quality. A wide diversity of habitat types was noted throughout. There are many loughs/turloughs, some of which are protected in the form of pNHA (proposed Natural Heritage Area) and cSAC (candidate Special Area of Conservation). All of these surface waters are of importance in that they support a variety of fish species. Seven river systems and many streams were recorded. Again, all the rivers support an extensive range of fauna. All of the water systems, together with their ecological importance, are detailed later in this report.

Important boglands are located partially within the corridors or close to them. Principle among them are the Cloonshanville and Bellanagare Bogs, both designated habitats. The former contains a section of bog woodland, but it is outside the corridor, *i.e.* Corridor 1. Other boglands noted were raised and cutover types. All of the important boglands, together with their ecological importance, are detailed later in this report. All the loughs, rivers and bogs are listed in Annex 1 of the Habitats Directive for which Sites have been selected in Ireland.

Throughout all seven corridors, there are potential bat roosts, but no definitive roost was identified at this time. Signs of other protected mammals such as badgers and otters were also recorded. Numerous bird species were identified, all of which are protected under the 1976 Wildlife Act (as amended 2000). No special area for bird protection was found. As regards plants, while there are many habitats within the seven corridors which could sustain some of those species protected under the 1999 *Flora Protection Order*, no protected species was found.

Elsewhere, there are many other habitats of lesser importance throughout the corridors. Most of these are given in the *Constrains Report* (Natura, 2005). These are mentioned in various Tables and assessed later in this document.

## DESIGNATED SITES

### Designated Sites Within the Study Area:

There are ten designated conservation areas within or adjoining the study area, as listed in Table 1 below. These include five cSACs (which are also designated as pNHAs), two Special Protection Areas (for birds) (SPAs) and ten pNHAs.

**Table 1 Designated Conservation Sites within the Study Area**

Site Name	Code	Status	Features of conservation interest/description
Lough Gara	000587/ 004048	pNHA cSAC SPA	Shallow lake with internationally important numbers of Greenland white-fronted goose (listed on Annex I of the EU Birds Directive), surrounded by scrub and raised bog.
Bellanagare Bog	000592	pNHA cSAC SPA	Large intermediate raised bog with a diversity of flush types, cutaway bog, and small areas of heath, scrub, wet grassland and several conifer plantations. Supports a population of red grouse.
Brierfield Turlough	000594	pNHA	Turlough with shallow water, lowland wet and dry grassland, scrub, a crannog, scraw, swallowholes and an area of limestone pavement. Important over-wintering site for a variety of wildfowl, including whooper swans (listed on Annex I of the EU Birds Directive).
Castleplunket Turlough	000598	pNHA	Turlough with wet grassland amidst scattered limestone outcrops. Supports a diversity of wintering wildfowl, including nationally important numbers of wigeon.
Mullygollan Turlough	000612	pNHA cSAC	Turlough with significant fen vegetation, drainage ditches, swallowhole and stream. Supports three species of bird listed on Annex I of the EU Birds Directive – Bewick’s swan, whooper swan and golden plover.
Cloonshanville Bog	000614	pNHA cSAC	Large raised bog with an extensive area of bog woodland (both priority habitats listed under Annex I of the EU Habitats Directive) and a large flush. Bounded by the Breedoge River, which supports snipe, mallard and white-clawed crayfish - a species listed under Annex II of the Habitats Directive.
Ardagh Bog	001222	pNHA	No information available – site not surveyed.
Ardakillin Lough	001617	pNHA	Lake with fen and flush vegetation and reedbed. Supports locally important numbers of wigeon, teal, mallard, tufted duck and lapwing and also the Irish hare (an Irish Red Data Book mammal species).
Annaghmore Lough	001626	pNHA cSAC	A large shallow calcareous lake with an area of dry calcareous grassland, reed bed, fen, old cutaway bog and limestone pavement. The lake is a wildfowl sanctuary, with nationally important numbers of teal, mallard and shoveler.
Corbally Turlough	001627	pNHA	A small turlough with three crannogs, ditches and areas of wet grassland. The site supports several species of wintering wildfowl, including whooper swan, Bewick’s swan, golden plover (all listed under Annex I of the EU Birds Directive), plus pintail, shoveler and pochard (all Irish Red Data Book species).

### Designated Sites Within 6 km of the Study Area:

There are eighteen additional designated conservation areas within 6km of the study area, as listed in Table 2 below. These include 5cSAC sites, 5 NHA sites and 12 pNHA sites.

**Table 2 Designated Conservation Sites within 6km of the Study Area**

Site Name	Code	Status	Features of conservation interest/description
Moorfield Bog/ Farm Cottage	000221	NHA	Active raised bog (listed as a priority habitat under the EU Habitats Directive) with pool system, swallow holes and cutaway.
Bella Bridge Bog	000591	NHA	Raised bog (listed under Annex I of the EU Habitats Directive) with some pools. Adjoins Breedoge River, which supports white-clawed crayfish - a species listed under Annex II of the Habitats Directive.
Callow Bog	000595	cSAC	Active raised bog, degraded raised bog and Rhynchosporion, habitats that are listed on Annex I of the E.U. Habitats Directive.
Cloonchambers Bog	000600	pNHA cSAC	Large raised bog with an alkaline fen in the centre (both habitats listed under Annex I of the EU Habitats Directive).
Cornaveagh Bog	000603	NHA	Small raised bog (a habitat listed under Annex I of the EU Habitats Directive) with wet flush and a small pool system.
Derrycanan Bog	000605	NHA	Large raised bog (a habitat listed under Annex I of the EU Habitats Directive) with extensive pool systems and wet flushes.
Kilglass and Grange Loughs	000608	pNHA	Group of lakes characterised by extensive areas of reedswamps, freshwater marls, wet grassland on peat and calcareous sandy shorelines. Supports nationally important numbers of wildfowl including Greenl and white-fronted goose and golden plover (both listed on Annex I of the EU Birds Directive), wigeon, teal, mute swan, tufted duck, goldeneye and lapwing.
Rathnalullagh Turlough	000613	pNHA	Dry turlough with grassland on limestone and peat.
Carrowreagh Turlough	001624	pNHA	Turlough with wet grassland, stream, heath and dry grassland.
Drumalough Bog	001632 002338	pNHA cSAC	Active raised bog (listed as a priority habitat under the EU Habitats Directive) with extensive pool systems, wet flushes, open water, freshwater marsh, wet grassland and conifer plantation. Supports a variety of bird species including mallard, grey heron and little grebe.
Lough Boderg/ Lough Bofin	001642	pNHA	Lake with stony lakeshore, fringing woodland, cutaway, drains and reed swamps. Greenland white-fronted goose (a species listed on Annex I of the EU Birds Directive) frequents a number of fields surrounding this site.
Lough Drumharlow	001643	pNHA	Lake with extensive areas of wet grassland (callows), woodland, raised bog and improved pasture. The site is utilised by a flock of Greenland white-fronted goose (a species listed on Annex I of the EU Birds Directive).



Site Name	Code	Status	Features of conservation interest/description
Lough Glinn	001644	pNHA	A small meso-trophic lake with a fen, wet grassland, pasture and conifer plantation. The site supports nationally important numbers of mute swan, whooper swan and tufted duck, and regionally/locally important numbers of wigeon, teal, mallard, pochard, goldeneye, coot and lapwing.
Newtown Turlough	001646	pNHA	Turlough with wet grassland, intermediate grassland and dry grassland.
Shad Lough	001648	pNHA	Lake with some features of a turlough, reed bed and wet grassland. Supports populations of otter and nationally important numbers of wigeon.
Tullaghan Bog	001652	NHA	Active raised bog (listed as a priority habitat under the EU Habitats Directive) with tear pools, reclaimed grassland and scrub.
Tullaghanrock Bog	002013 002354	pNHA cSAC	Raised bog which supports a variety of birds of prey.
Corliskea/ Trien/ Cloonfolliv Bog	02110	pNHA cSAC	Active raised bog with bog woodland (both listed as priority habitats under the EU Habitats Directive) and well developed pool systems, large diverse flush systems, subterranean streams with swallow holes and a lake.

## CORRIDOR ASSESSMENT

The objective of the study, at this point in time, was to determine which corridor would have the least impact on ecology. In this segment of the study, we examined all habitats while emphasizing the occurrence of the more important habitats such as peatlands, turloughs and broad-leaved woodlands in each corridor.

In the course of our field study, both the number and the ecological impact of river crossing by each corridor were considered and this was taken into consideration in our final assessment.

The assessment of ecological impacts on each site (Tables 6 to 12) is in accordance with the *Guidelines for the Assessment of Ecological Impacts of the National Road* (National Roads Authority, 2006).

### Important Habitats Within the Corridors: Aquatic Habitats:

**Table 3 Turloughs/Loughs within the seven corridors**

Name	Corridor/s
Ballyoughter Lough; Cregga Turlough+; Clooncullaan Lough+ (Cloonbyogue)	1 & 1A
Corbally Lough +*; Cloonfree Lough+ (c. one-half); Clooncullaan Lough+ (Sroove)	2, 2A & 3
Cloonfree Lough+ (c. one-half)	2, 2A, 2B, 3 & 4
Brierfield Lough +*; Cloonfree Lough +(c. one-half)	2, 2A, 2B, 3 & 4

\* Denotes Designated Habitat

+ Denotes Habitats listed in Annex 1 of the Habitats Directive for which Sites have been selected in Ireland.

Cregga Turlough was identified as a potential ecological site, based on a desktop Study during the Constraints Study. Cregga Turlough is not a designated site nor is the area identified on Ordnance Survey Mapping as being a Turlough. The area identified during Constraints Report is located on the side of a hill and is classified as wet grassland but is not waterlogged.

A site survey was carried out to assess this site. It was found that none of the features or species typically associated with Turloughs were present and therefore this potential site is not consistent with a Turlough priority habitat or with other features requiring designation under the Habitats directive.

**N.B.** See Table 12 for *Ecological Data* and *Impact Ratings*

**Table 4 Depositing Rivers within the seven corridors**

Name	Corridor/s
Breedoge - Main Channel	1
Owenur - Main Channel	1 & 1A
Ogulla - Tributary	2, 2A, 2B, 3 & 4
Scamogoe - Main Channel	1, 1A 2, 2A, 2B, 3 & 4
Owennaforeesha - Tributary	1, 1A 2, 2A, 2B
Carricknabraher - Tributary	1, 1A 2, 2A, 2B, 3 & 4
Strokestown - Tributary	1, 1A 2, 2A, 2B, 3 & 4

All listed in Annex 1 of the Habitats Directive for which Sites have been selected in Ireland

**N.B.** See Table 12 for *Ecological Data* and *Impact Ratings*

## Peatlands:

**Table 5 Raised/Blanket/Cutover Bogs**

Name	Corridors
Cloonshanville Bog * +	1
Bellanagare Bog* + [small section]	4
Ballinahowna Bog + - active	1
Ballinahowna Bog – cutover section [totally degraded, now grassland]	1A, 2, 2A, 2B.
Cloonroughan/Killeen East – cutover [totally degraded]	1 & 1A
Mullen Bog+ – raised and cutover [degraded with a conifer plantation]	1A, 2, 2A, 2B & 4

\* Denotes Designated Habitat

+ Denotes Habitats listed in Annex 1 of the Habitats Directive for which Sites have been selected in Ireland

## Potential bat roosts:

There are potential bat roosts within all corridors.

## Other Habitats of Lesser Importance within the Corridors:

Mature broad-leaved woodlands, Immature woodland, Scattered mature trees, Drainage ditches, Wetlands, Treelines, Hedgerows, Scrub (including scrub-covered raths), Buildings (other than those providing roosts for bats) Wet grasslands, Improved grassland and Conifer plantations.

## Protected Animal and Plant Species within the Corridors:

Of the many vascular and non-vascular plant species protected in the European Union, sixty-eight are protected under the Wildlife Act (1976) and Wildlife (as Amended) Act 2000 and Flora Protection Order 1999. Only two such plants have been recorded in County Roscommon (Scannell and Synnott 1987. *Catalogue of the Flora of Ireland*). These are *Hordeum secalinum* (Meadow Barley) and *Cephalanthera longifolia* (White Hellborine). Their preferred habitats – meadows and pastures, especially on heavy soils and wood and shaded places, respectively - occur throughout the seven corridors.

Determining the presence or absence of protected species generally involves a very thorough and time-consuming examination. In the absence of such an exercise, which would necessitate several ‘walk-overs’ of each corridor, it is not possible, at this time, to confirm or deny their presence. The authors of this report did not record any protected plant species listed under the *Flora Protection Order of 1999*.

Areas with potential bat roosting sites were not considered, though these are also important. A review of the ‘Constraints Report’ suggests that there are potential bat roosts in all corridors, though the number in each varies. Potential, of course, does not mean that they actually exist. Determination of their presence, at this time, in all corridors, was not possible. The following bat species have been recorded in the general area: *Pippistrellus pippistrellus* (45kHz), *Pippistrellus pippistrellus* (55kHz), *Nyctalus leisleri*, *Pippistrellus pygmaeus*, *Plecotus auritus* (Bat Conservation Ireland) and *Myotis daubentonii* (personnel observation).

It is worth noting that ‘signs’ of badger and otter activity were detected in the chosen areas visited. It is reasonable to assume that a more concentrated study would reveal similar activity in all corridors. For this reason, the occurrence of these two protected animals was not taken into consideration at this time. The bird species noted included winter migrants on the rivers and lakes/turloughs. Farmland birds were observed over all corridors with the relevant species recorded on areas of bog land.

**Permanent Aquatic Habitats within the Corridors:**

There are several aquatic habitats within or close to all seven corridors. These include Loughs Ballyoughter, Cregga, Clooncullaan (Cloonbyogue), Clooncullaan (Sroove) and Corbally, Cloonfree and Brier-field. Seven rivers were identified, viz. the Breedoge, Owerur, Ogulla, Scamoge, Owennaforeesha, Carricknabraher and Strokestown. Many streams traverse all corridors. For further information on location in corridors, Status, Site Codes, Ecological Data and Impact Ratings, see Tables 1, 2 and 12. As regards the loughs, Impact mitigation can be achieved by avoidance. Other rivers, in the general area but outside the corridors include the Lung, Termon, Frances and the Mountain. There is no reason to suspect that these rivers will be affected by the proposed roadway.

Of greater concern is the occurrence of Lough Ballyoughter, a non-designated site, in the centre of Corridors 1 and 1A. Nevertheless, from our examination, Impact Mitigation can be achieved by avoidance. Annaghmore Lough pNHA cSAC, a very important designated habitat, is less than 1 km from these corridors. However, there is not likely to be a significant impact on it.

Another area for concern is the fact that Corridors 2, 2A, 2B and 4 traverse approximately one-third of Lough Cloonfree. Again, if there are no other environmental concerns, Impact Mitigation can be achieved by avoidance. Ardakillin Lough pNHA, a designated site, is less than 0.5 km from these corridors. It should also be noted that these corridors adjoin Fin Lough, a non-designated site outside the corridors.

Corridor 3 runs through Corbally Turlough pNHA. Also, it traverses a small water body – Clooncullaan Lough at Sroove. Adoption of this corridor would have a severe negative impact on the environment as the Corbally Turlough pNHA cSAC is a designated habitat.

Corridor 4 bisects Brierfield Turlough pNHA, another very important designated habitat and incorporates a section of Bellanagare Bog cSAC, pNHA,SPA both designated sites. Furthermore, it runs close to three other such sites – Castleplunket pNHA and Mullygollan Turloughs pNHA cSAC and Ardakillin Lough pNHA. Again, adoption of this corridor would have a similar impact on the environment because of the importance of the designated habitats.

The authors of this report are in agreement with many of the sentiments expressed by the writer of the report from the Shannon Regional Fisheries Board (Appendix 4). In particular, the number of water-course diversions and crossings should be kept to a minimum.

Subject to good engineering practices such as attention to the avoidance of building debris falling into the waterways and, most especially, the prevention of pollution with cement products, the Environmental Impact should be a minor negative (see Table 6).

**Table 6 Ecological Data and Impact Ratings on the Permanent Aquatic Habitats within the Seven Corridors**

Name	Type	Fisheries Value/Protected Fauna	Site Evaluation	Level of Impact
Breedoge river	Main Channel	Contains White-clawed Crayfish and salmonids.	D	Minor Negative
Carricknabraher River	Tributary	Contains White-clawed Crayfish.	D	Minor Negative
Owennaforeesha River	Tributary	Contains Otter and White-clawed Crayfish.	D	Minor Negative
Scramoge River	Main Channel	Contains Lamprey, salmonids and White-clawed Crayfish.	D	Minor Negative
Ogulla River	Tributary	Contains salmonids	D	Minor Negative
Strokestown River	Tributary	Contains White-clawed Crayfish.	D	Minor Negative
Owenur	River	According to local information it is a very popular fishing lough.	D	Minor Negative
Clooncullaan (Cloonbyogue)	Lough	According to local information it is a very popular fishing lough.	C	Moderate/minor Negative
Clooncullaan (Sroove)	Lough	No information available.	C	Moderate Negative
Caudagh	Lough	No information available.	F	
Ballyoughter	Lough	According to local information, it is a very popular fishing lough	D	Moderate/minor Negative

All listed in Annex 1 of the Habitats Directive for which Sites have been selected in Ireland

### Designated Sites within 10 km or less of the Seven Corridors:

There are twenty-three designated sites in this category. None is affected by any corridor. All are listed in Annex 1 of the Habitats Directive for which Sites have been selected in Ireland

**Table 7 Designated Habitats within 10 km of the Seven Corridors**

Name	Code	Status
Ardagh Bog	001222	pNHA
Bella Bridge Bog	000591	NHA
Callow Bog	000595	NHA/SAC
Carrowreagh Turlough	001624	pNHA
Castleplunket Turlough	000598	pNHA
Corbo Bog	000602/002349	NHA/SAC
Cornaveagh Bog	000603	NHA
Derrycannon Bog	000605	NHA
Newtown Turlough	001646	pNHA
Lough Annaghmore	001626	PNHA/cSAC
Lough Ardakillin	001617	pNHA
Lough Boderg	001642	pNHA
Lough Bofin	001642	pNHA
Lough Gara	000587/004048	SPA
Lough Glinn	001644	pNHA
Lough Grange	000608	pNHA
Lough Kilglass	000608	pNHA
Lough Ree	002310/000440	SAC/pNHA/SPA
Lough Shad	001648	pNHA
Mullygollan Turlough	009612	pSAC/ pNHA
Rathnalulleagh Turlough	000613	pNHA
Tullaghan Bog	001652	NHA
Tullaghanrock Bog	002013/002354	pNHA/cSAC

All are listed in Annex 1 of the Habitats Directive for which Sites have been selected in Ireland

Cloonshanville Bog contains a section of wood bogland, but it outside the corridor, *i.e.* Corridor 1

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## Corridor 1 Assessment

N.B. For A, B, C, etc., Site Evaluation Ratings, see Appendices 1 and 2.

**Table 8a Designated Sites WITHIN the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
pNHA/ cSAC no. 000614	<b>Cloonshanville Bog:</b> This is a substantial raised bog of woodland (both priority habitats listed in Annex 1 of EU Habitats Directive 92/43/EEC) and a large flush in the centre. The main body of the flush supports an extensive area of bog woodland which contains a diverse range of plant species. The bog is largely dominated by Ling Heather ( <i>Calluna vulgaris</i> ) with the frequent occurrence of Deergrass ( <i>Trichophorum cespitosum</i> ) and Common Cottongrass ( <i>Eriophorum angustifolium</i> ). It is bounded by the River Breedoge which supports Mallard and White-clawed Crayfish - a species listed in Annex 1 of the Habitats Directive 92/43/EEC. Snipe is frequent in the bogland. See Appendix 3 for more complete details.	A	Severe Negative

**Table 8b Designated Sites CLOSE TO the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
pNHA/ cSAC no. 001626	<b>Annaghmore Lough:</b> A large shallow calcareous lake with an area of dry calcareous grassland, reed beds, fen, old cutover bog and limestone pavement. It is a candidate SAC selected for alkaline fen, a habitat listed in Annex 1 of the EU Habitats Directive 92/43/EEC. It is a wildfowl sanctuary, with nationally important numbers of Teal, Mallard and Shoveler. A good diversity of other species occur in local or regional concentrations, including Wigeon, Pochard, Golden-eye, Lapwing and Curlew. Of particular note is the occurrence, albeit in small numbers, of two listed species – Whooper Swan and Golden Plover. Two populations of the small snail <i>Vertigo geyeri</i> are also located within the site. Plant species found in and around the lough include: Common Clubrush ( <i>Scirpus lacustris</i> ), Common Reed ( <i>Phragmites australis</i> ), Black Bog-rush ( <i>Schoenus nigricans</i> ), Common Butterwort ( <i>Pinguicula vulgaris</i> ), Common Sedge ( <i>Carex nigra</i> ), Carnation Sedge ( <i>C. panicea</i> ), Glaucous Sedge ( <i>C. flacca</i> ), Tawny Sedge ( <i>C. hostiana</i> ), Greater Bird's-foot-trefoil ( <i>Lotus uliginosus</i> ), Few-flowered Spike-rush ( <i>Eleocharis quinqueflora</i> ), Early Marsh-orchid ( <i>Dactylorhiza incarnata</i> ), Fragrant Orchid ( <i>Gymnadenia conopsea</i> ), Broad-leaved Cottongrass ( <i>Eriophorum latifolia</i> ), Marsh Helleborine ( <i>Epipactis palustris</i> ), Marsh Hawk's-beard ( <i>Crepis paludosa</i> ), Bee Orchid ( <i>Ophrys apifera</i> ) and Fly Orchid ( <i>O. insectifera</i> ).	A	Neutral

**Table 8c Sites of Potential Ecological Value within the Corridor**

Site no.	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
3	Ballinphuill	Wet grassland, scrub, conifer plantations and cutover bog (well outside corridor).	D	Neutral
5	Tobhinine	Hedgerows, wet grassland, drainage ditches.	E	Neutral
7	Rathkeery	Hedgerows, wet grassland, drainage ditches.	E	Neutral
8	Clashcarragh	Treelines buildings and potential bat roosts.	D	Minor Negative
10	Rathkeery	Treelines, buildings and potential bat roosts.	D	Minor Negative
20	Frenchpark Demesne (a very small piece)	Buildings, Parkland, hedgerows, improved grassland and potential bat roosts.	D	Minor Negative
22	Frenchpark Demesne	Treelines and mature trees.	D	Minor Negative
24	Frenchpark	Hedgerows, wet grassland, drainage ditches, buildings.	E	Minor Negative
32	Keanspark	Raised bog, cutover bog (Ballinahowna bog), scrub, lowland depositing river (see Table 4), drainage ditches, wet grassland, improved agricultural grassland, hedgerows, buildings and conifer plantations. The corridor traverses an active section of Ballinahowna bog(See table 5). Bogs are important habitats, nationally and internationally. They support a wide range of fauna and flora species. The latter include, <i>inter alia</i> : Heather ( <i>Calluna vulgaris</i> ), Bell Heather ( <i>Erica cinera</i> ), Cross-leaved Heather ( <i>E. tetralix</i> ), Common Cottongrass ( <i>Eriophorum angustifolia</i> ), Broad-leaved Cottongrass ( <i>E. latifolia</i> ), Velvet Bent ( <i>Agrostis canina</i> ), Star Sedge ( <i>Carex echinata</i> ), Wavy Hain-grass ( <i>Deschampsia flexuosa</i> ), Bog Asphodel ( <i>Narthecium ossifragum</i> ), Bog-sedge ( <i>Carex limosa</i> ), Bog-bean ( <i>Menyanthes trifoliata</i> ) and Round-leaved Sundew ( <i>Drosera rotundifolia</i> ).	C	Major Negative
34	Kinclare	Broad leaved woodland, conifer plantation, hedgerows, wet grassland and rivers (see Table 4).	D	Minor negative
35	Corry East	Wet grassland, drainage ditches, hedgerows and treelines.	D	Minor negative
38	Cloonyefferr	Wet grassland, drainage ditches, hedgerows, river (see Table 4), conifer plantations.	D	Minor negative
40	Creeve	Wet grassland, hedgerows, and river (see Table 4).	D	Minor Negative
49	Cloonbyogue	Buildings, treelines, hedgerows, drainage ditches and potential bat roosts.	D	Minor Negative
50	Cloonbyogue	Wet grassland, scrub, drainage ditches, hedgerows and River Owenur (see Table 4).	D	Minor Negative



Site no.	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
51	Cloonbyogue	Wet grassland, river and Ballyoughter Lough (see Table 4), scrub and hedgerows.	D	Moderate Negative
52	Ballyoughter bridge (a very small piece)	Mature trees, treelines, hedgerows, buildings, wet grassland, improved agricultural grassland and lowland depositing river (see Table 4).	D	Minor Negative
57	Cregga	Buildings, treelines and mature trees.	D	Minor Negative
58	Cregga	Wet grassland, Cregga Turlough# (See table 3), treeines and hedgerows.	C	Minor Negative
M	Cloonroughan and Killeen East	Loughs Clooncullaan, Illanowen, Duff, Feeny, Loughanammer and O'Donnellan (all outside corridor except a very small section of Clooncullaan Loughs, rivers (see Tables 3 & 4), wet grassland, scrub, cutover bog (degraded), buildings, treelines, hedgerows and potential bat roosts.	C	Moderate Negative
M	Kilmore (a very small piece)	Scrub, immature woodland and lowland depositing river (see Table 4).	D	Minor Negative
131	Kilmore	Broad-leaved woodland, improved grassland, hedgerows.	D	Minor Negative
134	Strokestown Demesne	Parkland, improved grassland, conifer plantation, rivers (see Table 4), hedgerows and potential bat roosts.	D	Minor Negative

**Summary:** Corridor I directly impacts upon a *substantial* section of Cloonshanville Bog, cSAC and pNHA. Furthermore, it runs through an extensive sensitive area of Ballinahowna Bog. It incorporates a very small section of the Clooncullaan Lough. This habitat is listed in Annex 1 of the Habitats Directive for which sites have been selected in Ireland. The review of The Hydrology and Hydrogeology Report prepared by Hydro Environmental indicate that there will be no impact on the groundwater regime in Bellanagare Bog pNHA cSAC SPA and therefore no associated ecological impact on this site. In addition, subject to additional surveys/ investigation and appropriate engineering controls during construction and operation, there will be no impact on Annaghmore Lough pNHA cSAC which is located approximately 640m from the centre of the corridor. Thereafter, it does not affect any other sensitive habitat. The negatives recorded for this corridor are – 1 severe, 1 major, 4 moderate 15 minor and 4 neutral.

## Corridor 1A Assessment

**Table 9a Designated Sites WITHIN the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
	There are no designated sites within Corridor 1A		

**Table 9b Designated Sites CLOSE TO the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
NHA/ cSAC /SPA no. 000592	<b>Bellanagare Bog:</b> The corridor is c. 0.25 km from this designated site. A very large intermediate raised bog with a diversity of Flush types, cutover bog, and small areas of heath, scrubland, wet grassland and several coniferous plantations. Supports a population of Red Grouse. There is an abundance of Deergass ( <i>Trichophorum cespitosum</i> ), Bog Asphodel ( <i>Narthecium ossifragum</i> ) and Carnation Sedge ( <i>Carex panicea</i> ). See Appendix 3 for more complete details.	A	Neutral
pNHA/cSAC no. 001626	<b>Annaghmore Lough:</b> A large shallow calcareous lake with an area of dry calcareous grassland, reed beds, fen, old cutover bog and limestone pavement. It is a candidate SAC selected for alkaline fen, a habitat listed in Annex 1 of the EU Habitats Directive 92/43/EEC. It is a wildfowl sanctuary, with nationally important numbers of Teal, Mallard and Shoveler. A good diversity of other species occur in local or regional concentrations, including Wigeon, Pochard, Golden-eye, Lapwing and Curlew. Of particular note is the occurrence, albeit in small numbers, of two listed species – Whopper Swan and Golden Plover. Two populations of the small snail <i>Vertigo geyeri</i> are also located within the site. Plant species found in and around the lough include: Common Clubrush ( <i>Scirpus lacustris</i> ), Common Reed ( <i>Phragmites australis</i> ), Black Bog-rush ( <i>Schoenus nigricans</i> ), Common Butterwort ( <i>Pinguicula vulgaris</i> ), Common Sedge ( <i>Carex nigra</i> ), Carnation Sedge ( <i>C. panicea</i> ), Glaucous Sedge ( <i>C. flacca</i> ), Tawny Sedge ( <i>C. hostiana</i> ), Greater Bird's-foot-trefoil ( <i>Lotus uliginosus</i> ), Few-flowered Spike-rush ( <i>Eleocharis quinqueflora</i> ), Early Marsh-orchid ( <i>Dactylorhiza incarnata</i> ), Fragrant Orchid ( <i>Gymnadenia conopsea</i> ), Broad-leaved Cotton-grass ( <i>Eriophorum latifolia</i> ), Marsh Helleborine ( <i>Epipactis palustris</i> ), Marsh Hawk's-beard ( <i>Crepis paludosa</i> ), Bee Orchid ( <i>Ophrys apifera</i> ) and Fly Orchid ( <i>O. insectifera</i> ).	A	Neutral

**Table 9c Sites of Potential Ecological Value within the Corridor**

Site no.	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
3	Ballinphuill	Wet grassland, scrub, conifer plantations and cutover bog (well outside corridor).	D	Neutral
5	Tobhinine	Hedgerows, wet grassland, drainage ditches.	E	Neutral
7	Rathkeery	Hedgerows, wet grassland, drainage ditches.	E	Neutral
8	Clashcarragh	Treelines buildings and potential bat roosts.	D	Minor Negative
10	Rathkeery	Treelines, buildings and potential bat roosts.	D	Minor Negative
19	Dungar	Conifer plantation, hedgerows, drainage ditches, wet grassland, raised & cutover bog (Mullen Bog, See table 5) and buildings. Bogs partly degraded.	C	Moderate Negative
31	Leitrim	Lowland depositing river (see Table 4), wet grassland, hedgerows, drainage ditches, improved agricultural grassland, scrub, conifer plantation and buildings.	D	Minor Negative
32	Keanspark	Raised bog, cutover bog (Ballinahowna bog), scrub, lowland depositing river (see Table 4), drainage ditches, wet grassland, improved agricultural grassland, hedgerows, buildings and conifer plantations. The corridor traverses a section containing the cutover bog. The latter is now degraded and totally covered with graminaceous and broad-leaved species.	D	Minor Negative
34	Kinclare	Conifer plantation, hedgerows, drainage ditches, wet grassland, scrub, broad-leaved woodland and rivers (see Table 4).	D	Minor Negative
35	Corry East	Wet grassland, drainage ditches, hedgerows and treelines	D	Minor Negative
36	Corry East	Treelines and mature trees.	D	Moderate Negative
40	Creeve	Wet grassland, hedgerows and river (See table 4)		Minor Negative
49	Cloonbyogue	Buildings, treelines, hedgerows, drainage ditches and potential bat roosts.	D	Minor Negative
50	Cloonbyogue	Wet grassland, scrub, hedgerows drainage ditches and river (Owenur, see Table 4).	D	Minor Negative
51	Cloonbyogue	Wet grassland, river and Ballyougher Lough (see Table 4), scrub and hedgerows.	D	Moderate Negative
52	Ballyougher Bridge (a very small piece)	Mature trees, treelines, hedgerows, buildings, wet grassland, improved agricultural grassland and lowland depositing river (see Table 4).	D	Minor Negative
57	Cregga	Buildings, treelines and mature trees.	D	Minor Negative
58	Cregga	Wet grassland, Cregga Turlough (See table 3) treelines and hedgerows.	C	Minor Negative
61	Caldragh	Wet grassland, low depositing River, Lakes/Turloughs, hedgerows, scrub, drainage ditches, buildings, potential bat roosts	D	Minor
62	Cloonroughan and Killeen East	Loughs Clooncullaan, Illanowen, Duff, Feeny, Loughanammer and O'Donnellan (all outside corridor except a very small section of Clooncullaan, rivers (see Tables 3 & 4), wet grassland, scrub, cutover bog (degraded), buildings, treelines, hedgerows and potential bat roosts.	C	Moderate Negative

Site no.	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
67	Garrynphort	Conifer plantation, drainage ditches, scrub, wet grassland, hedgerows and buildings.	D	Minor Negative
67A	Mullenduff	Large conifer plantation, drainage ditches, scrub, a few scattered trees and poor hedgerows.	D	Minor Negative
128	Kilmore	Scrub, immature woodland and lowland depositing river (see Table 4).	D	Minor Negative
131	Kilmore	Broad-leaved woodland, improved grassland, hedgerows.	D	Minor Negative
134	Strokestown Demesne	Parkland, improved grassland, conifer plantation, rivers (see Table 4), hedgerows and potential bat roosts.	D	Minor Negative

**Summary:** Corridor 1A avoids all sensitive habitats, though it incorporates a very small section of the Clooncullaan Loughs. On the examination, July 2008, the vegetation consisted of the usual grassland species, together with a few hydrophytic plants. Whitethorn (*Crataegus monagyna*) is plentiful throughout. Thereafter, the Corridor does not affect any other sensitive habitat. The review of The Hydrology and Hydrogeology Report prepared by Hydro Environmental indicate that there will be no impact on the groundwater regime in Bellanagare Bog pNHA cSAC SPA and Cloonshanville Bog pNHA cSAC and therefore no associated ecological impact on these sites. In addition, subject to additional surveys/ investigation and appropriate engineering controls during construction and operation, there will be no impact on Annaghmore Lough pNHA cSAC which is located approximately 640m from the centre of the corridor. The negatives recorded for this corridor are, 5 moderate and 17 minor and 5 neutrals; there are **NO** severe or major negatives.

## Corridor 2 Assessment

Table 7 Important Ecological Sites

**Table 10a Designated Sites WITHIN the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
pNHA no. 001627	<b>Corbally Turlough:</b> A small designated site with three crannogs, ditches and areas of wet grassland. The site supports several species of wintering fowl, including Whooper Swan, Beswick's Swan, Golden Plover - all listed in Annex 1 of the EU Birds Directive 92/43/EEC - and Pintail, Shoveler and Pochard - all Irish Red Data Book species. See Appendix 3 for more complete details.	B	Severe Negative

**Table 10b Designated Sites CLOSE to the Corridor**

NHA/ cSAC /SPA no. 000592	<b>Bellanagare Bog:</b> The corridor is c. 0.16 km from this designated site. A very large intermediate raised bog with a diversity of Flush types, cutover bog, and small areas of heath, scrubland, wet grassland and several coniferous plantations. Supports a population of Red Grouse. There is an abundance of Deergrass ( <i>Trichophorum cespitosum</i> ), Bog Asphodel ( <i>Narthecium ossifragum</i> ) and Carnation Sedge ( <i>Carex panicea</i> ). See Appendix 3 for more complete details.	A	Neutral
pNHA no. 001617	<b>Ardakillin Lough:</b> This site is close to the corridor. A lake with fen and flush vegetation and reed beds. Plant species found in and around the lough include: Common Clubrush ( <i>Scirpus lacustris</i> ), Common Reed ( <i>Phragmites australis</i> ), Common Butterwort ( <i>Pinguicula vulgaris</i> ), Common Sedge ( <i>Carex nigra</i> ), Carnation Sedge ( <i>C. panicea</i> ), Glaucous Sedge ( <i>C. flacca</i> ), Tawny Sedge ( <i>C. hostiana</i> ), Supports locally important numbers of Wigeon, Teal, Mallard, Tufted Duck and Lapwing and the Irish Hare.	B	Neutral

**Table 10c Sites of Potential Ecological Value within the Corridor**

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
3	Ballinphuill	Wet grassland, scrub, conifer plantations and cutover bog (well outside corridor).	D	Neutral
5	Tobhinine	Hedgerows, wet grassland, drainage ditches.	E	Neutral
7	Rathkeery	Hedgerows, wet grassland, drainage ditches.	E	Neutral
8	Clashcarragh	Treelines buildings and potential bat roosts.	D	Minor Negative
10	Rathkeery	Treelines, buildings and potential bat roosts	D	Minor Negative

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
19	Dungar	Conifer plantation, hedgerows, drainage ditches, wet grassland, raised and cutover bog (Mullen Bog) and buildings. Bogs partly degraded.	C	Moderate Negative
31	Leitrim	River (see Table 4), wet grassland, hedgerows, drainage ditches, improved grassland, scrub, conifer plantations and buildings.	D	Minor Negative
32	Keanspark	Raised bog, cutover bog (Ballinahowna bog), scrub, lowland depositing river (see Table 4), drainage ditches, wet grassland, improved agricultural grassland, hedgerows, buildings and conifer plantations. The corridor traverses a section containing the cutover bog. The latter is now degraded and totally covered with graminaceous and broad-leaved species.	D	Minor Negative
34	Kinclare	Conifer plantation, hedgerows, drainage ditches, wet grassland, scrub, broad-leaved woodland and rivers (see Table 4)	D	Minor Negative
65	Ballymurray	Broad-leaved woodland, mature trees, buildings and potential bat roosts.	D	Minor Negative
67	Garrynphort	Wet grassland, drainage ditches, hedgerows and treelines.	D	Minor Negative
67A	Mullenduff	Wet grassland, drainage ditches, hedgerows and conifer plantations.	D	Minor Negative
104	Clooncunny	Loughs Natulla, Rogers, Conny More and Gal (all outside corridor), wet grassland, hedgerows, scrub, drainage ditches and conifer plantation.	D	Minor Negative
105	Castleland (a very small piece)	Wet grassland, hedgerows, and river (see Table 4).	D	Minor Negative
106	Castleland	Scrub.	D	Minor Negative
107	Castleland	Scrub, broad-leaved woodland, wet grassland, hedgerows, drainage ditches, rivers (see Table 4), buildings and treelines.	D	Minor Negative
139	Castlenode	Buildings, scattered trees, parkland, treelines and potential bat roosts.	D	Minor Negative
140	Castlenode	Treelines, river (see Table 4) and potential bat roosts.	D	Minor Negative
141	Farnmore	Broad-leaved woodland and immature woodland.	D	minor Negative
143	Carrownryla	Buildings, scrub-covered rath, treelines, river, improved agricultural grassland and potential bat roosts	D	Minor Negative

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
150	Cloonrane	Cloonfree Lough and rivers (see Tables 3 & 4), wet grassland, hedgerows and scrub. Cloonfree Lough may correspond to Annex 1 Habitats EU Directive 92/43/EEC but is not currently a designated site. It is a very popular fishing area (local information) and is known to contain an excellent stock of brown trout. NB. Specimen Beech tree ( <i>Fagus sylvatica</i> ) also within area.	C	Major Negative
155	Cloonrane	Conifer plantation, scrub, wet grassland, drainage ditches and river.	D	Minor Negative
156	Ardakillin	Scrub covered Rath	D	Minor Negative
157	Ardakillin	Scrub covered Rath	D	Minor Negative
158	Ardakillin	Scrub covered Rath	D	Minor Negative
163	Sroove	Sroove Lough (see Table 4), wet grassland, hedgerows, drainage ditches and scrub.	C	Moderate Negative

**Summary:** This corridor runs very close to Bellanagare bog. Eastwards, it traverses a section of cutover bog (Site 32) which is now degraded and totally covered with graminaceous and broad-leaved species. Just north of the cutover bog lies a section of bog where turf is presently being harvested. This section should not be affected. Eastwards, it embraces another designated site – Corbally Turlough. Later, it passes *close* to Ardakillin Lough, a third designated site. On the eastern-end of the corridor, it extends into about one-third of Cloonfree Lough and passes close to Fin Lough. The review of The Hydrology and Hydrogeology Report prepared by Hydro Environmental indicate that there will be no impact on the groundwater regime in Bellanagare Bog pNHA cSAC SPA and Cloonshanville Bog pNHA cSAC and therefore no associated ecological impact on these sites. In addition, subject to additional surveys/ investigation and appropriate engineering controls during construction and operation, there will be no impact on Ardakillin Lough pNHA which is located approximately 320m from the centre of the corridor. The negatives recorded for this corridor are – 1 severe, 1 major, 2 moderate and 20 minor and 5 neutrals.

## Corridor 2A Assessment

**Table 11a Designated Sites WITHIN the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
pNHA no. 001627	<b>Corbally Turlough:</b> A small designated site with three crannogs, ditches and areas of wet grassland. The site supports several species of wintering fowl, including Whooper Swan, Beswick's Swan, Golden Plover - all listed in Annex 1 of the EU Birds Directive 92/43/EEC - and Pintail, Shoveler and Pochard - all Irish Red Data Book species. See Appendix 3 for more complete details.	B	Severe Negative

**Table 11b Designated Sites CLOSE TO the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
NHA/ cSAC /SPA no. 000592	<b>Bellanagare Bog:</b> The corridor is c. 0.16 km from this designated site. A very large intermediate raised bog with a diversity of Flush types, cutover bog, and small areas of heath, scrubland, wet grassland and several coniferous plantations. Supports a population of Red Grouse. There is an abundance of Deergrass ( <i>Trichophorum cespitosum</i> ), Bog Asphodel ( <i>Narhecium ossifragum</i> ) and Carnation Sedge ( <i>Carex panicea</i> ). See Appendix 3 for more complete details.	A	Neutral
pNHA no. 001617	<b>Ardakillin Lough:</b> This site is close to the corridor. A lake with fen and flush vegetation and reed beds. Plant species found in and around the lough include: Common Clubrush ( <i>Scirpus lacustris</i> ), Common Reed ( <i>Phragmites australis</i> ), Common Butterwort ( <i>Pinguicula vulgaris</i> ), Common Sedge ( <i>Carex nigra</i> ), Carnation Sedge ( <i>C. panicea</i> ), Glaucous Sedge ( <i>C. flacca</i> ), Tawny Sedge ( <i>C. hostiana</i> ), Supports locally important numbers of Wigeon, Teal, Mallard, Tufted Duck and Lapwing and the Irish Hare.	B	Neutral

**Table 11c Sites of Potential Ecological Value within the Corridor**

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
3	Ballinphuill	Wet grassland, scrub, conifer plantations and cutover bog (well outside corridor).	D	Neutral
5	Tobhinine	Hedgerows, wet grassland, drainage ditches.	E	Neutral
7	Rathkeery	Hedgerows, wet grassland, drainage ditches.	E	Neutral
8	Clashcarragh	Treelines buildings and potential bat roosts.	D	Minor Negative
10	Rathkeery	Treelines, buildings and potential bat roosts.	D	Minor Negative



Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
19	Dungar	Conifer plantation, hedgerows, drainage ditches, wet grassland, raised and cutover bog (Mullen Bog, See Table 5), and buildings. Bogs partly degraded.	C	Moderate Negative
31	Leitrim	River (see Table 4), wet grassland, hedgerows, drainage ditches, improved grassland, scrub, conifer plantations and buildings.	D	Minor Negative
32	Keanspark	Raised bog, cutover bog (Ballinahowna bog), scrub, lowland depositing river (see Table 4), drainage ditches, wet grassland, improved agricultural grassland, hedgerows, buildings and conifer plantations. The corridor traverses a section containing the cutover bog. The latter is now degraded and totally covered with graminaceous and broad-leaved species.	D	Minor Negative
34	Kinclare	Conifer plantation, hedgerows, drainage ditches, wet grassland, scrub, broad-leaved woodland and rivers (see Table 4).	D	Minor Negative
65	Ballymurray	Broad-leaved woodland, mature trees, buildings and potential bat roosts.	D	Minor Negative
67	Garrynphort	Conifer plantation, drainage ditches, scrub, wet grassland, hedgerows and buildings.	D	Minor Negative
67A	Mullenduff	conifer plantation, wet grassland, scrub, few scattered trees, drainage ditches and poor hedgerows.	D	Minor Negative
104	Clooncunny	Loughs Natulla, Rogers, Conny More and Gal (all outside corridor), wet grassland, hedgerows, scrub, drainage ditches and conifer plantation.	D	Minor Negative
105	Castleisland	Wet grassland, hedgerows, scrub and drainage ditches.	D	Minor Negative
106	Castleisland	Scrub.	D	Minor Negative
107	Castleisland	Scrub, broad-leaved woodland, wet grassland, hedgerows, drainage ditches, rivers (see Table 4), buildings and treelines.	D	Minor Negative
139	Castlenode	Buildings, scattered trees, parkland, treelines and potential bat roosts.	D	Minor Negative
140	Castlenode	Treelines, river (see Table 4) and potential bat roosts	D	Minor Negative
141	Farnmore	Broad-leaved woodland and immature woodland.	D	Minor Negative
143	Carrowntryla	Buildings, scrub-covered rath, treelines, river (see Table 4), improved grassland and potential bat roosts	D	Minor Negative

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
150	Cloonrane	Cloonfree Lough and rivers (see Tables 3 & 4), wet grassland, hedgerows and scrub. Cloonfree Lough may correspond to Annex 1 Habitats EU Directive 92/43/EEC but is not currently a designated site. It is a very popular fishing area (local information) and is known to contain an excellent stock of brown trout. NB. Specimen Beech tree ( <i>Fagus sylvatica</i> ) also within area.	C	Major Negative
155	Cloonrane	Conifer plantation, scrub, wet grassland, drainage ditches and river (see Table 4).	D	Minor Negative
156	Ardakillin	Scrub covered Rath	D	Minor Negative
157	Ardakillin	Scrub covered Rath	D	Minor Negative
158	Ardakillin	Scrub covered Rath	D	Minor Negative
163	Sroove	Sroove Lough (see Table 4), wet grassland, hedgerows, drainage ditches and scrub.	C	Moderate Negative

**Summary:** This Corridor is essentially the same as Corridor 2 in ecological terms. It differs in that, west of the R361, it runs through mostly improved grassland. The review of The Hydrology and Hydrogeology Report prepared by Hydro Environmental indicate that there will be no impact on the groundwater regime in Bellanagare Bog pNHA cSAC SPA and therefore no associated ecological impact on this site. In addition, subject to additional surveys/ investigation and appropriate engineering controls during construction and operation, there will be no impact on Ardakillin Lough pNHA which is located approximately 320m from the centre of the corridor. The negatives recorded for this corridor are – 1 severe, 1 major, 2 moderate and 20 minor and 5 neutral.

## Corridor 2B Assessment

**Table 12a Designated Sites WITHIN the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
	There are no designated sites within Corridor 2B		

**Table 12b Designated Sites CLOSE TO the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
NHA/cSAC /SPA no. 000592	<b>Bellanagare Bog:</b> The corridor is c. 0.16 km from this designated site. A very large intermediate raised bog with a diversity of Flush types, cutover bog, and small areas of heath, scrubland, wet grassland and several coniferous plantations. Supports a population of Red Grouse. There is an abundance of Deergrass ( <i>Tricho-phorum cespitosum</i> ), Bog Asphodel ( <i>Narthecium ossifragum</i> ) and Carnation Sedge ( <i>Carex panicea</i> ). See Appendix 3 for more complete details.	A	Neutral
pNHA no. 001627	<b>Corbally Turlough:</b> A small designated site with three crannogs, ditches and areas of wet grassland. The site supports several species of wintering fowl, including Whooper Swan, Beswick's Swan, Golden Plover - all listed in Annex 1 of the EU Birds Directive 92/43/EEC - and Pintail, Shoveler and Pochard - all Irish Red Data Book species. See Appendix 3 for more complete details.	B	Neutral
pNHA no. 001617	<b>Ardakillin Lough:</b> This site is close to the corridor. A lake with fen and flush vegetation and reed beds. Plant species found in and around the lough include: Common Clubrush ( <i>Scirpus lacustris</i> ), Common Reed ( <i>Phragmites aus-tralis</i> ), Common Butterwort ( <i>Pinguicula vulgar-is</i> ), Common Sedge ( <i>Carex nigra</i> ), Carnation Sedge ( <i>C. panicea</i> ), Glaucous Sedge ( <i>C. flacca</i> ), Tawny Sedge ( <i>C. hostiana</i> ), Supports locally important numbers of Wigeon, Teal, Mallard, Tufted Duck and Lapwing and the Irish Hare.	B	Neutral

**Table 12c Sites of Potential Ecological Value within the Corridor**

Site no.	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
3	Ballinphuill	Wet grassland, scrub, conifer plantations and cutover bog (well outside corridor).	D	Neutral
5	Tobhinine	Hedgerows, wet grassland, drainage ditches.	E	Neutral
7	Rathkeery	Hedgerows, wet grassland, drainage ditches.	E	Neutral
8	Clashcarragh	Treelines buildings and potential bat roosts.	D	Minor Negative
10	Rathkeery	Treelines, buildings and potential bat roosts.	D	Minor Negative

Site no.	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
19	Dungar	Conifer plantation, hedgerows, drainage ditches, wet grassland, raised & cutover bog (Mullen Bog, See table 5), and buildings. Bogs partly degraded.	C	Moderate Negative
31	Leitrim	River (see Table 4), wet grassland, hedgerows, drainage ditches, improved grassland, scrub, conifer plantations and buildings.	D	Minor Negative
32	Keanspark	Raised bog, cutover bog (Ballinahowna bog), scrub, lowland depositing river (see Table 4), drainage ditches, wet grassland, improved agricultural grassland, hedgerows, buildings and conifer plantations. The corridor traverses a section containing the cutover bog. The latter is now degraded and totally covered with graminaceous and broad-leaved species.	D	Minor Negative
34	Kinclare	Conifer plantation, hedgerows, drainage ditches, wet grassland, scrub, broad-leaved woodland and rivers (see Table 4).	D	Minor Negative
65	Ballymurray	Broad-leaved woodland, mature trees, buildings and potential bat roosts.	D	Minor negative
67	Garrynphort	Conifer plantation, drainage ditches, scrub, wet grassland, hedgerows and buildings.	D	Minor Negative
67A	Mullenduff	conifer plantation, wet grassland, scrub, few scattered trees, drainage ditches and poor hedgerows.	D	Minor Negative
104	Clooncunny	Loughs Natulla, Rogers, Conny More and Gal (all outside corridor), wet grassland, hedgerows, scrub, drainage ditches and conifer plantation.	D	Minor Negative
105	Castleisland	Wet grassland, hedgerows, scrub and drainage ditches.	D	Minor Negative
106	Castleisland	Scrub.	D	Minor Negative
107	Castleisland	Scrub, broad-leaved woodland, wet grassland, hedgerows, drainage ditches, rivers (see Table 4), buildings and treelines.	D	Minor Negative
108	Lisnaneane	Buildings, mature trees, treelines, scrub and potential bat roosts.	D	Minor negative
109	Lisnaneane	Lough Acrann (outside corridor), wet grassland, scrub, drainage ditches and river (see Table 4).	D	Minor Negative
110	Cartron	Lough Caudagh (in corridor, small and insignificant), Loughs Beg and Saggart (outside corridor), scrub, wet grassland, drainage ditches and river (see Table 4), conifer plantation, broad-leaved woodland and hedgerows.	D	Minor Negative
139	Castlenode	Buildings, scattered trees, parkland, tree-lines and potential bat roosts.	D	Minor Negative
140	Castlenode	Treelines, river (see Table 4) and potential bat roosts.	D	Minor Negative

Site no.	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
141	Farnmore	Broad-leaved woodland and immature woodland.	D	Minor Negative
143	Carrownryla	Buildings, scrub-covered rath, treelines, river (see Table 4), improved grassland and potential bat roosts	D	Minor Negative
150	Cloonrane	Cloonfree Lough and rivers (see Tables 3 & 4), wet grassland, hedgerows and scrub. Cloonfree Lough may correspond to Annex 1 Habitats EU Directive 92/43/EEC but is not currently a designated site. It is a very popular fishing area (local information) and is known to contain an excellent stock of brown trout. NB. Specimen Beech tree ( <i>Fagus sylvatica</i> ) also within area.	C	Major Negative
155	Cloonrane	Conifer plantation, scrub, wet grassland, drainage ditches and river (see Table 4).	D	Minor Negative
156	Ardakillin	Scrub covered Rath	D	Minor Negative
162	Bloomfield	Treelines, mature trees, buildings and potential bat roosts.	D	Minor Negative

**Summary:** Again, Corridor 2B is somewhat similar to Corridor 2. However, it is well distant from Corbally Turlough and more distant from Ardakillin Lough than Corridors 2 and 2A. The review of The Hydrology and Hydrogeology Report prepared by Hydro Environmental indicate that there will be no impact on the groundwater regime in Bellanagare Bog pNHA cSAC SPA and Cloonshanville Bog pNHA cSAC and therefore no associated ecological impact on these sites. In addition, subject to additional surveys/ investigation and appropriate engineering controls during construction and operation, there will be no impact on Ardakillin Lough pNHA which is located approximately 320m from the centre of the corridor. The negatives recorded for this corridor are – 1 major, 1 moderate and 22 minor and 6 neutral; there are **NO** severe negatives.

### Corridor 3 Assessment

Table 10 Important Ecological Sites

Table 13a Designated Sites WITHIN the Corridor

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
pNHA no. 001627	<b>Corbally Turlough:</b> A small designated site with three crannogs, ditches and areas of wet grassland. The site supports several species of wintering fowl, including Whooper Swan, Beswick's Swan, Golden Plover - all listed in Annex 1 of the EU Birds Directive 92/43/EEC - and Pintail, Shoveler and Pochard - all Irish Red Data Book species. See Appendix 3 for more complete details.	B	Severe Negative

Table 13b Designated Sites CLOSE TO the Corridor

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
NHA/cSAC/ SPA no. 000592	<b>Bellanagare Bog:</b> The corridor is c. 0.64 km from this designated site. A very large intermediate raised bog with a diversity of Flush types, cutover bog, and small areas of heath, scrubland, wet grassland and several coniferous plantations. Supports a population of Red Grouse. There is an abundance of Deergrass ( <i>Trichophorum cespitosum</i> ), Bog Asphodel ( <i>Narthecium ossifragum</i> ) and Carnation Sedge ( <i>Carex panicea</i> ). See Appendix 3 for more complete details.	A*	Neutral
pNHA no. 001617	<b>Ardakillin Lough:</b> This site is close to the corridor. A lake with fen and flush vegetation and reed beds. Plant species found in and around the lough include: Common Clubrush ( <i>Scirpus lacustris</i> ), Common Reed ( <i>Phragmites australis</i> ), Common Butterwort ( <i>Pinguicula vulgaris</i> ), Common Sedge ( <i>Carex nigra</i> ), Carnation Sedge ( <i>C. panicea</i> ), Glaucous Sedge ( <i>C. flacca</i> ), Tawny Sedge ( <i>C. hostiana</i> ), Supports locally important numbers of Wigeon, Teal, Mallard, Tufted Duck and Lapwing and the Irish Hare.	A	Neutral

Table 13c Sites of Potential Ecological Value within the corridor

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
7	Rathkeery	Hedgerows, wet grassland, drainage ditches.	E	Neutral
10	Rathkeery	Treelines, buildings and potential bat roosts.	D	Minor Negative

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
19	Dungar	Conifer plantation, hedgerows, drainage ditches, wet grassland, raised & cutover bog (Mullen Bog, See Table 5), and buildings. Bogs partly degraded.	C	Moderate Negative
31	Leitrim (a very small piece)	River (see Table 4), wet grassland, hedgerows, drainage ditches, improved grassland, scrub, conifer plantations and buildings.	D	Minor negative
32	Keanspark (a very small piece)	Raised bog, cutover bog (Ballinahowna bog), scrub, lowland depositing river (see Table 4), drainage ditches, wet grassland, improved agricultural grassland, hedgerows, buildings and conifer plantations. The corridor traverses a section containing the cutover bog. The latter is now degraded and totally covered with graminaceous and broad-leaved species.	D	Minor Negative
70	Carrowreagh	Conifer plantation, drainage ditches, wet grassland and hedgerows.	D	Minor Negative
134	Strokestown Demesne	Parkland, improved grassland, conifer plantation, rivers (see Table 4), hedgerows and potential bat roosts.	D	Minor Negative
150	Cloonrane	Cloonfree Lough and rivers (see Tables 3 & 4), wet grassland, hedgerows and scrub. Cloonfree Lough may correspond to Annex 1 Habitats EU Directive 92/43/EEC but is not currently a designated site. It is a very popular fishing area (local information) and is known to contain an excellent stock of brown trout. NB. Specimen Beech tree ( <i>Fagus sylvatica</i> ) also within area.	C	Minor Negative
161	Cloonfree (a very small piece)	River (see Table 4), conifer plantation, wet grassland, treelines and scrub.	D	Minor Negative
163	Sroove	Sroove Lough (see Table 4), wet grassland, hedgerows, drainage ditches and scrub.	C	Moderate Negative

**Summary:** It would appear that this corridor would result in least disturbance to watercourses. However, it traverses Corbally Turlough and runs close to Ardakilin Lough. Also, it incorporates Clooncullaan Lough (Sroove) but avoids Cloonfree Lough. The review of The Hydrology and Hydrogeology Report prepared by Hydro Environmental indicate that there will be no impact on the groundwater regime in Bellanagare Bog pNHA cSAC SPA and Cloonshanville Bog pNHA cSAC and therefore no associated ecological impact on these sites. In addition, subject to additional surveys/investigation and appropriate engineering controls during construction and operation, there will be no impact on Ardakilin Lough pNHA which is located approximately 320m from the centre of the corridor. The negatives recorded for this corridor are – 1 severe, 2 moderate and 7 minor and 3 neutral.

## Corridor 4 Assessment

Table 11 Important Ecological Sites

**Table 14a Designated Sites WITHIN the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
NHA/cSAC/ SPA no. 000592	<b>Bellanagare Bog:</b> The corridor incorporates a section of this designated site. A very large intermediate raised bog with a diversity of Flush types, cutover bog, and small areas of heath, scrubland, wet grassland and several coniferous plantations. Supports a population of Red Grouse. There is an abundance of Deergrass ( <i>Trichophorum cespitosum</i> ), Bog Asphodel ( <i>Narthecium ossifragum</i> ) and Carnation Sedge ( <i>Carex panicea</i> ). See Appendix 3 for more complete details.	A	Severe Negative
pNHA no. 000594	<b>Brierfield Turlough:</b> A site with shallow water, lowland wet and dry grassland, scrubland, a crannog, scraw, swallow holes and an area of limestone pavement. Important over-wintering site for a diversity of Wildfowl, including Whooper Swans which are listed in Annex 1 of the EU Birds Directive 92/43/EEC. See Appendix 3 for more complete details.	B	Severe Negative

**Table 14b Designated Sites CLOSE TO the Corridor**

Site Code	Site Description/Habitat(s)	Site Evaluation	Level of Impact
pNHA no. 001617	<b>Ardakillin Lough:</b> This site is close to the corridor. A lake with fen and flush vegetation and reed beds. Plant species found in and around the lough include: Common Clubrush ( <i>Scirpus lacustris</i> ), Common Reed ( <i>Phragmites australis</i> ), Common Butterwort ( <i>Pinguicula vulgaris</i> ), Common Sedge ( <i>Carex nigra</i> ), Carnation Sedge ( <i>C. panicea</i> ), Glaucous Sedge ( <i>C. flacca</i> ), Tawny Sedge ( <i>C. hostiana</i> ), Supports locally important numbers of Wigeon, Teal, Mallard, Tufted Duck and Lapwing and the Irish Hare.	B	Neutral
pNHA no. 000598	<b>Castleplunket Turlough:</b> A designated site with wet grassland amidst scattered limestone outcrops. It supports a diversity of wintering wildfowl including nationally important numbers of Wigeon.	B	Neutral
pSAC/pNHA no. 000612	<b>Mullygollan Turlough:</b> Another designated habitat with significant fen vegetation, drainage ditches, swallow holes and streams. It supports three species listed in Annex 1 of the EU Birds Directive 92/43/EEC, <i>i.e.</i> Bewick's Swan, Whopper and Golden Plover. Also, the contrast of wet and dry areas in this turlough gives a good diversity in the vegetation which consists of peaty communities in the centre with more typical turlough species around the edges.	A	Neutral



**Table 14c Sites of Potential Ecological Value within the Corridor**

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
3	Ballinphuill	Wet grassland, scrub, conifer plantations and cutover bog (well <b>outside</b> corridor).	D	Neutral
5	Tobhinine	Hedgerows, wet grassland, drainage ditches.	E	Neutral
7	Rathkeery	Hedgerows, wet grassland and drainage ditches.	E	Neutral
8	Clashcarragh	Treelines, buildings and potential bat roosts.	D	Minor Negative
10	Rathkeery	Treelines, buildings and potential bat roosts.	D	Minor Negative
19	Dungar	Conifer plantation, hedgerows, drainage ditches, wet grassland, raised & cutover bog (Mullen Bog, See Table 5), and buildings. Bogs partly degraded.	C	Moderate Negative
31	Leitrim	River (see Table 4), wet grassland, hedgerows, drainage ditches, improved grassland, scrub, conifer plantations and buildings.	D	Minor Negative
75	Killaster	Treelines, mature trees, buildings and potential bat roosts.	D	Minor Negative
76	Killaster	Conifer plantation, immature woodland, scrub, wet grassland and drainage ditches.	D	Minor Negative
80	Kilkorkey	Immature woodland/scrub and river (see Table 4).	D	Minor Negative
91	Brackloon	Wet grassland, conifer plantation, hedgerows, drainage ditches, scrub, buildings and rivers (see Table 4).	D	Minor Negative
93	Rathmoyle	Mature trees, treelines, broad-leaved woodland, improved grassland, buildings and potential bat roosts.	D	Minor Negative
94	Rathmoyle	Treelines, improved grassland and potential bat roosts.	D	Minor Negative
95	Glenvela	Mature trees, treelines and potential bat roosts.	D	Minor Negative
97	Gortnasillagh	Mosaic of mature trees and treelines, hedgerows and improved grassland and potential bat roosts.	D	Moderate Negative
98	Gortnasillagh	Mosaic of mature trees and treelines, hedgerows and improved grassland and potential bat roosts.	D	Minor Negative
139	Castlenode	Treelines, lowland depositing river (see Table 4) and potential bat roosts.	D	Minor Negative
140	Castlenode	Treelines, river (see Table 4) and potential bat roosts	D	Minor Negative
141	Farmore	Broad-leaved woodland and immature woodland.	D	Minor Negative
143	Carrowntryla	Buildings, scrub-covered rath, treelines, river (see Table 4), improved grassland and potential bat roosts	D	Minor Negative

Site no	Site Name	Site Description/Habitat(s)	Site Evaluation	Level of Impact
150	Cloonrane	Cloonfree Lough and rivers (see Tables 3 & 4), wet grassland, hedgerows and scrub. Cloonfree Lough may correspond to Annex 1 Habitats EU Directive 92/43/EEC but is not currently a designated site. It is a very popular fishing area (local information) and is known to contain an excellent stock of brown trout. NB. Specimen Beech tree ( <i>Fagus sylvatica</i> ) also within area.	C	Major Negative
155	Cloonrane	Conifer plantation, scrub, wet grassland, drainage ditches and river (see Table 4).	D	Minor Negative
156	Ardakillin	Scrub covered Rath	D	Minor Negative
157	Ardakillin	Scrub covered Rath	D	Minor Negative
158	Ardakillin	Scrub covered Rath	D	Minor Negative
163	Sroove	Sroove Lough (see Table 4), wet grassland, hedgerows, drainage ditches and scrub.	C	Moderate Negative
166	Slevin	Conifer plantation, drainage ditches, wet grassland and scrub.	D	Minor Negative
167	Carrowkeel	Treelines, buildings, conifer plantation, lowland depositing river (see Table 4), wet grassland, drainage ditches, hedgerows and scrub.	D	Minor Negative

**Summary:** This corridor *dissects* Brierfield Lough, a designated. It also incorporates a section of another such important site – Bellanagare Bog. West of Brierfield, it passes within about 1km of Castleplunket Turlough. In the same general area, it is somewhat closer to Mullygollan Turlough. On the eastern-end, it is rather closer to Ardakillin Lough. Nearer to Strokestown, it takes in about one-third of Cloonfree Lough. The review of The Hydrology and Hydrogeology Report prepared by Hydro Environmental indicate that there will be no impact on the groundwater regime in Cloonshanville Bog Bog pNHA cSAC and therefore no associated ecological impact on these sites. The negatives recorded for this corridor are – 2 severe, 1 major, 3 moderate and 21 minor and 6 neutral.

## CORRIDOR CHOICE

Corridor choice is based on the number and level of negatives within each corridor. Weighting, in descending order applies as follows: Severe, Major, Moderate and Minor.

**1<sup>st</sup> Choice - Corridor 1A:** This is the only corridor which has no severe and **no** major negative. Otherwise, it shows **5** moderate and **17** minor negatives and **5** neutrals. The absence of a severe negative and the presence no major negative make it the 1<sup>st</sup> Choice.

**2<sup>nd</sup> Choice – Corridor 2B:** This corridor also has **no** severe negative but has **1** major negatives. Otherwise, it has **1** moderate and **22** minor negatives and **6** neutrals. These facts make it the 2<sup>nd</sup> Choice.

**3<sup>rd</sup> Choice – Corridor 3:** This corridor has **1** severe negative. However, it has no major negative. Otherwise, it has **2** moderate and **7** minor negatives and **3** neutrals. These facts make it the 3<sup>rd</sup> Choice.

**4<sup>th</sup> Choice – Corridor 1:** This corridor has **1** severe negative and **1** major negative. Otherwise, it has **4** moderate and **19** minor negatives. These facts make it the 4<sup>th</sup> Choice.

**5<sup>th</sup> Choice – Corridor 2A:** This corridor has **1** severe and **1** major negatives. Otherwise, it has **2** moderate and **20** minor negatives and **5** neutrals. These facts make it the 5<sup>th</sup> Choice.

**6<sup>th</sup> Choice – Corridor 2:** This corridor is very similar to the previous corridor (2A). However, is closer to Bellanagare Bog, a very sensitive Designated Habitat. This fact militates against it and makes it the 6<sup>th</sup> Choice.

**7<sup>th</sup> Choice – Corridor 4:** This is the only corridor with **2** severe negatives. It severely impacts upon Bellanagare Bog and Brierfield Turlough pNHA. Also, it runs close to Castleplunkett and Mullygollan Turloughs and Ardakillin Lough. Otherwise, it shows **1** major, **3** moderate and **22** minor negatives and **6** neutrals. This is the 7<sup>th</sup> Choice.

The final decision on the preferred route corridor, based on our ecological assessment of all corridors and the low number of river crossings (see **Table 13**) is **Option 1A**.

**Table 13 Summary Comparison of Impacts on Ecological Sites within the Seven Corridors**

Corridor Choice	Severe Negative Impact	Major Negative Impact	Moderate Negative Impact	Minor Negative Impact	Neutral Impact
<b>1<sup>st</sup> Choice - Corridor 1A</b>	0	0	5	17	5
<b>2<sup>nd</sup> Choice – Corridor 2B</b>	0	1	1	22	6
<b>3<sup>rd</sup> Choice – Corridor 3</b>	1	0	2	7	3
<b>4<sup>th</sup> Choice – Corridor 1</b>	1	1	4	15	4
<b>5<sup>th</sup> Choice – Corridor 2A</b>	1	1	2	20	5
<b>6<sup>th</sup> Choice – Corridor 2</b>	1	1	2	20	5
<b>7<sup>th</sup> Choice – Corridor 4</b>	2	1	3	21	6

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## APPENDIX 1

### Site Evaluation Scheme

[Taken from the 'Guidelines for Assessment of Ecological Impacts of National Road Schemes – NRA, 2006']

Rating	Qualifying Criteria
<b>A</b>	<p><b>Internationally Important</b></p> <p>Sites designated (or qualifying for designation) as SAC* or SPA* under the EU Habitats or Birds Directives.</p> <p>Undesignated sites containing good examples of Annex 1 <u>priority</u> habitats under the EU Habitats Directive.</p> <p>Major salmon river fisheries.</p> <p>Major salmonid (salmon, trout or char) lake fisheries.</p>
<b>B</b>	<p><b>Nationally Important</b></p> <p>Sites or waters designated or proposed as an NHA* or statutory Nature Reserves.</p> <p>Undesignated sites containing good examples of Annex 1 habitats (under EU Habitats Directive).</p> <p>Undesignated sites containing <u>significant numbers</u> of resident or regularly occurring populations of Annex 11 species under the EU Habitats Directive or Annex 1 species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000.</p> <p>Major trout river fisheries.</p> <p>Water bodies with major amenity fishery value.</p> <p>Commercially important coarse fisheries.</p>
<b>C</b>	<p><b>High Value, locally important</b></p> <p>Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species.</p> <p>Small water bodies with known salmonid populations or with good potential salmonid habitat.</p> <p>Sites containing <u>any</u> resident or regularly occurring populations of Annex 11 species under the EU Habitats Directive or Annex 1 species under the EU birds Directive.</p> <p>Large water bodies with some coarse fisheries value.</p>
<b>D</b>	<p><b>Moderate value, locally important</b></p> <p>Sites containing some semi-natural habitat or locally important for wildlife.</p> <p>Small water bodies with some coarse fisheries value or some potential salmonid habitat.</p> <p>Any water body with unpolluted water (Q-value rating 4-5).</p>
<b>E</b>	<p><b>Low value, locally important</b></p> <p>Artificial or highly modified habitats with low species diversity and low wildlife value.</p> <p>Water bodies with no current fisheries value and no significant potential value.</p>

\* SAC = Special Area of Conservation

\* SPA = Special Protection Area

\* NHA = National Heritage Area

## APPENDIX 2

### Criteria for Assessing Impact Significance

[Taken from the 'Guidelines for Assessment of Ecological Impacts of National Road Schemes – NRA, 2006']

Impact level	Site Category*				
	A Sites Internationally important	B Sites Nationally important	C Sites High value, locally important	D Sites Moderate value, locally important	E Sites Low value, locally important
Severe negative	Any permanent impacts	Permanent impacts on a large part of the site			
Major negative	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site		
Moderate negative	Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site	
Minor negative		Temporary impacts on a small part of a site	Temporary impacts on a large part of a site	Permanent impacts on a small part of a site	Permanent impacts on a large part of a site
Neutral	No impacts	No impacts	No impacts	No impacts	Permanent impacts on a small part of a site
Minor positive				Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site
Moderate positive			Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site	
Major positive		Permanent beneficial impacts on a small part of a site	Permanent beneficial impacts on a large part of a site		

\* Sites categories A to E are defined in Appendix 1

## APPENDIX 3

[Taken from a Report by the Department of the Environment, Heritage and Local Government]

### Site Synopsis

#### SITE NAME: CLOONSHANVILLE BOG

SITE CODE: 000614

Cloonshanvile Bog is locally approximately 2 km east of Frenchpark. The eastern boundary of the site is the Breedoge River, the southern is the Frenchpark/Elphin road. It is underlain by low permeability, clayey limestones. The bog developed in a shallow basin in a groundwater discharge zone. The regional water table has been lowered, but evidence of groundwater inputs are seen on and around the high bog.

Cloonshanvile Bog is a large raised bog, a priority habitat listed on Annex 1 of the EU Habitats Directive. The bog is largely dominated by Heather (*Calluna vulgaris*), with Deergrass (*Trichophorum cespitosum*) and Common Cottongrass (*Eriophorum angustifolium*) occurring frequently. Cranberry (*Vaccinium oxy-coccus*) is found in some sections of the bog. In the wettest areas hummock/pool systems have developed. The cover of Lichens and Bog Mosses (*Sphagnum* spp.) is generally good and the scree species, *S. imbricatum*, *S. fuscum* and *S. pulchrum* occur.

A large flush area occurs in the centre of the bog. The main body of the flush supports an extensive bog woodland. This habitat is also listed as a priority Annex 1 habitat under the EU Habitats Directive and is an extremely rare Irish woodland type. The woodland is well-developed structurally and contains a diverse range of plant species. It is dominated by Birch (*Betula* sp.) with some Willow (*Salix* sp.) occurring, and with an understorey of tussocky Purple Moor-grass (*Molinia caerulea*). Bog-myrtle (*Myrica gale*) occurs in places. Three areas of coniferous plantation have been included within the site for hydro-logical reasons.

The Breedoge River, which marks the eastern boundary of the site, adds habitat diversity and is important for wildfowl, including Mallard and snipe.

#### SITE NAME: CORBALLY TURLOUGH

SITE CODE: 001627

Corbally is one of seven turloughs centred around Tulsk in central Roscommon. It covers a small site beside the main Strokestown road where several fields converge in a thin shallow basin. The floor of the turlough is covered in a thin layer of drift but the basin itself is underlain by limestone, making the turlough quite productive in terms of its vegetation.

Large beds of Yellow Iris (*Iris pseudacorus*) with some Reed Canary-grass (*Phalaris arundinacea*) occur around the edges of the turlough. There is also a good mixture of other aquatic and floating plants within the main body of the water; Amphibious Bistort (*Polygonum amphibium*), Common Spike-rush (*Eleocharis palustris*), Marsh Pennywort (*Hydrocotyle vulgaris*), Marsh Foxtail (*Alopecurus gen-iculatus*), Floating Sweet-grass (*Glyceria fluitans*), Bogbean (*Menyanthes trifoliata*), Water Horsetail (*Equisetum fluvialile*) and Marsh Yellow-creed (*Rorippa palustris*) are common.

The ditches which meander through much of this area also contain an interesting flora with Thread-leaved Water-crowfoot (*Ranunculus trichophyllus*), Duckweed (*Lemna* sp.) Water Plantain (*Alisma plantago-aquatica*) and Fine-leaved Water-dropwort (*Oenanthe aquatica*).

A feature of interest are the three crannogs forming prominent hillocks within the turlough. In addition to being of archaeological interest, they provide roosting and nesting places for several bird

species. Corbally is a popular wetland for mobile populations of over-wintering wildfowl which move between adjacent turloughs. Some of the species that have been noted there include Bewicks Swans, Whooper Swans, Golden Plover, Wigeon, Teal, Mallard, Pintail, Shoveler, Pochard, Tufted Duck, Grebe, Coot, Lapwing and Curlew.

The vegetation and wildlife make this site interesting on scientific grounds, while the archaeology of the area adds to its overall importance.

## SITE NAME: BRIERFIELD TURLOUGH

SITE CODE: 000594

Brierfield turlough is located 4 km east of Castleplunket. This site is a very good example of a turlough system with an excellent species diversity and a good range of habitats. It is comprised of a large area of shallow water, lowland wet and dry grassland, a shrub covered island, a crannog and a small area of limestone pavement.

The southwest end is underlain by thick peat over marl. The peat floats as a scraw which is colonised by Bogbean (*Menyanthes trifoliata*), Bottle Sedge (*Carex rostrata*) and Blunt-flowered Rush (*Juncus subnodulosus*). The margins of the turlough consist of Swards of Sedges (*Carex* spp.), with occasional Willow (*Salix* spp.).

Around the swallow holes there is Mare's-tail (*Hippuris vulgaris*), Watercress (*Rorippa* spp.), Fine-leaved Water-dropwort (*Oenanthe aquatica*) and Amphibious Bistort (*Polygonum amphibium*).

The area is also an important over-wintering site for several species of wildfowl including Whooper Swans which are a legally protected species.

Parts of the site have been damaged by dumping of old cars. Eutrophication of the turlough has also occurred. However there are other parts of this site which are notable for their lack of disturbance particularly from grazing. The site is also of considerable scenic value.

## SITE NAME: BELLANAGARE BOG

SITE CODE: 000592

Bellanagare Bog is a large bog situated 6 km north-north-east of Castlereagh. It is classified as a western, or intermediate, raised bog, showing as it does features of both raised and blanket bog. The bog is underlain by muddy Carboniferous limestone with a low permeability. The sub-soil is predominantly of clayey limestone till. The site lies in an upland area at the top of a surface catchment divide. The surface of the bog is undulating and the peat is concentrated on ridges, with flushes occurring in between. A number of streams, including the Frances River, rise on the site. The bog is traversed by several tracks. A large section of the site is in state ownership.

The vegetation of the high bog is characterised by an abundance of Deergrass (*Trichophorum cespitosum*), Bog Asphodel (*Narthecium ossifragum*) and Carnation Sedge (*Carex panicea*), with varying dominances. The cover of Bog Moss (*Sphagnum* spp.) is generally low (<10%), but there are some localised wetter areas with pools, where Bog Moss cover is higher, as at the western and eastern sides of the site. Bog Sedge (*Carex limosa*), a species more frequently found on blanket bogs, occurs in some pools, while the scarce Bog Moss, *Sphagnum pulchrum*, is found in some of the wetter parts of the site. Well-developed hummocks and several quaking areas occur in some sections of the site. For a raised bog, Bellanagare Bog is floristically unusual, supporting, as it does, species typically found on raised bogs as well as species more usually found on blanket bogs.

Bellanagare Bog is also notable for its range of flush types found. These occur quite frequently and are usually located in depressions. Flush types on the site include an in-filling lake, an



extensive Purple Moor-grass (*Molinia caerulea*) flush with a high diversity of plant species, a large swallow hole flush and flushes associated with springs, rises and streams. One flush is coincident with a bog burst. The site also includes much cutaway bog, small areas of heath, scrub, wet grassland and several small conifer plantations.

The site is vulnerable to water loss through the extensive drain network in its northern half and from active peat-cutting, which occurs in places all around the site. Because it is also quite a dry bog it is very vulnerable to burning.

The site provides habitat for a relatively large population of Red Grouse, a scarce and declining species in Ireland.

Bellanagare Bog is of considerable scientific and conservation significance, in particular for its status as an intermediate raised bog, for a wide variety of different flush types found, for its large size and for the presence of the scarce Bog Moss (*Sphagnum pulchrum*). Raised bogs are rare and threatened in Europe and are listed as a priority habitat on Annex 1 of the EU Habitats Directive.

## SITE NAME: BELLANAGARE BOG SPA

SITE CODE: 004105

Bellanagare Bog is a large bog situated 6 km north-north-east of Castlerea in Co. Roscommon. It is classified as a western, or intermediate, raised bog, showing as it does features of both raised bog and blanket bog. The bog is underlain by muddy Carboniferous limestone with a low permeability. The sub-soil is predominantly of clayey limestone till. The site lies in an upland area at the top of a surface catchment divide. The surface of the bog is undulating and the peat is concentrated on ridges, with flushes occurring in between. A number of streams, including the Frances River, rise on the site. The bog is traversed by several tracks. A large section of the site is in state ownership.

The vegetation of the high bog is characterised by an abundance of Deergrass (*Trichophorum cespitosum*), Bog Asphodel (*Narthecium ossifragum*) and Carnation Sedge (*Carex panicea*), with varying dominances. The cover of bog mosses (*Sphagnum* spp.) is generally low, but there are some localised wetter areas with pools. Well-developed hummocks and several quaking areas occur in some sections of the site.

In the past, the bog was used by wintering Greenland White-fronted Geese from the population that is centred on Lough Gara. However, the geese now feed mainly on intensively managed grassland and seldom use the bogs in the area. The bog may have been used by nesting Golden Plover in the past and is occasionally used by small numbers of wintering birds. There is a good population of Red Grouse at the site.

Other typical bog fauna present includes the Common Frog and the Irish Hare – both of these species are listed in the Irish Red Data Book.

While Bellanagare Bog SPA appears to have been abandoned by wintering Greenland White-fronted Geese, it is still of some ornithological importance as it supports a population of Red Grouse, a scarce and declining species in Ireland that is Red listed.

## APPENDIX 4

[Extracts taken from a Report by the Shannon Regional Fisheries Board to Roscommon NRDO]

Preference depends to a certain extent on the layout of the actual road within the corridor as this will determine the number and location of river crossings and the extent and number of watercourse diversions. As discussed at our meeting we will assume that no lake crossings will take place (despite lakes being indicated within the corridor) and that where possible watercourse crossings will be as short as possible and watercourse diversions will be kept to a minimum.

No net loss should occur to fisheries habitat and water quality as a result of this road scheme. As far as possible watercourse diversions should be avoided, where there is no other viable alternative, a diversion may be permissible.

Where a diversion has been agreed with the Shannon Regional Fisheries Board and instream fisheries development works are required to provide habitat, the cost of these works should be borne by the contractor and works must be carried out to meet with Shannon Regional Fisheries Board's specifications. The Board may require that an Officer of the Board is present to supervise these works.

It is likely that green corridor 3 (along the existing road) might result in the least disturbance to watercourses. The comments below should be considered in the context of the preceding paragraphs. In relation to the proposed new corridors, the blue corridor 1, passing through the north eastern quadrant would have least impact on the Scramoge River. than those passing through the south east quadrant. The Board would have a strong preference for this part of the blue route and would have concerns about the number of watercourse crossings of the Oguilla River in Eastern area and the Scramoge River system in the South Eastern quadrant (corridors 2, 2a, 2b and 4) and the likely effects on fishing habitats in these areas. However in the Western area the blue corridor (1) crosses and runs along tributaries of the Owenforeesha River and, may necessitate a number of diversions, unless these could be avoided, the preferred option would be the purple (2), pink (4) or red route (2a) through the North Western Quadrant crossing to the blue route around the Mullenduff or Mantua area, *i.e.* route **1a**.