

Appropriate Assessment Screening Report

Proposed new Ballinrobe Greenway (Phase 1),
Ballinrobe, Co Mayo

For Mayo County Council



April 2021

Giorria Environmental Services
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SECTION 1

1.0 Introduction

Giorria Environmental Services were commissioned by Marie Jennings, Mayo County Council, to undertake a Screening for Appropriate Assessment under Article 6 of the EU Habitats Directive on the proposed new Greenway on the outskirts of Ballinrobe Town, Co. Mayo.

The aim of this report is to identify any significant impacts of the proposed development on any adjacent Natura 2000 sites. The report has been prepared in accordance with the current guidance (NPWS 2009, revised February 2010, Office of Planning Regulator 2021). The report was compiled and written by Dr. Karina Dingerkus, ecologist (see Appendix 5 for qualifications).

1.1 Overview of proposed new Greenway, Ballinrobe, Co. Mayo

Mayo County Council proposes to construct a new Greenway on the outskirts of Ballinrobe Town, Co Mayo.

The proposed new Greenway will be 904m in length and will run from the Slí na Roba housing estate to Station Road at the eastern end of the town.



Photograph 1: Showing start of section 1 of the Greenway at Slí na Roba

1.2 The Appropriate Assessment Process

Natura 2000 is a European network of important ecological sites. The EU Habitats Directive (92/43/EEC) placed an obligation on Member States of the EU to establish the Natura 2000 network. The network is made up of Special Protection Areas (SPAs), established under the EU Birds Directive (2009/147/EC), and SACs, established under the Habitats Directive itself. Ireland's contribution to Natura 2000 is being created under the European Communities (Natural Habitats) Regulations, 1997 (S.I. 94 of 1997 as amended by S.I. 233 of 1998 and S.I. 378 of 2005). These regulations transpose the EU directives into Irish national Law.

There is a requirement, under Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC), to carry out an Appropriate Assessment when a plan or project is proposed that may have conservation implications for the Natura 2000 site. The first step of the Appropriate Assessment process is to establish whether, in relation to a particular plan or project, Appropriate Assessment is required. Article 6(3) states:

'Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'

Several guidance documents on the appropriate assessment process have been referred to during the preparation of this NIS. These are:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (NPWS 2009, Revised February 2010)
- Circular NPW 1/10 & PSSP 2/10 (March 2010)
- EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (2007)
- Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (Nov. 2001 – published 2002)
- Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000).
- Office of the Planning Regulator (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01.

Should a decision be reached to the effect that it cannot be said with sufficient certainty that

the development will not have any significant effect on the Natura 2000 sites, then, as is stated above, it is necessary and appropriate to carry out an appropriate assessment of the implications of the development for the sites in view of their conservation objectives.

The guidance for Appropriate Assessment (NPWS, 2009, revised February 2010) states:

“AA is an impact assessment process that fits within the decision-making framework and tests of Articles 6(3) and 6(4) and, for the purposes of this guidance, it comprises two main elements. Firstly, a Natura Impact Statement – i.e. a statement of the likely and possible impacts of the plan or project on a Natura 2000 site (abbreviated in the following guidance to “NIS”) must be prepared. This comprises a comprehensive ecological impact assessment of a plan or project; it examines the direct and indirect impacts that the plan or project might have on its own or in combination with other plans and projects, on one or more Natura 2000 sites in view of the sites’ conservation objectives. Secondly, the competent authority carries out the AA, based on the NIS and any other information it may consider necessary. The AA process encompasses all of the processes covered by Article 6(3) of the Habitats Directive, i.e. the screening process, the NIS, the AA by the competent authority, and the record of decisions made by the competent authority at each stage of the process, up to the point at which Article 6(4) may come into play following a determination that a plan or project may adversely affect the integrity of a Natura 2000 site”.

1.3 Appropriate Assessment Stages

The European Commission’s Guidance promotes a four-stage process to complete the Appropriate Assessment.

Stage 1 – Screening Process

Stage 2 – Appropriate Assessment

Stage 3 – Assessment of alternative Solutions

Stage 4 – Assessment where no alternative solutions exist and where adverse impacts remain.

Stage 1 and 2 deal with the main requirements of assessment under Article 6.3. Stage 3 may be part of Article 6.3 or a necessary precursor to Stage 4.

Screening determines whether appropriate assessment is necessary by examining:

1. Whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of the site.
2. The potential effects of a project or plan, either alone or in combination with other projects or plans, on a Natura 2000 site in view of its conservation objectives and considering whether these effects will be significant.

Screening involves the following:

1. Description of plan or project, and local site or plan area characteristics.
2. Identification of relevant Natura 2000 sites, and compilation of information qualifying interests and conservation objectives.
3. Assessment of likely effects – direct, indirect on the basis of available information as a desk study and/or field survey and/or primary research as necessary.
4. Screening statement and conclusion.

The report also provides the information required for the Competent Authority to complete the Appropriate Assessment (Stage 2) should this be necessary and appropriate in the opinion of the Competent Authority.

2.0 Methods

2.1 Zone of influence

The Zone of Influence of a project may be defined as area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities (CIEEM 2016). The zone of influence can extend beyond the project site, for example, where there are ecological or hydrological links beyond the site boundaries.

The NPWS (2010) recommends that: *“the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects.”*. Generally, all European sites within 15km of the proposed project are examined. In some circumstances it may be necessary to go beyond this distance (e.g. hydrologically connect site).

Recent guidance from Office of the Planning Regulator (2021) indicates that the zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a Natura 2000 Site. It indicates that this should be established on a case-by-case basis using the Source-Pathway-Receptor framework.

2.2 Desk-top study

A desk study was carried out to gather information available on Natura 2000 sites in the vicinity of the proposed project. The Environmental Protection Agency Appropriate Assessment GeoTool application was used to gather data about SACs and SPAs from the National Parks and Wildlife Service (NPWS). The Environmental Sensitivity Mapping tool (ESM tool) was also consulted (<https://airomaps.geohive.ie/ESM/>). The NPWS and National Biodiversity Data Centre online databases were consulted concerning designated conservation areas in the vicinity of the proposed development and protected species. The Mayo County Council website online planning access: (www.mayo.ie/planning/search) was consulted for information on other plans or projects in the area, which may result in a cumulative impact when considered with the proposed development. Other databases consulted include:

- Information on other plans or projects in the area from www.myplan.ie
- Information on soils, geology and hydrogeology in the area www.gsi.ie
- National Biodiversity Action Plan 2017–2021 (Department of Culture, Heritage and the Gaeltacht, 2017)
- Mayo County Development Plan 2015-2020
- National Biodiversity database maps <https://maps.biodiversityireland.ie/>
- Environmental Protection Agency - <https://gis.epa.ie/EPAMaps/>

2.3 Field Survey

The site was visited on 18th March 2021.

This section starts at the road end at the entrance road to Slí Na Roba housing estate just south of the Primary Care Centre Building and car park. At present, the field is an improved agricultural field (Fossitt classification: GA1). There is a broken fence line leading from the road end south to the stonewall along the southern boundary. The proposed new Greenway will run along this route to the south.

At the southern boundary of the field is a stonewall with a small field area beyond. This area is narrow and has a stonewall on four sides. The stonewall is in disrepair in places allowing access from the north and south onto Ballinrobe Community School sports field footpath. The proposed path crosses two stonewalls to emerge on the sports field and a new track will run parallel to the existing path but closer to the field boundary with a 1.8m fence between the two paths. The existing path is a circular path round the perimeter of the sports field. The proposed path goes east and curves round to the south again joining a walled track past the club house and out onto Convent Road. This narrow track is stone walled on both sides and is presently mown grass. Along the walls are ivy (*Hedra helix*), bramble (*Rubus fruticosus* agg.), some small trees of ash (*Fraxinus excelsior*) and willow (*Salix* spp.). It leads from Convent Road north to private fields at a gateway. At the southern end the track is motorable and allows access to the sports clubhouse but past this it is a walking track.

The proposed greenway follows Convent Road west towards the town centre for about 110 m. It then crosses the road and goes down the west side of the Convent wall along the National School grounds. A small area of land will be taken from the school grounds that run along the wall to the south. This area is presently mown grass with some shrubs. The path comes to a hedgerow to the next field south. While winter heliotrop is present in large numbers on the Convent side the proposed pathway is mown grass so no Heliotrope was seen.

The other side is a field that has recently been refenced and divided into several paddocks to house Alpacas. At the top of the field Winter Heliotrope is spreading out from the corner where a metal gate is. This is a relatively small area at present. The proposed path follows the field boundary running south to the minor road. This boundary is a stonewall (in disrepair in places), new post and wire fence with several large and small trees (ash trees) with bramble and ivy in places. It is proposed to move the new fence outwards to make room for the new track.

The proposed Greenway then crosses the road and heads west before turning south again into another field. It is proposed to widen the road along this section and have the track running along the south side. The field boundary here is a stonewall with hedge and post and wire sheep fencing on the field side. The hedgerow is predominantly ash trees and hawthorn (*Crataegus monogyna*) with a lot of ivy and some bramble and a short grass verge along the road.

The proposed Greenway turns south along the field following the fence line behind some houses. The field boundary here is a post and wire sheep fence. Behind this is a treeline with

overgrown trees and shrubs of ash, hawthorn and garden ornamentals, with ivy encroaching on the trees. The Greenway follows this field boundary down towards the Bulkan River. At the southern end is a large stone wall and the back of commercial buildings close to the fence line. The field boundary curves round a house and garden before reaching the river.

It is proposed to build a new bridge across the Bulkan River to connect the Greenway with Station Road. Along Station Road there is a large grass verge with a few planted trees and stonewall separating the verge from the riverbank. The riverbank is steep and vegetated and colonising trees of sycamore (*Acer pseudoplatanus*), willows and ash. These are small saplings at present. There are also areas with bramble and plant clippings (grass and woody material) have been dumped over the wall in places.

The site can be divided into areas of MADE (built land) and areas of BminDW (grey brown podzolics, brown earths). BminDW is defined as well-drained mineral soils.



Photograph 2: Invasive species – Winter heliotrope



Photograph 3: Location of Winter heliotrope at end of section 2



Photograph 4 and 5: Approximate area where footbridge will cross River Bulkan

3.0 Screening for Appropriate Assessment

The aim of this section of the report is to identify any significant impacts of the proposed development on any adjacent Natura 2000 sites. The report covers Stage 1 screening for appropriate assessment and has been prepared in accordance with the current guidance (NPWS 2009, revised February 2010 and Office of the Planning Regulator 2021).

3.1 Description of development

Mayo County Council proposes to construct a new Greenway on the eastern outskirts of Ballinrobe Town, Co Mayo. The proposed new Greenway will be 904m in length and will run from the Slí na Roba housing estate to Station Road.

Section 1 which starts at Slí na Roba housing estate will be 266m in length. The Greenway will start at the existing footpath and will travel north south before heading East along the sports grounds. A mesh fence (1.8 m high) will be used to separate the grounds from the Greenway. The Greenway will then head north-south again. At the corner there will be a grass verge and high friction surface. The Greenway then follows the existing lane which will be resurfaced.

Section 2 of the Greenway is 336m in length. There will be gate access to the school. Where the Greenway meets Convent Road it turns west and runs for a short distance along the road.

Section 3 of the Greenway will be 302 m in length. At the bottom of the section there will be a footbridge over the Bulkan river. The footbridge will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment and an application for a Section 50 will also be made to the OPW.

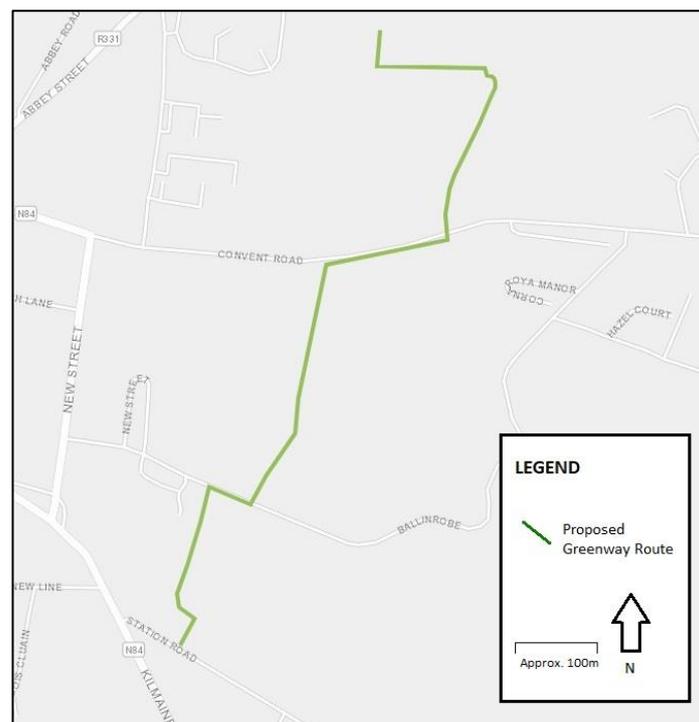
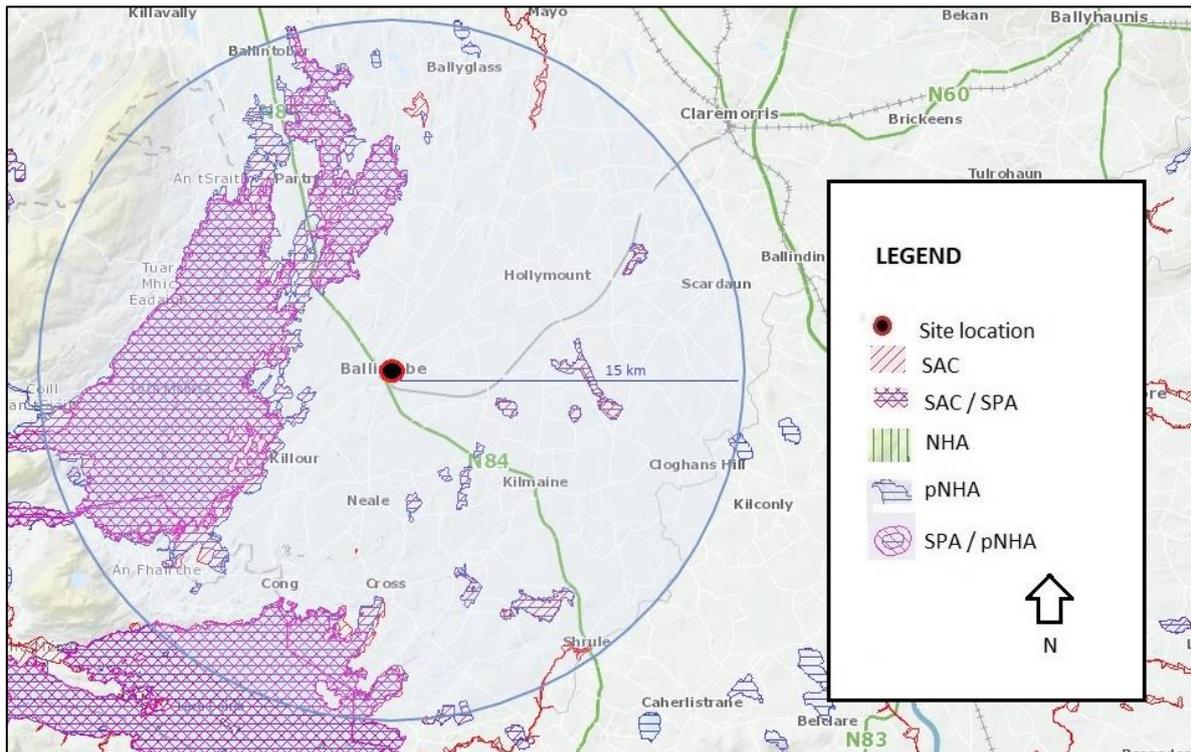


Diagram 1: Map showing proposed location of proposed Greenway

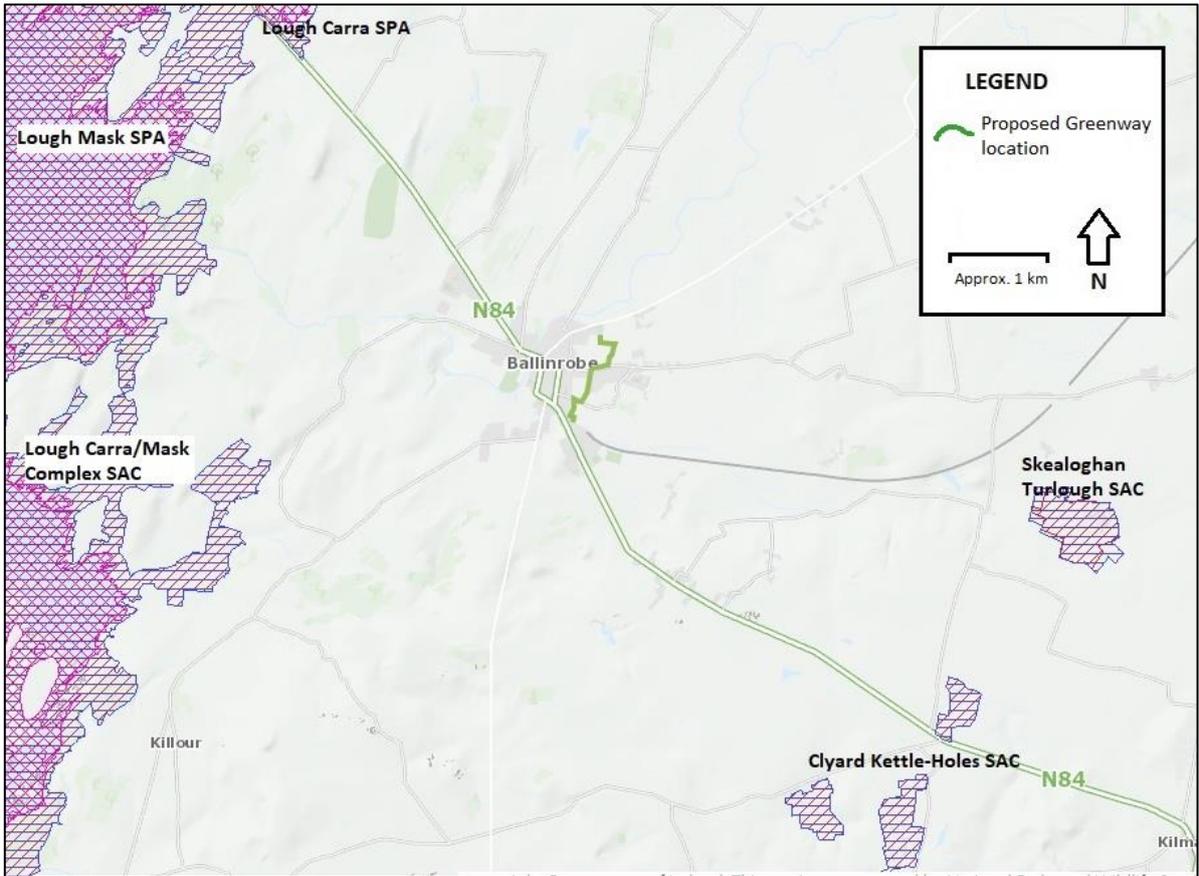
3.2 Description of Natura 2000 sites

All Natura 2000 sites occurring within 15km of the likely zone of influence of the plan or project need to be considered while conducting an assessment.

The site lies approximately 3.3 km from the Lough Carra / Mask Complex SAC and 4.15 km to Lough Carra SPA and 4.5 km from the Lough Mask SPA. Sixteen other Natura 2000 sites (SACs and SPAs) fall within a 15km radius of the site. See Table 1 below for details.



Map 1 Showing Natura 2000 sites within 15km radius of site
(Map source: <http://dahg.maps.arcgis.com/apps/webappviewer>)



Map 2. Showing section of Lough Carra / Mask Complex SAC, Lough Carra SPA and Lough Mask SPA with proposed Greenway location at Ballinrobe
 (Map source - <https://www.npws.ie/maps-and-data>)

Table 1: Natura 2000 sites lying in a 15km radius of the proposed development site and connectivity to Natura sites

Site Code	Site Name and brief site description	Distance To (m)	Assessment
001774	<p>Lough Carra/Mask Complex SAC</p> <p>This site comprises of two large lakes, Lough Mask and Lough Carra, and includes the smaller Cloon Lough. Lough Mask is the sixth largest lake in the country and is an excellent example of an oligotrophic lake. There is a variety of wetland habitats and significant amounts of deciduous woodland. Lough Carra, which is hydrologically linked to Mask, is one of the best examples in Ireland of a hard water marl lake. It is fringed by a diverse complex of limestone and wetland habitats. Areas of calcareous grassland, often orchid-rich, occur interspersed amongst the limestone. There are several rare plants is found at this site, e.g. Irish St. John's-wort and Irish Lady's-tresses. There is also a summer breeding site for the Lesser Horseshoe Bat. In 1993 more than 100 bats were counted, which makes it of international importance. The site has important bird interests. There are national important flocks of Greenland White-fronted Goose, Shoveler, Tufted Duck and Goldeneye. Other important species are Arctic Char and White clawed Crayfish</p>	3342.11	<p>Hydrological connection.</p> <p>The end of the Greenway crosses the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site to Natura site is just over 5 km.</p> <p>Potential impacts will be assessed in more details in Table 4 below.</p>
000541	<p>Skealaghan Turlough SAC</p> <p>Most of Skealaghan Turlough has a peaty soil. There is some semi-permanent standing water at the eastern end which is fed from natural ponds and ditches to the west. The southern part dries out completely in summer and is bordered by a woodland fringe. Several pairs of Lapwing breed at the site and some wintering waterfowl are likely to visit the turlough. Despite some intensive agriculture to the west of the site, the area remains quite oligotrophic. Skealaghan Turlough is of conservation interest for its diversity of vegetation types, particularly the oligotrophic sedge communities.</p>	4647.23	<p>There is no direct hydrological link and the project site lies over 4 km from the SAC.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged.</p>
000480	<p>Clyard Kettle-holes SAC</p> <p>This site comprises several small lakes and. Some of these lakes are connected with each other but others appear to fill and empty by subterranean means. The main plant community in the kettle-holes at Clyard townland is Cladium fen. To the north of Clyard, in Coolisduff townland, lies a turlough that floods in winter to an area of 12 ha. This turlough drains to a swallow hole in the north-west corner, with summer</p>	4747.57	<p>There is no direct hydrological link and the project site lies over 4 km from the SAC.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential</p>

	<p>pools supporting stands of Great Fen-sedge. Another turlough lies just to the north, in Thomastown townland. Two further turlough areas occur to the west, at Cahernagry East, which floods to an area of 12 ha, and at Caherhemush – Ballywalter, which floods to over 25 ha.</p>		<p>impacts envisaged.</p>
000504	<p>Kilglassan/Cahevavostia Turlough Complex SAC This site is situated about 7 km east of Ballinrobe in Co. Mayo. It comprises two turloughs separated by a rise of land which includes a pond and a small floating fen. The surrounding topography is gently rolling, with limestone outcrop at the northern end of Kilglassan. Both turloughs occupy relatively flat basins that remain wet even in summer and have accumulated peat. The site is likely to attract wintering waterfowl but no data are available.</p>	6787.20	<p>Indirect upstream hydrological link.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged.</p>
000461	<p>Ardkill Turlough SAC Ardkill turlough is one of a group of five turloughs that occupy hollows in rolling countryside. It is set amongst low limestone knolls with drift around the south and east. Exposed limestone extends out across the northern part forming a central island with low cliffs.</p>	7727.02	<p>There is no direct hydrological link and the project site lies over 7 km from the SAC.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged.</p>
002320	<p>Kildun Souterrain SAC Kildun Souterrain contains an important hibernation site of the Lesser Horseshoe Bat. It is situated within an area of Hazel (<i>Corylus avellana</i>) and Ash (<i>Fraxinus excelsior</i>) woodland which grows over limestone. The number of bats using this site has been gradually increasing and in January 2001, 69 bats were counted here making it a roost of international importance.</p>	7801.31	<p>There is no direct hydrological link and the project site lies over 7 km from the SAC.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged.</p>
001536	<p>Mocorha Lough SAC Mocorha Lough comprises a shallow wetland complex. The predominant habitat on the site is fen, including Cladium Fens that is dominated by Great Fen-sedge (<i>Cladium mariscus</i>). Areas of dry calcareous grassland, wet grassland and Juniper</p>	8819.54	<p>There is no direct hydrological link and the project site lies over 7 km from the SAC.</p> <p>As no complete source-pathway-receptor</p>

	<i>(Juniperus communis)</i> scrub also occur. Very little open water remains at the site. The scarce moss <i>Drepanocladus cossonii</i> has been recorded. The site supports locally important numbers of wetland birds, especially Snipe and Mallard.		chain was identified and due the nature and scale of the project no potential impacts envisaged.
000503	Greaghans Turlough SAC Greaghans Turlough is located near to Ballinrobe in Co. Mayo. It is surrounded by grazing land and is itself moderately grazed. The turlough is somewhat uniform because of its topography but is valuable as an undrained turlough with a variety of well-developed vegetation communities. The rare Northern yellow-cress occurs on site. The turlough is notable for its use in winter by Whooper Swans.	8923.68	There is no direct hydrological link and the project site lies over 7 km from the SAC. As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged.
000297	Lough Corrib SAC Lough Corrib is the second largest lake in Ireland. The surrounding lands to the south and east are mostly pastoral farmland, while bog and heath predominate to the west and north. The rivers include the Clare, Grange, Abbert, Sinking, Dalgan and Black to the east, as well as the Cong, Bealanabrack, Failmore, Cornamona, Drimneen and Owenriff to the west. In addition to the rivers and lake basin, adjoining areas of conservation interest, including raised bog, woodland, grassland and limestone pavement, have been incorporated into the site. The site supports a number of rare plants. The lake is rated as an internationally important site for waterfowl. Atlantic Salmon use the lake and rivers as spawning grounds. A population of Freshwater Pearl Mussel and White-clawed Crayfish also occur. A summer roost of Lesser Horseshoe Bat is also found in the SAC.	9671.67	Lough Corrib is hydrologically connected to Lough Mask. However, the hydrological connection is more than 26 km downstream. Potential for direct or indirect impact on the Natura Site can be excluded due to the scale and nature of the development, and the assimilation capacity of the intervening water ways. The project site is not within the likely zone of impact for this SAC and no further assessment is required.
000527	Moore Hall (Lough Carra) SAC This site consists of a series of buildings within 1 km of the eastern shore of Lough Carra, Co. Mayo. The buildings are used at various times throughout the year by the Lesser Horseshoe Bat. The site remains of international importance and is notable as one of the most northerly locations for the Lesser Horseshoe Bat in Ireland.	10071.02	The project site lies over 10 km from the SAC. This SAC is designated for Lesser Horseshoe Bat. As no complete source-pathway-receptor chain was identified that will impact this QI and due the nature and scale of the project no potential impacts envisaged.

002179	<p>Towerhill House SAC Towerhill House is situated 10 km north of Ballinrobe in Co. Mayo. The site comprises the ruins of Towerhill House, the surrounding woodlands, Lough Beg and its associated swamp vegetation. At this site the Lesser Horseshoe Bats use a man-made, stone underground passage which runs around the ruin of Towerhill House. This offers ideal winter hibernation site. Up to 56 bats have been recorded at Towerhill House in recent years, making it a site of international importance. It is also notable for being along the northern limit of the distribution of the species in Europe.</p>	10452.93	<p>The project site lies over 10 km from the SAC. This SAC is designated for Lesser Horseshoe Bat.</p> <p>As no complete source-pathway-receptor chain was identified that will impact this QI and due the nature and scale of the project no potential impacts envisaged.</p>
000475	<p>Carrowkeel Turlough SAC Carrowkeel turlough lies between Ballinrobe and Claremorris, Co. Mayo, about 2 km from the Robe River. It has a high diversity of vegetation types. This is partly due to the presence of permanent water in at least part of the turlough basin. Consequently, the turlough offers an excellent series of communities which are linked to water depth and quality. There is low grazing pressure throughout most of the site, though some of the fields in the north-east are closely grazed by sheep. The catchment is very small and therefore the turlough is relatively oligotrophic (nutrient-poor) in character, at least at its northern end.</p>	10638.56	<p>There is no direct hydrological link, and the project site lies over 10 km from the SAC.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged.</p>
000525	<p>Shrule Turlough SAC Shrule Turlough is a large, highly oligotrophic turlough, with thick marl and peat deposits which makes it unusual in the general range of turloughs and gives it a very significant ecological value. There is no above-ground outflow from the turlough. Drainage attempts have been made by enlarging the swallow holes, but the turlough still floods regularly and appears to show little modification due to the drainage efforts. Shrule Turlough has a high level of physical and supports a diversity of plant communities including some species rare in turloughs.</p>	10859.24	<p>There is no direct hydrological link, and the project site lies over 10 km from the SAC.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged</p>
002298	<p>River Moy SAC This site comprises almost the entire freshwater element of the River Moy and its tributaries, including both Lough Conn and Lough Cullin. The catchment area of 805 km². The river and its tributaries rise in a number of locations some of which are upland areas dominated by blanket bog and heath. Throughout most of its course the river flows through low-lying countryside consisting mainly of agricultural</p>	11933.61	<p>There is no direct hydrological link, and the project site lies over 11 km from the SAC.</p> <p>As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential</p>

	grassland. In addition to river and lake habitats, the site contains adjoining habitats of ecological interest such as raised bogs, heath, wet grassland and deciduous woodland.		impacts envisaged
000474	Ballymaglancy Cave, Cong SAC Ballymaglancy Cave is a linear stream cave which supports a population of Lesser Horseshoe Bat. This is a fairly extensive (>500 m) example of a natural limestone cave. Lesser Horseshoe Bats have been using the cave for many years. The numbers, however, vary with external temperature; during periods of sustained low temperatures, numbers in the cave may exceed 50 bats; when air temperature rises, numbers may drop to approximately 35 bats. Most of the bats hibernate within 20 m of the cave entrance.	12200.75	There is no direct hydrological link and the site lies over 12 km from the SAC. This SAC is designated for Lesser Horseshoe Bat and caves. As no complete source-pathway-receptor chain was identified and due the scale and nature of the project no potential impacts envisaged.
000479	Cloughmoyne SAC The site is a Special Area of Conservation selected for Limestone Pavement of the 'shattered' form. The limestone pavement supports a typical flora and is associated with areas of species-rich calcareous grassland and heath. Of particular note is the presence of the very rare and legally protected (Flora (Protection) Order, 1999) species Limestone Fern (<i>Gymnocarpium robertianum</i>). The site includes areas of species-rich dry grassland, which includes flora species including the scarce Dense-flowered Orchid (<i>Neotinea maculata</i>), Spring Gentian (<i>Gentiana verna</i>) and the rare and legally protected (Flora Protection) Order, 1999) species, Wood Bitter-vetch (<i>Vicia orobus</i>). The site also includes some species-poor fen vegetation, dominated by Black Bog-rush (<i>Schoenus nigricans</i>).	14455.39	There is no direct hydrological link, and the project site lies over 14 km from the SAC. As no complete source-pathway-receptor chain was identified and due the nature and scale of the project no potential impacts envisaged
004051	Lough Carra SPA Lough Carra is one of the best examples in Ireland of a hard water marl lake. It is connected to Lough Mask via the Keel River. Lough Carra is classified as a mesotrophic system. There are well-developed stonewort communities. The lake is fringed by a diverse complex of limestone and wetland habitats. The islands in Lough Carra have traditionally supported nesting Common Gull (nationally important) and Black-headed Gull. The site also supports wintering populations of a several species.	4152.64	Hydrological connection. The end of the proposed Greenway crosses the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site to Natura site is > 5 km.

			Potential impacts will be assessed in more details in Table 5 below.
004062	<p>Lough Mask SPA</p> <p>Lough Mask is a large lake. The main inflowing rivers are the Cloon and Robe, and the stream from Lough Carra to the north-east. The main outflow is to Lough Corrib to the south. The eastern part of the lake is edged by a low-lying shoreline which is subject to winter flooding. The water of the lake is moderately hard. There are a number of islands. Lough Mask is a nationally important site for breeding gulls including Black-headed Gull, Common Gull and Lesser Black-backed Gull. The lake is also a traditional breeding site for Common Tern. In winter the site supports a range of waterfowl, including a nationally important Tufted Duck population. It also supports Whooper Swan, Greenland White-fronted Goose, Mute Swan, Whooper Swan, Wigeon, Teal, Mallard, Pochard, Goldeneye, Red-breasted Merganser, Little Grebe, Cormorant, Coot, Lapwing and Curlew.</p>	4458.49	<p>Hydrological connection.</p> <p>The end of the proposed Greenway crosses the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site to Natura site is >5 km.</p> <p>Potential impacts will be assessed in more details in Table 5 below.</p>
004042	<p>Lough Corrib SPA</p> <p>Lough Corrib can be divided into two parts: a relatively shallow basin in the south, which is underlain by Carboniferous limestone, and a larger, deeper basin to the north, which is underlain by more acidic granite, schists, shales and sandstones. The main inflowing rivers are the Black, Clare, Dooghta, Cregg, Owenriff and the channel from Lough Mask. The main outflowing river is the Corrib, which reaches the sea at Galway City. The shallow, lime-rich waters of the southern basin of the lake support extensive beds of Stoneworts (Charophytes), an important source of food for waterfowl. The northern basin contains more oligotrophic and acidic waters. Greenland White-fronted Goose, Gadwall, Shoveler, Pochard, Tufted Duck, Common Scoter, Hen Harrier, Coot, Golden Plover, Black-Headed Gull, Common Gull, Common Tern and Arctic Tern all occur.</p>	10342.31	<p>Lough Corrib and Lough Mask are hydrological connected. However, based on the scale and nature of the project, the downstream hydrological distance of approximately 26 km and the assimilative capacity of the intervening Lough Mask, there is no potential for significant impact</p>

In addition to the above sites, **Galway Bay Complex SAC (000268)** and **Inner Galway Bay SPA (004031)** are also hydrologically linked to the project site. Both Natura sites lie over 68km downstream from the project site. Based on the small scale of the project, the downstream hydrological distance of over 68km and the assimilative capacity of the intervening watercourses, there is no potential for significant effect on these downstream Natura 2000 sites.

Table 2: Qualifying interests and documented threat to the Natura 2000 sites lying in a 15km radius of the proposed development site

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Documented Threats / Pressures Information primarily based on NPWS Site Synopses, NATURA 2000 – standard data forms and other sources
001774	Lough Carra/Mask Complex SAC	<p>Habitats</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></p> <p>3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</p> <p>4030 European dry heaths</p> <p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)</p> <p>7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>*</p> <p>7230 Alkaline fens</p> <p>8240 Limestone pavements*</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i></p>	<p>http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001774.pdf</p>	<ul style="list-style-type: none"> • Agriculture abandonment • Pollution of surface waters

		(Alno-Padion, Alnion incanae, Salicion albae)* Species 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) 1393 Slender Green Feather-moss (<i>Drepanocladus vernicosus</i>) 1355 Otter (<i>Lutra lutra</i>)		
000541	Skealaghan Turlough SAC	Habitats 3180 Turloughs*	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000541.pdf	<ul style="list-style-type: none"> • Diffuse groundwater pollution due to agricultural and forestry activities • Cultivation • Stock feeding • In-appropriate grazing regime • Nutrient enrichment • Fertilisation
000480	Clyard Kettle-holes SAC	Habitats 3180 Turloughs* 7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> *	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000480.pdf	<ul style="list-style-type: none"> • Intensive cattle Grazing • Diffuse groundwater pollution due to agricultural and forestry activities • Nutrient enrichment • Fertilization • Agricultural intensification
000504	Kilglassan/Caheravoostia Turlough Complex SAC	Habitats 3180 Turloughs*	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000504.pdf	<ul style="list-style-type: none"> • Intensive cattle grazing • Nutrient enrichment • Fertilisation • Mowing / cutting of grassland • Stock feeding

				<ul style="list-style-type: none"> • Agricultural intensification • Diffuse groundwater pollution due to agricultural and forestry activities • Diffuse pollution to surface waters due to agricultural and forestry activities
000461	Ardkill Turlough SAC	Habitats 3180 Turloughs*	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000461.pdf	<ul style="list-style-type: none"> • Intensive cattle grazing • Diffuse groundwater pollution due to agricultural and forestry activities • Nutrient enrichment • Agricultural intensification • Fertilisation
002320	Kildun Souterrain SAC	Species 1303 Lesser Horseshoe Bat <i>(Rhinolophus hipposideros)</i>	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002320.pdf	<ul style="list-style-type: none"> • Recreational cave visits • Light pollution • Loss of habit • Disturbance
001536	Mocorha Lough SAC	Habitats 7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> *	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001536.pdf	<ul style="list-style-type: none"> • Competition • Hunting • Grazing • Non intensive cattle grazing • Fertilisation • Infilling of ditches, dykes, ponds, pools, marshes or pits • Disposal of household /

				recreational facility waste
000503	Greaghans Turlough SAC	Habitats 3180 Turloughs*	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000503.pdf	<ul style="list-style-type: none"> • In-appropriate grazing regime • Nutrient enrichment • Diffuse pollution to surface waters due to agricultural and forestry activities • Stock feeding • Agricultural intensification • Fertilisation
000297	Lough Corrib SAC	Habitats 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) 6410 Molinia meadows on	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000297.pdf	<ul style="list-style-type: none"> • Agricultural intensification • Invasive non-native species • Piers / tourist harbours or recreational piers • Continuous urbanisation • Forest planting on open ground • Infilling of ditches, dykes, ponds, pools, marshes or pits • Sand and gravel extraction • Abandonment of pastoral systems, lack of grazing • Diffuse pollution to surface waters due to household sewage and waste waters • Other human induced

		<p>calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion 7210 Calcareous fens with Cladium mariscus and species of the Caricion davallianae* 7220 Petrifying springs with tufa formation (Cratoneurion)* 7230 Alkaline fens 8240 Limestone pavements* 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles 91D0 Bog woodland*</p> <p>Species 1096 Brook Lamprey (<i>Lampetra planeri</i>) 1092 White-clawed Crayfish (<i>Austropotamobius pallipes</i>) 1095 Sea Lamprey (<i>Petromyzon marinus</i>) 1393 Slender Green Feather-moss (<i>Drepanocladus vernicosus</i>) 1106 Salmon (<i>Salmo salar</i>) 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) 1355 Otter (<i>Lutra lutra</i>) 1029 Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) 1833 Slender Naiad (<i>Najas flexilis</i>)</p>		<p>changes in hydraulic conditions</p> <ul style="list-style-type: none"> • Roads, paths and railroads • Other human intrusions and disturbances • Removal of hedges and copses or scrub • Mechanical removal of peat • Disposal of household / recreational facility waste • Fertilisation dispersed habitation
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000527	Moore Hall (Lough Carra) SAC	Species 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000527.pdf	<ul style="list-style-type: none"> • Removal of hedges and copses or scrub • Disturbance
002179	Towerhill House SAC	Species 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002179.pdf	<ul style="list-style-type: none"> • Forestry, particularly felling • Disturbance
000475	Carrowkeel Turlough SAC	Habitats 3180 Turloughs*	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000475.pdf	<ul style="list-style-type: none"> • Diffuse pollution to surface waters due to agricultural and forestry activities • Fertilisation • Infilling of ditches, dykes, ponds, pools, marshes or pits • In-appropriate grazing regime • Nutrient enrichment
000525	Shrule Turlough SAC	Habitats 3180 Turloughs*	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000525.pdf	<ul style="list-style-type: none"> • Grazing • Restructuring agricultural holdings • Fertilization • Agricultural intensification
002298	River Moy SAC	Habitats 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion 7230 Alkaline fens 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002298.pdf	<ul style="list-style-type: none"> • Forest planting on open ground • Aerodrome, heliport • Invasive non-native species • diffuse pollution to surface waters due to agricultural and forestry activities • Peat extraction

		<p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i>, <i>Salicion albae</i>)*</p> <p>Species 1096 Brook Lamprey (<i>Lampetra planeri</i>) 1106 Salmon (<i>Salmo salar</i>) 1355 Otter (<i>Lutra lutra</i>) 1092 White-clawed Crayfish (<i>Austropotamobius pallipes</i>) 1095 Sea Lamprey (<i>Petromyzon marinus</i>)</p>		<ul style="list-style-type: none"> • Agricultural intensification • Use of fertilizers (forestry)
000474	Ballymaglancy Cave, Cong SAC	<p>Habitats 8310 Caves not open to the public</p> <p>Species 1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p>	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000474.pdf	<ul style="list-style-type: none"> • Speleology • Disturbance • Outdoor recreation
000479	Cloughmoyne SAC	<p>Habitats 8240 Limestone pavements*</p>	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000479.pdf	<ul style="list-style-type: none"> • Agricultural activities • Reclamation of limestone pavement • Fertilization
004051	Lough Carra SPA	<p>Birds A182 Common Gull (<i>Larus canus</i>)</p>	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004051.pdf	<ul style="list-style-type: none"> • Restructuring agricultural land holding • Fertilisation • Forestry • Leisure fishing
004062	Lough Mask SPA	<p>Birds A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A193 Common Tern (<i>Sterna hirundo</i>) A061 Tufted Duck (<i>Aythya fuligula</i>)</p>	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004062.pdf	<ul style="list-style-type: none"> • Leisure fishing • Fertilisation • Forestry • Restructuring agricultural land

		<p>A182 Common Gull (<i>Larus canus</i>) A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) A183 Lesser Black-backed Gull (<i>Larus fuscus</i>) Habitats Wetlands</p>		
004042	Lough Corrib SPA	<p>Birds A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) A194 Arctic Tern (<i>Sterna paradisaea</i>) A082 Hen Harrier (<i>Circus cyaneus</i>) A061 Tufted Duck (<i>Aythya fuligula</i>) A051 Gadwall (<i>Anas strepera</i>) A059 Pochard (<i>Aythya ferina</i>) A140 Golden Plover (<i>Pluvialis apricaria</i>) A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A182 Common Gull (<i>Larus canus</i>) A125 Coot (<i>Fulica atra</i>) A065 Common Scoter (<i>Melanitta nigra</i>) A193 Common Tern (<i>Sterna hirundo</i>) A056 Shoveler (<i>Anas clypeata</i>) Habitats Wetlands</p>	http://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004042.pdf	<ul style="list-style-type: none"> • Fishing • Boating • Fertilization • Forestry • Hunting • Grazing

Table 3: Natural Heritage Area and proposed Natural Heritage Areas lying in a 15km radius of the proposed development site

Natural Heritage Area	Site Code	Approximate Distance (km)	Connectivity / comment
Mocorha Lough pNHA	001536	9.1	No direct connectivity
Lough Manan pNHA	001533	9.8	No direct connectivity
Cloonboorhy Lough pNHA	001486	13.0	No direct connectivity
Mountpleasant School Turlough pNHA	001472	13.9	No direct connectivity
Slisheen Turlough pNHA	001559	14.5	No direct connectivity
Rathbaun Turlough pNHA	000215	14.7	No direct connectivity

3.3 Assessment of Likely Effects

The proposed development of a new Greenway is not directly connected with or necessary to the management of any Natura 2000 site. In light of this the site must be subject to AA for its implications for the Natura 2000 sites in view of the site's conservation objectives "*if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects*" (EC, 2006). The assessment is based on a preliminary impact assessment using available information and data (e.g. NPWS data, water quality data etc.), supplemented with local site information and ecological surveys.

In order, to assess the likely impacts and ascertain whether a significant impact on the integrity of the Natura site is likely to occur as a result of the proposed development it is necessary to consider what constitutes the integrity of a Site as referred to in Article 6(3). The document Managing Natura 2000 Site, the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000) gives clear guidance and states: "*The integrity of the site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site's conservation objectives*".

3.3.1 Direct, indirect or secondary impacts

The screening analysis below considers each qualifying interest of the Lough Carra / Mask Complex SAC, Lough Carra SPA and the Lough Mask SPA and list the potential pathways and potential threat sources and whether it is likely to have a significant effect on the qualifying habitats or species.

Table 4: Lough Carra / Mask SAC – Screening analysis (using source-pathway-receptor model) to identify SAC qualifying habitats and any “Likely Significant Effects” of impacts on Natura 2000 site, based on current project proposals.

Qualifying habitat and code <i>(Potential receptors)</i>	Conservation Objectives	Pathway / Comment	Source of Potential Threats/Pressures	Likelihood of significant
Oligotrophic Waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 3110	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	At the end of the proposed Greenway a foot bridge will be installed to cross the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site to Natura site is >5 km.	Sediment or pollution run-off from proposed works to river	The foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW. Therefore, no significant impacts are predicted.
Oligotrophic to Mesotrophic Standing Waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> 3130	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	At the end of the proposed Greenway a foot bridge will be installed to cross the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site to Natura site is >5 km.	Sediment or pollution run-off from proposed works to nearby waterbodies	The foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.

				Therefore, no significant impacts are predicted.
Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. 3140	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	At the end of the proposed Greenway a foot bridge will be installed to cross the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site to Natura site is >5 km.	Sediment or pollution run-off from proposed works to nearby waterbodies	The foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW. Therefore, no significant impacts are predicted.
European dry heath 4030	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Habitat has not been mapped for this SAC. No area of dry heath recorded close to proposed project area.	Over-grazing	As this qualifying interest is terrestrial in nature and the development will be restricted to the project site area, there is no pathway for impacts arising from the project. As such, there is no potential for significant impacts.
Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Habitat has not been mapped for this SAC. None of this habitat recorded close to proposed project area	Over-grazing	As this qualifying interest is terrestrial in nature and the development will be restricted to the project site area, there is no pathway for impacts arising from the project. As such, there is no potential for significant impacts.

6210				
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> 7210	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Habitat has not been mapped for this SAC. Habitat not observed near site	Sediment or pollution run-off from proposed works to nearby waterbodies	The foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW. Therefore, no significant impacts are predicted.
Alkaline Fens 7230	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Habitat has not been mapped for this SAC. Habitat not observed near site	Sediment or pollution run-off from proposed works to nearby waterbodies	The foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW. Therefore, no significant impacts are predicted.
Limestone Pavement* 8240	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II	No areas of limestone pavement noted on field visit.	Overgrazing Invasive species	As this qualifying interest is terrestrial in nature and the development will be restricted to the project site area, there is no

	species for which the SAC has been selected.			pathway for impacts arising from the project. As such, there is no potential for significant impacts.
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)* 91E0	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Has not been mapped for this SAC, and no alluvial forest habitat observed within close proximity to site	Invasive species, sediment or pollution run-off from proposed works to nearby waterbodies	<p>The foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.</p> <p>Winter heliotrope while recorded along the route is not located anywhere near the river crossing so there is no threat of it being washed downstream.</p> <p>Therefore, no significant impacts are predicted.</p>

Qualifying species and code (Potential receptors)	Conservation Objectives	Pathway / Comment	Source of Potential Threats/Pressures	Likelihood of significant
Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>) 1303	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Land/air pathways Records (National Bat Database of Ireland) approximately 700 m from building survey close to the Robe River. This site lies to the west of the Greenway. This potential roost site is outside the SAC boundary.	Disturbance, destruction of roost sites, impact on foraging habitat through loss of commuting routes and inappropriate management of foraging habitats	The project site will not impact on any bat roosts as summer roosts for these species are generally in buildings and winter roosts are underground sites such as basements, cellars and caves. Lesser Horseshoe Bats rely on linear features to navigate when foraging and commuting and rarely fly out into the open (Schofield 2008). The only hedgerow being removed will be a short section (approx. 60m) along the main road. There are no planned changes to field hedgerows as part of the proposed new Greenway route. Therefore, the impact on this QI will not be significant.
Otter (<i>Lutra lutra</i>) 1355	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Water and land/air pathways At the end of the proposed Greenway a foot bridge will be installed to cross the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site to Natura site is >5 km	Sediment or pollution run-off from proposed works to nearby waterbodies, disturbance, destruction of holts	Potential for otter to use Bulkan river. The short duration of proposed project should result in no significant impacts due to disturbance. No impact on water quality is perceived as though works along Bulkan River will involve the construction of a foot bridge with abutments on either side of the embankment with a

		Records within 2.5km of site. Little potential for impact.		set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.
Slender Green Feather-moss <i>Hamatocaulis vernicosus</i> (previously <i>Drepanocladus vernicosus</i>) 1393	To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	Records are over 12km from site near Western shote of Lough Mask. No potential for impact	Destruction to habitat, increased nutrients	Given distance of records from site, no potential impacts envisaged.

Table 5: Lough Mask SPA– Screening analysis (using source-pathway-receptor model) to identify SAC qualifying species and any “Likely Significant Effects” of impacts on Natura 2000 site, based on current project proposals.

Qualifying species / habitat and code <i>(potential receptors)</i>	Conservation Objectives	Pathway / Comment	Source of potential threats	Likelihood of significant
Common Gull <i>Larus canus</i> A182	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.	Water and land/air pathways Confirmed breeding evidence and winter records within 10km squares M16	Disturbance Sediment or pollution run-off from proposed works to nearby waterbodies	Site works will only occur within project site area which lies some 4.5 km from SPA. No potential for disturbance. Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW. Therefore, no significant impacts are predicted.
Tufted Duck <i>Aythya fuligula</i> A061	To maintain or restore the favourable conservation condition of the bird species listed as Special	Water and land/air pathways Confirmed breeding evidence and winter records within 10km	Disturbance	Site works will only occur within project site area which lies some 4.5 km from SPA. No potential for disturbance.

	Conservation Interests for this SPA.	squares M16	Sediment or pollution run-off from proposed works to nearby waterbodies	<p>Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.</p> <p>Therefore, no significant impacts are predicted.</p>
Black-headed gull <i>Chroicocephalus ridibundus</i> A179	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.	Water and land/air pathways Confirmed breeding evidence and winter records within 10km squares M16	<p>Disturbance</p> <p>Sediment or pollution run-off from proposed works to nearby waterbodies</p>	<p>Site works will only occur within project site area which lies some 4.5 km from SPA. No potential for disturbance.</p> <p>Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.</p>

				Therefore, no significant impacts are predicted.
Lesser Black-backed gull <i>Larus fuscus</i> A183	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.	Water and land/air pathways Confirmed breeding evidence and winter records within 10km squares M16	Disturbance Sediment or pollution run-off from proposed works to nearby waterbodies	Site works will only occur within project site area which lies some 4.5 km from SPA. No potential for disturbance. Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW. Therefore, no significant impacts are predicted.
Common Tern <i>Sterna hirundo</i> A193	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.	Water and land/air pathways Confirmed breeding evidence in 10km square M16	Disturbance Sediment or pollution run-off from proposed works to nearby waterbodies	Site works will only occur within project site area which lies some 4.5 km from SPA. No potential for disturbance. Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back

				<p>area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.</p> <p>Therefore, no significant impacts are predicted.</p>
<p>Greenland White fronted Goose <i>Anser albifrons flavirostris</i> A395</p>	<p>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.</p>	<p>Water and land/air pathways</p> <p>Winter presence in adjacent 10km square (M26)</p>	<p>Disturbance</p> <p>Sediment or pollution run-off from proposed works to nearby waterbodies</p>	<p>Site works will only occur within project site area which lies some 4.5 km from SPA. No potential for disturbance.</p> <p>Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.</p> <p>Therefore, no significant impacts are predicted.</p>
<p>Wetland and Waterbirds [A999]</p>	<p>To maintain or restore the favourable conservation condition of the wetland habitat at Lough Mask SPA</p>	<p>Hydrological pathway</p>	<p>Sediment or pollution run-off from proposed works to</p>	<p>Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of constructing abutments on either side</p>

	as a resource for the regularly-occurring migratory waterbirds that utilise it.		nearby waterbodies	of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW. Therefore, no significant impacts are predicted.
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Table 6: Lough Carra SPA – Screening analysis (using source-pathway-receptor model) to identify SAC qualifying habitats and any “Likely Significant Effects” of impacts on Natura 2000 site, based on current project proposals.

Qualifying species and code <i>(potential receptors)</i>		Pathway / Comment	Source of potential threats	Likelihood of significant
Common Gull <i>Larus canus</i> A182	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA	Water and land/air pathways Confirmed breeding evidence and winter records within 10km squares M16	Disturbance Sediment or pollution run-off from proposed works to	Site works will only occur within project site area which lies some 4.2 km from SPA. No potential for disturbance. Deterioration in water quality should not occur as the foot bridge that will cross the Bulkan River will consist of

			<p>nearby waterbodies</p>	<p>constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.</p> <p>Therefore, no significant impacts are predicted.</p>
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There are nineteen natura 2000 sites within a 15km radius of the proposed project area, sixteen SACs and three SPAs. The proposed project area is not situated within any of the SACs or SPAs, therefore, no direct impacts will occur through habitat loss or fragmentation of habitats or species. The site does lie within 3.3 km of the Lough Carra / Mask complex SAC. Lough Carra is classed as 'Under review' and Lough Mask at 'At Risk' in the Lake Waterbodies Risk assessment (WFD).

At the end of the proposed Greenway a foot bridge will be installed to cross the Bulkan River (EPA name: Rathkelly) which is a tributary of the Robe River. The downstream distance from project site Lough Mask is >5 km. Deterioration in water quality should not occur as the footbridge that will cross the Bulkan River will consist of constructing abutments on either side of the embankment with a set-back area provided to prevent any interference with the river embankment. This should prevent any sediment run-off. An application for a Section 50 will also be made to the OPW.

Species impacts could include direct disturbance due to noise caused by the presence of machinery during construction. The work is far enough away from the SAC and SPAs, so there will be no negative impact due to disturbance of bird species of qualifying interest.

While numerous qualifying species are recorded for the SACs and SPAs there are no existing records of them occurring within the site area boundary. The nearest Lesser Horseshoe bat records are less than 1 km from project area, but due to the nature and scale of the development no impacts are envisaged. The nearest otter records are 2.3 km away. The project will not involve any alteration of riverside habitats so no direct impacts are envisaged. Slender Green Feather-moss occurs 12 km from the site, and it's habitat will not be impacted by the development.

3.3.2 Cumulative Impacts – other projects

Under Appropriate Assessment it is necessary to investigate if there are any other projects or plans that together with the project outlined here could affect the Natura 2000 Sites. Table 8 below lists other proposed plans accesses through the Mayo County Council planning database.

Table 7: Planning application near proposed development site (Myplan.ie accessed on 31st March 2021)

Planning Application Number	Address	Description	Planning comments
20420	Cornaroya, Ballinrobe	Construct a new extension to dwelling house and a new domestic garage/fuel store and all ancillary site works.	EIAR not required for this development

2059	New Street, Ballinrobe	Renovation and extension of existing dwelling house and all associated site works	EIAR or AA not required for this development
20480	Neale Road (Knockfereen), Ballinrobe	Construct a shed for the purpose of machinery storage along with all associated services	AA not mentioned
2128	Main Street, Ballinrobe	Carry out modification to the former function room/nightclub at the rear of the protected structure known as the valkenburg hotel. the modifications include a new roof, additional exits, internal alterations, and all associated works	Change of use, no AA required
20988	Art O' Neills Bar, Abbey Street, Ballinrobe	Installation of an ATM machine to the existing rear (north) elevation. The ATM will be installed within the curtilage of a protected structure - ref no. 0084	AA found no significant effects
2190	Rathkelly TD, Ballinrobe	Construction of a private dwelling house and domestic garage with connection to adjoining public foul sewer system along with all associated services	Pending, new application
20578	No. 8 Carraig Dun, Ballinrobe	Construct a two storey extension to the side and rear of dwelling house.	Granted but no planners report published at time of search
20272	Rathcarreen/Creagh Demesne, Ballinrobe	Extension and alterations to an existing light industrial manufacturing facility with associated services.	AA screening concluded no significant effects on European site(s)
20110	Claremorris Road, Friarsquarter West, Ballinrobe	Construct a commercial unit including offices and storage area, new site entrance, connection to public water main and foul sewer and all associated site works	AA screening concluded no significant effects on European site(s)
20985	Friarsquarter East, Ballinrobe	Construction of a dwelling house, sewage treatment unit and percolation area together with all necessary site ancillary works	Subject to FI

3.3.3 Cumulative impacts – other plans

It is a requirement of Appropriate Assessment that the ‘in-combination’ (the cumulative development with any other plans) effects be assessed. A search of Galway County Council Planning enquiry system was conducted for plans that may have in-combination effects on the listed Natura 2000 sites.

Table 8: Other plans and possible impacts

Plan	Summary objectives	Possible impacts from plans	Is there a risk of significant in combination effects from the plans
Mayo County Development Plan 2014-2020 Volume 1, 2014	1: To promote rural sustainability by encouraging more people to live in Rural Areas through the promotion of sustainable rural communities and economic development. 2: To attract investment and people into the County. 3: To ensure a sustainable economy. 4: To adopt ‘green principles’ that promote a high quality of life. 5: To create attractive settlements that promote a high quality of life. 6: To maintain and provide additional services for our citizens, investors and visitors. 7: To protect and enhance our natural environment. 8: To offer visitors, from Ireland and overseas, a range of high quality experiences.	No negative impacts envisaged	Mayo County Development Plan 2014-2020 Volume 1, 2014
River Basin Management Plan for Western River Basin District in Ireland	1. Prevent deterioration 2. Restore good status 3. Reduce chemical pollution 4. Achieve water related protected areas objectives.	No negative impacts envisaged	Screening completed for this plan – no significant ‘in combination’ effects

3.4 Stage 1 Screening Conclusion and Statement

The Screening process identified nineteen Natura 2000 sites within a 15km radius of the proposed project, sixteen SACs and three SPAs. The proposed project is not situated within any of the SACs or SPAs. See also Screening Matrix in Appendix 1.

The screening exercise concludes that there is no potential for significant effects on the Natura 2000 sites. Therefore, the project need not proceed to Stage 2 (AA).

4.0 References

Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Environment, Heritage and Local Government (2009 - Revised February 2010)

Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission. (Nov. 2001 – published 2002)

Circular NPW 1/10 & PSSP 2/10 (March 2010)

CIEEM (2018). The Guidelines for Ecological Impact Assessment in the UK and Ireland

EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (2007)

Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000).

NPWS (2015) Conservation Objectives: Connemara Bog Complex SAC 002034. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

NPWS (2017) Conservation Objectives: The Twelve Bens/Garraun Complex SAC 002031. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017) Conservation Objectives: Maumturk Mountains SAC 002008. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2018) Conservation objectives for Lough Carra/Mask Complex SAC [001774]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht

NPWS (2018) Conservation objectives for Lough Mask SPA [004062]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

NPWS (2018) Conservation objectives for Lough Carra SPA [004051]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: Inner Galway Bay SPA 004031. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2017) Conservation Objectives: Lough Corrib SAC 000297. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs

NPWS (2017) Conservation Objectives: Mweelrea/Sheeffry/Erriff Complex SAC 001932. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

NPWS (2020) Conservation objectives for Lough Corrib SPA [004042]. Generic Version 7.0. Department of Culture, Heritage and the Gaeltacht.

Office of the Planning Regulator (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01.

5.0 Appendices

Appendix 1 – Screening Matrix

Screening Matrix

<i>Description of project</i>	See section 3.1
<i>Description of Natura 2000 sites</i>	See section 3.2

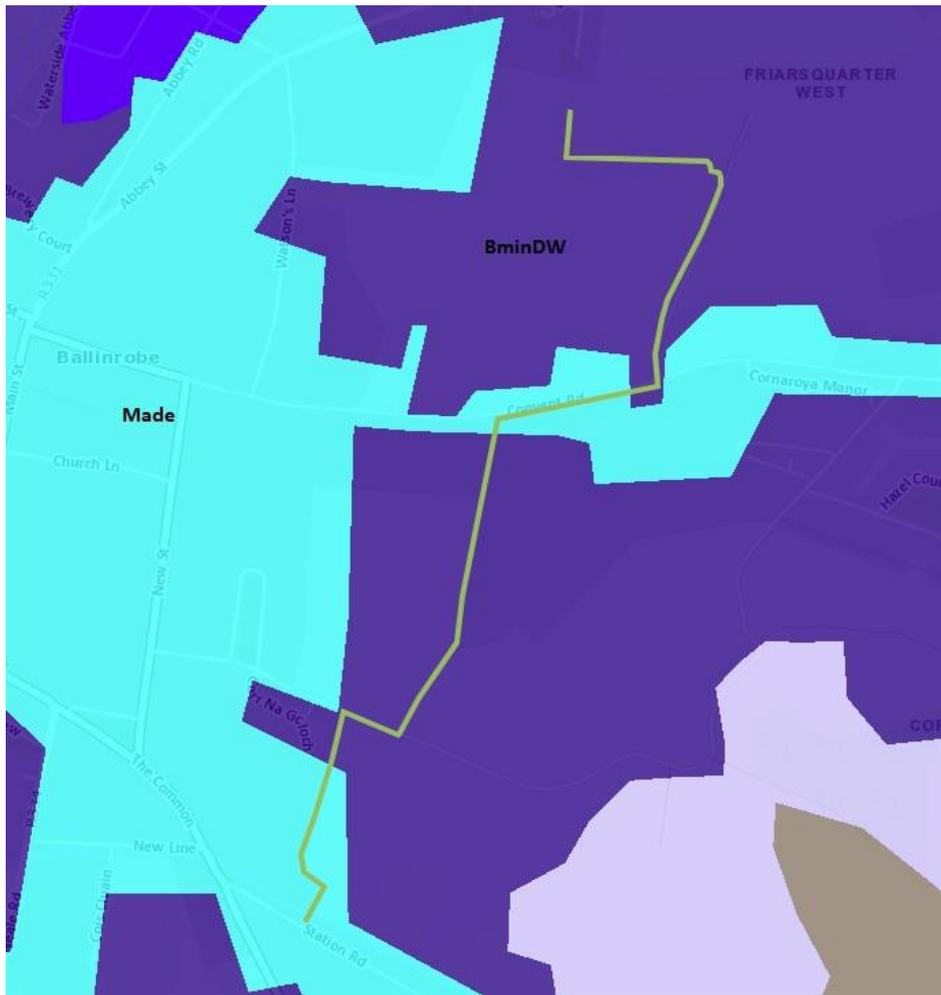
Assessment Criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site.</i>	It is considered that the proposed plan either alone or in combination with other plans or projects is not likely to give rise to significant effects on the Natura 2000 sites
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:</i>	No impacts perceived
	Size and scale The size and scale of the project is small and does not impact directly on a Natura 2000 site.
	Land-take There will be no land take from any Natura 2000 sites
	Distance from the Natura 2000 site or key features of the site The distances to the Natura sites are listed in Table 1 – the closest Natura 2000 sites are the Lough Carra / Mask Complex SAC at 3.3 km and Lough Carra SPA 4.2 km from the site and there are sixteen other protected areas within 15km of the site.
	Resource requirements (water abstraction etc.) The proposed development is not dependent on any resource, such as freshwater, from any of the Natura sites.
	Emissions (disposal to land, water or air) Minimal emissions from proposed development.
	Excavation requirements Some excavation will occur on site during the construction phase of the project.
	Transportation requirements Minimum increase in traffic during construction phase. Will not impact Natura 2000 sites.
	Duration of construction, operation, decommissioning, etc. Short construction phase. Unlikely to impact Natura 2000 sites
	Other None envisaged
<i>Describe any likely changes to the site(s) arising as a result of:</i>	Reduction of habitat area None
	Disturbance of key species Disturbance will be minimal and only caused by noise during the construction phase of project. The work is far enough away from the SACs and SPAs, and the work is of short enough duration not to have an adverse impact on qualifying species.
	Habitat or species fragmentation

	None
	Reduction in species density None for qualifying species.
	Changes in key conservation indicators Unlikely
	Climate change Greenway will hopefully encourage more people to walk and cycle, reducing car use and positively impacting climate change
Describe any likely impacts on the Natura 2000 site as a whole in terms of:	
	Interference with the key relationships that define the structure of the site None envisaged
	Interference with key relationships that define the function of the site None envisaged
Provide indicators of significance as a result of the identification of effects set out above in terms of:	
	Loss N/A
	Fragmentation N/A
	Disruption N/A
	Disturbance N/A
	Change to key element of the site N/A

The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the Natura sites.	The proposed project is not likely to affect any Natura 2000 site
Explain why these effects are not considered significant.	There are eighteen Natura 2000 sites within a 15km radius of the proposed project, fifteen SACs and three SPAs. The proposed project is not situated within any of the SACs or SPAs, therefore, no direct impacts will occur through habitat loss or fragmentation of habitats or species. Lough Mask lies approximately 3.3 km from the site and Lough Carra SPA 4.2km. Project will not impact water quality. Disturbance will be short term and only caused during the construction phase of the project and will not impact on QIs of the Natura 2000 site. The proposed project will have no visual impact on the Natura 2000 sites.
List of agencies consulted and responses, if applicable	-

Data collected to carry out the Assessment	
Who carried out the Assessment	Giorria Environmental Services
Sources of data	'' http://www.eplanning.ie/GalwayCC/searchexact Giorria Environmental Services
Level of assessment completed	Desktop and site survey
Where can full results of the Assessment screening be viewed	Mayo County Council Planning

Appendix 2 – Geological Information



Soil Map

Source: <https://airomaps.geohive.ie/ESM/>

Following information is from the Geological Survey Ireland
<https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx>

Geology	64, Marine shelf facies; Limestone & calcareous shale
Soils (National Soil Survey)	BminDW and MADE
GSI Bedrock Aquifer	Regionally Important Aquifer - Karstified (conduit)
Aquifer vulnerability	High
WFD Ground water status	At Risk

Appendix 3 – Biodiversity Records

Table 9: National Biodiversity Record Centre showing sample records at closest distance to Greenway route

Species	Date	Grid Reference	Distance to site (km)	Database
Lesser Horseshoe Bat <i>(Rhinolophus hipposideros)</i>	6/11/13	M190645	0.7 km	National Bat Database of Ireland
Lesser Horseshoe Bat <i>(Rhinolophus hipposideros)</i>	4/10/2005	M176648	1.7 km	National Bat Database of Ireland
Slender Green Feather-moss <i>(Drepanocladus vernicosus)</i>	2009	M062630	13.0	Bryophytes of Ireland
Otter (<i>Lutra lutra</i>)	2012	M2067	2.3	Atlas of Mammals in Ireland 2010-2015

Table 10: National Biodiversity Record Centre showing sample bird records in vicinity of site

Species	Date of record	Within 10km ²	Grid Reference	Data Set
Common Gull <i>Larus canus</i> A182	2007-2011 Confirmed breeding and winter records	10km ²	M16	Bird Atlas 2007 - 2011
Tufted Duck <i>Aythya fuligula</i> A061	2007-2011 Confirmed breeding and winter records	10km ²	M16	Bird Atlas 2007 - 2011
Black-headed gull <i>Chroicocephalus ridibundus</i> A179	2007-2011 Confirmed breeding and winter records	10km ²	M16	Bird Atlas 2007 - 2011
Lesser Black-backed gull <i>Larus fuscus</i> A183	2007-2011 Confirmed breeding and winter records	10km ²	M16	Bird Atlas 2007 - 2011
Common Tern <i>Sterna hirundo</i> A193	2007-2011 Confirmed breeding records	10km ²	M16	Bird Atlas 2007 - 2011
Greenland White fronted Goose <i>Anser albifrons flavirostris</i> A395	2007-2011 Confirmed winter records	Adjacent 10km ²	M26	Bird Atlas 2007 - 2011

Appendix 4 - SITE SYNOPSIS - Lough Carra/Mask Complex SAC

Site Name: Lough Carra/Mask Complex SAC

Site Code: 001774

This site is dominated by two large lakes, Lough Mask and Lough Carra, and includes the smaller Cloon Lough. Most of the site is in Co. Mayo, with a small portion in Co. Galway. On the western side, the site is overlooked by the Partry Mountains, while to the east the landscape is largely low-lying agricultural land. The nearest large town is Ballinrobe which is about 4 km east of Lough Mask. The general geological character of the area is Carboniferous limestones, with some shales and sandstones on the western side of Lough Mask. The underlying geology results in a great diversity of habitats, which support many scarce and rare plants and animals.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- [3110] Oligotrophic Waters containing very few minerals
- [3130] Oligotrophic to Mesotrophic Standing Waters
- [3140] Hard Water Lakes
- [4030] Dry Heath
- [6210] Orchid-rich Calcareous Grassland*
- [7210] *Cladium* Fens*
- [7230] Alkaline Fens
- [8240] Limestone Pavement*
- [91E0] Alluvial Forests*
- [1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)
- [1355] Otter (*Lutra lutra*)
- [1393] Slender Green Feather-moss (*Drepanocladus vernicosus*)

Lough Mask, at over 8,000 ha, is the sixth largest lake in the country and with a maximum depth of 58 m it is one of the deepest. It is an excellent example of an oligotrophic lake. Aquatic and wetland plant species present which are characteristic of this habitat include several pondweed species (*Potamogeton* spp.), Water Lobelia (*Lobelia dortmanna*) and Shoreweed (*Littorella uniflora*). The eastern part of the lake is shallow and is edged by a lowlying shoreline which is subject to winter flooding. An intricate mixture of plant communities has developed on the limestone, with bare pavement, scrub-dominated pavement, dry grassland and heath. A variety of wetland habitats are also present, along with significant amounts of deciduous woodland along the eastern and southern shores. The western shoreline is less diverse and lacks the limestone communities. However, the fast flowing Owenbrin River has created at its mouth an interesting delta of coarse sandy sediment.

Lough Carra, which is hydrologically linked to Mask, is one of the best examples in Ireland of a hard water marl lake. It is a shallow (mostly less than 2 m), predominantly spring fed, lake with only a few streams flowing into it. Its wellknown pellucid green colour is due to calcareous encrustations. It has well developed stonewort communities in the submerged zones, with *Chara curta*, *C. desmacantha*, *C. rudis* and *C. contraria* recorded. Lough Carra, like the eastern and southern shores of Mask, is fringed by a diverse complex of limestone and wetland habitats.

The limestone pavement within this site represents the northern limit of the limestones of Clare and Galway. The limestone is variable in character, from open bare pavement to areas covered with dense scrub. Associated with the pavement are areas of dry calcareous grassland and dry heath. Characteristic species of the rocky, limestone formations where soil may only occur in pockets include Bloody Crane's-bill (*Geranium sanguineum*), Yellow-wort (*Blackstonia perfoliata*), Blue Fleabane (*Erigeron acer*), Wild Madder (*Rubia peregrina*) and Rustyback (*Ceterach officinarum*).

Areas of calcareous grassland, often orchid-rich, occur interspersed amongst the limestone. These grasslands support species such as Carlina Thistle (*Carlina vulgaris*), Quaking-grass (*Briza media*), Blue Moor-grass (*Sesleria albicans*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Cowslip (*Primula veris*), Common Knapweed (*Centaurea nigra*), Fairy Flax (*Linum catharticum*), Lady's Bedstraw (*Galium verum*) and Wild Thyme (*Thymus praecox*). A good diversity of orchid species have been recorded from these grasslands, including Pyramidal Orchid (*Anacamptis pyramidalis*), Early-purple Orchid (*Orchis mascula*), Bee Orchid (*Ophrys apifera*), Fragrant Orchid (*Gymnadenia conopsea*) and Dense-flowered Orchid (*Neotinea maculata*). Several of these species, notably Dense-flowered Orchid and Spring Gentian (*Gentiana verna*), are typical Burren species and occur here towards the northern end of their distribution.

The scrub vegetation is variable in character, with extensive areas dominated by Hazel (*Corylus avellana*) and Hawthorn (*Crataegus monogyna*), with Buckthorn (*Rhamnus catharticus*), Alder Buckthorn (*Frangula alnus*), Spindle (*Euonymus europaeus*) and Ash (*Fraxinus excelsior*).

The dry heath is well developed in places and is characterised by Gorse (*Ulex europaeus*), Bell Heather (*Erica cinerea*), Heather (*Calluna vulgaris*) and St. Dabeoc's Heath (*Dabeocia cantabriga*). The diminutive orchid Lesser Twayblade (*Listera cordata*) occurs within the heath communities.

A wide range of wetland habitats occur around Lough Carra and along parts of the eastern and southern shores of Lough Mask, including *Cladium* fen and alkaline fen. Great Fen-sedge (*Cladium mariscus*) occurs as pure stands in places but also grades into areas of alkaline fen, where it is intermixed with Black Bog-rush (*Schoenus nigricans*), Common Club-rush (*Scirpus lacustris*), Common Reed (*Phragmites australis*) and a number of sedge species (*Carex* spp.). The areas of alkaline fen are more extensive than the *Cladium* fens, and here Black Bog-rush is generally the dominant species. A rich diversity of flowering plant occurs in the fen communities. In addition to the fen habitats, there are sparse but widespread reed swamps, wet grassland and some freshwater marsh communities around the lake shores.

Broadleaved deciduous woodland occurs fairly frequently around much of the shores of the lakes and on some of the islands. This is often scrub-type woodland, which may be either dry (dominated by Hazel, Hawthorn and Ash) or wet. In the case of the latter, dominant species include birches (*Betula* spp.), willows (*Salix* spp.) and Alder (*Alnus glutinosa*). The wet areas of woodland flood seasonally and represent alluvial woodland, a habitat that is listed with priority status on Annex I of the E.U. Habitats Directive. These are particularly well developed in the Ballykine and Clonbur areas of Lough Mask. In some places the woodlands contain Sessile Oak (*Quercus petraea*), Holly (*Ilex aquifolium*) and Rowan (*Sorbus aucuparia*).

A high concentration of rare plants is found at this site. Five species protected under the Flora (Protection) Order, 2015, occur: Irish St. John's-wort (*Hypericum canadense*), Chives (*Allium*

schoenoprasum), Pillwort (*Pilularia globulifera*), Irish Lady's-tresses (*Spiranthes romanzoffiana*), and Small Cudweed (*Logfia minima*). Two other Red Data Book plants, Alder Buckthorn and Bird's-nest Orchid (*Neottia nidus-avis*), also occur, along with two Red Data Book stonewort species, *Chara curta* and *C. rudis*.

The Owenbrin area of the site supports a population of the rare bryophyte *Drepanocladus vernicosus*, a species listed on Annex II of the E.U. Habitats Directive. This is the only known lake shore site for the species, which is usually found in upland flushes in association with blanket bog.

A large loft in the stable block of Curramore House provides a summer breeding site of the Lesser Horseshoe Bat, a species listed on Annex II of the E.U. Habitats Directive. The bats gain access to the loft through windows that extend from the ground floor to the loft area. The building is surrounded by mixed woods and is close to the shores of Lough Mask; both of these habitats provide ideal foraging habitat for the bats. In 1993 more than 100 bats were counted at this site, which makes it of international importance.

A second internationally important summer roost of Lesser Horseshoe Bats occurs within the site at Ballykyne, near Clonbur. Over 150 bats have been counted at this site in recent years. The site provides excellent habitat for Otter, also an Annex II species, and the area has Pine Marten (*Martes martes*), a species listed in the Irish Red Data Book.

The site has important bird interests, both in winter and summer. It provides feeding areas for part of the Erriff/Derrycraff population of Greenland White-fronted Goose. This flock has declined somewhat in recent years but is still of national importance, with an average spring peak from 1989-94 of 124 birds. The following count figures are the averages from surveys in January 1995 and January 1996: Wigeon 167, Mallard 397, Shoveler 57, Pochard 91, Tufted Duck 757, Goldeneye 158, Lapwing 233 and Curlew 118. Also, 68 Whooper Swan and 25 Gadwall were recorded in January 1996. The Shoveler, Tufted Duck and Goldeneye populations are of national importance. Both lakes are traditional sites for breeding gulls and terns. In 1995, 44 pairs of Common Tern nested at Lough Mask, while in 1992 a census of gulls at both lakes resulted in the following counts: Black-headed Gull 1,451 pairs, Common Gull 407 pairs and Lesser Black-backed Gull 361 pairs. The Common Gull colony represents 11.3% of the national total, and the Lesser Black-backed Gull colony is 6.9% of the total. The deep waters of Lough Mask are home to a population of the glacial relict fish species Arctic Char (*Salvelinus alpinus*), and a rare shrimp (*Niphargus* spp.) is also found in these waters. Lough Mask is a very important Brown Trout fishery. Whiteclawed Crayfish (*Austropotamobius pallipes*), a species listed on Annex II of the E.U. Habitats Directive, has been recorded from Lough Carra.

This site is of considerable conservation importance as it has good examples of nine habitats listed on Annex I of the E.U. Habitats Directive, four of which are listed with priority status. Some of these habitats are amongst the best examples of their kind in the country. It is also selected for two Annex II mammal species and an Annex II moss. The site is of ornithological importance for both wintering and breeding birds. A relatively large number of rare or localised plant and animal species occur, including the glacial relict Arctic Char.

SITE NAME: LOUGH CARRA SPA

SITE CODE: 004051

Lough Carra, which extends for over 9 km along its long axis, lies to the north-east of Lough Mask, in the Corrib catchment in Co. Mayo. It is one of the best examples in Ireland of a hard water marl lake. It is a shallow (mean depth 1.5 m, maximum depth 18 m), predominantly spring-fed lake with only a few inflowing streams. It is connected to Lough Mask via the Keel River. The water has an alkaline pH and negligible amounts of iron and manganese. Sodium and chloride are present in relatively high concentrations. Lough Carra is classified as a mesotrophic system.

Lough Carra has well-developed stonewort communities in the submerged zones, and includes such species as *Chara curta*, *C. desmacantha*, *C. rudis* and *C. contraria*. The lake has a highly indented shoreline (over 69 km in length) and includes many small islands. It is fringed by a diverse complex of limestone and wetland habitats. The wetland habitats include both Great Fen-sedge (*Cladium mariscus*) fen and alkaline fen. In addition to the fen habitats, there are widespread reed swamps, wet grassland and some freshwater marsh communities around the lakeshores.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Common Gull.

The islands in Lough Carra have traditionally supported nesting gulls. A survey in 1993 recorded Common Gull (72 individuals) and Black-headed Gull (252 individuals). The site was surveyed in 1999 as part of the Seabird 2000 Survey and 65 pairs of Common Gull and 100 pairs of Black-headed Gull were recorded.

The site also supports wintering populations of a number of species including Wigeon (67), Gadwall (26), Teal (63), Mallard (140), Shoveler (38), Pochard (33), Tufted Duck (133), Goldeneye (64), Little Grebe (14) Great Crested Grebe (12) and Lapwing (243) - all figures are mean peaks for 4 of the 5 winters in the period 1995/96- 1999/2000. In the past, Lough Carra supported a population of Mallard of national importance.

Lough Carra SPA is of considerable ornithological importance for breeding gulls including a nationally important population of Common Gull. Part of Lough Carra SPA is a Wildfowl Sanctuary.

SITE NAME: LOUGH MASK SPA**SITE CODE: 004062**

Lough Mask, at over 8,000 ha, is the sixth largest lake in the country. It is located in south Co. Mayo with a small area extending across the border into Co. Galway. It extends for over 14 km along its long axis and is on average about 5 km in width. The underlying geology is of Carboniferous limestones, with some shales and sandstones. The main inflowing rivers are the Cloon and Robe, and the stream from Lough Carra to the north-east. The main outflow is to Lough Corrib to the south. The eastern part of the lake is edged by a low-lying shoreline which is subject to winter flooding but is considerably deeper on the western side where there is a long narrow trench with a maximum depth of 58 m. The water of the lake is moderately hard. Islands are a feature of the lake, especially in the south-east sector.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Greenland White-fronted Goose, Tufted Duck, Black-headed Gull, Common Gull, Lesser Black-backed Gull and Common Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Lough Mask is one of the most important sites in the country for breeding gulls and a survey in 1999 recorded Black-headed Gull (329 pairs), Common Gull (124 pairs) and Lesser Black-backed Gull (286). Whilst higher numbers of nesting gulls have been recorded in the recent past, the 1999 populations of the three species still accounted for 2.4%, 7.8% and 6% of the respective national totals. The lake is also a traditional breeding site for Common Tern, with 44 pairs in 1995 and 39 pairs in 1999.

In winter the site has a range of waterfowl, especially diving duck, with the Tufted Duck population (453) being of national importance - all figures are mean peaks for 4 of the 5 winters in the period 1995/96 to 1999/2000. It also supports Whooper Swan (54) and is visited at times by part of the Erriff/Derrycraff population of Greenland White-fronted Goose (peak count of 62 in 1995/96). Other species using the site include Mute Swan (49), Whooper Swan (54), Wigeon (84), Teal (99), Mallard (101), Pochard (65), Goldeneye (89), Red-breasted Merganser (12), Little Grebe (17), Cormorant (36), Coot (112) Lapwing (31) and Curlew (75).

Lough Mask is one of the most important inland gull breeding sites in the country, with nationally important populations of three gull species. It also has a nationally important colony of Common Tern. The site supports a good diversity of wintering waterfowl, including a nationally important population of Tufted Duck. The site is also regularly utilised by a proportion of the Erriff/Derrycraff population of Greenland White-fronted Goose. The occurrence of three species, Whooper Swan, Greenland White-fronted Goose and Common Tern, is of note as these species are listed on Annex I of the E.U. Birds Directive. Part of Lough Mask SPA is a Wildfowl Sanctuary.

Appendix 5 - Qualifications

Dr. Karina Dingerkus

Summary

Experienced field ecologist with twenty years' experience of working with local authorities, communities, charities, academic institutions and as a self-employed consultant.

Employment

2005-present	Self-employed Environmental Consultant, based in Co. Mayo
2000–2005	Ecology Officer, Norwich City Council
1998–2000	Environmental Liaison Officer, Ulster Wildlife Trust/Lisburn Borough Council
1997	Part time field worker for ATEC (Environmental Consultants)
1993	Fieldworker at Culterty Field Station, Aberdeen University, Scotland

Education

PhD. 1997 The Ecology and Distribution of the Irish hare in Northern Ireland, Queen's University, Belfast

BSc. 1993 (2:1 Class Hons.), Zoology (Animal Ecology), Aberdeen University, Scotland

Selected publications and reports

Various NIS reports for planning applications for private individuals.

Ballinedine Wildlife and Pollinator Wildlife (2018), Ballinedine Tidy Towns, Heritage Office, Mayo County Council

Survey of woodland at Laghtarvarry, Ballyvary and Chancery, Turlough, Co Mayo (2016) for Bernard and Zane Joyce. Unpublished report

Survey for squirrels at Jamestown Forest, Co Westmeath for Coillte (2015)

County Louth Hedgerow Survey (2014): Survey and report for Heritage Office, Louth County Council. www.louthheritage.ie/publications_39_2350481956.pdf

Nature and Wildlife in Roscommon - Action for Biodiversity, Giorria Environmental Services and Janice Fuller, Roscommon County Council (2012)

Dingerkus, SK, Stone, RE, Wilkinson, JW, Marnell F and Reid N., (2010) Developing a methodology for the National Frog Survey of Ireland: a pilot study in Co. Mayo. *Irish Naturalists' Journal* 31 No.2 2010: 85-90

West Galway Hedgerow Survey and associate hedgerow leaflets for Galway County Council (2007).

Biodiversity Action Plans for County Mayo and County Roscommon (Heritage Council funded) (2007).

County Cavan Hedgerow Report for Cavan County Council (2006).

Reid, N., Dingerkus, K., Montgomery, W.I., Marnell, F., Jeffrey, R., Lynn, D., Kingston, N. & McDonald, R.A. (2007) Status of hares in Ireland. *Irish Wildlife Manuals*, No. 30. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government

Dr. Richard Stone

Experienced ornithologist and field ecologist with wide range of surveying experience including aquatic, hedgerow, bird, mammal, and vegetation surveys.

Employment

2005 - present Self-employed Environmental Consultant, based in Co. Mayo
2003 - 2005 Organ keyboard maker. P & S Specialist Joinery, UK
2000 - 2002 Environmental Research Scientist at British Antarctic Survey, Cambridge, UK
1998 - 1999 Field Ecologist ATEC Consultants
1998 Breeding Bird survey for RSPB Northern Ireland.
1989 Set-aside survey for RSPB, bird and vegetation surveys.
1987 Vegetation survey of open cast coal sites, Wales for RSPB

Education

PhD. 1999 The ecology and behaviour of water birds in relation to human activity on Strangford Lough, Queen's University, Belfast.

BSc. 1993 (2:1 Class Hons.), Zoology (Animal Ecology), Aberdeen University, UK.

Selected publications and reports

Survey of woodland at Laghtarvarry, Ballyvary and Chancery Turlough Co Mayo (2016) for Bernard and Zane Joyce. Unpublished report

Survey for squirrels at Jamestown Forest, Co Westmeath for Coillte (2015)

Cooper, F., Stone, R.E., McEvoy, P., Wilkins, T. & Reid, N. (2012). The conservation status of juniper formations in Ireland. Irish Wildlife Manuals, No. 63. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Dingerkus, SK, Stone, RE, Wilkinson, JW, Marnell F and Reid N., (2010) Developing a methodology for the National Frog Survey of Ireland: a pilot study in Co. Mayo. Irish Naturalists' Journal 31 No.2 2010: 85-90

West Galway Hedgerow Survey and associate hedgerow leaflets (2007).

Mathers, R.G., Watson, S., Stone, R.E. and Montgomery, W.I. (2000) A study of the impact of human disturbance on Wigeon *Anas penelope* and Brent geese *Branta bernicla hrota* on an Irish Sea Loch. Wildfowl 51: 67-81.

Speakman, J.R., Irwin, N., Tallach, N. and Stone, R.E. (1999) Effect of roost size on the emergence behaviour of pipistrelle bats (*Pipistrellus pipistrellus*): Statistical artefacts and intra- and inter-roost effects. Animal Behaviour 58: 787-795.

Mathers, R.G., Montgomery, W.I., Portig, A.A. and Stone, R. (1998) Winter habitat use by Brent Geese *Branta bernicla hrota* and Wigeon *Anas penelope* on Strangford Lough, Co. Down. Irish Birds 6: 257-268.