

NATURA IMPACT STATEMENT

IN SUPPORT OF THE
APPROPRIATE ASSESSMENT
OF THE
DUBLIN TO GALWAY GREENWAY PLAN

IN ACCORDANCE WITH THE REQUIREMENTS OF
ARTICLE 6(3) OF THE EU HABITATS DIRECTIVE

for: Department of Transport, Tourism and Sport
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1 Introduction

1.1 Background

The Department of Transport, Tourism and Sport has prepared a Dublin to Galway Greenway Plan which sets out the Department's high level vision, policy and objectives for the development of a segregated cycling and walking trail from Dublin City to Clifden (County Galway) via Galway City.

The Plan is generally text based and does not identify the route for the greenway. The greenway will be developed at project level at which Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) will be undertaken as relevant.

An Appropriate Assessment is a requirement of Article 6 of the Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (hereafter referred to as the "Habitats Directive"). The overall aim of the Habitats Directive is to maintain or restore the "Favourable Conservation Status" of habitats and species of European Community Interest. These habitats and species are listed in the Habitats and Birds Directives (Council Directive 2009/147/EC on the conservation of wild birds) with Special Areas of Conservation and Special Protection Areas designated to afford protection to the most vulnerable of them. These two designations are collectively known as European Sites.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations (in particular Part XAB of the Planning and Development (Amendment) Act 2010 and the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477) (often referred to as the Habitats Regulations) to ensure the ecological integrity of these sites. Appropriate Assessment (AA) is an assessment of whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a European site in view of the site's conservation objectives.

A Strategic Environmental Assessment (SEA) has been undertaken to assess the impacts of the Plan on a number of environmental considerations including biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape and the interrelationship between these considerations, whenever applicable.

This report has been prepared independently on behalf of the Department of Transport, Tourism and Sport by CAAS.

1.2 Legislative Context

The Appropriate Assessment process (AA) is an assessment of the potential for adverse or negative effects of a plan or project, in combination with other plans or projects, on the conservation objectives of a European Site. These sites consist of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and provide for the protection and long-term survival of Europe's most valuable and threatened species and habitats.

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. In Ireland, these are candidate Special Areas of Conservation (cSACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/ECC), hereafter referred to as European sites.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites. Article 6(3) establishes the requirement for AA:

"Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In 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.

If, in spite of a negative assessment of the implications for the [Natura 2000] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

These requirements are implemented in the Republic of Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011. These regulations consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in judgements of the Court of Justice of the European Union (CJEU).

If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project may nevertheless be carried out for "Imperative Reasons Of Overriding Public Interest", including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 network is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

Appropriate Assessment should be based on best scientific knowledge and Planning Authorities should ensure that scientific data (ecological and hydrological expertise) is utilised. This report details a Natura Impact Statement to inform the AA process which is finalised by the statutory authority.

1.3 Source-Pathway-Receptor Model

Ecological impact assessment of potential indirect impacts on European Sites is conducted utilising a standard SOURCE-PATHWAY-RECEPTOR model, where, in order for an indirect impact to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potential effect is not of any relevance or significance.

- Source(s) – e.g. pollutant run-off from proposed works.
- Pathway(s) – e.g. groundwater connecting to nearby qualifying wetland habitats.
- Receptor(s) – Qualifying aquatic habitats and species of European sites.

This report determines if direct, indirect and cumulative adverse effects (however minor) will arise from the proposed development.

1.4 Guidance

This Natura Impact Statement has been prepared in accordance with the following guidance:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, 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 Environment DG, 2002.*
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC: European Commission, 2000.*
- *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, Office for Official Publications of the European Communities, Luxembourg (EC 2001);*
- *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg (EC 2007).*
- *Flora (Protection) Order, 1999 (As amended 2016)*

In addition, a detailed online review of published scientific literature and 'grey' literature was conducted. This included a detailed review of the National Parks and Wildlife Website including mapping and available reports for relevant sites and in particular sensitive qualifying interests described and their conservation objectives. The EPA Envision Map-viewer (www.epa.ie) and available reports were also reviewed.

Definitions of conservation status, integrity and significance used in this assessment are defined in accordance with 'Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2000).

- The conservation status of a natural habitat is defined as the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species;
- The conservation status of a species is defined as the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its population;
- The integrity of a European Site is defined as the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified;
- Significant effect should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's conservation objectives.

1.5 Stages of Appropriate Assessment

As previously mentioned, there are four main stages in the AA process; the requirements for each depending on likely impacts to European Sites (SAC/ SPA).

Stage One: Screening

The process which identifies the likely impacts upon a European site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant.

Stage Two: Appropriate Assessment

The consideration of the impact on the integrity of the European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts. If adequate mitigation is proposed to ensure no significant adverse impacts on European sites, then the process may end at this stage. However, if the likelihood of significant impacts remains, then the process must proceed to Stage 3.

Stage Three: Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoids adverse impacts on the integrity of the European site.

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain

An assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First, the plan should aim to avoid any impacts on European sites by identifying possible impacts early in the plan-making process and writing the plan in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If the plan is still likely to result in impacts on European sites, and no further practicable mitigation is possible, then it must be rejected. If no alternative solutions are identified and the plan is required for imperative reasons of overriding public interest (IROPI test) under Article 6(4) of the Habitats Directive, then compensation measures are required for any remaining adverse effect.

1.6 Relationship between the Appropriate Assessment process and the Plan

Appropriate Assessment (AA) needs to be fully integrated with the various stages of the development plan process in order to ensure that the ecological implications of the plan do not impact upon any areas designated as Natura 2000 sites. As the AA process has been managed by part of the Forward Planning team, interaction has occurred from the early stages of writing of the plan to impress the importance of protection of the Natura 2000 network and that the plan should be formulated to avoid adverse impacts on these sites. In addition, the Strategic Environmental Assessment process has been taken into account in the appropriate assessment process. The screening of objectives and the assessment of objectives in the context of mitigation measures and potential impacts of the designated sites, has been an iterative process throughout each stage of the plan-making process.

2 Description of project and receiving environment

2.1 Description of the Plan

2.1.1 Content of the Plan

The Plan sets out the Department's high level vision, policy and objectives for the development of a greenway between Dublin City to Clifden, Galway via Galway City. The Plan document is text based and does not identify a route for the greenway. The greenway will be developed at project level at which an Environmental Impact Assessment (EIA) and AA will be undertaken as relevant.

2.1.2 Vision

Develop a segregated cycle and walking trail to international standards, extending from Dublin City to Galway which is of a scale that will allow Ireland to harness the potential of an identified growing tourism market for cycling. This route will form part of an interconnected national cycle network of high quality, substantially traffic free inter-urban routes, which will establish Ireland as a quality international tourism destination for a broad range of associated recreational activities and pursuits.

2.1.3 Policy

To provide a segregated, substantially off road cycle route from Dublin City to Clifden via Galway City, maximising the use of - where feasible - existing and approved routes and disused railway line corridors and to also use existing plans and/or permitted projects where these have been subject to a consent process that has previously included the carrying out or screening for Strategic Environmental Assessment (SEA)/ Environmental Impact Assessment (EIA) and/or Appropriate Assessment (AA).

The development of this route shall be subject to the requirements of Habitats and EIA Directives **and shall comply with the provisions detailed in Appendix I 'Environmental Management and Sustainable Development' to this Plan.** Where State lands are not available, land will be acquired in order to secure the use of the infrastructure for future years, thereby securing the State's investment.

2.1.4 Objectives

- Establish a cycleway route connecting Dublin to Clifden via Galway City which is substantially segregated from vehicular traffic and is safe, attractive and comfortable.
- Maximise the value of existing infrastructure including canal towpaths, disused railway lines and state owned lands.
- Secure permanent access to the entire route through land acquisition if required
- Develop a tourism experience that caters for a broad range of users in key tourism markets
- Route to be designed and built to international best practice and in accordance with adopted standards
- Maximise the value of existing and proposed investment in key tourism destinations
- Facilitate regular access to visitor attractions and services along the corridor
- Facilitate connections with public transport hubs which will provide access to the route from bus and rail
- Provide frequent connections to towns, tourism facilities, natural amenities and other attractions in proximity to the route in collaboration with local communities and tourism providers
- To generate ongoing economic benefits for rural and urban areas along the route

- To maximise the number of potential commuter, leisure and tourist users
- To facilitate the achievement of Smarter Travel targets for sustainable travel
- To market and promote the cycleway internationally
- To provide comprehensive route signage, mapping and distinct branding to international standards
- To provide for maintenance of the route and monitoring of patterns of use
- To create an economic stimulus for growth in the national and local economy, providing opportunities for new and existing businesses and communities
- **To implement the provisions detailed in Appendix I 'Environmental Management and Sustainable Development' to this Plan.**

2.1.5 Note on Minor Changes made to the Draft Plan after public display, before adoption

Submissions on the Draft Plan resulted in two minor changes to the Draft Plan before adoption (the insertion of the word 'substantial' in two locations). These changes provide clarification and internal consistency within the Draft Plan and would not result in any additional potential effects to those already foreseen by the AA of the Draft Plan; they are not considered as being material.

2.1.6 Indicative Study Area (ISA)

An Indicative Study Area (ISA) for the Plan has been selected between and within Dublin and Galway as shown in Figure 1. This area includes part of the administrative areas of ten County Councils and two City Councils.

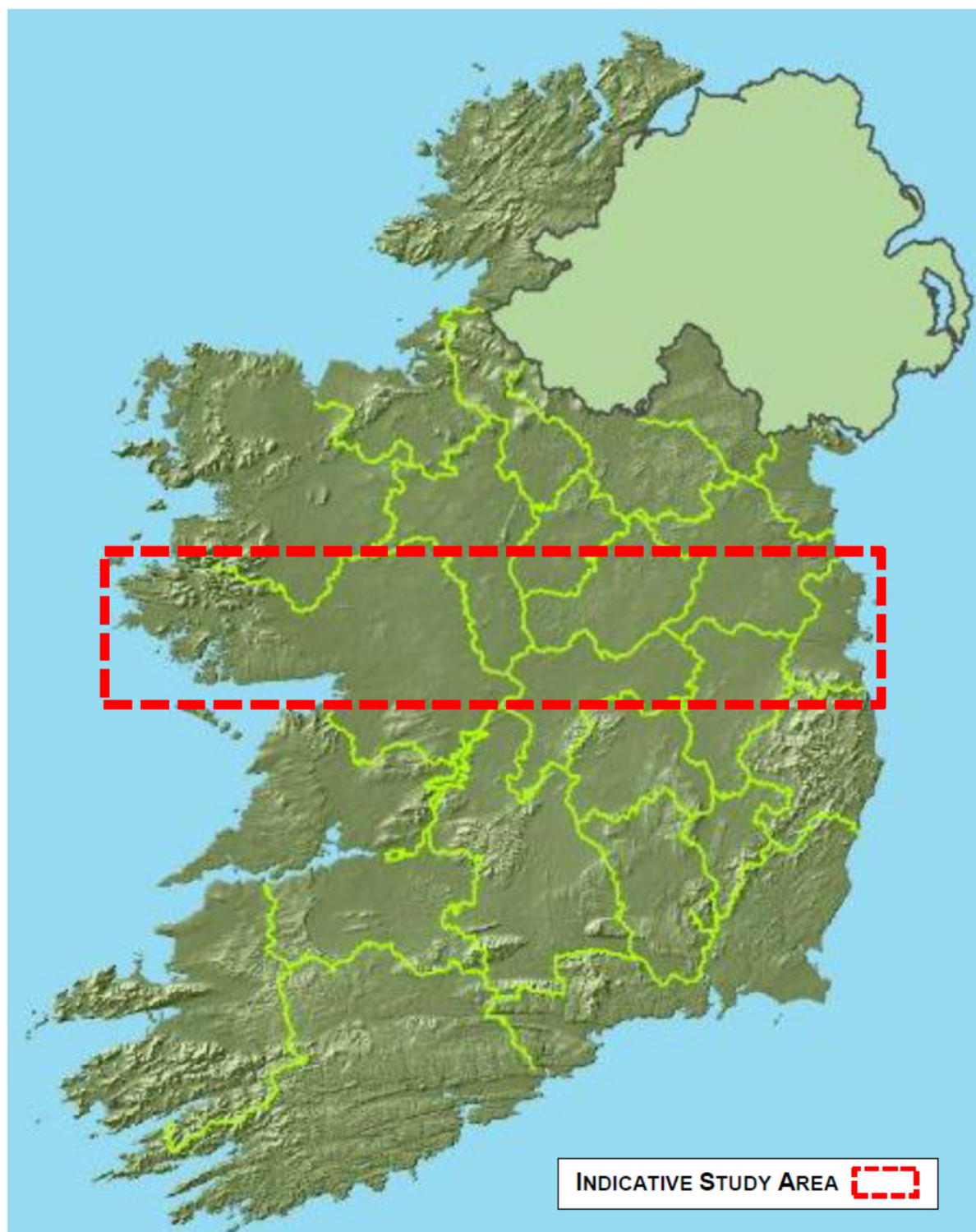


Figure 1 Indicative Study Area of the Dublin to Galway Greenway

3 Screening for Appropriate Assessment

3.1 Introduction to Screening

3.1.1 Background to Screening

This stage of the process identifies any likely significant impacts upon European Sites from a project or plan, either alone or in combination with other projects or plans. The screening phase was progressed in the following stages. A series of questions are asked during the Screening Stage of the AA process in order to determine:

- Whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of a European Site.
- Whether the project will have a potentially significant effect on a European Site, either alone or in combination with other projects or plans, in view of the site's conservation objectives or if residual uncertainty exists regarding potential impacts.

An important element of the AA process is the identification of the "Qualifying Interests" of European Sites requiring assessment. Qualifying Interests are the habitats and species for which each European Site has been designated and afforded protection. It is also vital that the threats to the ecological / environmental conditions that are required to support Qualifying Interests are considered as part of the assessment.

Site specific conservation objectives have been designed to define favourable conservation status for a particular habitat or species at that site. According to the European Commission interpretation document 'Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', paragraph 4.6(3) states:

"The integrity of a 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."

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing,
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats,
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

3.1.2 Desktop Studies

The ecological desktop study completed for the Plan comprised the following elements:

- Identification of European Sites within 15km with identification of potential pathways links for specific sites (if relevant) greater than 15km from the proposed development study area.;

- Review of the NPWS site synopsis and conservation objectives for European Sites with identification of potential pathways from the proposed development; and
- A series of ecological desk studies were undertaken in March 2016. This included but is not limited to the collation of information on protected species including Bats, Otters, Bird species (including Annex I species), Annex II habitat types, protected and Red Data Book Flora species, invertebrates and amphibians. The results of these studies are included as part of the Appropriate Assessment where they were deemed relevant to the European Sites and their qualifying interests.

3.2 Identification of Relevant European Sites

This section of the screening process describes the European sites within the ISA and within a further 15 km buffer. A distance of 15 km is currently recommended in the DEHLG document *Guidance for Planning Authorities*¹ and as a precautionary measure, to ensure that all potentially affected European sites are included in the screening process. Sites that have potential to be hydrologically linked to the Plan are also considered.

Those European sites which occur within the ISA of the proposed greenway are presented in Table 1 (cSACs) and Table 2 (SPAs). A map indicating the location of all relevant European sites in relation to the ISA is presented in Figure 2.

Further information on the relevant European sites is provided in Appendix I and Appendix 2 of this report. This information includes the features for which each site has been selected, and the previously reported threats to each site. This information was derived from a variety of sources:

- *Ireland's Article 17 Report to the European Commission "Status of EU Protected Habitats and Species in Ireland" (NPWS 2014)*
- *Site Synopses*
- *NATURA 2000 Standard Data Forms*
- *Detailed Site Specific Conservation Objectives and supporting documents (where available)*

Since the conservation objectives for the European sites focus on maintaining the favourable conservation condition of the qualifying interests of each site, the screening process concentrated on assessing the potential implications of the development of the greenway against the qualifying interests of each site.

¹ DEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities.

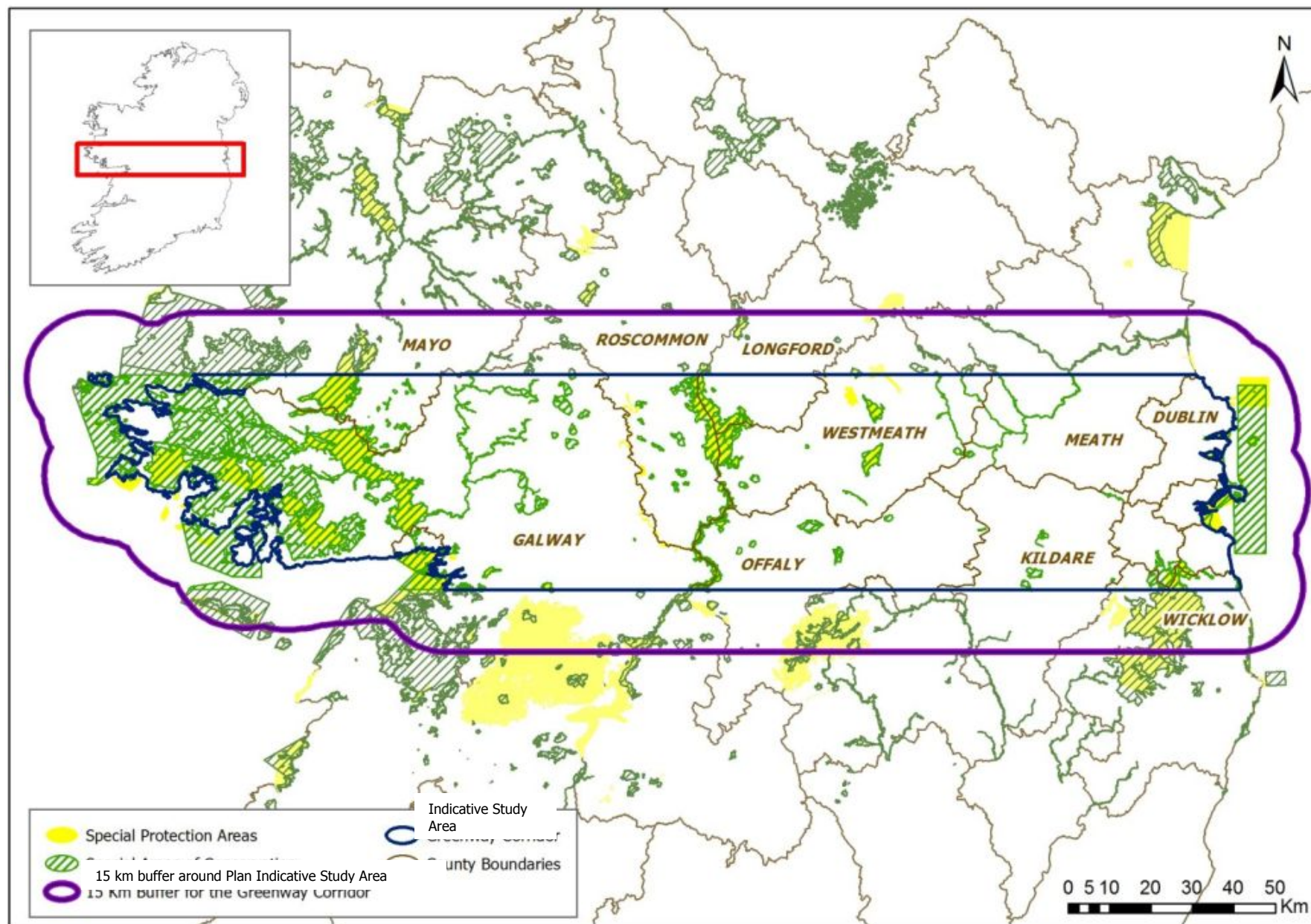


Figure 2 European sites within the Plan Indicative Study Area and within 15 km of this Area

Table 1. SACs with hydrological links or within a 15km buffer to the Plan Area (in ascending order of Distance from Plan Area)

Site Code	Site Name	Distance
0199	Baldoyle Bay SAC	0km
0202	Howth Head SAC	0km
0204	Lambay Island SAC	0km
0205	Malahide Estuary SAC	0km
0206	North Dublin Bay SAC	0km
0208	Rogerstown Estuary SAC	0km
0210	South Dublin Bay SAC	0km
0216	River Shannon Callows SAC	0km
0242	Castletaylor Complex SAC	0km
0268	Galway Bay Complex SAC	0km
0278	Inishbofin And Inishshark SAC	0km
0285	Kilsallagh Bog SAC	0km
0295	Levally Lough SAC	0km
0296	Lisnageeragh Bog And Ballinastack Turlough SAC	0km
0297	Lough Corrib SAC	0km
0301	Lough Lurteen Bog/Glenamaddy Turlough SAC	0km
0304	Lough Rea SAC	0km
0322	Rahasane Turlough SAC	0km
0324	Rosroe Bog SAC	0km
0326	Shankill West Bog SAC	0km
0328	Slyne Head Islands SAC	0km
0330	Tully Mountain SAC	0km
0391	Ballynafagh Bog SAC	0km
0396	Pollardstown Fen SAC	0km
0397	Red Bog, Kildare SAC	0km
0440	Lough Ree SAC	0km
0448	Fortwilliam Turlough SAC	0km
0461	Ardkill Turlough SAC	0km
0474	Ballymaglancy Cave, Cong SAC	0km
0479	Cloughmoyne SAC	0km
0480	Clyard Kettle-Holes SAC	0km
0503	Greaghans Turlough SAC	0km
0504	Kilglassan/Caheravoostia Turlough Complex SAC	0km
0525	Shrute Turlough SAC	0km
0541	Skealoghan Turlough SAC	0km
0571	Charleville Wood SAC	0km
0572	Clara Bog SAC	0km
0575	Ferbane Bog SAC	0km
0576	Fin Lough (Offaly) SAC	0km
0580	Mongan Bog SAC	0km
0581	Moyclare Bog SAC	0km
0582	Raheenmore Bog SAC	0km
0588	Ballinturly Turlough SAC	0km
0606	Lough Fingall Complex SAC	0km
0609	Lisduff Turlough SAC	0km
0610	Lough Croan Turlough SAC	0km
0611	Lough Funshinagh SAC	0km
0679	Garriskil Bog SAC	0km
0685	Lough Ennell SAC	0km

0688	Lough Owel SAC	0km
0692	Scragh Bog SAC	0km
0713	Ballyman Glen SAC	0km
0725	Knocksink Wood SAC	0km
0925	The Long Derries, Edenderry SAC	0km
1209	Glenasmole Valley SAC	0km
1228	Aughrusbeg Machair And Lake SAC	0km
1242	Carrownagappul Bog SAC	0km
1251	Cregduff Lough SAC	0km
1257	Dog's Bay SAC	0km
1271	Gortnandarragh Limestone Pavement SAC	0km
1309	Omey Island Machair SAC	0km
1311	Rusheenduff Lough SAC	0km
1312	Ross Lake And Woods SAC	0km
1387	Ballynafagh Lake SAC	0km
1398	Rye Water Valley/Carlton SAC	0km
1536	Mocorha Lough SAC	0km
1625	Castlesampson Esker SAC	0km
1637	Four Roads Turlough SAC	0km
1774	Lough Carra/Mask Complex SAC	0km
1776	Pilgrim's Road Esker SAC	0km
1831	Split Hills And Long Hill Esker SAC	0km
1932	Mweelrea/Sheeffry/Erriff Complex SAC	0km
2008	Maumturk Mountains SAC	0km
2031	The Twelve Bens/Garraun Complex SAC	0km
2034	Connemara Bog Complex SAC	0km
2074	Slyne Head Peninsula SAC	0km
2111	Kilkieran Bay And Islands SAC	0km
2118	Barnahallia Lough SAC	0km
2119	Lough Nageeron SAC	0km
2122	Wicklow Mountains SAC	0km
2129	Murvey Machair SAC	0km
2130	Tully Lough SAC	0km
2193	Ireland's Eye SAC	0km
2213	Glenloughaun Esker SAC	0km
2214	Killeglan Grassland SAC	0km
2265	Kingstown Bay SAC	0km
2299	River Boyne And River Blackwater SAC	0km
2313	Ballymore Fen SAC	0km
2320	Kildun Souterrain SAC	0km
2331	Mouds Bog SAC	0km
2336	Carn Park Bog SAC	0km
2337	Crosswood Bog SAC	0km
2339	Ballynamona Bog And Corkip Lough SAC	0km
2342	Mount Hevey Bog SAC	0km
2347	Camderry Bog SAC	0km
2350	Curraghlehagh Bog SAC	0km
2352	Monivea Bog SAC	0km
3000	Rockabill to Dalkey Island SAC	0km
2162	River Barrow And River Nore SAC	0.34km
2121	Lough Lene SAC	0.62km
0996	Ballyvaughan Turlough SAC	0.65km
2296	Williamstown Turloughs SAC	0.7km

2356	Ardgraique Bog SAC	1.03km
2349	Corbo Bog SAC	1.22km
2244	Ardrahan Grassland SAC	1.3km
0719	Glen Of The Downs SAC	1.94km
0475	Carrowkeel Turlough SAC	1.98km
2353	Redwood Bog SAC	3.16km
0566	All Saints Bog And Esker SAC	3.35km
0716	Carriggower Bog SAC	3.5km
0218	Coolcam Turlough SAC	3.65km
0255	Croaghill Turlough SAC	3.93km
2120	Lough Bane And Lough Glass SAC	4.04km
0213	Inishmore Island SAC	4.36km
1529	Lough Cahasy, Lough Baun And Roonah Lough SAC	4.39km
0318	Peterswell Turlough SAC	5.14km
1913	Sonnagh Bog SAC	5.51km
1818	Lough Forbes Complex SAC	5.53km
0412	Slieve Bloom Mountains SAC	5.93km
0859	Clonaslee Eskers And Derry Bog SAC	6.07km
1957	Boyne Coast And Estuary SAC	6.48km
2141	Mountmellick SAC	6.53km
2249	The Murrough Wetlands SAC	6.93km
0252	Coole-Garryland Complex SAC	6.94km
2295	Ballinduff Turlough SAC	7.05km
2294	Cahermore Turlough SAC	7.18km
2110	Corliskea/Trien/Cloonfolliv Bog SAC	7.32km
1926	East Burren Complex SAC	7.4km
2117	Lough Coy SAC	7.55km
0484	Cross Lough (Killadoon) SAC	7.72km
2293	Carrowbaun, Newhall and Ballylee Turloughs SAC	7.74km
0527	Moore Hall (Lough Carra) SAC	8km
2341	Ardagullion Bog SAC	8.21km
2298	River Moy SAC	8.24km
2179	Towerhill House SAC	8.31km
0054	Moneen Mountain SAC	8.37km
2299	River Boyne And River Blackwater SAC	8.52km
0238	Caherglassaun Turlough SAC	8.64km
2346	Brown Bog SAC	8.74km
1810	White Lough, Ben Loughs And Lough Doo SAC	8.87km
0020	Black Head-Poulsallagh Complex SAC	9.36km
1313	Rosturra Wood SAC	9.5km
0286	Kiltartan Cave (Coole) SAC	9.87km
0641	Ballyduff/Clonfinane Bog SAC	11.2km
0231	Barroughter Bog SAC	11.43km
2241	Lough Derg, North-East Shore SAC	11.57km
0647	Kilcarren-Firville Bog SAC	12.56km
0612	Mullygollan Turlough SAC	12.65km
0471	Brackloon Woods SAC	12.8km
0600	Cloonchambers Bog SAC	12.84km
0919	Ridge Road, SW of Rapemills SAC	13.29km
1285	Kiltiernan Turlough SAC	13.31km
0319	Pollnaknockaun Wood Nature Reserve SAC	13.38km
0248	Cloonmoylan Bog SAC	13.51km
0212	Inishmaan Island SAC	13.61km

2236	Island Fen SAC	13.84km
2340	Moneybeg And Clareisland Bogs SAC	14.33km
2147	Lisduff Fen SAC	14.68km
0597	Carrowbehy/Caher Bog SAC	14.98km

Table 2. SPAs with hydrological links or within a 15km buffer to the Plan Area (in ascending order of Distance from Plan Area)

Site Code	Site Name	Distance
4006	North Bull Island SPA	0
4015	Rogerstown Estuary SPA	0
4016	Baldoyle Bay SPA	0
4017	Mongan Bog SPA	0
4024	South Dublin Bay and River Tolka Estuary SPA	0
4025	Malahide Estuary SPA	0
4031	Inner Galway Bay SPA	0
4040	Wicklow Mountains SPA	0
4042	Lough Corrib SPA	0
4043	Lough Derravaragh SPA	0
4044	Lough Ennell SPA	0
4045	Glen Lough SPA	0
4046	Lough Iron SPA	0
4047	Lough Owel SPA	0
4062	Lough Mask SPA	0
4063	Poulaphouca Reservoir SPA	0
4064	Lough Ree SPA	0
4069	Lambay Island SPA	0
4089	Rahasane Turlough SPA	0
4096	Middle Shannon Callows SPA	0
4097	River Suck Callows SPA	0
4102	Garriskil Bog SPA	0
4113	Howth Head Coast SPA	0
4117	Ireland's Eye SPA	0
4134	Lough Rea SPA	0
4139	Lough Croan Turlough SPA	0
4140	Four Roads Turlough SPA	0
4142	Cregganna Marsh SPA	0
4144	High Island, Inishshark and Davillaun SPA	0
4159	Slyne Head To Ardmore Point Islands SPA	0
4170	Cruagh Island SPA	0
4172	Dalkey Islands SPA	0
4181	Connemara Bog Complex SPA	0
4221	Illaunnanoon SPA	0
4231	Inishbofin, Omey Island and Turbot Island SPA	0
4232	River Boyne and River Blackwater SPA	0

4122	Skerries Islands SPA	0.32
4051	Lough Carra SPA	1.44
4014	Rockabill SPA	1.69
4158	River Nanny Estuary and Shore SPA	1.71
4168	Slieve Aughty Mountains SPA	1.97
4086	River Little Brosna Callows SPA	2.36
4103	All Saints Bog SPA	3.3
4160	Slieve Bloom Mountains SPA	3.95
4137	Dovegrove Callows SPA	7.24
4186	The Murrough SPA	7.9
4212	Cross Lough (Killadoon) SPA	8.36
4152	Inishmore SPA	8.42
4107	Coole-Garryland SPA	8.67
4101	Ballykenny-Fisherstown Bog SPA	8.86
4080	Boyne Estuary SPA	8.96
4058	Lough Derg (Shannon) SPA	11.62
4061	Lough Kinale and Derragh Lough SPA	12.77
4065	Lough Sheelin SPA	14.96

3.2.1 Qualifying Interests (QIs) and Special Conservation Interests (SCIs)

The European sites listed in Section 3.2 are selected for a range of different habitats and species listed on Annex I and Annex II of the habitats directive, known as Qualifying Interests (QIs). Full details on the Qualifying interests of each individual site can be found in Appendices 1 and 2. A summary of all Qualifying Interests which were exist within the all European Sites Identified are listed in Table 3 (EU Habitats Directive Annex I) and Table 4 (EU Habitats Directive Annex II).

Those SPA sites listed in Section 3.2 above have been selected for the protection of endangered species of wild birds. Each SPA has been selected for one or a combination of the following:

- Listed rare and vulnerable species (as listed on Annex I of EU Birds Directive 2009/147/EC);
- Regularly occurring migratory species, such as ducks, geese and waders;
- Wetlands, especially those of international importance, which attract large numbers of migratory birds each year.

The features for which SPAs have been selected are referred to as Special Conservation Interests (SCIs). Those SCIs for which sites are selected within and surrounding the ISA are presented in Table 4 below.

Table 3 Annex I habitats for which cSACs within and surrounding the Indicative Study Area (ISA) have been selected and associated threats/vulnerabilities

EU Habitat Code	EU Habitat Name	Location	Recognised threats / vulnerabilities to relevant Annex I habitat
91E0	*Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)	cSACs Within ISA	This habitat has suffered considerable historic losses and is highly fragmented. Encroachment from non-native and invasive species especially Sycamore and Beech are considered the main pressures impacting on this habitat. The Overall Status is assessed as Bad due to these ongoing pressures and the fragmented nature of this habitat
1130	Estuaries	Within 15 km of ISA only	Pollution and fishing/aquaculture related activities affect habitat quality, particularly in some highly sensitive areas.
1140	Mudflats and sandflats not covered by seawater at low tide	cSACs Within ISA	Pollution and fishing/aquaculture and diverse use of the foreshore are likely to affect habitat quality, particularly eelgrass beds.
1150	*Coastal lagoons	cSACs Within ISA	The most damaging impact affecting habitat extent is the drainage of the previously largest lagoon for largely agricultural reasons. Further habitat loss has occurred as a result of natural silting. Water pollution is the major impact affects the habitat quality, mostly in the form of excessive nutrient enrichment from agricultural sources, and domestic effluent from an increase in urbanisation, commercial and industrial activities.
1160	Large shallow inlets and bays	cSACs Within ISA	Fishing and agriculture related activities are likely to affect habitat quality, particularly for highly sensitive species.
1170	Reefs	cSACs Within ISA	Pressures from fishing can potentially affect the ecological quality of this habitat.
1210	Annual vegetation of drift lines	cSACs Within ISA	Recreational pressures, beach cleaning in particular, and coastal defences which may affect the sediment dynamics of this habitat are the most notable threats to this habitat type.
1220	Perennial vegetation of stony banks	cSACs Within ISA	Recreational pressures and coastal defences which may affect the sediment dynamics of this habitat are the most notable threats to this habitat type.
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	cSACs Within ISA	Erosion caused by sea defences and pathways, and invasive species are the most notable threats to this habitat type.
1310	Salicornia and other annuals colonizing mud and sand	cSACs Within ISA	The ongoing spread of common cordgrass (<i>Spartina anglica</i>) and invasion are the most notable threats to this habitat type.
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	cSACs Within ISA	This habitat is affected by ecologically unsuitable grazing levels impacting on the condition of the habitat.

EU Habitat Code	EU Habitat Name	Location	Recognised threats / vulnerabilities to relevant Annex I habitat
1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	cSACs Within ISA	This habitat is affected by ecologically unsuitable grazing levels impacting on the condition of the habitat.
2110	Embryonic shifting dunes	cSACs Within ISA	Recreational pressures and coastal defences which may affect the sediment dynamics and wave dynamics are the most notable threats to this habitat type.
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	cSACs Within ISA	Recreational pressures and coastal defences are the most notable threats to this habitat type.
2130	*Fixed coastal dunes with herbaceous vegetation (grey dunes)	cSACs Within ISA	This habitat is affected by ecologically unsuitable grazing levels impacting on the condition of the habitat, along with recreational pressures.
2170	Dunes with <i>Salix repens</i> spp. <i>argentea</i> (<i>Salix arenariae</i>)	Within 15 km of ISA only	This habitat is affected by undergrazing, forestry, and agricultural intensification.
2190	Humid dune slacks	cSACs Within ISA	This habitat suffers from ongoing habitat loss from interference in the local hydrology, recreation and agriculture.
3110	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	cSACs Within ISA	Habitat is under significant pressure from eutrophication, and from drainage and other damage to peatland. Diffuse nutrient losses from agriculture and forestry are the most likely cause of enrichment in this lake habitat. Damage to peatlands can result in hydrological changes in lakes, increased water colour and turbidity, changes in sediment characteristics, acidification, and enrichment.
3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i>	cSACs Within ISA	Habitat affected by eutrophication and other activities linked to water pollution and hydrological change. Agriculture and domestic wastewater are the most significant sources of nutrients causing enrichment of this habitat, particularly in peaty soils. Peat-cutting and forestry on peatland are also notable pressures on this habitat.
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.	cSACs Within ISA	The hard water lake habitat is under significant pressure from eutrophication, the primary sources of nutrients and organic material being agriculture, municipal, and industrial wastewaters. Movement of pollutants, especially phosphorus, through groundwater is of significant concern.
3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation	cSACs Within ISA	Habitat threatened by significant eutrophication from agriculture domestic wastewaters.
3160	Natural dystrophic lakes and ponds	cSACs Within ISA	Pressures causing peatland damage results in hydrological changes in dystrophic lakes and ponds, as well as increased sedimentation, colour, turbidity, organic material and ammonia. Fertilisation of forests may

EU Habitat Code	EU Habitat Name	Location	Recognised threats / vulnerabilities to relevant Annex I habitat
			also contribute to enrichment of this habitat.
3180	*Turloughs	cSACs Within ISA	Ecologically unsuitable grazing and groundwater pollution are the most notable threats to this habitat.
3260	Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation	cSACs Within ISA	Nutrient and organic losses from agriculture, municipal and industrial discharges are the most significant pressures to river habitats.
3270	Rivers with muddy banks with Chenopodium rubri p.p. and Bidens p.p. vegetation	Within 15 km of ISA only	Nutrient enrichment and cattle trampling are currently being investigated as potential impacts to this habitat type.
4010	Northern Atlantic wet heaths with Erica tetralix	cSACs Within ISA	Afforestation and agricultural improvement are the most notable threats to this habitat. The quality of the habitat has been affected by overgrazing, trampling, burning, invasive non-native species, drainage and erosion.
4030	European dry heaths	cSACs Within ISA	Afforestation and agricultural improvement are the most notable threats to this habitat. The quality of the habitat has been affected by overgrazing, trampling, burning, invasive non-native species, drainage and erosion.
4060	Alpine and Boreal heaths	cSACs Within ISA	High levels of sheep grazing, hill walking and abandonment of traditional agricultural practices (which can lead to scrub encroachment) are the most notable threats to this habitat
5130	Juniperus communis formations on heaths or calcareous grasslands	cSACs Within ISA	Low recruitment and ecologically unsuitable grazing regime are the main issues affecting the quality of this habitat.
6130	Calaminarian grasslands of the Vicia calaminariae	Within 15 km of ISA only	Household dumping, overgrazing, trampling, erosion and abandonment to coarse vegetation as toxicity declines through leaching, are the most notable threats to this habitat type.
6210	*Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia)(*important orchid sites)	cSACs Within ISA	Agricultural intensification and abandonment leading to scrub encroachment have led to habitat loss and fragmentation.
6230	*Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)	cSACs Within ISA	Forestry planting and agricultural improvements are ongoing and causing habitat loss, along with succession to heath and scrub.
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinietum caeruleae)	cSACs Within ISA	Succession to scrub, abandonment of pastoral systems, and abandonment of mowing have led to a decline in this habitat type.

EU Habitat Code	EU Habitat Name	Location	Recognised threats / vulnerabilities to relevant Annex I habitat
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Within 15 km of ISA only	Grazing (sheep and cattle), the spread of invasive species, intensified agriculture and land reclamation are the most notable threats to this habitat type.
6510	Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)	cSACs Within ISA	Lack of mowing, agricultural improvement, and changes in land management are the most notable threats to this habitat type.
7110	*Active raised bogs	cSACs Within ISA	Peat extraction (ongoing), and drainage have resulted in shrinking and slumping of the bog structure.
7120	Degraded raised bogs still capable of natural regeneration	cSACs Within ISA	Peat extraction (ongoing) and drainage have resulted in shrinking and slumping of the bog structure.
7130	*Blanket bog (*active only)	cSACs Within ISA	Main threats include overgrazing, trampling, burning, drainage, afforestation, peat extraction, windfarm and other infrastructural development.
7140	Transition mires and quaking bogs	cSACs Within ISA	Peat extraction, wetland reclamation, and infilling are the most notable threats to this habitat type.
7150	Depressions on peat substrates of the Rhynchosporion	cSACs Within ISA	Sheep grazing is one of the main land uses occurring in this habitat, resulting in trampling and concomitant in standing water surfaces. This habitat is also affected by peat cutting and drainage.
7210	*Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	cSACs Within ISA	Peat extraction, wetland reclamation, and infilling are the most notable threats to this habitat type.
7220	*Petrifying springs with tufa formation (<i>Cratoneurion</i>)	cSACs Within ISA	Drainage, land reclamation, unsuitable grazing levels, pollution and water abstraction, along with isolated incidences of road drainage and outdoor leisure pursuits are the most notable pressures on this habitat type.
7230	Alkaline fens	cSACs Within ISA	Peat extraction, wetland reclamation, and infilling are the most notable threats to this habitat type.
8110	Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)	cSACs Within ISA	Recreational activities such as rock climbing, unsuitable grazing levels and invasive non-native species are the most notable threats to this habitat type.
8210	Calcareous rocky slopes with chasmophytic vegetation	cSACs Within ISA	Recreational activities such as rock climbing, unsuitable grazing levels and invasive non-native species are the most notable threats to this habitat type.
8220	Siliceous rocky slopes with chasmophytic vegetation	cSACs Within ISA	Recreational activities such as rock climbing and unsuitable grazing levels are the most notable threats to this habitat type.

EU Habitat Code	EU Habitat Name	Location	Recognised threats / vulnerabilities to relevant Annex I habitat
8240	*Limestone pavements	cSACs Within ISA	Quarrying, land reclamation, scrub encroachment, invasive non-native species and undergrazing are the most notable threats to this habitat type.
8310	Caves not open to the public	Within 15 km of ISA only	May be subject to disturbance and dumping.
8330	Submerged or partly submerged sea caves	Within 15 km of ISA only	No significant pressure affecting this habitat.
21A0	*Machairs (* in Ireland)	cSACs Within ISA	Pressures from disturbance and ecologically unsuitable grazing regimes have compromised habitat quality.
91A0	Old sessile oak woods with Ilex and Blechnum in British Isles	cSACs Within ISA	Invasive non-native species such as Rhododendron and Beech, and overgrazing by deer are regarded as the main pressures to this habitat type.
91D0	*Bog woodland	cSACs Within ISA	Drainage and effects of peat cutting.

Table 4 Annex II species for which cSACs within and surrounding the study area have been selected

EU Species Code	Common Name	Scientific Name	Location	Recognised threats / vulnerabilities to relevant Annex II species
1013	Geyer's whorl snail	<i>Vertigo geyeri</i>	cSACs Within ISA	Sites for this species are small and easily damaged.
1014	Narrow-mouthed whorl snail	<i>Vertigo angustior</i>	cSACs Within ISA	Declines in habitat quality from drainage and grazing.
1016	Desmoulin's whorl snail	<i>Vertigo moulinsiana</i>	cSACs Within ISA	The drying out of wetlands is an ongoing threat to this species.
1029	Freshwater Pearl Mussel	<i>Margaritifera margaritifera</i>	cSACs Within ISA	Urban wastewater, development activities, farming, and forestry have led to increased sedimentation and nutrient run-off, a significant threat to the species. Direct impacts from channelization, bridge construction and recreational fishery structures.
1065	Marsh Fritillary	<i>Euphydryas aurinia</i>	cSACs Within ISA	Declines in habitat quality lead to species decline.
1092	White-Clawed Crayfish	<i>Austropotamobius pallipes</i>	cSACs Within ISA	The threat of disease introduction is the most notable impact on this species.
1095	Sea Lamprey	<i>Petromyzon marinus</i>	cSACs Within ISA	Barriers to upstream migration (e.g. weirs), which limit access to spawning beds and juvenile habitat are main threats to this species.
1096	Brook Lamprey	<i>Lampetra planeri</i>	cSACs Within ISA	No significant pressures affecting this species
1099	River Lamprey	<i>Lampetra fluviatilis</i>	Within 15 km of ISA only	No significant pressures affecting this species
1103	Twaite Shad	<i>Alosa fallax</i>	Within 15 km of ISA only	Habitat quality, particularly at spawning sites is the most notable threat to this species.
1106	Atlantic Salmon	<i>Salmo salar</i>	cSACs Within ISA	There are numerous threats to the freshwater habitats of this species.
1303	Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	cSACs Within ISA	There are no significant pressures affecting this species.
1349	Bottle-nosed Dolphin	<i>Tursiops truncatus</i>	Within 15 km of ISA only	Vulnerable to disturbance from human activities, accidental entanglement in fishing gear, illegal killing, competition for prey, pollution and other habitat degradation.
1351	Harbour Porpoise	<i>Phocoena phocoena</i>	cSACs Within ISA	Vulnerable to accidental entanglement in fishing gear, illegal killing, competition for prey, pollution and other habitat degradation.
1355	Otter	<i>Lutra lutra</i>	cSACs Within ISA	There are no significant threats to this species.
1364	Grey Seal	<i>Halichoerus grypus</i>	Within 15 km of ISA only	Vulnerable to disturbance from human activities, accidental entanglement in fishing gear, illegal killing, competition for prey, pollution and other habitat degradation.
1365	Common Seal	<i>Phoca vitulina</i>	cSACs Within ISA	Vulnerable to disturbance from human activities, accidental entanglement in fishing gear, illegal killing, competition for prey, pollution and other habitat degradation.
1393	Slender green feather moss	<i>Drepanocladus vernicosus</i>	cSACs Within ISA	There are no significant impacts affecting this species.
1395	Petalwort	<i>Petalophyllum ralfsii</i>	cSACs Within ISA	There are no significant impacts affecting this species.

EU Species Code	Common Name	Scientific Name	Location	Recognised threats / vulnerabilities to relevant Annex II species
1421	Killarney Fern	<i>Trichomanes speciosum</i>	cSACs Within ISA	Threatened by habitat loss, deliberate collection, encroachment of invasive or vigorous species, or indirectly by water pollution, removal of woodland or alteration of watercourses.
1833	Slender Naiad	<i>Najas flexilis</i>	cSACs Within ISA	Threatened by enrichment (eutrophication), acidification, and peatland damage.
1990	Irish Freshwater Pearl Mussel	<i>Margaritifera durrovensis</i>	Within 15 km of ISA only	Increased sedimentation and nutrient run-off remains a significant threat to the species. Direct impacts from channelization, bridge construction and recreational fishery structures may also affect populations.

Table 5 Special Conservation Interests (SCIs) of SPAs that occur within and surrounding the study area.

Common Name	Scientific Name	Location
Arctic Tern	<i>Sterna paradisaea</i>	SPAs within the ISA
Barnacle Goose	<i>Branta leucopsis</i>	SPAs within the ISA
Bar-tailed Godwit	<i>Limosa lapponica</i>	SPAs within the ISA
Black-headed Gull	<i>Larus ridibundus</i>	SPAs within the ISA
Black-tailed Godwit	<i>Limosa limosa</i>	SPAs within the ISA
Common Gull	<i>Larus canus</i>	SPAs within the ISA
Common Scoter	<i>Melanitta nigra</i>	SPAs within the ISA
Common Tern	<i>Sterna hirundo</i>	SPAs within the ISA
Coot	<i>Fulica atra</i>	SPAs within the ISA
Cormorant	<i>Phalacrocorax carbo</i>	SPAs within the ISA
Corncrake	<i>Crex crex</i>	SPAs within the ISA
Curlew	<i>Numenius arquata</i>	SPAs within the ISA
Fulmar	<i>Fulmarus glacialis</i>	Within 15 km of ISA only
Gadwall	<i>Anas strepera</i>	SPAs within the ISA
Golden Plover	<i>Pluvialis apricaria</i>	SPAs within the ISA
Goldeneye	<i>Bucephala clangula</i>	Within 15 km of ISA only
Great Crested Grebe	<i>Podiceps cristatus</i>	Within 15 km of ISA only
Great Northern Diver	<i>Gavia immer</i>	SPAs within the ISA
Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>	SPAs within the ISA
Grey Heron	<i>Ardea cinerea</i>	SPAs within the ISA
Grey Plover	<i>Pluvialis squatarola</i>	SPAs within the ISA
Greylag Goose	<i>Anser anser</i>	Within 15 km of ISA only
Guillemot	<i>Uria aalge</i>	Within 15 km of ISA only
Hen Harrier	<i>Circus cyaneus</i>	SPAs within the ISA
Herring Gull	<i>Larus argentatus</i>	Within 15 km of ISA only
Kingfisher	<i>Alcedo atthis</i>	Within 15 km of ISA only
Kittiwake	<i>Rissa tridactyla</i>	SPAs within the ISA
Knot	<i>Calidris canutus</i>	SPAs within the ISA
Lapwing	<i>Vanellus vanellus</i>	SPAs within the ISA
Lesser Black-backed Gull	<i>Larus fuscus</i>	Within 15 km of ISA only

Common Name	Scientific Name	Location
Light-bellied Brent Goose	<i>Branta bernicla hrota</i>	SPAs within the ISA
Little Grebe	<i>Tachybaptus ruficollis</i>	Within 15 km of ISA only
Little Tern	<i>Sterna albifrons</i>	SPAs within the ISA
Mallard	<i>Anas platyrhynchos</i>	Within 15 km of ISA only
Manx Shearwater	<i>Puffinus puffinus</i>	Within 15 km of ISA only
Merlin	<i>Falco columbarius</i>	SPAs within the ISA
Oystercatcher	<i>Haematopus ostralegus</i>	SPAs within the ISA
Peregrine	<i>Falco peregrinus</i>	SPAs within the ISA
Pintail	<i>Anas acuta</i>	SPAs within the ISA
Pochard	<i>Aythya ferina</i>	SPAs within the ISA
Puffin	<i>Fratercula arctica</i>	Within 15 km of ISA only
Razorbill	<i>Alca torda</i>	Within 15 km of ISA only
Red-breasted Merganser	<i>Mergus serrator</i>	SPAs within the ISA
Redshank	<i>Tringa totanus</i>	SPAs within the ISA
Red-throated diver	<i>Gavia stellata</i>	Within 15 km of ISA only
Ringed Plover	<i>Charadrius hiaticula</i>	SPAs within the ISA
Roseate Tern	<i>Sterna dougallii</i>	SPAs within the ISA
Sanderling	<i>Calidris alba</i>	SPAs within the ISA
Sandwich Tern	<i>Sterna sandvicensis</i>	SPAs within the ISA
Shag	<i>Phalacrocorax aristotelis</i>	Within 15 km of ISA only
Shelduck	<i>Tadorna tadorna</i>	SPAs within the ISA
Shoveler	<i>Anas clypeata</i>	SPAs within the ISA
Teal	<i>Anas crecca</i>	SPAs within the ISA
Tufted Duck	<i>Aythya fuligula</i>	SPAs within the ISA
Turnstone	<i>Arenaria interpres</i>	SPAs within the ISA
Whooper Swan	<i>Cygnus cygnus</i>	SPAs within the ISA
Wigeon	<i>Anas penelope</i>	SPAs within the ISA
Wetlands	<i>Not applicable</i>	SPAs within the ISA

3.3 Assessment Criteria

3.3.1 Is the Plan Necessary to the Management of European Sites?

Under the Habitats Directive, Plans that are directly connected with or necessary to the management of a European site do not require AA. For this exception to apply, management is required to be interpreted narrowly as nature conservation management in the sense of Article 6(1) of the Habitats Directive. This refers to specific measures to address the ecological requirements of annexed habitats and species (and their habitats) present on a site(s). The relationship should be shown to be direct and not a by-product of the plan, even if this might result in positive or beneficial effects for a site(s).

The primary purpose of the Dublin to Galway Greenway is not the nature conservation management of European sites but to provide for development of an amenity cycleway from Dublin to Galway. Therefore, the Plan is not considered by the Habitats Directive to be directly connected with or necessary to the management of European designated sites.

3.3.2 Elements of the Plan with Potential to Give Rise to Effects

An assessment of the potential for effects on European sites to arise due to the implementation of the Plan is presented in the following sections. The assessment considers the full range of effects including direct, indirect, and in-combination. The Plan under consideration is a high-level Plan as the preferred route has not yet been identified. Minor text changes were made to the plan after the Draft Plan went on Public Display, however these changes were assessed to have no ecological interactions.

In order to minimise the possible impacts of the greenway, the sustainability of the route must be considered during the project planning and design stage. Ground conditions, drainage requirements, flood and storm risks, and coastal dynamics must be considered at this stage of the Plan. The potential impacts resulting from the implementation of the key Plan objectives are summarised in Table 6 below. The activities that could be associated with development of the greenway that could give rise to effects on European Sites are as follows:

- Route selection, in relation to the location of European sites. It must be noted that in the case of a continuous linear project from Dublin to Galway it may not be possible to avoid European sites;
- Physical infrastructure which will be required for the greenway development, which may be required in/or adjacent to natural or semi-natural habitats, including ground testing, the project footprint and all works areas (including compounds and access routes). Such development could potentially give rise to habitat loss and or deterioration, fragmentation, disturbance to key species, and changes in key indicator values for conservation status;
- Drainage requirements could potentially effect water quality/quantity in proximity to the selected route, or to those sites downstream which are hydrologically connected to the route;
- Operational phase of the greenway will include usage of the amenity by significant numbers of people (and dogs) which could cause disturbance to sensitive species due to increased human activity, noise, and light;
- Requirements of routine maintenance such as drainage, vegetation clearance, surface treatments could adversely impact on sensitive habitat and species in the surroundings; and
- In combination effects with existing land uses, plans, and projects (relevant Plans are considered in Section 3.4).

3.3.3 Identification of Potential Likely Significant Effects

This section documents the final stage of the screening process. It has used the information collected on the sensitivity of each European site and describes any likely significant effects resulting from the

implementation of the Greenway Plan. This assumes the absence of any controls, conditions, or mitigation measures. In determining the potential for significant effects, a number of factors have been taken into account. Firstly, the sensitivity and reported threats to the European site. Secondly, the individual elements of the Plan and the potential effect they may cause on the site were considered. The elements of the Plan with potential to cause adverse impacts on European sites are presented in Section 3.4 below.

Sites are screened out based on one or a combination of the following criteria:

- where it can be shown that there are no hydrological links between activities Dublin to Galway Greenway Plan, and the site to be screened;
- where the site is located at such a distance from Dublin to Galway Greenway Plan that impacts are not foreseen;
- where it is that known threats or vulnerabilities at a site cannot be linked to potential impacts that may arise from implementation of the Plan.

The screenings of individual European sites within 15km of the Dublin to Galway Greenway Plan or with identified hydrological linkages to Plan Area are presented in Table 6.

Table 6 Objectives of the Plan with Potential for adverse impacts on European sites

Plan Objective	Potential Impacts
Establish a cycleway route connecting Dublin to Clifden via Galway City which is substantially segregated from vehicular traffic and is safe, attractive and comfortable.	In the case of a continuous linear project from Dublin to Galway it may not be possible to avoid European sites. The establishment of this cycleway may potentially lead to temporary and residual impacts on the surrounding natural environment, the following potential impacts may occur as result of the implementation of the Plan: <ul style="list-style-type: none"> • Habitat loss (direct and/or indirect) • Habitat and/or species fragmentation • Disturbance of key species • Potential impacts on water dependant habitats and species
Maximise the value of existing infrastructure including canal towpaths, disused railway lines and state owned lands.	Whilst the utilisation of existing infrastructure is largely beneficial to European sites, sites traversed may form parts of designated sites or occur adjacent to them. The use of this existing infrastructure may potentially lead to: <ul style="list-style-type: none"> • Habitat loss (direct and/or indirect) • Habitat and/or species fragmentation • Disturbance of key species • Potential impacts on water dependant habitats and species
Secure permanent access to the entire route through land acquisition if required	No ecological issues are foreseen with the implementation of this objective.
Develop a tourism experience that caters for a broad range of users in key tourism markets	The development of tourism along the proposed greenway route may potentially lead to adverse impacts on European sites and/or un-designated sites which are of importance to wintering or breeding bird species of conservation concern, or provide wildlife corridors for sensitive species. Tourism development along the proposed route may potentially lead to: <ul style="list-style-type: none"> • Habitat loss • Disturbance of key species • Potential impacts on water dependant habitats and species
Route to be designed and built to international best practice and in accordance with adopted standards	No ecological issues foreseen with the implementation of this objective.
Maximise the value of existing and proposed investment in key tourism destinations	This objective may lead to increased visitor numbers to key tourism destination which may potentially lead to increased pressures on the natural environment and amenities. Increased visitor numbers to key tourism destinations may potentially lead to: <ul style="list-style-type: none"> • Disturbance of key species

Plan Objective	Potential Impacts
	Potential impacts on water dependant habitats and species
Facilitate regular access to visitor attractions and services along the corridor.	<p>The development of connections to visitor attractions, public transport hubs, towns and amenities may potentially lead to adverse impacts on European sites. Access may potentially traverse European sites, or occur adjacent to them, which may potentially lead to:</p> <ul style="list-style-type: none"> • Habitat loss (direct and/or indirect) • Habitat and/or species fragmentation • Disturbance of key species • Potential impacts on water dependant habitats and species
Facilitate connections with public transport hubs which will provide access to the route from bus and rail.	
Provide frequent connections to towns, tourism facilities, natural amenities and other attractions in proximity to the route in collaboration with local communities and tourism providers.	
To facilitate the achievement of Smarter Travel targets for sustainable travel	No issues foreseen with the implementation of this objective.
To generate ongoing economic benefits for rural and urban areas along the route	<p>International marketing of the proposed route and the generation of the economy for rural and urban areas along the route may potentially lead to exacerbated pressures on the existing environment and amenities. These objectives may lead to increased visitor numbers which may potentially lead to pressures on waste water treatment and the natural environment. The development of these objectives may potentially lead to:</p> <ul style="list-style-type: none"> • Habitat loss (direct and/or indirect) • Habitat and/or species fragmentation • Disturbance of key species • Potential impacts on water dependant habitats and species
To maximise the number of potential commuter, leisure and tourist users	
To market and promote the cycleway internationally	
To provide comprehensive route signage, mapping and distinct branding to international standards	<p>Depending on their siting, the provision to provide route signage could cause adverse impacts to European sites. The erection of signage may potentially lead to:</p> <ul style="list-style-type: none"> • Habitat loss (direct and/or indirect) • Disturbance of key species
To provide for maintenance of the route and monitoring of patterns of use	<p>The maintenance of the proposed route may potentially lead to adverse impacts on designated European sites due to such activities as drain maintenance, vegetation clearance, or surface treatments. Such maintenance works could potentially lead to:</p> <ul style="list-style-type: none"> • Disturbance of key species • Potential impacts on water dependant habitats and species
To create and economic stimulus for growth in the national and local economy, providing opportunities for new and existing businesses and communities	<p>International marketing of the proposed route and the generation of the economy for rural and urban areas along the route may potentially lead to exacerbated pressures on the existing environment and amenities. These objectives may lead to increased visitor numbers which may potentially lead to pressures on waste water treatment and the natural environment. The development of these objectives may potentially lead to:</p> <ul style="list-style-type: none"> • Habitat loss (direct and/or indirect) • Habitat and/or species fragmentation • Disturbance of key species • Potential impacts on water dependant habitats and species

Each of the Objectives of the Dublin to Galway Greenway Plan were examined in relation to each of the European sites identified above with specific reference to their Qualifying Interests to determine if there is potential for significant impacts to any European Site. The results are summarised in Table 7 and Table 8.

Table 7 Screening of European Sites within the ISA and 15 km of the Plan

Site Code	Site Name	Distance	Potential Impacts resulting from the implementation of the greenway	Stage 2 Required
0199	Baldoyle Bay SAC	0km	Site occurs within the ISA of the Plan	Yes
0202	Howth Head SAC	0km	Site occurs within the ISA of the Plan	Yes
0204	Lambay Island SAC	0km	Site occurs within the ISA of the Plan	Yes
0205	Malahide Estuary SAC	0km	Site occurs within the ISA of the Plan	Yes
0206	North Dublin Bay SAC	0km	Site occurs within the ISA of the Plan	Yes
0208	Rogerstown Estuary SAC	0km	Site occurs within the ISA of the Plan	Yes
0210	South Dublin Bay SAC	0km	Site occurs within the ISA of the Plan	Yes
0216	River Shannon Callows SAC	0km	Site occurs within the ISA of the Plan	Yes
0242	Castletaylor Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
0268	Galway Bay Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
0278	Inishbofin And Inishshark SAC	0km	Site occurs within the ISA of the Plan	Yes
0285	Kilsallagh Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0295	Levally Lough SAC	0km	Site occurs within the ISA of the Plan	Yes
0296	Lisnageeragh Bog And Ballinastack Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0297	Lough Corrib SAC	0km	Site occurs within the ISA of the Plan	Yes
0301	Lough Lurleen Bog/Glenamaddy Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0304	Lough Rea SAC	0km	Site occurs within the ISA of the Plan	Yes
0322	Rahasane Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0324	Rosroe Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0326	Shankill West Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0328	Slyne Head Islands SAC	0km	Site occurs within the ISA of the Plan	Yes
0330	Tully Mountain SAC	0km	Site occurs within the ISA of the Plan	Yes
0391	Ballynafagh Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0396	Pollardstown Fen SAC	0km	Site occurs within the ISA of the Plan	Yes
0397	Red Bog, Kildare SAC	0km	Site occurs within the ISA of the Plan	Yes
0440	Lough Ree SAC	0km	Site occurs within the ISA of the Plan	Yes
0448	Fortwilliam Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0461	Ardkill Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0474	Ballymaglancy Cave, Cong SAC	0km	Site occurs within the ISA of the Plan	Yes

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0479	Cloughmoyne SAC	0km	Site occurs within the ISA of the Plan	Yes
0480	Clyard Kettle-Holes SAC	0km	Site occurs within the ISA of the Plan	Yes
0503	Greaghans Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0504	Kilglassan/Caheravoostia Turlough Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
0525	Shrute Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0541	Skealoghan Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0571	Charleville Wood SAC	0km	Site occurs within the ISA of the Plan	Yes
0572	Clara Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0575	Ferbane Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0576	Fin Lough (Offaly) SAC	0km	Site occurs within the ISA of the Plan	Yes
0580	Mongan Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0581	Moyclare Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0582	Raheenmore Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0588	Ballinturly Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0606	Lough Fingall Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
0609	Lisduff Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0610	Lough Croan Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
0611	Lough Funshinagh SAC	0km	Site occurs within the ISA of the Plan	Yes
0679	Garriskil Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0685	Lough Ennell SAC	0km	Site occurs within the ISA of the Plan	Yes
0688	Lough Owel SAC	0km	Site occurs within the ISA of the Plan	Yes
0692	Scragh Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
0713	Ballyman Glen SAC	0km	Site occurs within the ISA of the Plan	Yes
0725	Knocksink Wood SAC	0km	Site occurs within the ISA of the Plan	Yes
0925	The Long Derries, Edenderry SAC	0km	Site occurs within the ISA of the Plan	Yes
1209	Glenasmole Valley SAC	0km	Site occurs within the ISA of the Plan	Yes
1228	Aughrusbeg Machair And Lake SAC	0km	Site occurs within the ISA of the Plan	Yes
1242	Carrownagappul Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
1251	Cregduff Lough SAC	0km	Site occurs within the ISA of the Plan	Yes
1257	Dog's Bay SAC	0km	Site occurs within the ISA of the Plan	Yes
1271	Gortnandarragh Limestone Pavement SAC	0km	Site occurs within the ISA of the Plan	Yes
1309	Omey Island Machair SAC	0km	Site occurs within the ISA of the Plan	Yes

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1311	Rusheenduff Lough SAC	0km	Site occurs within the ISA of the Plan	Yes
1312	Ross Lake And Woods SAC	0km	Site occurs within the ISA of the Plan	Yes
1387	Ballynafagh Lake SAC	0km	Site occurs within the ISA of the Plan	Yes
1398	Rye Water Valley/Carlton SAC	0km	Site occurs within the ISA of the Plan	Yes
1536	Mocorha Lough SAC	0km	Site occurs within the ISA of the Plan	Yes
1625	Castlesampson Esker SAC	0km	Site occurs within the ISA of the Plan	Yes
1637	Four Roads Turlough SAC	0km	Site occurs within the ISA of the Plan	Yes
1774	Lough Carra/Mask Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
1776	Pilgrim's Road Esker SAC	0km	Site occurs within the ISA of the Plan	Yes
1831	Split Hills And Long Hill Esker SAC	0km	Site occurs within the ISA of the Plan	Yes
1932	Mweelrea/Sheeffry/Erriff Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
2008	Maumturk Mountains SAC	0km	Site occurs within the ISA of the Plan	Yes
2031	The Twelve Bens/Garraun Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
2034	Connemara Bog Complex SAC	0km	Site occurs within the ISA of the Plan	Yes
2074	Slyne Head Peninsula SAC	0km	Site occurs within the ISA of the Plan	Yes
2111	Kilkieran Bay And Islands SAC	0km	Site occurs within the ISA of the Plan	Yes
2118	Barnahallia Lough SAC	0km	Site occurs within the ISA of the Plan	Yes
2119	Lough Nageeron SAC	0km	Site occurs within the ISA of the Plan	Yes
2122	Wicklow Mountains SAC	0km	Site occurs within the ISA of the Plan	Yes
2129	Murvey Machair SAC	0km	Site occurs within the ISA of the Plan	Yes
2130	Tully Lough SAC	0km	Site occurs within the ISA of the Plan	Yes
2193	Ireland's Eye SAC	0km	Site occurs within the ISA of the Plan	Yes
2213	Glenloughaun Esker SAC	0km	Site occurs within the ISA of the Plan	Yes
2214	Killeglan Grassland SAC	0km	Site occurs within the ISA of the Plan	Yes
2265	Kingstown Bay SAC	0km	Site occurs within the ISA of the Plan	Yes
2299	River Boyne And River Blackwater SAC	0km	Site occurs within the ISA of the Plan	Yes
2313	Ballymore Fen SAC	0km	Site occurs within the ISA of the Plan	Yes
2320	Kildun Souterrain SAC	0km	Site occurs within the ISA of the Plan	Yes
2331	Mouds Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
2336	Carn Park Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
2337	Crosswood Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
2339	Ballynamona Bog And Corkip Lough SAC	0km	Site occurs within the ISA of the Plan	Yes

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2342	Mount Hevey Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
2347	Camderry Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
2350	Curraghlehanagh Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
2352	Monivea Bog SAC	0km	Site occurs within the ISA of the Plan	Yes
3000	Rockabill to Dalkey Island SAC	0km	Site occurs within the ISA of the Plan	Yes
2162	River Barrow And River Nore SAC	0.34km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2121	Lough Lene SAC	0.62km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
0996	Ballyvaughan Turlough SAC	0.65km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2296	Williamstown Turloughs SAC	0.7km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2356	Ardgraique Bog SAC	1.03km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
2349	Corbo Bog SAC	1.22km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
2244	Ardrahan Grassland SAC	1.3km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
0719	Glen Of The Downs SAC	1.94km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
0475	Carrowkeel Turlough SAC	1.98km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
2353	Redwood Bog SAC	3.16km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
0566	All Saints Bog And Esker SAC	3.35km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
0716	Carriggower Bog SAC	3.5km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
0218	Coolcam Turlough SAC	3.65km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway due to the distance from the site.	No
0255	Croaghill Turlough SAC	3.93km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway due to the distance from the site.	No
2120	Lough Bane And Lough Glass SAC	4.04km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
0213	Inishmore Island SAC	4.36km	The cSAC forms part of the Aran Islands and is removed from the study area.	No
1529	Lough Cahasy, Lough Baun And Roollah Lough SAC	4.39km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No
0318	Peterswell Turlough SAC	5.14km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway due to the distance from the site.	No
1913	Sonnagh Bog SAC	5.51km	Habitat for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway.	No

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1818	Lough Forbes Complex SAC	5.53km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
0412	Slieve Bloom Mountains SAC	5.93km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0859	Clonaslee Eskers And Derry Bog SAC	6.07km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
1957	Boyne Coast And Estuary SAC	6.48km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2141	Mountmellick SAC	6.53km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
2249	The Murrough Wetlands SAC	6.93km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0252	Coole-Garryland Complex SAC	6.94km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2295	Ballinduff Turlough SAC	7.05km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2294	Cahermore Turlough SAC	7.18km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway due to the distance from the site.	No
2110	Corliskea/Trien/Cloonfellov Bog SAC	7.32km	Habitats for which cSAC is designated is unlikely to be impacted upon by the implementation of the proposed greenway due to the distance from the site.	No
1926	East Burren Complex SAC	7.4km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2117	Lough Coy SAC	7.55km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
0484	Cross Lough (Killadoon) SAC	7.72km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
2293	Carrowbaun, Newhall and Ballylee Turloughs SAC	7.74km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
0527	Moore Hall (Lough Carra) SAC	8km	The bat species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway due to the distance.	No
2341	Ardagullion Bog SAC	8.21km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
2298	River Moy SAC	8.24km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2179	Towerhill House SAC	8.31km	The bat species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway due to the distance.	No
0054	Moneen Mountain SAC	8.37km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2299	River Boyne And River Blackwater SAC	8.52km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
0238	Caherglassaun Turlough SAC	8.64km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
2346	Brown Bog SAC	8.74km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
1810	White Lough, Ben Loughs And Lough Doo SAC	8.87km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes
0020	Black Head-Poulsallagh Complex SAC	9.36km	Site occurs outside of but within 15 km of the ISA. The cSAC is designated for sensitive ecological receptors.	Yes

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1313	Rosturra Wood SAC	9.5km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0286	Kiltartan Cave (Coole) SAC	9.87km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0641	Ballyduff/Clonfinane Bog SAC	11.2km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0231	Barroughter Bog SAC	11.43km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
2241	Lough Derg, North-East Shore SAC	11.57km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0647	Kilcarren-Firville Bog SAC	12.56km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0612	Mullygollan Turlough SAC	12.65km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0471	Brackloon Woods SAC	12.8km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0600	Cloonchambers Bog SAC	12.84km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0919	Ridge Road, SW of Rapemills SAC	13.29km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
1285	Kiltiernan Turlough SAC	13.31km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0319	Pollnaknockaun Wood Nature Reserve SAC	13.38km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0248	Cloonmoylan Bog SAC	13.51km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0212	Inishmaan Island SAC	13.61km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
2236	Island Fen SAC	13.84km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
2340	Moneybeg And Clareisland Bogs SAC	14.33km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
2147	Lisduff Fen SAC	14.68km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No
0597	Carrowbehy/Caher Bog SAC	14.98km	Habitats and species for which the cSAC is designated are unlikely to be impacted upon by the implementation of the proposed greenway.	No

Table 8 Screening of SPAs within the ISA and 15 km of the Plan

Site Code	Site Name	Distance	Potential Impacts resulting from the implementation of the greenway	Stage 2 Required
4006	North Bull Island SPA	0	Site occurs within the ISA of the Plan	Yes
4015	Rogerstown Estuary SPA	0	Site occurs within the ISA of the Plan	Yes
4016	Baldoyle Bay SPA	0	Site occurs within the ISA of the Plan	Yes
4017	Mongan Bog SPA	0	Site occurs within the ISA of the Plan	Yes
4024	South Dublin Bay and River Tolka Estuary SPA	0	Site occurs within the ISA of the Plan	Yes
4025	Malahide Estuary SPA	0	Site occurs within the ISA of the Plan	Yes
4031	Inner Galway Bay SPA	0	Site occurs within the ISA of the Plan	Yes
4040	Wicklow Mountains SPA	0	Site occurs within the ISA of the Plan	Yes
4042	Lough Corrib SPA	0	Site occurs within the ISA of the Plan	Yes
4043	Lough Derravaragh SPA	0	Site occurs within the ISA of the Plan	Yes
4044	Lough Ennell SPA	0	Site occurs within the ISA of the Plan	Yes
4045	Glen Lough SPA	0	Site occurs within the ISA of the Plan	Yes
4046	Lough Iron SPA	0	Site occurs within the ISA of the Plan	Yes
4047	Lough Owel SPA	0	Site occurs within the ISA of the Plan	Yes
4062	Lough Mask SPA	0	Site occurs within the ISA of the Plan	Yes
4063	Poulaphouca Reservoir SPA	0	Site occurs within the ISA of the Plan	Yes
4064	Lough Ree SPA	0	Site occurs within the ISA of the Plan	Yes
4069	Lambay Island SPA	0	Site occurs within the ISA of the Plan	Yes
4089	Rahasane Turlough SPA	0	Site occurs within the ISA of the Plan	Yes
4096	Middle Shannon Callows SPA	0	Site occurs within the ISA of the Plan	Yes
4097	River Suck Callows SPA	0	Site occurs within the ISA of the Plan	Yes
4102	Garriskil Bog SPA	0	Site occurs within the ISA of the Plan	Yes
4113	Howth Head Coast SPA	0	Site occurs within the ISA of the Plan	Yes
4117	Ireland's Eye SPA	0	Site occurs within the ISA of the Plan	Yes
4134	Lough Rea SPA	0	Site occurs within the ISA of the Plan	Yes
4139	Lough Croan Turlough SPA	0	Site occurs within the ISA of the Plan	Yes

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4140	Four Roads Turlough SPA	0	Site occurs within the ISA of the Plan	Yes
4142	Cregganna Marsh SPA	0	Site occurs within the ISA of the Plan	Yes
4144	High Island, Inishshark and Davillaun SPA	0	Site occurs within the ISA of the Plan	Yes
4159	Slyne Head To Ardmore Point Islands SPA	0	Site occurs within the ISA of the Plan	Yes
4170	Cruagh Island SPA	0	Site occurs within the ISA of the Plan	Yes
4172	Dalkey Islands SPA	0	Site occurs within the ISA of the Plan	Yes
4181	Connemara Bog Complex SPA	0	Site occurs within the ISA of the Plan	Yes
4221	Illaunnaanoon SPA	0	Site occurs within the ISA of the Plan	Yes
4231	Inishbofin, Omev Island and Turbot Island SPA	0	Site occurs within the ISA of the Plan	Yes
4232	River Boyne and River Blackwater SPA	0	Site occurs within the ISA of the Plan	Yes
4122	Skerries Islands SPA	0.32	Site occurs directly adjacent to the Plan	Yes
4051	Lough Carra SPA	1.44	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4014	Rockabill SPA	1.69	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4158	River Nanny Estuary and Shore SPA	1.71	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4168	Slieve Aughty Mountains SPA	1.97	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4086	River Little Brosna Callows SPA	2.36	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4103	All Saints Bog SPA	3.3	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4160	Slieve Bloom Mountains SPA	3.95	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4137	Dovegrove Callows SPA	7.24	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4186	The Murrough SPA	7.9	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4212	Cross Lough (Killadoon) SPA	8.36	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4152	Inishmore SPA	8.42	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4107	Coole-Garryland SPA	8.67	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4101	Ballykenny-Fisherstown Bog SPA	8.86	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4080	Boyne Estuary SPA	8.96	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4058	Lough Derg (Shannon) SPA	11.62	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4061	Lough Kinale and Derragh Lough SPA	12.77	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No
4065	Lough Sheelin SPA	14.96	Potential impacts are not foreseen on SPAs outside the ISA of the Plan.	No

3.4 Other Plans and Projects

Article 6(3) of the Habitats Directive requires an assessment of a plan or project to consider other plans or programmes that might, in combination with the plan or project, have the potential to adversely impact upon European sites. Table 9 lists the plans or programmes that may interact with the Dublin to Galway Greenway to cause in-combination effects to European sites. The plans or programmes are listed according to a four-tier spatial hierarchy: International; National; Regional; and Local.

Table 9 Other Plans and Projects Relative to the Plan

Directive	Purpose	Interactions resulting in Cumulative Impacts
International		
EU Water Framework Directive (2000/60/EC)	Objectives seek to maintain and enhance the quality of all surface waters in the EU.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
EU Freshwater Fish Directive (78/659/EEC)	Objectives seek to protect those fresh water bodies identified by Member States as waters suitable for sustaining fish populations. For those waters it sets physical and chemical water quality objectives for salmonid waters and cyprinid waters.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
EU Groundwater Directive (2006/118/EC)	This directive establishes a regime, which sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
EU Floods Directive (2007/60/EC)	The Floods Directive applies to river basins and coastal areas at risk of flooding. With trends such as climate change and increased domestic and economic development in flood risk zones, this poses a threat of flooding in coastal and river basin areas.	Potential in-combination impacts may arise, if unmitigated, where there is a requirement to provide for new infrastructure such as flood walls or flood defences. Avoidance on, or near protected areas should be implemented or where this is not possible, favouring infrastructure that carries a lower risk of damage to protected areas should be emphasised in the plan.
Nitrates Directive (91/676/EEC)	This Directive has the objective of reducing water pollution caused or induced by nitrates from agricultural sources and preventing further pollution.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
The Urban Wastewater Treatment Directive (91/271/EEC)	The primary objective is to protect the environment from the adverse effects of discharges of urban wastewater, by the provision of urban wastewater collecting systems (sewerage) and treatment plants for urban centres. The Directive also provides general rules for the sustainable disposal of sludge arising from wastewater treatment.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
Sewage Sludge Directive (86/278/EEC)	Objective is to encourage the appropriate use of sewage sludge in agriculture and to regulate its use in such a way as to prevent harmful effects on soil, vegetation, animals and man. To this end, it prohibits the use of untreated sludge on agricultural land unless it is injected or incorporated into the soil.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.

Directive	Purpose	Interactions resulting in Cumulative Impacts
The Integrated Pollution Prevention Control Directive (96/61/EC)	Objective is to achieve a high level of protection of the environment through measures to prevent or, where that is not practicable, to reduce emissions to air, water and land from industrial sources.	No risk of likely significant in-combination effects will result as the primary purpose of the Directive is to improve environmental quality.
National		
National Spatial Strategy 2002-2020	Objectives of the NSS are to achieve a better balance of social, economic and physical development across Ireland, supported by more effective planning.	Potential in-combination impacts may arise, if unmitigated, where there is a requirement to provide for new infrastructure. Provision of infrastructure may result in: <ul style="list-style-type: none"> • Habitat loss • Alteration of hydrology • Deterioration in water quality • Disturbance during construction / operation
Grid25 Implementation Programme	•Framework for the development of the electricity transmission grid in the short, medium and long terms, to support a long-term sustainable and reliable electricity supply	No risk of likely significant in-combination effects will result as the primary purpose of the Plan is to improve sustainable electricity in Ireland.
NPWS Biodiversity Action Plan	Aims to achieve biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally	No risk of likely significant in-combination effects will result as the primary purpose of the Plan is to improve biodiversity and ecosystems in Ireland.
National Landscape Strategy	To promote sustainable protection, management and planning for the Irish landscape.	No risk of likely significant in-combination effects will result as the primary purpose of the Plan is to improve biodiversity and ecosystems in Ireland by promoting sustainable planning for the Irish landscape.
National Peatland Strategy (DECLG)	Designed to conserve and protect peatlands in Ireland.	No risk of likely significant in-combination impacts as the Peatland Strategy aims to promote the conservation and management of peatlands in Ireland.
National Forestry Programme 2014 – 2020 (DAFM)	The Department's Statement of the Strategy includes the following goal: "Promoting economic, social and environmentally sustainable farming, fishing and forestry". Strategic actions under this goal include the developing and implementation measures, schemes and services that underpin a rural economy. Collaboration with other organisations to deliver policies on environmental sustainability and biodiversity. Enhance the development of a sustainable and diverse forestry sector. Implement measures to promote use of non-food crops for energy production.	Potential for in-combination effects if unmitigated with drainage issues associated with afforestation.
Catchment Flood Risk Assessment Management (CFRAM)	The Programme delivers on core components of the National Flood Policy; the programme is currently in a studies and studies of parallel activity stage. Implementation of the Plan is due to take place from 2016. The programme aims to meet the needs of the EU floods Directive. The Floods Directive applies to river basins and coastal areas at risk of flooding. With	Potential in-combination impacts may arise, if unmitigated, where there is a requirement to provide for new infrastructure such as flood walls or flood defences. Avoidance on, or near protected areas should be implemented or where this is not possible, favouring infrastructure that carries a lower risk of damage to protected areas should be

Directive	Purpose	Interactions resulting in Cumulative Impacts
	trends such as climate change and increased domestic and economic development in flood risk zones, this poses a threat of flooding in coastal and river basin areas.	emphasised in the plan.
Smarter Travel Initiative 2012-2016	Sustainable transport investment programme to encourage transport initiatives such as cycling, car sharing, the use of public transport etc.	Potential for in-combination effects with the Dublin to Galway Greenway if unmitigated as Smarter Travel encourages alternative modes of transport, therefore promoting greenways and other alternative routes which may cause amplified pressures on the Natura 2000 network in-combination with the proposed Greenway Plan.
Ireland's First National Cycle Policy Framework (2009)	<ul style="list-style-type: none"> •Outlines objectives and actions aimed at developing a strong cycle network in Ireland •Sets out 19 specific objectives, and details the 109 actions, aimed at ensuring that a cycling culture is developed 	Potential for in-combination effects with the Dublin to Galway Greenway if unmitigated as the Cycle Policy encourages alternative modes of transport, promoting greenways and other alternative routes which may cause amplified pressures on the Natura 2000 network in-combination with the proposed Greenway Plan.
Actions for Biodiversity 2011-2016 Ireland's National Biodiversity Plan, 2011	<ul style="list-style-type: none"> •Sets out strategic objectives, targets and actions to conserve and restore Ireland's biodiversity and to prevent and reduce the loss of biodiversity in Ireland and globally 	No in-combination impacts foreseen. The implementation of the Biodiversity Plan will have a positive impact on the Natura 2000 network.
Regional		
River Basin Management Plans	This plan aims to achieve good water quality within the region by 2015 in keeping with the Water Framework Directive	No risk of likely significant in-combination effects will result as the primary purpose of the Plan is to improve water quality in the South-west region.
Regional Planning Guidelines	Policy document which aims to direct the future growth of the South-east Area over the medium to long term and works to implement the strategic planning framework set out in the National Spatial Strategy (NSS)	Potential in-combination impacts may arise, if unmitigated, where there is a requirement to provide for new infrastructure. Provision of infrastructure may result in: <ul style="list-style-type: none"> • Habitat loss • Alteration of hydrology • Deterioration in water quality • Disturbance during construction / operation
Wild Atlantic Way (Fáilte Ireland)	The Wild Atlantic Way initiative incorporates the western seaboard of Ireland in its entirety as a 2,500 km touristic route. The Plan formulated by Fáilte Ireland promotes tourism from Cork to Donegal along the route.	Potential for in-combination effects with the Dublin to Galway Greenway if unmitigated from increased visitor numbers to sensitive areas. Both projects will also require the erection of signage in potentially sensitive areas.
Greater Dublin Area Cycle Network Plan	<ul style="list-style-type: none"> •Sets out a ten-year cycling strategy for Counties Dublin, Kildare, Meath and Wicklow •Plan to increase regions cycle network dramatically 	In combination with this Plan the greenway Plan will contribute towards smarter travel and associated positive environmental effects.
Local		
Transportation Strategy for the Greater Dublin Area 2011 - 2030	The Greater Dublin Area encompasses the Dublin and Mid-East Regions, which includes Counties Kildare, Meath and Wicklow. The Strategy's role is to establish the essential policies and measures required to support the Greater Dublin Area in meeting its full potential.	Potential for in-combination effects if unmitigated. The Transportation Strategy may formulate policies and measures requiring infrastructural development which may increase pressures on European sites potentially affected by the Dublin to Galway Greenway.

Directive	Purpose	Interactions resulting in Cumulative Impacts
Cycle Network Plan for the Greater Dublin Area (NTA)	The National Cycle Manual defines a cycle network as ' <i>a collection of connected routes. Routes are a set of connected links and junctions that follow logical corridors between zones or urban centres. The purpose of the cycle network is to connect the main zones of origin and destination within an urban area and should provide effective through-movement for cyclists. A well-planned cycle network will carry the vast majority of cycle journeys.</i> '	Potential for in-combination effects if unmitigated. Although the CNP is primarily focused on delivering cycle routes in urban areas, the development of the CNP may increase pressures on European sites potentially affected by the Dublin to Galway Greenway.
Connemara Greenway	The Connemara Greenway will consist of a 76km greenway linking Galway City to Clifden, upon completion it will be the longest greenway in Ireland, which generally follows the route of the disused Galway to Clifden railway.	Potential for in-combination effects if unmitigated. The proposed Galway City to Clifden Greenway will also increase pressures on European sites potentially affected by the development of the Dublin to Galway Greenway.
Maam Cross to Oughterard Road Improvement Project Clifden to Maam Cross Road Improvement Project M6 Galway to Ballinasloe Roadworks	These infrastructural development projects have been formulated to create a new Type 3 Single Carriageway road type. The N59 Clifden to Oughterard is divided into two sections: Clifden to Maam Cross (ca 30km) Maam Cross to Oughterard (ca 15 km). It is expected that the scheme will be primarily on-line widening with some isolated off line sections where the existing alignment is particularly poor.	Potential for in-combination affects if unmitigated as these road works occur in the corridor of the proposed greenway. These road works may increase pressures on European sites potentially affected by the implementation of the greenway plan.
Galway harbour Extension Project Salthill to Silverstrand Coastal Protection Scheme	Galway Harbour Company is seeking a ten year planning permission for the development of an extension of Galway Harbour at Renmore and Townparks and on lands to be reclaimed from the foreshore and the sea in Galway Bay to the south of the existing Galway Harbour Enterprise Park. The works will include re-development of some of the land at Galway Harbour Enterprise Park.	Potential for in-combinations effects if unmitigated. Works on Galway Harbour largely occur within Galway Bay SAC and SPA, and are likely to increase pressures on other European sites potentially affected by the implementation of the Plan.
Clare County Development Plan 2011- 2017 Dublin City Development Plan 2016 -2022 Galway County Development Plan 2015 – 2021 Kildare County Development Plan 2011 – 2017 Longford County Development Plan 2015 – 2021 Mayo County Development Plan 2014 - 2020 North Tipperary County Development Plan 2010 - 2016	Overall strategies for the proper planning and sustainable development of the administrative area of the relevant Local Authorities.	Development plans in existence throughout the surrounding counties acting alone or in combination can have a cumulative impact on European sites within 15 km of the ISA: Provision of infrastructure may result in: <ul style="list-style-type: none"> • Habitat loss • Alteration of hydrology • Deterioration in water quality • Disturbance during construction / operation

Directive	Purpose	Interactions resulting in Cumulative Impacts
Offaly County Development Plan 2014 – 2020 Roscommon County Development Plan 2014 – 2020 South Dublin County Council Plan 2010 – 2016 South Tipperary County Development Plan 2009 – 2015 Westmeath County Development Plan 2014-2020 Wicklow County Development Plan 2010 – 2016		
Local Area Plans (LAPs) of the Towns which occur in proximity to the greenway	LAPS outline the development of a townland and its environs over a six-year period, similar to County Development Plans but on a local scale. Development of infrastructure, retail, economic developments, tourism, agriculture, etc.	LAPs in existence throughout the surrounding counties acting alone or in combination can have a cumulative impact on European sites located within the corridor and 15 km of the Plan Provision of LAPs may result in increased pressures on the Natura 2000 network of sites.

3.5 Conclusion of Screening Stage

The likely impacts that could arise from the Plan have been examined in the context of a number of factors that could potentially affect the integrity of the Natura 2000 network of sites. On the basis of the findings of this Screening for AA, it is concluded that the Plan:

- i. is not directly connected with or necessary to the management of a European site; and
- ii. may have significant impacts on the Natura 2000 network.

Therefore, applying the precautionary principle and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 AA is required. That stage is set out in 4 of this report.

4 Stage 2 Appropriate Assessment

4.1 Introduction

The main objective of this stage (Stage 2) in the AA is to determine whether the proposed Greenway would result in significant adverse impacts on the integrity of any European site with respect to the site's structure, function, and/or conservation objectives.

The Stage 1 Screening presented above has identified 153 sites with potential to be affected by the proposed Greenway development. Therefore, Stage 2 AA is required. The potential adverse effects considered at this stage will either be effects occurring as a result of the implementation of the Plan alone or in-combination with other plans, programmes, and/or projects.

Detailed information relevant to the sites that has been reviewed to inform the AA includes the following:

- NPWS Site Synopsis
- Natura 2000 Standard Data Form
- Conservation Objectives and supporting documents

Table 10 Sites considered for Stage 2 Appropriate Assessment

Rivers and lakes	Bogs	Turloughs	SPAs (upland, wetland, and coastal)	Other
Aughrusbeg Machair And Lake SAC	Ballynafagh Bog SAC	Ardkill Turlough SAC	All Saints Bog SPA	Aughrusbeg Machair And Lake SAC
Ballynafagh Lake SAC	Camderry Bog SAC	Ballinduff Turlough SAC	Baldoyle Bay SPA	Baldoyle Bay SAC
Barnahallia Lough SAC	Carn Park Bog SAC	Ballinturly Turlough SAC	Ballykenny-Fisherstown Bog SPA	Ballymaglancy Cave, Cong SAC
Cregduff Lough SAC	Carrownagappul Bog SAC	Ballyvaughan Turlough SAC	Boyne Estuary SPA	Ballyman Glen SAC
Fin Lough (Offaly) SAC	Clara Bog SAC	Caherglassaun Turlough SAC	Connemara Bog Complex SPA	Ballymore Fen SAC
Levally Lough SAC	Connemara Bog Complex SAC	Carrowbaun, Newhall and Ballylee Turloughs SAC	Coole-Garryland SPA	Ballynamona Bog And Corkip Lough SAC
Lough Bane And Lough Glass SAC	Crosswood Bog SAC	Fortwilliam Turlough SAC	Cregganna Marsh SPA	Black Head-Poulsallagh Complex SAC
Lough Carra/Mask Complex SAC	Curraghlahanagh Bog SAC	Four Roads Turlough SAC	Cross Lough (Killadoon) SPA	Boyne Coast And Estuary SAC
Lough Corrib SAC	Ferbane Bog SAC	Greaghans Turlough SAC	Cruagh Island SPA	Castlesampson Esker SAC
Lough Coy SAC	Garriskil Bog SAC	Kilglassan/Caheravoostia Turlough Complex SAC	Dalkey Islands SPA	Castletaylor Complex SAC
Lough Ennell SAC	Kilsallagh Bog SAC	Lisduff Turlough SAC	Dovegrove Callows SPA	Charleville Wood SAC
Lough Fingall Complex SAC	Mongan Bog SAC	Lough Croan Turlough SAC	Four Roads Turlough SPA	Cloughmoyne SAC
Lough Forbes Complex SAC	Monivea Bog SAC	Rahasane Turlough SAC	Garriskil Bog SPA	Clyard Kettle-Holes SAC
Lough Funshinagh SAC	Mouds Bog SAC	Shrulle Turlough SAC	Glen Lough SPA	Coole-Garryland Complex SAC
Lough Lene SAC	Mount Hevey Bog SAC	Skealaghan Turlough SAC	High Island, Inishshark and Davillaun SPA	Dog's Bay SAC
Lough Nageeron SAC	Moyclare Bog SAC	Williamstown Turloughs SAC	Howth Head Coast SPA	East Burren Complex SAC
Lough Owel SAC	Raheenmore Bog SAC		Illaunnanoon SPA	Galway Bay Complex SAC
Lough Rea SAC	Red Bog, Kildare SAC		Inishbofin, Omev Island and Turbot Island SPA	Glenasmole Valley SAC

Rivers and lakes	Bogs	Turloughs	SPAs (upland, wetland, and coastal)	Other
Lough Ree SAC	Rosroe Bog SAC		Inishmore SPA	Glenloughaun Esker SAC
Macorha Lough SAC	Scragh Bog SAC		Inner Galway Bay SPA	Gortnandarragh Limestone Pavement SAC
River Barrow And River Nore SAC	Shankill West Bog SAC		Ireland's Eye SPA	Howth Head SAC
River Boyne And River Blackwater SAC			Lambay Island SPA	Inishbofin And Inishshark SAC
River Boyne And River Blackwater SAC			Lough Carra SPA	Ireland's Eye SAC
River Moy SAC			Lough Corrib SPA	Kildun Souterrain SAC
River Shannon Callows SAC			Lough Croan Turlough SPA	Kilkieran Bay And Islands SAC
Ross Lake And Woods SAC			Lough Derg (Shannon) SPA	Killeglan Grassland SAC
Rusheenduff Lough SAC			Lough Derravaragh SPA	Kingstown Bay SAC
Rye Water Valley/Cartron SAC			Lough Ennell SPA	Knocksink Wood SAC
Tully Lough SAC			Lough Iron SPA	Lambay Island SAC
White Lough, Ben Loughs And Lough Doo SAC			Lough Kinale and Derragh Lough SPA	Lisnageeragh Bog And Ballinastack Turlough SAC
			Lough Mask SPA	Lough Lurteen Bog/Glenamaddy Turlough SAC
			Lough Owel SPA	Malahide Estuary SAC
			Lough Rea SPA	Maumturk Mountains SAC
			Lough Ree SPA	Moneen Mountain SAC
			Lough Sheelin SPA	Murvey Machair SAC
			Malahide Estuary SPA	Mweelrea/Sheeffry/Erriff Complex SAC
			Middle Shannon Callows SPA	North Dublin Bay SAC
			Mongan Bog SPA	Omev Island Machair SAC
			North Bull Island SPA	Pilgrim's Road Esker SAC
			Poulaphouca Reservoir SPA	Pollardstown Fen SAC
			Rahasane Turlough SPA	Rockabill to Dalkey Island SAC
			River Boyne and River Blackwater SPA	Rogerstown Estuary SAC
			River Little Brosna Callows SPA	Slyne Head Islands SAC
			River Nanny Estuary and Shore SPA	Slyne Head Peninsula SAC
			River Suck Callows SPA	South Dublin Bay SAC
			Rockabill SPA	Split Hills And Long Hill Esker SAC
			Rogerstown Estuary SPA	The Long Derries, Edenderry SAC
			Skerries Islands SPA	The Twelve Bens/Garraun Complex SAC
			Slieve Aughty Mountains SPA	Tully Mountain SAC
			Slieve Bloom Mountains SPA	Wicklow Mountains SAC

Rivers and lakes	Bogs	Turloughs	SPAs (upland, wetland, and coastal)	Other
			Slyne Head To Ardmore Point Islands SPA	
			South Dublin Bay and River Tolka Estuary SPA	
			The Murrough SPA	
			Wicklow Mountains SPA	

4.2 Identifying and Charactering Potential Significant Effects

The following parameters are described when characterising impacts (following CIEEM (2016), EPA (2002) and NRA (2009)):

Direct and Indirect Impacts - An impact can be caused either as a direct or as an indirect consequence of a proposed development.

Magnitude - Magnitude measures the size of an impact, which is described as high, medium, low, very low or negligible.

Extent - The area over which the impact occurs – this should be predicted in a quantified manner.

Duration - The time for which the effect is expected to last prior to recovery or replacement of the resource or feature.

- Temporary: Up to 1 Year;
- Short Term: The effects would take 1-7 years to be mitigated;
- Medium Term: The effects would take 7-15 years to be mitigated;
- Long Term: The effects would take 15-60 years to be mitigated;
- Permanent: The effects would take 60+ years to be mitigated.

Likelihood – The probability of the effect occurring taking into account all available information.

- Certain/Near Certain: >95% chance of occurring as predicted;
- Probable: 50-95% chance as occurring as predicted;
- Unlikely: 5-50% chance as occurring as predicted;
- Extremely Unlikely: <5% chance as occurring as predicted.

The Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for ecological impact assessment (CIEEM 2016) define an ecologically significant impact as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographic area. The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified (CIEEM, 2016).

The Habitats Directive requires the focus of the assessment at this stage to be on the integrity of the site as indicated by its Conservation Objectives. It is an aim of NPWS to draw up conservation management plans for all areas designated for nature conservation. These plans will, among other things, set clear objectives for the conservation of the features of interest within a site.

Site-specific conservation objectives (SSCOs) have been prepared for a number of European sites. These detailed SSCO aim to define favourable conservation condition for the qualifying habitats and species at that site by setting targets for appropriate attributes which define the character habitat. The maintenance of the favourable condition for these habitats and species at the site level will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a species can be described as being achieved when: *'population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'*

Favourable conservation status of a habitat can be described as being achieved when: *'its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable.'*

Generic Conservation Objectives for cSACs have been provided as follows:

- *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.*

One generic Conservation Objective has been provided for SPAs as follows:

- *To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.*

4.2.1 Identification of Potential Significant Effects

As outlined in the European Commission Environment DG document "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", impacts that could potentially occur through the implementation of the proposed Greenway can be categorised under a number of headings:

- Loss / reduction of habitat area (e.g. due to the development of new projects)
- Disturbance to Key Species (e.g. increased public access to protected sites, or during the construction phase of infrastructure projects)
- Habitat or species fragmentation
- Reduction in species density
- Changes in key indicators of conservation value such as decrease in water quality / quantity (e.g. through inadequate wastewater treatment, run-off of pollutants during construction and operation of developments)

The Plan includes a provision for the development of a greenway which will utilise existing disused tracks and trails where possible but may require the extension of these trails into natural or semi-natural habitat. A summary of the potential significant effects on the European sites associated with the development of such a greenway is presented below. The route of the greenway has not yet been identified and the analysis of likely impacts is examined at a high level at this stage. It must be noted that the development of the greenway will itself be subject to project level AA when routes are identified at project level.

4.2.1.1 Reduction of Habitat Area

Direct habitat loss is caused where there is complete removal of a habitat type. Habitat loss can also occur through the reduction of habitat quality and a loss of important habitat functions. It can arise

from the introduction of invasive species, toxic contamination or physical alteration. Indirectly, it can be caused by significant hydrological alteration of water dependent habitats.

Direct habitat loss may result from the initial footprint of the project where the route may traverse a European site. Furthermore, indirect habitat loss may potentially arise should the route be chosen adjacent to or in close proximity to a European site. Where drainage works occur within or adjacent to a site, potential for habitat loss and degradation of the sites habitats may occur.

The possible extent and significance of habitat loss due to the construction of the greenway cannot yet be determined as the detailed design and route of the greenway are not know. However, avoidance of habitat loss at the vast majority of the sites identified for Stage 2 AA should be possible by giving due consideration to ecological constraints (such as European sites) during the route selection process.

4.2.1.2 Disturbance to Key Species

Disturbance to species supported by a European site is likely to increase where there is an increase in activity levels from recreation and amenity or from developments within or adjacent to sensitive designated areas. Sources of disturbance include noise, vibration, light, construction and operation activities or other sources of disturbance arising from recreation and amenity or from the inappropriate timing of works.

The proposed greenway may potentially lead to increased visitor numbers and activity levels to sensitive areas. Disturbance to key species may occur should the route occur adjacent to or within a European site. Some of the European sites identified are vulnerable to disturbance from walkers and dogs. As the route of the greenway has not yet been identified it is assumed that all sites designated for sensitive species, including SPAs, within the ISA of the Plan are susceptible to disturbance from the implementation of the Plan, in the form of noise, light, construction and operation. The operational stage of the Plan may potentially lead to greater visitor numbers to sensitive areas, leading to increased noise, and possibly light pollution.

However, avoidance of disturbance at the vast majority of the sites identified for Stage 2 AA should be possible by giving due consideration to ecological constraints (such as the presence of key species that would be vulnerable to disturbance) during the route selection and detailed design phase.

4.2.1.3 Fragmentation

In the case of a continuous linear project from Dublin to Galway it may not be possible to completely avoid European sites. Habitat and species fragmentation can occur through the breaking up of or loss of habitats resulting in interference with existing ecological units. Fragmentation can also result from impediments to the natural movements of species. This is relevant where important corridors for movement or migration are likely to be disrupted such as along river corridors when construction introduces a barrier to the free movement of species from one area of habitat to another. Nocturnal species such as bats are particularly sensitive to light pollution². Therefore, the lighting used for the cycleway has potential to act as a barrier between resources.

Those European sites potentially affected include sites within the ISA of the Plan as the route of the greenway has not yet been identified. The implementation of the Plan may potentially lead to the removal of, or disruption of, ecological corridors, such as hedgerows and treelines which are valuable ecological corridors for some faunal species.

However, avoidance of habitat and species fragmentation at the vast majority of the sites identified for Stage 2 AA should be possible by giving due consideration to ecological constraints (such as European sites and ecological corridors) during the route selection process.

4.2.1.4 Reduction in Species Density

Species densities is often linked to habitat quality and the availability of resources. Route selection to facilitate the avoidance of key ecological receptors and European Sites is a key element of this

² Stone, E.L. (2013) Bats and lighting: Overview of current evidence and mitigation guidance

project. Each proposed development within the plan will be subject to an individual Appropriate Assessment which will take into account fine scale population information for each of the sites.

Based on the likely characteristics of the proposed greenway, impacts to species densities are not foreseen during the operational phase.

4.2.1.5 Changes in Key Indicators of Conservation Value

The key indicators of conservation value for the majority of the European sites considered in Table 10 are water quality and quantity.

Those sites which are designated for aquatic species and habitats (rivers, turloughs, and lakes) could potentially be impacted by any significant deterioration in water quality that could arise during the construction phase. Sites located downstream of the development could potentially be impacted.

Similarly, any changes in drainage and hydrological conditions associated with the development of the greenway could potentially impact on the hydrological integrity of sensitive sites, such as rivers, lakes, turloughs, bogs, fens, and other wetlands.

Based on the likely characteristics of the proposed greenway, such impacts are not foreseen during the operational phase.

4.2.2 Conservation Objectives

The Habitats Directive requires the focus of the assessment at this stage to be on the integrity of the site as indicated by its Conservation Objectives. It is an aim of NPWS to draw up conservation management plans for all areas designated for nature conservation. These plans will, among other things, set clear objectives for the conservation of the features of interest within a site. Conservation objectives have been prepared for five sites which have been considered in Stage 2 of this assessment.

These site-specific conservation objectives aim to define favourable conservation condition for the qualifying habitats and species at that site. The maintenance of the favourable condition for these habitats and species at the site level will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a species can be described as being achieved when: 'population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'

Favourable conservation status of a habitat can be described as being achieved when: 'its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable'.

Where no management plan or detailed conservation objectives are available, the NPWS has provided generic Conservation Objectives for designated European sites. Generic Conservation Objectives for cSACs have been provided as follows:

- *To maintain or restore the favourable conservation condition of the Annex I habitat(s) and / or the Annex II species for which the cSAC has been selected.*

One generic Conservation Objective has been provided for SPAs as follows:

- *To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.*

Detailed Conservation Objectives have been prepared for 159 European sites in Ireland (123 cSAC and 36 SPA). The conservation objectives of each qualifying habitat and species for European sites

are presented as a selection of attributes against which targets are set. All of these attributes in relation to each relevant feature have been considered in relation to the potential impacts associated with the proposed Greenway outlined in Section 3.3.3 above. It is expected that detailed site specific conservation objectives will be more useful for project level AA.

5 Mitigation Measures

5.1 Introduction

This section outlines measures that are to be incorporated into the Plan in order to mitigate against potential impacts on the Natura 2000 network of sites as identified above.

The main means by which mitigation is to be provided for is the inclusion of Appendix I 'Environmental Management of Sustainable Development' to the Plan. This includes a range of provisions that will safeguard the Natura 2000 sites against potential adverse impacts due to the development of the Dublin to Galway greenway.

5.2 Changes to the Main Plan Document

A number of changes are recommended with respect to the main Plan document. These changes are flagged in 'green' in sections 2.1.3 and 2.1.4 above. The changes relate to the addition of a commitment to comply with provisions detailed in a new Appendix to the Plan. This Appendix I, 'Environmental Management and Sustainable Development', has been recommended for inclusion in the Plan by the SEA and AA. The content relative to AA is presented in Table 11 below.

5.3 Reduction of habitat area (habitat loss)

The route selection process will be the primary means of mitigating against habitat loss. An outline of this route selection process is to be included in Appendix I of the Plan. Potential habitat loss will be a key consideration during 'least constrained' options appraisal process of the route selection.

Through careful and considered route selection, as set out in Table 11 below, the route of the greenway will, where possible, avoid traversing designated European sites thereby limiting direct habitat loss. However, based on the distribution of European sites throughout the study area, it may not be possible to avoid all sites. Where it is not possible to avoid European sites, then the chosen route across the site should be informed by project level AA, the outcome of which will also inform the detailed design and if appropriate provide for site specific mitigation to minimise any potential impacts on the relevant site(s).

The proposed greenway should follow as much as possible existing infrastructure corridors such as; canal towpaths, disused railway lines, and existing roads or tracks. This will also limit the loss of semi-natural habitat and associated impacts.

5.4 Fragmentation

Careful and considered route selection will be the primary mitigation measure to reduce the likelihood of fragmentation of sensitive habitats resulting from the implementation of the Plan. Potential fragmentation effects to habitats and species of European sites will be a key consideration during route selection.

Features outside of designated sites which provide ecological connectivity (such as watercourse and associated habitats, linear woodlands etc) will be considered as constraints during corridor identification and evaluation, and subsequent route selection.

Other site specific mitigation that may be required to reduce the effects of unavoidable fragmentation will be provided for as necessary following the project level AA; such as directional lighting for nocturnal species.

5.5 Disturbance to Key Species

Disturbance to key species has been identified as a potential impact during both the construction and operational phase of the greenway. The route selection process will be the primary means of mitigating against potential disturbance to the qualifying interests for which European sites are designated.

Un-designated sites which are of importance to wintering or breeding bird species of conservation concern, or provide wildlife corridors for sensitive species will also be considered as constraints during the route selection process. Further details on these considerations can be found in the Strategic Impact Assessment for the Plan.

The route of the greenway will, where possible, avoid traversing designated European sites thereby limiting disturbance or displacement of key species. However, based on the distribution of European sites throughout the study area, it will not be possible to avoid all European sites. Where it is not possible to avoid European sites, then the chosen route across the site should be informed by project level AA, the outcome of which will also inform the detailed design and if appropriate provide for site specific mitigation to minimise any potential impacts on the relevant site.

5.6 Potential impacts on water dependant habitats and species

The proposed Greenway has been identified as potentially giving rise to adverse impacts on water quality/quantity within all water dependent European sites within the ISA and those downstream of the proposed Greenway which are hydrologically linked to route. This has further potential for indirect impacts on the water-dependent Annex I habitats or Annex II species (such as salmon and otter) adjacent to, or downstream of, the works. The avoidance of European sites is the primary means of avoiding such impacts.

Pollution control measures must be utilized where works occur adjacent to watercourses, to minimise the potential transport of deleterious substances to European sites and their associated habitats and/or species. A Construction and Environmental Management Plan (CEMP) will be prepared in advance of the construction phase of the project and implemented throughout. The CEMP will incorporate relevant mitigation measures from this report, associated SEA and any lower tier AA or SEA. Should the selected route be unable to avoid water crossings more specific mitigation measures must be integrated to prevent potential adverse impacts on watercourses.

A description of both Environmental Constraints and Opportunity mapping and Route Selection Criteria will be provided for use in the identification of Opportunity Corridors as part of lower tier planning and environmental assessment. When compiled for relevant areas at project level, the mapping will provide an indication of the areas that are most sensitive (including European sites) with respect to the development of a greenway; and those that are most suited. Both the mapping and the criteria will enable the adverse effects of implementing the Plan at project level to be identified and appropriately mitigated.

Table 11 Selected proposed measures and controls to be included in Appendix I of the Plan which will mitigate potential impacts on European sites.

Mitigating Provisions included in Appendix I Relevant to the Safeguarding of Europeans Sites	Means by which proposed mitigation addresses potential impacts on European sites
<p>Key Measure: Environmental Constraints and Opportunity Mapping</p> <p>Environmental Constraints and Opportunity mapping will be prepared at project level as part of lower tier planning and environmental assessment. The mapping will allow the identification of the areas that are most sensitive with respect to the development of a greenway and those that are most suited. Opportunities and constraints will be overlain upon each other using a Geographical Information System, allowing for the identification of Opportunity Corridors. Planning/Environmental Assessment teams may augment the datasets to be included to ensure that they are appropriate to the parts of the project being considered and differentiation in the weighting of certain layers may be applied. Additional datasets including those detailed under Sections 4.3 to 4.10 of the SEA Environmental Report may be considered for inclusion in the mapping where relevant/appropriate or during further detailed refinement of the route. It is emphasised that the occurrence of constraints does not necessarily preclude development; rather it flags where specific mitigation measures may be required to ensure that adverse effects do not occur. Some components, such as a cultural heritage, for example, are included as both constraints and opportunities as these would be both attractive to greenway users and potentially sensitive to the construction of a greenway and associated development.</p> <p>The following datasets will be used by constraints mapping:</p> <ul style="list-style-type: none"> • Candidate Special Areas of Conservation and Special Protection Areas; • Features of the landscape that provide linkages/connectivity to designated sites (e.g. watercourses, areas of semi-natural habitat such as linear woodlands etc) • Salmonid Waters; • Shellfish Waters; • Freshwater Pearl Mussel catchments; • Nature Reserves; • Natural Heritage Areas and proposed Natural Heritage Areas; • Areas likely to contain a habitat listed in annex 1 of the Habitats Directive (from CORINE land cover mapping); • Information on badger sets from the Department of Agriculture, Food and the Marine, relevant datasets from the National Biodiversity Data Centre and BirdWatch Ireland's 'Important Bird Areas'; • Entries to the Record of Monuments and Places and Zones of Archaeological Potential; • Entries to the Record of Protected Structures; • Un-designated sites of importance to wintering or breeding bird species of conservation concern; • Architectural Conservation Areas; and • Relevant landscape designations. <p>The following datasets will be used by opportunities mapping:</p> <ul style="list-style-type: none"> • Proximity to settlements (400m³ buffer to be applied around towns and villages); • Existing linear infrastructure (canal rights of way, river corridor rights of way, railway rights of way, motorways/roads, cycle networks along roads and through parks and tracks on state owned lands); • Entries to the Record of Monuments and Places; • Zones of Archaeological Potential; • Entries to the Record of Protected Structures; • Architectural Conservation Areas; • Relevant landscape designations; and • Slope⁴. 	<p>Avoidance of European sites and sensitive ecological receptors is an overarching method for avoiding potential adverse impacts on the Natura 2000 network of sites.</p> <p>Constraints mapping will allow the route selection process to avoid European sites and undesignated sites that may provide connectivity or which are of importance to wintering or breeding birds of conservation concern.</p> <p>Route selection will take into consideration hydrological sensitivities and the presence of sensitive aquatic receptors and hydrological connectivity.</p> <p>The identification of existing infrastructure corridors would assist in determining those areas that are likely to be least sensitive to ecological impacts.</p>

³ 400m is the typical accepted walking catchment in urban design e.g. referenced in Department of Transport, Tourism and Sport and Department of Environment, Community and Local Government (2013) *Design Manual for Urban Roads and Streets*

⁴ Generally, a maximum gradient of 3% is preferred where possible (steep inclines and difficult to climb and may exclude some users) and a minimum gradient of 0.5% (to facilitate drainage)

[Manton & Clifford (2011) 'Rural cycle route design' in *Proceedings of the ITRN2011 31st August – 1st September*, University College Cork]

Mitigating Provisions included in Appendix I Relevant to the Safeguarding of Europeans Sites	Means by which proposed mitigation addresses potential impacts on European sites
<p>Key Measure: Corridor and Routeway Selection Process</p> <p>The following Corridor and Routeway Selection Process will be undertaken for the greenway as follows:</p> <p>Stage 1 Route Corridor Identification, Evaluation and Selection</p> <p>The environmental constraints and opportunities will assist in the identification of possible route corridor options.</p> <p>Potentially feasible corridors within which a greenway could be accommodated will be identified and these corridors assessed. The selection of the preferred route corridor will avoid constraints and meet opportunities to the optimum extent, as determined by the relevant specialists.</p> <p>In addition to the constraints identified above, site specific field data may be required to identify the most appropriate corridor.</p> <p>Stage 2 Routeway Identification, Evaluation and Selection</p> <p>Potentially feasible routeways within the preferred corridor will be identified and assessed. The selection of the preferred routeway will avoid constraints and meet opportunities to the optimum extent, as determined by the relevant specialists, taking into account project level information and potential mitigation measures.</p> <p>In addition to the constraint identified above, site specific field data may be required to identify the most appropriate route</p> <p>In addition to environmental considerations, the identification of route corridors and the refinement of the route line is likely to be informed by other considerations such as access to lands, perceptions of safety and attractiveness, costs and benefits and ease of maintenance.</p>	<p>The environmental constraints and opportunities mapping will assist in the route corridor, and subsequent route identification process. The development of such mapping will assist in the avoidance of potentially sensitive areas, whilst identifying opportunistic route development areas; in effect this process will further contribute to the safeguarding of the Natura 2000 network of sites.</p>
<p>Regulatory framework for environmental protection and management</p> <p>The Department is committed to cumulatively contributing towards – in combination with other users and bodies – the achievement of the objectives of the regulatory framework for environmental protection and management. The Department will ensure, as appropriate, that plans, programmes and projects comply with EU Directives - including the Habitats Directive (92/43/EEC, as amended), the Birds Directive (2009/147/EC), the Environmental Impact Assessment Directive (85/337/EEC, as amended) and the Strategic Environmental Assessment Directive (2001/42/EC) – and relevant transposing Regulations.</p>	<p>Contribution toward these directives and regulations will further contribute to the protection of designated European sites potentially affected by the Plan.</p>
<p>Construction and Environmental Management Plan</p> <p>A Construction Environment Management Plan (CEMP) shall be prepared in advance of the construction of the project and implemented throughout. This plan shall incorporate relevant mitigation measures indicated in the SEA Environmental Report and any lower tier Environmental Impact Statement or Appropriate Assessment. CEMPs typically provide details of intended construction practice for the proposed development, including:</p> <ol style="list-style-type: none"> location of the sites and materials compound(s) including area(s) identified for the storage of construction refuse, location of areas for construction site offices and staff facilities, details of site security fencing and hoardings, details of on-site car parking facilities for site workers during the course of construction, details of the timing and routing of construction traffic to and from the construction site and associated directional signage, measures to obviate queuing of construction traffic on the adjoining road network, measures to prevent the spillage or deposit of clay, rubble or other debris, alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public right of way during the course of site development works, details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels, containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained; such bunds shall be roofed to exclude rainwater, disposal of construction/demolition waste and details of how it is proposed to manage excavated soil, a water and sediment management plan, providing for means to ensure that surface water runoff is controlled such that no silt or other pollutants enter local water courses or drains, details of a water quality monitoring and sampling plan. if peat is encountered - a peat storage, handling and reinstatement management plan. measures adopted during construction to prevent the spread of invasive species (such as Japanese Knotweed). appointment of an ecological clerk of works at site investigation, preparation and construction phases. details of appropriate mitigation measures for lighting specifically designed to minimise impacts to biodiversity. 	<p>The development of a CEMP will ensure that relevant mitigation measures from lower level SEA and AA will be adhered to during the development and operational phases. The CEMP will also ensure that best practice construction methods are adopted throughout the development of the Plan.</p> <p>The inclusion of a CEMP will safeguard the integrity of the Natura 2000 network of sites by minimising the potential for habitat loss, disturbance of species and potential adverse impacts on water quality/quantity dependant sites.</p>

Mitigating Provisions included in Appendix I Relevant to the Safeguarding of Europeans Sites	Means by which proposed mitigation addresses potential impacts on European sites
<p>Maintenance Plan Lower tier assessments should examine the need for Maintenance Plans informed by environmental considerations to be prepared and implemented.</p>	<p>The development of maintenance plans will ensure that the maintenance of the route will have minimal impacts on the surrounding natural environment.</p> <p>Maintenance plans will also allow for appropriate habitat management plans thereby minimising the potential for habitat loss, fragmentation, disturbance to key species, and potential adverse impacts on water dependant European sites.</p>
<p>Maximising positive effects on sustainable mobility In order to maximise positive effects on sustainable mobility (and associated benefits regarding greenhouse gas emissions, noise emissions and other emissions to air and human health), the Department will seek to, taking into account other factors such as environmental protection and planning considerations:</p> <ul style="list-style-type: none"> Maximise the length of greenway developed along existing linear infrastructure, taking into account other factors such as environmental protection and planning considerations; and <p>Maximise the number of settlements within the greenway's catchment area.</p>	<p>Using existing structures will reduce the level of habitat loss, this will limit the potential direct impacts to any European Site.</p>
<p>Construction Waste All waste arising during the construction phase will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts and regulations and any of the relevant Local Authorities Waste Management Plans. A Construction Waste Management Plan will be implemented to minimise waste and ensure correct handling and disposal of construction waste streams in accordance with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, Department of the Environment, July 2006.</p> <p>Waste Creation Support the minimisation of waste creation and promote a practice of reduce, reuse and recycle where possible.</p> <p>Waste Disposal Safeguard the environment by seeking to ensure that residual waste is disposed of appropriately.</p> <p>Irish Water Co-operate with and support, as relevant and appropriate, Irish Water in its new role as the lead authority for water services.</p>	<p>All construction waste will be subject to removal under licence from the Waste Management Acts and regulations. Waste creation will be minimised through the 'reduce, reuse and recycle' principal.</p> <p>These various measures will further limit any effect to the designated European sites potentially affected by the Plan.</p>
<p>Visitor Management Strategy</p> <ul style="list-style-type: none"> Research by Fáilte Ireland in the Burren has shown improved environmental outcomes (improved attainment of conservation objectives) in areas with visitor management strategies. A visitor management strategy during the implementation of the Greenway project could contribute positively to advancing the attainment of conservation objectives along and adjacent to the route, thereby benefitting the management of designated sites. Based on existing Waterways Ireland and Office of Public Works visitor management strategy practices, the Department will ensure that a visitor management strategy informs the implementation of the Greenway project. <p>Protection of Biodiversity including Natura 2000 Network Contribute, as appropriate, towards the protection of designated ecological sites including candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs); UNESCO World Heritage and UNESCO Biosphere sites; Ramsar Sites; Salmonid Waters; Shellfish Waters; Freshwater Pearl Mussel catchments; Flora Protection Order sites; Wildlife Sites (including Nature Reserves); Certain entries to the Water Framework Directive Register of Protected Areas; Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs); Wildfowl Sanctuaries (see S.I. 192 of 1979); and Tree Preservation Orders (TPOs).</p> <p>The protection of natural heritage and biodiversity, including European sites that form part of the Natura 2000 network, will be implemented in accordance with relevant EU</p>	<p>The development of a well-informed visitor management strategy will minimise habitat loss, fragmentation and disturbance to key species by visitors to sensitive areas.</p> <p>The need for appropriate assessment at project level will minimise potential impacts on European sites and will ensure that no projects giving rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites which may lead to adverse effects shall be permitted on the basis of this Plan (either individually or in combination with other plans or projects⁶).</p> <p>These various commitments will further contribute to the</p>

⁶ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:

- no alternative solution available,
- imperative reasons of overriding public interest for the plan to proceed; and
- Adequate compensatory measures in place.

Mitigating Provisions included in Appendix I Relevant to the Safeguarding of Europeans Sites	Means by which proposed mitigation addresses potential impacts on European sites
<p>Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines, including the following and any updated/superseding documents):</p> <ul style="list-style-type: none"> • EU Directives, including the Habitats Directive (92/43/EEC, as amended), the Birds Directive (2009/147/EC), the Environmental Liability Directive (2004/35/EC), the Environmental Impact Assessment Directive (85/337/EEC, as amended), the Water Framework Directive (2000/60/EC) and the Strategic Environmental Assessment Directive (2001/42/EC). • National legislation, including the Wildlife Act 1976, the European Communities (Environmental Impact Assessment) Regulations 1989 (SI No. 349 of 1989) (as amended), the Wildlife (Amendment) Act 2000, the European Union (Water Policy) Regulations 2003 (as amended), the Planning and Development Act 2000 (as amended), the European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011), the European Communities (Environmental Liability) Regulations 2008 and the Flora Protection Order 1999. • National policy guidelines, including the Landscape and Landscape Assessment Guidelines 2000, the Environmental Impact Assessment Sub-Threshold Development Guidelines 2003, Strategic Environmental Assessment Guidelines 2004 and the Appropriate Assessment Guidance 2010. • Catchment and water resource management Plans, including River Basin District Management Plans 2009-2015. • Biodiversity Plans and guidelines, including Actions for Biodiversity 2011-2016: and Ireland's National Biodiversity Plan. • Ireland's Environment 2015 (EPA, 2016), and to make provision where appropriate to address the report's goals and challenges. <p>Appropriate Assessment</p> <p>All projects and plans arising from this plan will be screened for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. A plan or project will only be authorised after the competent authority has ascertained, based on scientific evidence, Screening for Appropriate Assessment, and a Stage 2 Appropriate Assessment where necessary, that:</p> <ol style="list-style-type: none"> 1. The Plan or project will not give rise to significant adverse direct, indirect or secondary effects on the integrity of any European site (either individually or in combination with other plans or projects); or 2. The Plan or project will have significant adverse effects on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or 3. The Plan or project will have a significant adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000. <p>Protection of Natura 2000 Sites</p> <p>No projects giving rise to significant cumulative, direct, indirect or secondary impacts on Natura 2000 sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans or projects⁵).</p> <p>Areas of geological interest</p> <p>Contribute towards, as appropriate, the protection and maintenance of the character, integrity and conservation value of features or areas of geological interest.</p> <p>NPWS & Integrated Management Plans</p> <p>The Department shall endeavour to engage with the National Parks & Wildlife Service to ensure Integrated Management Plans are prepared for all Natura sites and ensure that</p>	<p>protection of designated European sites potentially affected by the Plan.</p>

⁵ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:

- a) no alternative solution available,
- b) imperative reasons of overriding public interest for the plan to proceed; and
- c) Adequate compensatory measures in place.

Mitigating Provisions included in Appendix I Relevant to the Safeguarding of Europeans Sites	Means by which proposed mitigation addresses potential impacts on European sites
<p>plans are fully integrated with the Greenway Plan and other plans, with the intention that such plans are practical, achievable and sustainable and have regard to all relevant ecological, cultural, social and economic considerations and with special regard to local communities.</p> <p>Coastal Zone Works undertaken in coastal areas will be in accordance with best practice and the Department will, as appropriate, support measures to protect the coast, the coastal edge and coastal habitats. The Department will seek, as appropriate, to contribute towards an Integrated Coastal Zone Management approach to ensure the conservation, management and protection of man-made and natural resources of the coastal zone.</p> <p>National Peatlands Strategy To implement any relevant recommendations contained in the Department of Arts, Heritage and the Gaeltacht's National Peatlands Strategy, when finalised.</p> <p>Biodiversity and Ecological Networks Support, as appropriate, the protection and enhancement of biodiversity and ecological connectivity, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, geological and geo-morphological systems, other landscape features, natural lighting conditions and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones in the context of Article 10 of the Habitats Directive.</p> <p>Waters Contribute towards, as appropriate, the protection of the water resources, including rivers, streams, wetlands, groundwater, coastal waters and associated habitats and species in accordance with the requirements and guidance in the EU Water Framework Directive 2000 (2000/60/EC), the European Union (Water Policy) Regulations 2003 (as amended), the relevant River Basin Management Plans and other relevant EU Directives, including associated national legislation and policy guidance (including any superseding versions of same). Support the application and implementation of a catchment planning and management approach to development and conservation, including the implementation of Sustainable Drainage System techniques for new development.</p> <p>Protection of Riparian Zone and Waterbodies and Watercourses Protect waterbodies and watercourses from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains. This will include protection buffers in riverine, wetland and coastal areas as appropriate, especially between designated sites and cycle lanes and associated infrastructure.</p> <p>Non-Designated Sites Recognise that nature conservation is not just confined to designated sites and acknowledge the need to protect non-designated habitats and landscapes and to conserve the biological diversity.</p> <p>Non-native invasive species Support, as appropriate, the National Parks and Wildlife Service's efforts to seek to control the spread of non-native invasive species on land and water.</p>	
<p>Directives and Regulations Contribute towards, as appropriate, the protection of existing and potential water resources, and their use by humans and wildlife, in accordance with the EU Water Framework Directive, the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009), the Groundwater Directive 2006/118/EC and the European Communities Environmental Objectives (groundwater) Regulations, 2010 (S.I. No. 9 of 2010) or any updated legislation.</p> <p>River Basin Management Plan Support the implementation of the relevant recommendations and measures as outlined in the various relevant River Basin Management Plans, and associated Programmes of Measures, or any such plans that may supersede same during the lifetime of the Greenway Plan, as well as relevant recommendations contained in the Water Quality in Ireland 2010-2012 (EPA, 2015, and any updated/superseding document). The Department will seek to demonstrate that proposals for development would not have an unacceptable impact on the water environment, including surface waters, groundwater quality and quantity, river corridors and associated woodlands and coastal waters. Also the Department will have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 which provides guidance on exemptions to the environmental objectives of the Water Framework Directive.</p> <p>Bathing Water Contribute towards the achievement of the requirements of the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008) and EU Mandatory Values, as a minimum, and EU Guide Values, where possible.</p> <p>Flood Risk Management Guidelines Support, as appropriate, in co-operation with the OPW and planning authorities, the</p>	<p>These measures will safeguard the integrity of water quality/quantity dependant habitats and species for which European sites are designated.</p>

Mitigating Provisions included in Appendix I Relevant to the Safeguarding of Europeans Sites	Means by which proposed mitigation addresses potential impacts on European sites
<p>implementation of the EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010), the DEHLG/OPW publication <i>The Planning System and Flood Risk Management Guidelines</i> (2009) (and any updated/superseding legislation or policy guidance) and relevant outputs of the Catchment and Flood Risk Assessment and Management Studies (CFRAMS).</p> <p>Improvement and/or Restoration of Natural Flood Risk Management Functions Support, subject to compliance with the Habitats and Birds Directives, the improvement and/or restoration of the natural flood risk management functions of flood plains.</p> <p>Surface Water Drainage and Sustainable Drainage Systems (SuDs) Ensure that new development is adequately serviced with surface water drainage infrastructure and promote the use of Sustainable Drainage Systems as appropriate. Also see measures related to water quality and waste water treatment.</p>	
<p>Soil Protection and Contamination The Department shall ensure that adequate soil protection measures are undertaken where appropriate. Adequate and appropriate investigations shall be carried out into the nature and extent of any soil and groundwater contamination and the risks associated with site development work, where brownfield development is proposed.</p>	<p>Soil protection measures will lessen the likelihood of groundwater contamination, therefore minimising the potential for adverse impacts on groundwater dependant habitats.</p>
<p>Landscape Designations Contribute, as appropriate, towards the protection of county and local level landscape designations and Special Amenity Area Order designations from incompatible developments. Proposals for development that have the potential to significantly adversely impact upon these designations shall be accompanied by an assessment of the potential landscape and visual impacts of the proposed development - demonstrating that landscape impacts have been anticipated and avoided to a level consistent with the sensitivity of the landscape and the nature of the designation.</p> <p>Coastal Areas and Seascapes Protect the character and visual potential of the coast and conserve the character and quality of seascapes.</p> <p>National Landscape Strategy Support, as appropriate, any relevant recommendations contained in the Department of Arts, Heritage and the Gaeltacht's National Landscape Strategy for Ireland.</p>	<p>The preservation of landscape features will facilitate the protection of European sites and their associated interests at a landscape scale as well as a local scale. This will reduce potential impacts to the European sites.</p>

6 Conclusion

Stage 1 Screening and Stage 2 AA of the Dublin to Galway Greenway Plan have been carried out. It has been demonstrated that implementation of the Plan has the potential to result in adverse impacts to the integrity of the Natura 2000 network of sites, if unmitigated.

The risks to the safeguarding and integrity of the qualifying interests and conservation objectives of the Natura 2000 network have been addressed by the recommended inclusion of mitigation measures to the document that will prioritise the avoidance of impacts in the first place and mitigate impacts where these cannot be avoided. In addition, all lower level plans and projects arising through the implementation of the Plan will themselves be subject to AA when further details of design and location are known.

Having incorporated these suggested mitigation measures; it is considered that the Plan will not have significant impacts on the Natura 2000 network of sites⁷.

⁷ Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:

- a) no alternative solution available,
- b) imperative reasons of overriding public interest for the plan to proceed; and
- c) Adequate compensatory measures in place.

Appendix I Detailed characteristics of the SAC sites identified within 15km or with a hydrological link to the Dublin to Galway Greenway Plan

SITECODE	SITE_NAME	Distance	Qualifying Interests	Threats
0199	Baldoye Bay SAC	0km	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410]	A substantial part of the site is a Nature Reserve and is not significantly threatened in any way. The part of the site at the Mayne River, outside of the Nature Reserve, has been proposed for development in the past and is still considered to be under threat. The site receives pollution from a number of sources, chiefly the inflowing rivers but also an unsatisfactory sewage network. A new sewage works has been planned. Bait digging and controlled wildfowling may be problems. Spartina is well established in the inner estuary and may be causing unfavourable interactions with the intertidal and salt marsh habitats. Sterna albifrons formerly nested but regular disturbance is a problem.
0202	Howth Head SAC	0km	Dry heaths [1230] Sea cliffs [4030]	At present the only threats are control of heath fires and possibly excess visitors. In future the growth of Dublin may increase visitor pressure and possibly air pollution. Overfishing in the Irish Sea may affect sea bird numbers.
0204	Lambay Island SAC	0km	Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Halichoerus grypus (Grey Seal) [1364] Phoca vitulina (Harbour Seal) [1365]	The island has been maintained as a wildlife sanctuary by its owners for all of this century. No threats are envisaged should the present landuse continue. Rodents may be causing some damage to burrow nesting seabirds. There is some over-fishing in the marine areas.
0205	Malahide Estuary SAC	0km	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Spartina swards (Spartinion maritimae) [1320] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	The main problems or threats affecting this site are recreational activities, water pollution and infilling. Owing to the proximity of two large towns, the area is very popular for water sports and other amenity activities. These can disturb the bird populations and impact on the dune habitats, and the intensity of such activities is likely to increase in the future. Pollution, mostly nutrients, enters the system from the Broadmeadows River and from sewage plants at Swords and Malahide. The inner estuary is particularly affected owing to its lagoonal character. The efficiency of the sewage plants may be upgraded in the future. Parts of the estuary have been infilled in the past for various developments and this remains a threat.
0206	North Dublin Bay SAC	0km	Fixed dunes (grey dunes)*[1140] Drift lines[1210] Atlantic salt meadows[1310] Embryonic shifting dunes[1330] Dune slack[1410] Mediterranean salt meadows[2110] Tidal mudflats[2120] Salicornia mud[2130] Marram dunes (white dunes)[2190] Petalwort[1395]	Dunes are subject to high recreational pressures and moderate levels of grazing by rabbits which cause some localised damage. Damaged areas, however, are monitored by Dublin Corporation and appropriate management implemented. Abstraction of water by the golf clubs could result in a lowering of the water table which could affect the humid dune slacks. Any extensions to the two golf courses would be deleterious. The intertidal areas receive polluted water though there are no apparent significant impacts on the associated flora and fauna. Owing to its location in Dublin Bay, pollution such as oil spillages from Dublin Port and shipping is a threat. Commercial bait digging is a problem and causes disturbance to wintering birds.
0208	Rogerstown Estuary SAC	0km	Fixed dunes (grey dunes)*; Atlantic salt meadows; Estuaries; Mediterranean salt meadows; Tidal mudflats; Salicornia mud; Marram dunes (white dunes)	A significant part of estuary (intertidal flats and salt marsh) has been lost due to landfilling and this remains a threat. Landfill site is also a major source of pollution to estuary. Other sources of pollution include input of raw sewage from a local town and general pollution inputs from a rich agricultural hinterland. Dunes at site are considered to be in a highly vulnerable state due to a combination of natural (i.e.

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				erosion) and anthropogenic factors. Erosion has removed much of nesting area of <i>Sterna albifrons</i> .
0210	South Dublin Bay SAC	0km	Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Embryonic shifting dunes [2110]	The main threat to this site is further reclamation for industrial and/or infrastructural purposes. The intertidal areas receive water that is somewhat polluted though there are no apparent impacts on the associated flora and fauna. Owing to its location in Dublin Bay, pollution such as oil spillages from Dublin Port and shipping is a threat. Commercial bait digging may be a problem and causes disturbance to wintering birds. Disturbance to birds is also caused by walkers and dogs.
0216	River Shannon Callows SAC	0km	Molinia meadows [6410] Hay meadows [6510] Limestone pavements [8240] Alluvial forests [91E0] Lutra lutra (Otter) [1355]	The main threats to the Annex I habitats (and the other humid grasslands) on the site come from intensification of grassland management which would destroy their semi-natural nature and reduce botanical diversity. The flooding regime generally mitigates against intensification but herbicides and high fertiliser applications have been effectively used in a few places and this trend may increase. Most of the meadows are old meadows and any trend towards change to permanent pasture would be detrimental. This has not happened to date but may in the future, especially if deterioration in the flooding regime makes it more difficult to harvest. Large scale drainage of this section of the river is considered unlikely at present. The limestone pavement is threatened by removal of rock and scrub clearance. Drainage schemes, agricultural pollution and wildfowling threaten the bird-life in the area. Power lines across the site are also hazards for flying birds.
0242	Castletaylor Complex SAC	0km	Turloughs [3180] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Limestone pavements [8240]	The main land use within the open areas of the site is light grazing by cattle. Some clearance of scrub within parts of the woodland has caused some damage and is a further threat.
0268	Galway Bay Complex SAC	0km	Mudflats and sandflats [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] stony banks [1220] Vegetated sea cliffs [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows [1330] Mediterranean salt meadows [1410] Turloughs [3180] Calcareous grasslands [5130] Semi-natural dry grasslands [6210] Calcareous fens [7210] Alkaline fens [7230] Limestone pavements [8240] Otter [1355] Harbour Seal [1365]	A main concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities. Reef and sediment communities are vulnerable to disturbance or compaction from tractors accessing oyster trestles. The <i>Paracentrotus lividus</i> populations have been shown to be vulnerable to overfishing. Extraction of maerl in Galway Bay is a threat. Owing to the proximity of Galway city, shoreline and terrestrial habitats are under pressure from urban expansion and recreational activities. Eutrophication is probably affecting some of the lagoons and is a continued threat. Drainage is a general threat to the turlough and fen habitats. Bird populations may be disturbed by aquaculture activities.
0278	Inishbofin And Inishshark SAC	0km	Limestone pavement*; Orchid-rich calcareous grassland*; Turloughs*; Alpine and subalpine heath; Juniper scrub	There are presently few real threats to the turlough. Limited clearance of scrub from around parts of the turlough has destroyed the transitional zone vegetation. Scrub clearance has damaged parts of the woodland and is an ongoing problem. The heath-limestone habitats are not under any present threat. Water relations in the

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				turlough seem natural but a regional water scheme that would affect the watertable would cause considerable damage.
0285	Kilsallagh Bog SAC	0km	Active raised bogs [7110] Degraded raised [7120] Rhynchosporion Vegetation [7150]	Most of the boundary, excluding the far north, is on, or close to, the mineral soil, and so the site encloses most of the peat basin of Kilsallagh Bog. Forestry, peat cutting and drainage are considered as threats to the site along with burning which has caused damage to the high bog area.
0295	Levally Lough SAC	0km	Turloughs [3180]	Threats to turloughs include alterations in groundwater characteristics as well as agricultural improvements.
0296	Lisnageeragh Bog And Ballinastack Turlough SAC	0km	Turloughs [3180] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	Threats to turloughs include alterations in groundwater characteristics as well as agricultural improvements. Raised bogs, due to the high water content of peat are vulnerable to activities which increase water loss. Drainage is extensive at this site and has caused significant drying out. Past peat cutting and some active peat cutting have also speeded up water loss with a subsequent deterioration in vegetation cover.
0297	Lough Corrib SAC	0km	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Petrifying springs with tufa formation (Cratoneurion) [7220] Alkaline fens [7230] Limestone pavements [8240] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Bog woodland [91D0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Salmo salar (Salmon) [1106] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] Lutra lutra (Otter) [1355]	The main threats to the quality of this site are from water polluting activities resulting from intensification of agricultural activities on the eastern side of the lake, uncontrolled discharge of sewage which is causing localised eutrophication of the lake, and housing and boating development, which is causing the loss of native lakeshore vegetation. The raised bog habitats are susceptible to further degradation and drying out due to drainage and peat cutting and, on occasions, burning. Peat cutting threatens Addergoole Bog and already a substantial area of it has been cut away. Fishing and shooting occur in and around the lake. Introduction of exotic crayfish species or the crayfish fungal plague (Aphanomyces astaci) could have a serious impact on the native crayfish population. The bat roost is susceptible to disturbance or development.

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			Drepanocladus vernicosus (Slender Green Feather-moss) [1393] Najas flexilis (Slender Naiad) [1833]	
0301	Lough Lurleen Bog/Glenamaddy Turlough SAC	0km	Turloughs [3180] Chenopodium rubri p.p. and Bidention p.p. vegetation [3270] Active raised bogs [7110] Degraded raised bogs [7120] Rhynchosporion Vegetation [7150]	The main threats are to water quality from nutrient enrichment are an issue at the site, along with peat cutting, drainage and burning, all of which would be detrimental to the bog.
0304	Lough Rea SAC	0km	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]	This site may be vulnerable to eutrophication arising from agricultural run-off and from nutrient inputs from the town of Loughrea. Any reclamation of the marginal wetlands would be detrimental. Boating activities on the lake could affect the fragile <i>Chara</i> species
0322	Rahasane Turlough SAC	0km	Turloughs* [3180]	Local drainage schemes on the turlough floor have been attempted and could cause significant damage to vegetation though probably not to the wintering birdlife. Arterial drainage would be more of a risk. Shooting disturbance could be serious as there are few alternative sites for such numbers of birds.
0324	Rosroe Bog SAC	0km	Blanket bog (active)* [7130] Rhynchosporion depressions [7150]	Further cutting of peat at the margins of this site is a threat. More intense grazing by cattle and sheep would damage the peat surface.
0326	Shankill West Bog SAC	0km	Active raised bogs [7110] Degraded raised [7120] Rhynchosporion Vegetation [7150]	Raised bogs, due to the high water content of peat, are vulnerable to activities which increase water loss, such as peat cutting, fire and drainage. A section of this site has been prepared for moss peat production. The wettest section of the site is partly protected as it is in a subsidence area. However some deepening of drains and the extension of the moss peat area would threaten the central wet area. The fen area is vulnerable to intensive agricultural activities, drainage and forestry planting.
0328	Slyne Head Islands SAC	0km	Reefs [1170] Halichoerus grypus (Grey Seal) [1364]	There are no known threats to the habitats, seals or birds of these islands. Culling of seals is a potential threat at all seal colonies. The only recorded use of the marine area is potting. Overstocking of the grassy islands with sheep could lead to habitat destruction and soil erosion.
0330	Tully Mountain SAC	0km	European dry heaths [4030] Alpine and Boreal heaths [4060]	The entire site is under threat from over-grazing by sheep. Burning on the lower slopes is also a problem. Much of the heath habitat has already been eroded leaving bare soil exposed. Quarrying also poses a threat to the dry heath habitat
0391	Ballynafagh Bog SAC	0km	Raised bog (active)* [7110] Degraded raised bogs; [7120] Rhynchosporion depressions [7150]	The wettest section of this site is probably protected at present, as it is located in a subsidence hollow. However ongoing peat cutting threatens its long term viability. Old and recent drains are increasing water loss. A recent fire event on the SW has increased surface water run-off. Further afforestation on the bog would be very damaging.
0396	Pollardstown Fen SAC	0km	Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Petrifying springs with tufa formation (Cratoneurion) [7220] Alkaline fens [7230] Vertigo geyeri (Geyer's Whorl Snail) [1013] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	Largely protected as a nature reserve, the site is nonetheless vulnerable to interference with the Curragh aquifer.
0397	Red Bog, Kildare SAC	0km	Transition mires and quaking bogs [7140]	A main threat to this site is lowering of water table due to nearby quarrying operations. It is not known if this has already happened. The hydrology of the site could also be affected by direct drainage attempts. Agricultural run-off is likely to be entering the site from surrounding areas though the effects of this are unknown.
0440	Lough Ree SAC	0km	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]	The main threat to the aquatic life in the lake is from artificial enrichment of the waters by agricultural and domestic waste, and also by peat silt in suspension, which

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			Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Degraded raised bogs still capable of natural regeneration [7120] Alkaline fens [7230] Limestone pavements [8240] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Bog woodland [91D0] Lutra lutra (Otter) [1355]	is increasingly limiting light penetration. Increased use of the lake for leisure activities, especially boating, will cause disturbance and some physical damage to marginal wetlands. The degraded raised bog is threatened by further cutting, burning and afforestation.
0448	Fortwilliam Turlough SAC	0km	Turlough [3180]	Threats to turloughs stem mainly from drainage and agricultural improvement. Fortwilliam seems largely unaffected by drainage, and standing water may persist throughout the summer. It is an oligotrophic site, which indicates that it has escaped significant nutrient input but renders it sensitive to damage should this occur. The turlough is grazed by cattle and sheep, but is undivided.
0461	Ardkill Turlough SAC	0km	Turlough [3180]	The condition of the ground water gives some cause for concern as the basin has two farms beside it, one highly intensive for the region.
0474	Ballymaglancy Cave, Cong SAC	0km	Caves not open to the public [8310] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	This site is frequently visited during the winter months by locals and caving groups. Visitors may cause degradation of delicate cave formations.
0479	Cloughmoyne SAC	0km	Limestone pavement [8240]	Agricultural activities within and adjacent to the site pose the main threats to the future of the site. Both clearance of limestone pavement and the application of fertilizer are presently a serious problem at the site. Some poaching by cattle recorded along the edge of the fen.
0480	Clyard Kettle-Holes SAC	0km	Turloughs [3180] Caldium Fens [7210]	Agricultural practices, mainly grazing and fertiliser application but also some scrub removal, have already caused damage to part of the site. Further intensification of agriculture within and around the site would be damaging. Drainage is a general threat to In Co Mayo, approx. 6 km from Galway. Within the Corribb WMU with potential hydrological links to Co. Galway. Area drains towards Lough Corribb. Natura Impact Statement for Galway County Development Plan 2015-2021 CAAS for Galway County Council 23 Site Name (Site Code) Qualifying Features Site Vulnerability Site Location the wetland habitats. A possible flood relief scheme at Thomastown turlough could have effects on other turloughs in the area
0503	Greaghans Turlough SAC	0km	Turloughs [3180]	Some of the inflows to the site are polluted so eutrophication is a significant threat to the natural ecology. The source would seem to be agricultural. The Robe River has been drained arterially though impacts to this site are not obvious.
0504	Kilglassan/Cahevavoostia Turlough Complex SAC	0km	Turloughs [3180]	Some adverse impacts have been caused by agricultural intensification in the surrounding area and there is a possibility of future site drainage. The habitat is fairly eutrophic so that pollution of the ground water does not pose a significant ecological threat.
0525	Shrule Turlough SAC	0km	Turloughs* [3180]	There is some water flow from the west end into the basin which could be a eutrophying influence as there is farmland there. More direct run-off could occur at E. end. Arterial drainage is the major risk: the Black River is 1.9km away.
0541	Skealohan Turlough SAC	0km	Turloughs [3180]	The site seems to be largely unaffected by intensive pastures at the western end but is obviously susceptible to eutrophication. It is one of five wetlands in a small area so bird disturbance by hunting is not likely to be significant.
0571	Charleville Wood SAC	0km	Old oak woodlands; [91AO] Desmoulin's whorl snail [1016]	Although privately owned, the management of the wood is sympathetic to nature conservation and at present the site is not considered threatened.
0572	Clara Bog SAC	0km	Raised bog (active)*[6210] Bog woodland* [7110]	Active peat cutting is occurring in the southern, western and northern sections of the bog. The eastern section of the bog was drained in preparation for peat extraction.

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			Degraded raised bogs; [7120] Rhynchosporion depressions; [7150] Bog Woodland [91D0]	These drains have been effectively blocked. The road running through the bog drains the areas adjacent to it. The esker grassland is vulnerable to improvement through fertilization and reseeding, to a change in grazing intensity and in particular at this site to scrub encroachment.
0575	Ferbane Bog SAC	0km	Raised bog (active)*; [7110] Degraded raised bogs; [7120] Rhynchosporion depressions [7150]	Raised bogs, due to the high water content of peat are vulnerable to activities which increase water loss. Drainage is extensive at this site and has caused significant drying out. Past peat cutting and some active peat cutting have also speeded up water loss with a subsequent deterioration in vegetation cover.
0576	Fin Lough (Offaly) SAC	0km	Alkaline fens; [7230] Geyer's whorl snail [1013]	Site is currently affected by drainage and is vulnerable to continued water loss.
0580	Mongan Bog SAC	0km	Raised bog (active)*; [7110] Degraded raised bogs; [7120] Rhynchosporion depressions [7150]	Raised bogs, due to the high water content of peat, are vulnerable to activities which cause water loss, such as drainage, peat cutting and fire. Two concentrations of surface drains on the high bog are increasing water loss. Other surface drains and marginal drains are also impacting the site. Peat cutting is at a low intensity but is also affecting the site.
0581	Moyclare Bog SAC	0km	Raised Bog (Active)* [7110] Degraded Raised Bog [7120] Rhynchosporion Vegetation [7150]	This site is vulnerable to the effects of further peat cutting, drainage and fire, as these are all factors which increase water loss.
0582	Raheenmore Bog SAC	0km	Raised Bog (Active)* [7110] Degraded Raised Bog [7120] Rhynchosporion Vegetation [7150]	Due to the high water content of peat, raised bogs are vulnerable to drainage. A deep marginal drain surrounds most of this site which is causing drying out and subsidence. Two networks of surface drains also occur, one extensive, which are increasing water loss from the site.
0588	Ballinturly Turlough SAC	0km	Turlough [3180]	Grazing occurs over most of the basin but it causes little vegetational damage. The oligotrophic communities require a low nutrient input from external sources to survive (i.e. from ground water, the River Suck and surface flow)
0606	Lough Fingall Complex SAC	0km	Turloughs [3180] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Limestone pavements [8240] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	Conditions in the wetland components of the site are maintained by groundwater input and lack of development. Any further change in drainage patterns would have significant and adverse repercussions. The limestone paving and heath habitats are vulnerable to clearance for agriculture. Burning is also a threat to the heath and scrub communities. There are no apparent threats to the bat population.
0609	Lisduff Turlough SAC	0km	Turlough [3180]	There is little human influence on the site at present though hunting probably occurs in winter. The turlough could be affected by eutrophication of ground water and there is some intensification taking place to the north-west.
0610	Lough Croan Turlough SAC	0km	Turlough [3180]	The southern side of the wetland includes and adjoins intensive farmland and there is a likelihood of eutrophication from this source. Further drainage would damage the site: it could be done through the Cross River.
0611	Lough Funshinagh SAC	0km	Turlough [3180]	Lough Funshinagh would be adversely affected by eutrophication from agricultural intensification in the catchment and also from housing on shore. Actual drainage or a lowering of regional watertables would also be damaging as would an increase in human disturbance.
0679	Garriskil Bog SAC	0km	Active raised bogs [7110] Degraded raised [7120] Rhynchosporion Vegetation [7150]	This site is sensitive to drainage and the alteration of the water table, Activities such as continued turf cutting is an issue for this site.

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0685	Lough Ennell SAC	0km	Alkaline fens [7230]	Eutrophication, owing to sewage and fertiliser inputs, has been a problem since the 1970's. There has recently been significant improvement, however, as a result of reduction of phosphate in the effluent from Mullingar Sewage Treatment Plant, and in 1990 the water was classified as mesotrophic. Remobilisation of phosphate from the sediments of the lake is likely to continue, as well as runoff from surrounding lands. Boating activities on the lake could cause damage to the fragile Chara species.
0688	Lough Owel SAC	0km	Alkaline fens [7230] Hard water lakes; Transition mires; White-Clawed Crayfish	The site is vulnerable to eutrophication. Increased abstraction of water from the lake could adversely affect the functioning of the system. Increased activity by boats on the lake could cause physical damage to the fragile species of Chara.
0692	Scragh Bog SAC	0km	Transition mires [7140] Alkaline fens [7230] Slender Green Feather-moss [1393]	As well as being vulnerable to interference with its hydrology, Scragh Bog is also susceptible to eutrophication as a result of agricultural run-off from the surrounding land.
0713	Ballyman Glen SAC	0km	Petrifying springs* [7220] Alkaline fens [7230]	Ballyman Glen is surrounded by intensively managed agricultural grassland and is vulnerable to nutrient run-off from this source. The petrifying springs could be threatened by over-extraction of water locally.
0725	Knocksink Wood SAC	0km	Residual alluvial forests*; Petrifying springs* [7220]	As a popular amenity area the site is vulnerable to disturbance and littering.
0925	The Long Derries, Edenderry SAC	0km	Orchid-rich Calcareous Grassland*[6210]	The calcareous grassland on the site is particularly vulnerable to changes in the grazing and fertilization regimes. This habitat is also threatened by the encroachment of scrub and by afforestation with coniferous species. The gravel pits, sites of three of the rare plant species, are threatened by continued gravel extraction, dumping and overuse by motorbikes. The ornithological interest of the site is vulnerable to disturbance from shooting.
1209	Glenasmole Valley SAC	0km	Orchid-rich Calcareous Grassland* [6210] Molinia Meadows [6410] Petrifying Springs*[7220]	Much of the dry calcareous grassland has been improved to some extent in recent decades by fertilisation and reseeding, and remains vulnerable to further improvement for agriculture. The Molinia meadows are also vulnerable to agricultural intensification, including drainage. There are no apparent threats to the petrifying springs.
1228	Aughrusbeg Machair And Lake SAC	0km	Oligotrophic water [3110] Northern Atlantic wet heaths [4010]	Aughrusbeg Lough appears to have good water quality. Algal blooms have been reported in the past though these may be a natural phenomenon. Developments in the catchment of the lake, such as holiday homes, could be damaging to the lake. The lake contains an introduced population of Rutilus rutilus. It is not known what impact these have had on the natural ecology of the lake. The machair plain has been severely damaged by over-grazing and such grazing levels could also affect the coastal heath habitat.
1242	Carrownagappul Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	This site is vulnerable to water loss from the numerous bog roads and drains which extend into the centre of the site. It is also vulnerable to water loss from peat cutting activities which are occurring at a high frequency.
1251	Cregduff Lough SAC	0km	Transition mires and quaking bogs [7140] Najas flexilis (Slender Naiad) [1833]	No site-specific threats identified.
1257	Dog's Bay SAC	0km	Annual Vegetation of Drift Lines [1210] Embryonic Shifting Dunes [2110] Marram Dunes (White Dunes) [2120] Fixed Dunes (Grey Dunes)* [2130] Dry Heath [4030]	The main threats to the site are erosion due to wave action, overgrazing (mainly by cattle) and recreational pressures. Erosion is particularly acute along the edges of the dune grassland and there have been recent attempts to halt this erosion by the planting of Marram grass. Grazing by cattle still continues throughout the site and is intensive in places. Recreational pressure on the site is very high, especially during the summer, and is largely restricted to the sandy beaches and adjoining areas of fore-dune. Visitor pressure is increased by the presence of a large caravan park along the north-eastern edge of the site.

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1271	Gortnandarragh Limestone Pavement SAC	0km	Limestone Pavement* [8240]	The site is vulnerable to scrub invasion through lack of grazing and to land reclamation and quarrying. The two last-named activities have both occurred to a small extent within the site.
1309	Omey Island Machair SAC	0km	Machairs (* in Ireland) [21A0] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Petalophyllum ralfsii (Petalwort) [1395]	The main threats to the site are erosion of the sandy areas by the sea, overgrazing and recreational pressures. The seaward edge of the machair plain is experiencing erosion at present and this is likely to continue in the future unless restoration measures are taken. Damage due to overgrazing (cattle and rabbits) occurs throughout the site and remains a threat. The area is becoming increasingly popular with tourists and visitors and damage may be caused to the machair surface. Owing to its relatively small size, Fahy Lough could be prone to eutrophication from agricultural or tourism related activities.
1311	Rusheenduff Lough SAC	0km	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Najas flexilis (Slender Naiad) [1833]	No site-specific threats identified.
1312	Ross Lake And Woods SAC	0km	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	The lake is vulnerable to water polluting operations from the surrounding agricultural and forestry activities. The main threat to the bat populations would be human disturbance or a change of use of the building, but neither of these seem apparent at present.
1387	Ballynafagh Lake SAC	0km	Alkaline fens [7230] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] Euphydryas aurinia (Marsh Fritillary) [1065]	At present there are no significant threats to this site. Water levels in the lake have dropped over time and some management might be required to maintain open water in the future. There is a proposal to reopen the disused feeder canal - this would require raising of the water levels which would be damaging to some habitats and the Vertigo moulinsiana population. Detailed environmental impact assessment would be required before this could happen.
1398	Rye Water Valley/Cartron SAC	0km	Petrifying springs with tufa formation (Cratoneurion) [7220] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	The woodland section of the site is vulnerable to woodland clearance - resulting in habitat loss for some of the rare flowering plants present. The Rye Water is vulnerable to pollution - much of the surrounding land is agricultural. The petrifying spring and Vertigo species are particularly vulnerable to urban development and to dumping.
1536	Mocorha Lough SAC	0km	Cladium fen [7210]	There are no known significant threats to the wetland vegetation though some localised infilling has occurred in the past and could happen again. The level of duck and snipe shooting at the site may be too high.
1625	Castlesampson Esker SAC	0km	Hard Water Lakes [3140] Lesser Horseshoe Bat [1303]	The site is vulnerable to grassland improvement, i.e. fertilization and reseeding, to both overgrazing and undergrazing (the latter would encourage scrub encroachment onto the esker grassland) and to gravel extraction. The whole site has no state protection, but one species of flora which is protected does occur on the site.
1637	Four Roads Turlough SAC	0km	Turloughs* [3180]	The vegetation and habitat quality would be further damaged by continuing the present farming patterns. Using fertilisers may not affect the birdlife which would be more sensitive to disturbance.
1774	Lough Carra/Mask Complex SAC	0km	Oligotrophic waters containing very few minerals of sandy plains (Littorelletea uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important	Water quality of both lakes is vulnerable to enrichment from surrounding agricultural activities and other commercial developments near the lakeshores. Areas of fens are vulnerable to drainage attempts, while both marginal wetland vegetation and dry grasslands could be affected by overgrazing. Clearance of scrub and limestone pavement has occurred in the past and is a continuous threat to these habitats. Any further plantings of exotic species would be damaging to the existing woodland habitats. The quality of the woodlands would be compromised by the further spread of invasive species such as <i>Acer pseudoplatanus</i> , <i>Prunus lauroceres</i> and <i>Fallopia japonica</i> . The bat population is presently under no threat. The population of <i>Drepanocladus vernicosus</i> is not presently threatened but the area is vulnerable to

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			<p>orchid sites) [6210] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] Limestone pavements [8240] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] <i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] <i>Lutra lutra</i> (Otter) [1355] <i>Drepanocladus vernicosus</i> (Slender Green Feather-moss) [1393]</p>	land drainage and improvement.
1776	Pilgrim's Road Esker SAC	0km	Orchid-rich calcareous grassland* [6210]	The site is particularly vulnerable to grassland improvement, i.e. fertilization and re-seeding for grazing of stock, silage and hay. The site is vulnerable to colonization by scrub if the correct grazing regime is not maintained. As with most Irish eskers the site is vulnerable to quarrying for sand and gravel.
1831	Split Hills And Long Hill Esker SAC	0km	Orchid-rich calcareous grassland* [6210]	The esker ridge is particularly vulnerable to quarrying for sand and gravel. This activity already occurs on the site in several locations. The calcareous grassland is vulnerable to both overgrazing and undergrazing and to fertilization. The woodland is vulnerable to clearance for grazing of stock. Although some sections of the site are state owned, the site is otherwise unprotected. The presence of two protected species of flora provides a measure of protection to those sections of the site in which they occur.
1932	Mweelrea/Sheeffry/Erriff Complex SAC	0km	<p>Coastal lagoons [1150] Annual vegetation of drift lines [1210] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Atlantic decalcified fixed dunes (<i>Calluno-Ulicetia</i>) [2150] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetia</i> [3130] Natural dystrophic lakes and ponds [3160] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]</p>	Extensive areas of hillside vegetation at this site have been over-grazed by sheep in the past, and in some areas this continues. Peat erosion occurs in places. The vast areas which were formerly covered by lowland blanket bog are now fragmented, often by coniferous forestry plantations.

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			<p>Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Depressions on peat substrates of the Rhynchosporion [7150] Petrifying springs with tufa formation (Cratoneurion) [7220] Alkaline fens [7230] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Vertigo geyeri (Geyer's Whorl Snail) [1013] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Petalophyllum ralfsii (Petalwort) [1395] Najas flexilis (Slender Naiad) [1833]</p>	
2008	Maumturk Mountains SAC	0km	<p>Blanket bog (active)*; Alpine and subalpine heath; Rhynchosporion depressions; Wet heath; Oligotrophic soft water lakes; Siliceous rocky slopes; Slender Naiad; Atlantic Salmon</p>	The heath and blanket bog vegetation present is currently overgrazed by sheep and these habitats are vulnerable to erosion. Lakes and rivers within the site are susceptible to a reduction in water quality primarily due to peat inwash and fertilisation of adjoining land.
2031	The Twelve Bens/Garraun Complex SAC	0km	<p>Blanket bog (active)*; Alpine and subalpine heath; Calcareous rocky slopes; Rhynchosporion depressions; Old oak woodlands; Oligotrophic soft water lakes; Siliceous rocky slopes; Siliceous scree; Otter; Freshwater Pearl Mussel; Slender Naiad; Atlantic Salmon</p>	Large tracts of blanket bog are currently overgrazed by sheep and are vulnerable to erosion, a problem that could be accentuated by the striping of commonage which is taking place in some areas. Other threats are the further expansion of commercial afforestation on blanket bog, and the development of fish-farming in the oligotrophic lakes.
2034	Connemara Bog Complex SAC	0km	<p>Coastal lagoons [1150] Reefs [1170] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Natural dystrophic lakes and ponds [3160] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Depressions on peat substrates of the Rhynchosporion [7150] Alkaline fens [7230] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p>	The main damaging operations and threats in the Connemara Bog Complex are peat cutting, over-grazing and afforestation. Extensive peat extraction using 'Difco' machines has become common in the region in recent years, and cutting by excavator and hopper is also increasing. The hand-cutting of peat is less threatening as it is usually on a much smaller scale, but nonetheless it should be controlled within the site. Over-grazing and poaching by sheep and cattle is a widespread problem within the site, with erosion of peat ensuing. The above operations are the most extensive Version date: 08.12.2015 5 of 5 002034_Rev15.Docx but other threats and potentially damaging operations include land drainage and reclamation, fertilization, quarrying and dumping.

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			<p><i>Euphydryas aurinia</i> (Marsh Fritillary) [1065] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	
2074	Slyne Head Peninsula SAC	0km	<p>Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletalia uniflorae</i> and/or <i>Isoeto-Nanojuncetalia</i> [3130] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] European dry heaths [4030] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] <i>Petalophyllum ralfsii</i> (Petalwort) [1395] <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	<p>The main threats to site are further improvement for agriculture of heath and grassland habitats. Overgrazing is a general threat but especially to machair. Further housing developments within site would be locally damaging. Extension to the golf course at Aillebrack is a threat to the machair, while increase in leisure activities, especially caravanning is also a threat to machair. Lakes which are oligotrophic would be affected by intensification of agriculture in the immediate vicinity. <i>Petalophyllum ralfsii</i> population in part of the site is threatened by undergrazing and by heavy vehicle usage. Aquaculture activities seem to be the most immediate source of concern at Mannin Bay. The 'Coral Strand' of Mannin Bay is most vulnerable to activities that affect the maerl bed in the middle of the bay. Such activities include commercial extraction of maerl deposits, mollusc dredging, and suction dredging of bivalves such as <i>Ensis</i> and <i>Venerupis</i> spp. Ecological changes to maerl beds may be caused by removing predator or grazer species by fishing. Mechanical damage due to mooring boats is likely to be a result of increased leisure activities over maerl. Low intensity pollution from use of Ivermectin is of particular concern to rocky shore communities at Mannin Bay.</p>
2111	Kilkieran Bay And Islands SAC	0km	<p>Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletalia uniflorae</i> and/or <i>Isoeto-Nanojuncetalia</i> [3130] Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510]</p>	<p>The Department of Fisheries has designated Kilkieran Bay as an aquaculture area. It is possible that consequent increased siltation and eutrophication will have a deleterious effect on the benthic communities and on the <i>Raspailia ramosa</i>/<i>Corella parallelogramma</i> communities in the deep littoral reef. The effects of Ivermectin and other biocides on adjacent fauna have not been studied. Sublittoral sediment communities are vulnerable to bottom-fishing for shellfish. The salt meadows and machair are subject to over-grazing. The lowland hay meadows would be sensitive to any type of change in agricultural practices, especially the use of fertilisers.</p>

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			Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365] Najas flexilis (Slender Naiad) [1833]	
2118	Barnahallia Lough SAC	0km	Oligotrophic soft water lakes; Slender Naiad [3130]	The only apparent threat to this site is nutrient enrichment from cattle. While water is abstracted for local use, this is presently on a small scale.
2119	Lough Nageeron SAC	0km	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoetes-Nanojuncetea [3130] Najas flexilis (Slender Naiad) [1833]	The main threat to this site is deterioration in water quality which could arise as a result of eutrophication from surrounding agricultural activities. At present, stocking levels are not excessive.
2122	Wicklow Mountains SAC	0km	Oligotrophic waters containing very few minerals of sandy plains (Littorelletea uniflorae) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Calaminarian grasslands of the Violetalia calaminariae [6130] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Lutra lutra (Otter) [1355]	The main threat to the quality of habitats on the site is overgrazing by sheep, affecting the bog, heath and rocky habitats and both deer and sheep affecting the woodlands. Localised peat extraction and heavy burning is a threat to the blanket bog. The spread of non-native species is a threat to the quality of the woodlands. Many recreational activities occur within the site and some, such as hill walking and climbing, have potential for disturbance to habitats and species. Peat erosion is frequent on the peaks - this may be a natural process but is likely to be accelerated by activities such as grazing.
2129	Murvey Machair SAC	0km	Machairs (* in Ireland) [21A0] Petalophyllum ralfsii (Petalwort) [1395]	The main threat to the integrity of the site is erosion due to wave action and overgrazing (mainly by sheep). The effects are largely restricted to the machair area. While little can be done to prevent further damage by wave action, a reduction in the grazing pressure at the site would have a positive effect on the vegetation. There is also some evidence to suggest that the wetland areas are experiencing some eutrophication due to agricultural practices in surrounding fields.
2130	Tully Lough SAC	0km	Oligotrophic to mesotrophic standing waters [3130] Slender Naiad [1833]	The main threat to the area is further agricultural intensification, leading to a loss of bog and wet grassland habitats surrounding the lake, in turn leading to eutrophication of the lake. Afforestation is a serious threat along with the modification of the house where the bats roost could affect their use of the site.
2193	Ireland's Eye SAC	0km	Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	The main threat to the island would be an increase in the numbers of visitors to the island. This could impact upon the more sensitive sandy habitats and cause disturbance to the breeding seabirds.
2213	Glenloughaun Esker SAC	0km	Orchid-rich calcareous grassland (6210)	Several current or potential activities threaten this site. Some of the grassland is already partly improved by fertilization and all is vulnerable to further fertilization and reseeding. Grazing pressures could also then be increased. Scrub is present in parts of the site and its spread is a threat. A serious threat is quarrying of gravel or sand from the esker ridge.
2214	Killeglan Grassland SAC	0km	Orchid-rich calcareous grassland [6210]	The majority of the site is managed by the traditional practise of low intensity winter grazing by cattle. This form of farming is important to the continued high conservation value of the site, and at present it does not appear to be under threat.

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				The site is vulnerable to fertilizer application, overgrazing and land reclamation.
2265	Kingstown Bay SAC	0km	Large shallow inlets and bays [1160]	The only known activities within the site are potting and clam collecting which occur at low intensity. The beaches are not used for recreational activities. No known significant threats.
2299	River Boyne And River Blackwater SAC	0km	Alkaline fens [7230] 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] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Main threats to the ecological interests of this site are further drainage schemes and water pollution. In the past, where drainage occurred it altered the character of the river and removed natural bankside structure and vegetation. Ongoing maintenance dredging is carried out along stretches of the river system where the gradient is low. This can be extremely destructive to salmonid habitat. Drainage also impacts on the many small wetland areas throughout the site. Water quality is impaired in parts of the system through agricultural runoff and inputs from domestic and industrial sources. A reduction in the input of pollutants to the system is required to preserve the important aquatic interests in this site.
2313	Ballymore Fen SAC	0km	Transition mires [7140]	There are no known threats to this site at present. Peat cutting by hand occurred in the distant past and is unlikely to happen again. Some nutrient runoff from surrounding agricultural land is likely to be entering the site but this is not considered to be significant as the intensity of farming in the surrounding area is low.
2320	Kildun Souterrain SAC	0km	<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]	Much of the surrounding natural habitat has been reclaimed and further reclamation may lead to disturbance of the bats. The soil that covers the souterrain has been eroded by trampling cattle and this allows some light to enter the roost. This could impact on the microclimate of the souterrain.
2331	Mouds Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	The main threat to the hydrology of this site is the extensive area of industrial cutting which is affecting the western part of the high bog. Peat-cutting for domestic purposes also still continues on a small scale. The ongoing removal of peat and the associated drainage if continued could threaten the long-term viability of the remaining high bog. The surface of the bog appears to be burned regularly and this is impairing the functioning of the acrotelm by damaging the peat-forming <i>Sphagnum</i> cover. Further burning would be damaging.
2336	Carn Park Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	Current land use on the site consists of mechanised peat-cutting, forestry and agricultural reclamation around the edge of the high bog. Peat-cutting is carried out along the track and road, which form the northern and north-western site boundaries. Afforestation occurs on the bog margins and extends onto intact or high bog. Some agricultural grassland has been reclaimed from cutover bog to the south and north-west of the site. Damaging activities associated with these land uses include drainage throughout the site (both old and recent) and extensive burning of the bog. These are all activities that have resulted in loss of habitat and damage to the hydrological status of the site, and which pose a continuing threat to its viability
2337	Crosswood Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120]	Current land use on the site consists of peat-cutting around the edge of the high bog; it is more intensively cut on the western and southern margins. While the northern margin has drains that extend into the intact bog, it is relatively protected from development due to the proximity to the railway. Forestry is found to the south of the site on areas of cutover bog. Some fields on old cutover are used for pasture and are presently undergoing further reclamation. Damaging activities associated with these land uses include drainage throughout the site (both old and recent) and extensive burning of the high bog. These are activities that have resulted in loss of habitat and damage to the hydrological status of the site, and pose a continuing

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				threat to its viability.
2339	Ballynamona Bog And Corkip Lough SAC	0km	Turloughs [3180] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Bog woodland [91D0]	The main threats to this site are peat-cutting and associated activities such as drainage and burning. Burning appears to be a frequent occurrence on the peatland area of this site and this damages the structure of the bog surface. The bog woodland, however, may be somewhat protected from burning by the surrounding wet flush vegetation. Agricultural reclamation and afforestation are potential threats to cutover areas of bog within the site. The turlough area is especially vulnerable to agricultural reclamation, drainage and water pollution.
2342	Mount Hevey Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	In the past this site was subject to extensive peat-cutting. More recently there has been afforestation in the south-eastern corner of the site. Both of these damaging operations have resulted in the drying-out of the high bog area. Unless peat-cutting is curtailed and the areas of forestry are removed, the site will continue to be vulnerable to drying out. Any intensification of these activities could be very damaging. The drier areas of the high bog surface are vulnerable to burning events which, if intense, can be very damaging.
2347	Camderry Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	The raised bog habitats, both active and degraded, are vulnerable to drying out caused by peat-cutting, burning and afforestation. Peat-cutting still occurs along most of the site perimeter, while an area of conifer plantation occurs along the north-western edge of the site. Cessation of peat-cutting and the removal of forestry is essential for the rehabilitation of this site.
2350	Curraghlehagh Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	In the past this bog was subject to extensive peat-cutting, however the severity of this practice appears to have declined significantly in the past few years. Afforestation has taken place in the northern section of the site and this is having a strong drainage effect on the northern half of the high bog surface. Any intensification of cutting or further afforestation could be very damaging to the uncut high bog. Burning is a general threat to the integrity of the bog surface. A large proportion of the site is owned by the semi-state company Bord na Mona. Single ownership by a semi-state company is a positive feature if the bog is to be acquired for conservation purposes in the future.
2352	Monivea Bog SAC	0km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	There is extensive mechanical peat cutting to the north, east and south of the site, and some hand-cutting in the south-west. In places the peat facebank reaches 3 m in height, with associated cracking and slumping. Some of the high bog drains are new and others have been deepened. Burning events have occurred on the bog in the past and in places the peat remains unvegetated. These are all activities that have resulted in loss of habitat and damage to the hydrological status of the site, and pose a continuing threat to its viability.
3000	Rockabill to Dalkey Island SAC	0km	Reefs [1170] Harbour Porpoise [1351]	Rockabill to Dalkey Island cSAC is designated for reefs and Harbour Porpoise. The resilience/recoverability of reefs is very low and even small levels of pressure, particularly from fishing, have the potential to affect ecological quality. Harbour Porpoise are vulnerable to a range of threats and pressures in their natural habitat, including accidental entanglement in fishing gear, competition for prey resources, pollution and other habitat degradation, and from disturbance from human activities.
2162	River Barrow And River Nore SAC	0.34km	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	30% of the site consists of water: 10% freshwater and 20% of estuarine and tidal stretches. The Annex II species listed in Section 4.2 are dependent on the quality of these waters. Much of the site along the water courses is under threat from pollution caused by increased fertiliser application, sewage and industrial waste. There is also loss of saltmeadow habitat with two legally protected species and a rare sedge, as a result of infilling and agricultural intensification. Alosa fallax may be vulnerable to angling pressure. Aquaculture occurs in Waterford Harbour and may be causing

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			<p>[1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] 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] <i>Vertigo moulinsiana</i> (<i>Desmoulin's Whorl Snail</i>) [1016] <i>Margaritifera margaritifera</i> (<i>Freshwater Pearl Mussel</i>) [1029] <i>Austropotamobius pallipes</i> (<i>White-clawed Crayfish</i>) [1092] <i>Petromyzon marinus</i> (<i>Sea Lamprey</i>) [1095] <i>Lampetra planeri</i> (<i>Brook Lamprey</i>) [1096] <i>Lampetra fluviatilis</i> (<i>River Lamprey</i>) [1099] <i>Alosa fallax fallax</i> (<i>Twaite Shad</i>) [1103] <i>Salmo salar</i> (<i>Salmon</i>) [1106] <i>Lutra lutra</i> (<i>Otter</i>) [1355] <i>Trichomanes speciosum</i> (<i>Killarney Fern</i>) [1421] <i>Margaritifera durrovensis</i> (<i>Nore Pearl Mussel</i>) [1990]</p>	some disturbance to the intertidal sediments and wintering birds - intensification of aquaculture is a threat.
2121	Lough Lene SAC	0.62km	<p>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] <i>Austropotamobius pallipes</i> (<i>White-clawed Crayfish</i>) [1092]</p>	Much of the lakeshore is accessible to grazing cattle and the surrounding fields have been heavily improved. The stoneworts may become gradually displaced as the principal primary producers by phytoplankton or vascular plants if the lake becomes artificially enriched with nutrients.
0996	Ballyvaughan Turlough SAC	0.65km	Turloughs [3180]	Site is prone to agricultural improvement, particularly clearance of scrub. The interest of the turlough could be lessened by the continued spread of dense hazel scrub.
2296	Williamstown Turloughs SAC	0.7km	Turloughs [3180]	This site is vulnerable due to the lake of water reaching it. Drainage works that were carried out in 1996 damaged the site and the effects the site to date. Drainage at the eastern end of Polleagh has been reversed and water to the turlough is being lost at times of high flood. Water input from the small catchment is also being lost during the summer. The long term effect on this suite of turloughs has not yet been assessed.
2356	Ardgraique Bog SAC	1.03km	<p>Raised Bogs [7110] Degraded Raised Bogs [7110] Rhynchosporion Vegetation [7150]</p>	This small site continues to be vulnerable to drainage effects from peat-cutting operations. This damage is most severe in the south-western corner of the site and cessation of peat-cutting coupled with drain-blocking is essential if the hydrological balance of the site is to be maintained or improved. Fire damage at the bog has been slight in recent decades perhaps due to the wetness of the surface though burning remains a threat.
2349	Corbo Bog SAC	1.22km	<p>Raised Bogs [7110] Degraded Raised Bogs [7110] Rhynchosporion Vegetation [7150]</p>	Threats to this site include burning and drainage of the high bog. Two area of the site in the North and North East have previously been damaged by burning. These activities result in the loss of habitat and damage to the hydrological status of the site.
2244	Ardrahan Grassland SAC	1.3km	<p>Alpine and Boreal heaths [4060] <i>Juniperus communis</i> formations on heaths or calcareous</p>	The majority of this site is being managed in the traditional practise of low intensity winter grazing by cattle. This form of farming is vital to the continued high scientific

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			grasslands [5130] Limestone pavements [8240]	value of this site, and at present does not appear to be under threat. Water quality of Brackloaon Lake is threatened by the intensive fertilization of sloping ground adjacent to the southern shore.
0719	Glen Of The Downs SAC	1.94km	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Further road widening is planned which will reduce and modify the habitats on the valley floor.
0475	Carrowkeel Turlough SAC	1.98km	Turloughs [3180]	Low grazing pressure throughout most of the site, with some of the fields in the north-east is closely grazed by sheep.
2353	Redwood Bog SAC	3.16km	Raised Bogs [7110] Degraded Raised Bogs [7110] Rhynchosporion Vegetation [7150]	Commercial peat-cutting is a serious threat to the western half of this site.
0566	All Saints Bog And Esker SAC	3.35km	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Bog woodland [91D0]	Raised bog sites, due to the high water content of peat, are extremely vulnerable to activities which cause water loss. The most significant of these are drainage, peat-cutting and fire. This site is particularly vulnerable as a large section is being exploited for milled peat. This is occurring adjacent to the area of <i>Betula</i> bog woodland for which the site is important. (Marginal drainage is causing a gradual drying out of the high bog). The orchid-rich esker grassland is particularly threatened by gravel extraction. This grassland is also vulnerable to changes in the grazing regime and to grassland fertilisation and/or reseeded.
0716	Carriggower Bog SAC	3.5km	Transition mires [7140]	A main threat to this site is lowering of the water table due to drainage attempts. A drainage channel has already been dug at the eastern end of site though its impact on the bog is not known. Part of the site is semi-improved grassland and any intensification of grazing could be damaging. Forestry is widespread in the area and is a general threat.
0218	Coolcam Turlough SAC	3.65km	Turloughs [3180]	Gravel pits exist on all sides of the turlough but they have not yet affected any of the eskers in the immediate vicinity. There is a large quarry to the south-east: activities here would influence the hydrology of the site should they extend below the water table. The turlough is grazed by cattle and sheep. There is little intensive farming in the region.
0255	Croaghill Turlough SAC	3.93km	Turlougha [3180]	The main basin is subject to very little grazing because of its wetness and soft terrain. Surrounding land is used for hay, pasture and oats. The site is generally undisturbed. Threats would include drainage from surrounding lands or the release of polluting substances, such as silage effluent getting into the system. At present the site seems to naturally eutrophic.
2120	Lough Bane And Lough Glass SAC	4.04km	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Austropotamobius pallipes (White-clawed Crayfish) [1092]	As it is a small water body and situated in a valley, it is vulnerable to water pollution. A further threat comes from afforestation within the catchment - should there be an increase in the areas under commercial forestry, the quality of the water could be affected.
0213	Inishmore Island SAC	4.36km	Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170] Humid dune slacks [2190]	Although grazing is vital to maintain the ecological interest of the grassland, in a number of areas overgrazing or undergrazing is damaging the site. The site is particularly vulnerable to changing agricultural practices. Development plans for tourism and amenity purposes require close monitoring to safeguard the wildlife and scientific value of this unique environment. The reefs of Inishmore Island are used for potting, angling and netting. It is also a popular dive destination. The effects of these activities have not been studied but should be monitored as there is a growing diving industry in the area. It is thought that, besides effects of fishing on the target species, there is minor localised, mechanical damage to benthic communities. The fragility of the deep circalittoral communities at Inishmore Island makes them particularly vulnerable to mechanical damage. The dragging of heavy fishing gear across the bottom should be prevented. The dunes in which <i>Vertigo angustior</i> occur

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			<p>Machairs (* in Ireland) [21A0] European dry heaths [4030] Alpine and Boreal heaths [4060] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]</p>	are subject to recreational pressures, while the grassland location is heavily grazed. Monitoring of these populations is required.
1529	Lough Cahasy, Lough Baun And Roonah Lough SAC	4.39km	<p>Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]</p>	Agriculture around the site is relatively intensive for the area, and fertiliser applications are likely to contribute to high nutrient levels in the lakes. However, in Roonah Lough susceptibility to eutrophication is reduced by the large amounts of freshwater which flushes through the lake. The site is used for cattle grazing. Grazing is generally considered to be a positive influence in coastal sites, in that the correct level of grazing contributes to the maintenance of open, species-rich swards. However, the presence of too many grazers can cause damage due to the destruction of the vegetation cover, the exacerbation of erosion of beach material, poaching and manuring of lakeshore communities. A major threat to coastal habitats is the removal of beach material (sand and shingle). Amenity developments can also cause damage and careful planning of sewage treatment, for example, is required.
0318	Peterswell Turlough SAC	5.14km	Turloughs [3180]	Heavy grazing, particularly in Bullaunagh impacts negatively on wintering birds. Agricultural improvement and removal of scrub poses a threat.
1913	Sonnagh Bog SAC	5.51km	Active Raised Bogs [7110]	Site is located in an area of extensive commercial afforestation and its low protection status (private ownership) leaves it vulnerable to forestry.
1818	Lough Forbes Complex SAC	5.53km	<p>Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</p>	The raised bogs are vulnerable to water loss from peat-cutting and drainage, though ongoing restoration work involving blocking of drains is occurring. There are no known threats to the wintering birds though the increased use of the River Shannon system by leisure craft could cause disturbance.
0412	Slieve Bloom Mountains SAC	5.93km	<p>Northern Atlantic wet heaths with Erica tetralix [4010] Blanket bogs (* if active bog) [7130] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</p>	Largely protected as a Nature Reserve, marginal areas are vulnerable to afforestation.
0859	Clonaslee Eskers And Derry Bog SAC	6.07km	<p>Alkaline fens [7230] Vertigo geyeri (Geyer's Whorl Snail) [1013]</p>	The quality of this site is threatened by several activities. Gravel extraction from the eskers would be very damaging if the intensity of the present operations was to increase. The areas of fen and the population of Vertigo geyeri could be affected. Further improvement of the grasslands for agriculture would be damaging. Agricultural improvement could also lead to removal of the native woodland. The area of raised bog is threatened by peat cutting, especially by machine.
1957	Boyne Coast And Estuary SAC	6.48km	<p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand</p>	This site has been somewhat modified by human activities. The river is regularly dredged to accommodate cargo ships, which causes disturbance to the bird, fish and invertebrate communities in the estuary. Several factories operate upstream from the estuary and pollution and disturbance associated with them has had an impact on the ecology of the area. There is a proposal to create a deep water facility at the

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			[1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	north end of Mornington Dunes on the mouth of the Boyne estuary.
2141	Mountmellick SAC	6.53km	Desmoulin's whorl snail	<i>Vertigo moulinsiana</i> was formerly more widespread in the canal area but has disappeared from most of its recorded sites with the dredging and reopening of canal navigation channels. Area immediately west of Dangan's Bridge has been drained and is now grassland. As site is state owned, prospects are good.
2249	The Murrough Wetlands SAC	6.93km	Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230]	Drainage, building of an embankment, reclamation, levelling of sandhills and afforestation have already affected the habitats. Further works pose a threat to these. The water quality of inflowing streams may be reduced as a result of agricultural intensification outside of the site. Housing development is becoming a feature at the edge of the site. Access and recreational pressure is affecting the vegetation of the shingle shore, this will also cause disturbance to birds.
0252	Coole-Garryland Complex SAC	6.94km	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Turloughs [3180] Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation [3270] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Limestone pavements [8240] <i>Taxus baccata</i> woods of the British Isles [91J0]	This site could be damaged through agricultural intensification especially fertilization or further eutrophication of the Gort River which supplies Coole Lake. Increased public use, if not properly controlled, could give rise to problems of disturbance particularly for sensitive animals such as <i>Martes martes</i> , and wintering waterfowl.
2295	Ballinduff Turlough SAC	7.05km	Turloughs [3180]	The main threat to this site is from agricultural improvement, such as scrub removal, re-seeding and fertilisation. The water quality of the turlough is vulnerable to run-off from the surrounding lands.
2294	Cahermore Turlough SAC	7.18km	Turloughs [3180]	The main threat to the site is further intensification of the land within and around the flood zone for agriculture. Scrub removal would be very damaging.
2110	Corliskea/Trien/Cloonfellov Bog SAC	7.32km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Bog woodland [91D0]	A major threat to raised bogs is drainage, associated with turf-cutting or afforestation, which upsets the delicate hydrology of these ecosystems. Fires cause damage due to removal of the vegetation and dessication of the bog surface. Parts of this site have been burned in the past, and although regeneration of the vegetation is occurring, recovery is slow.
1926	East Burren Complex SAC	7.4km	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] Turloughs [3180] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	The main threat to this site is from agricultural improvement activities - these involve clearance of limestone pavement and associated habitats (heaths and grassland), subsequent reseedling, fertilisation and then grazing. Heavy grazing pressure is a threat to the lowland areas of the site. The water quality of the various wetlands is vulnerable to run-off from agricultural lands.

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			<p>Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Petrifying springs with tufa formation (Cratoneurion) [7220] Alkaline fens [7230] Limestone pavements [8240] Caves not open to the public [8310] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Euphydryas aurinia (Marsh Fritillary) [1065] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] Lutra lutra (Otter) [1355]</p>	
2117	Lough Coy SAC	7.55km	Turloughs [3180]	The turlough vegetation would be damaged by a further increase in grazing pressure which already modifies the lake edge. A regional scheme of water management could also be a significant threat.
0484	Cross Lough (Killadoon) SAC	7.72km	Perennial vegetation of stony banks [1220]	This site is used for grazing cattle and sheep. Extraction of beach material poses a significant threat to coastal habitats of this type.
2293	Carrowbaun, Newhall and Ballylee Turloughs SAC	7.74km	Turloughs [3180]	The quality of this site is threatened by further intensification of agricultural practices, particularly grazing levels. Water quality could be affected by fertiliser run-off for surrounding areas.
0527	Moore Hall (Lough Carra) SAC	8km	Lesser Horseshoe Bat [1303]	Any commercial felling of timber near the site would have a negative impact on the bats. There is intermittent vandalism at the breeding site, but does not effect the bats as it is monitored closely. There are no disturbances to the hibernation site.
2341	Ardagullion Bog SAC	8.21km	<p>Raised Bogs [7110] Degraded Raised Bogs [7110] Rhynchosporion Vegetation [7150]</p>	Threats to the site include drainage throughout and burning of the high bog. These activities result in loss of habitat and damage to the hydrological status of the site.
2298	River Moy SAC	8.24km	<p>Raised Bogs (7110) Degraded raised Bogs (7120) Rhynchosporion Vegetation (7150) Alkaline Fens (7230) Oak Woodlands (91A0) Alluvial Forests (91E0) White-Clawed Cray Fish (1092) Sea Lamprey (1095) Brook Lamprey (1096) Atlantic Salmon (1106) Otter (1355)</p>	The main threat to the site includes peat cutting and associated activities such as drainage and burning. The long term future of the pontoon is threatened by overgrazing and the spread of rhododendron.
2179	Towerhill House SAC	8.31km	Lesser Horseshoe Bat (1303)	There is little disturbance to the bats, however a grille at the entrance to the site would be useful. Any commercial felling of timber near the roost site would negatively impact on the bats.

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0054	Moneen Mountain SAC	8.37km	Turloughs [3180] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Petrifying springs with tufa formation (Cratoneurion) [7220] Limestone pavements [8240] Euphydryas aurinia (Marsh Fritillary) [1065] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	Agriculture activities in the form of fertilizer application, inappropriate grazing regimes and land reclamation pose the greatest threats to the future of the site. The colony of <i>Rhinolophus hipposideros</i> is subject to periodic disturbance due to human presence. Also, the building used by the bats is in
2299	River Boyne And River Blackwater SAC	8.52km	Alkaline fens [7230] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355]	Main threats to the ecological interests of this site are further drainage schemes and water pollution. In the past, where drainage occurred it altered the character of the river and removed natural bankside structure and vegetation. Ongoing maintenance dredging is carried out along stretches of the river system where the gradient is low. This can be extremely destructive to salmonid habitat. Drainage also impacts on the many small wetland areas throughout the site. Water quality is impaired in parts of the system through agricultural runoff and inputs from domestic and industrial sources. A reduction in the input of pollutants to the system is required to preserve the important aquatic interests in this site.
0238	Caherglassaun Turlough SAC	8.64km	Turloughs [3180] Lesser Horseshoe Bat [1303]	Agricultural improvement and overstocking within the site would pose a threat to the vegetation communities and rare plants found there.
2346	Brown Bog SAC	8.74km	Raised Bogs [7110] Degraded Raised Bogs [7110] Rhynchosporion Vegetation [7150]	The main threats to this site include peat-cutting and burning.
1810	White Lough, Ben Loughs And Lough Doo SAC	8.87km	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Austropotamobius pallipes (White-clawed Crayfish) [1092]	The presence of stoneworts in such abundance is significant as many of these species are threatened by loss of habitat or by pollution.
0020	Black Head-Poulsallagh Complex SAC	9.36km	Reefs [1170] Perennial vegetation of stony banks [1220] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Petrifying springs with tufa formation (Cratoneurion) [7220] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] Petalophyllum ralfsii (Petalwort) [1395]	The main threats to the site are from agricultural improvement activities to the grassland, heath and scrub habitats. Further land improvements in the Caher River valley should be prevented so as to maintain water quality. Extension to the caravan park at Fanore poses a threat to the presence of <i>Petalophyllum ralfsii</i> . The shoreline would be vulnerable to oil spills, and over collection of <i>Paracentrotus lividus</i> , although many are below the market size.
1313	Rosturra Wood SAC	9.5km	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No site-specific threats are identified.

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0286	Kiltartan Cave (Coole) SAC	9.87km	Caves [8310] Lesser Horseshoe Bat [1303]	Although this site is well known and is often visited by caving groups, disturbances to the cave and the wintering bats is thought to be minimal.
0641	Ballyduff/Clonfinane Bog SAC	11.2km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Bog woodland [91D0]	There are a number of areas on the high bog surface of both bogs which have been drained in the past decade and this drainage has lead to the degradation of the habitat locally. At Clonfinane these drains have been subsequently dammed with peat dams, an action which should arrest the decline in habitat quality. On both bog areas there are relatively high levels of pine regeneration on the surface, which suggests that the surface is drying out. Burning poses a significant threat to the bog surface and especially to the area of bog woodland due to its rather dry nature.
0231	Barroughter Bog SAC	11.43km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	A threat to the extent and quality of the central and most interesting habitat is present in the form of active "hopper" turf extraction around 90% of the bog's perimeter. This is especially serious along the south-west facing edge, where the quaking area lies quite close to the perimeter. Burning has caused some drying out of the bog surface. The area of outstanding habitat (i.e. the very wet, quaking area) in the centre of the bog could be extended if burning was prevented, especially towards the south-west.
2241	Lough Derg, North-East Shore SAC	11.57km	Juniper Scrub (5130) Cladium Fens (7210) Alkaline Fens (7230) Limestone Pavements (8240) Alluvial Forests (91E0) Yew Woodlands (91J0)	The main land use at this site is mainly recreational. This includes a boat hire service, holiday homes service and angling clubs, all of which are located at the lakes edge. The main threat to the wintering wild fowl is through recreational disturbance. Threats to the water quality include intensification of agricultural activities around the lake shore.
0647	Kilcarren-Firville Bog SAC	12.56km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	Peripheral areas at Kilcarren-Firville Bog have been extensively damaged by peat cutting, drainage and land reclamation. The structure of the high bog has been detrimentally affected by drainage effects over a long period of time through a lowering of the water table. This can lead to the decline in abundance of plant species of wet bog conditions. Without restoration works, further drying out of the bog surface is likely to occur and further peat cutting remains a threat.
0612	Mullygollan Turlough SAC	12.65km	Turloughs [3180]	Cattle are widespread and there is evidence of some damage to the drier vegetation, leading to the invasion of docks (Rumex spp.). There is also heavy fertilizer use in adjacent fields to the north-east of the turlough.
0471	Brackloon Woods SAC	12.8km	Old Oak Woodlands [91A0]	Sheep grazing and the spread of rhododendron pose the most significant threat to the value of the site.
0600	Cloonchambers Bog SAC	12.84km	Active Raised Bogs [7110] Degraded raised bogs [7120] Rhynchosporian Vegetation [7150]	The structure of much of the high bog is poor due to the prolonged effect of drainage associated with peat cutting and possibly also burning. Peat cutting has now largely discontinued.
0919	Ridge Road, SW of Rapemills SAC	13.29km	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]	The site is vulnerable to grassland improvement, i.e. fertilization and reseeding, to both overgrazing and undergrazing and to removal of the site through gravel extraction.
1285	Kiltiernan Turlough SAC	13.31km	Turloughs [3180]	The whole site is threatened by the intensive farming operations of the western half and by two flood control schemes - one of which is built. This will remove high floods but allow water level to rise to 'normal' levels - the bounding hedges.
0319	Pollnacknockaun Wood Nature Reserve SAC	13.38km	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Invasion by Beech (Fagus sylvaticus) and Rhododendron (Rhododendron ponticum) is now a threat.
0248	Cloonmoylan Bog SAC	13.51km	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Bog woodland [91D0]	Raised bogs are vulnerable to turf-cutting and any drain excavation, since these practices affect the hydrology of the bog. Burning is also damaging, causing drying out of the surface and removal of vegetation.

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0212	Inishmaan Island SAC	13.61km	Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) [6510] Limestone pavements [8240]	Land development and disturbance from tourism threaten breeding tern colonies. A change in agricultural practices would potentially threaten the rare and threatened arable weeds.
2236	Island Fen SAC	13.84km	Juniper Scrub (5130) Alkaline Fen (7230)	Cattle grazing is the main land use. The scientific interest in the site has decreased due to damage from drainage activities to the north of the site. However the rest of the site does not appear to be under any significant threat.
2340	Moneybeg And Clareisland Bogs SAC	14.33km	Raised Bogs [7110] Degraded Raised Bogs [7110] Rhynchosporion Vegetation [7150]	The main land use on this site is peat cutting to the west and north west of the bog, and forestry to the south. Threats to the site include drainage and burning. These activities can lead to a loss of habitats and cause damage to the hydrological status of the site. They can also pose a threat to the viability of the high bogs.
2147	Lisduff Fen SAC	14.68km	Petrifying Spring (7220) Alkaline Fens (7230) Gleyers Whorl Snail (1013)	There so no immediate threat to fen. However the site is fairly small and could be easily damaged by drainage.
0597	Carrowbeh/Caher Bog SAC	14.98km	Active raised bogs [7110] Degraded raised bogs [7120] Rhynchosporion vegetation [7150]	The site has already been damaged as a result of drying out of the surface from past peat cutting. Further drying out of the surface is a continued threat. Burning is also a threat.

Appendix II Detailed characteristics of the SPA sites identified within 15km or with a hydrological link to the Dublin to Galway Greenway Plan

Site Code	Site Name	Distance	Qualifying Interests	Threats
4006	North Bull Island SPA	0	<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]</p>	<p>Owing to the various conservation designations, there are no serious imminent threats to the wintering birds. However, due to its location in Dublin Bay, pollution such as oil spillages from Dublin Port and shipping is a general threat. Also, the intertidal areas receive polluted water though there are no apparent significant impacts on the associated flora and fauna. Commercial bait digging is a localised activity and causes disturbance to wintering birds. There is also some disturbance from walkers, free-running dogs, and sailing activities. There is high disturbance from amenity activities which is probably responsible for the abandonment of the site by <i>Sterna albifrons</i>.</p>
4015	Rogerstown Estuary SPA	0	<p>Greylag Goose (<i>Anser anser</i>) [A043] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Shoveler (<i>Anas clypeata</i>) [A056] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p>	<p>A significant part of the estuary (intertidal flats and salt marsh) has been lost due to landfilling; while this remains a threat it is unlikely because of the site's various conservation designations. The landfill site is a major source of pollution to the estuary. Other sources of pollution include input of raw sewage from a local town and general pollution inputs from a rich agricultural hinterland. Erosion has removed much of the nesting area of <i>Sterna albifrons</i>. Illegal shooting causes disturbance to wintering waterfowl.</p>
4016	Baldoye Bay SPA	0	<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Wetland and Waterbirds [A999]</p>	<p>The majority of the site is a Nature Reserve and is not threatened. The site receives pollution from a number of sources, chiefly the inflowing rivers and, until recently, an unsatisfactory sewage network. Bait digging and controlled wildfowling may be problems. <i>Spartina</i> is well established in the inner estuary and may be causing unfavourable interactions with the intertidal and salt marsh habitats. <i>Sterna albifrons</i> formerly nested but regular disturbance from walkers and dogs is a problem.</p>
4017	Mongan Bog SPA	0	<p>Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</p>	<p>Mongan Bog is owned by An Taisce (the National Trust) and is a Statutory Nature Reserve. The high bog could be threatened by marginal cutting outside of the Nature Reserve though this is probably unlikely to happen. Fire is a potential threat. No apparent threats to the wintering <i>Anser flavirostris albifrons</i> population in the area.</p>

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4024	South Dublin Bay and River Tolka Estuary SPA	0	<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Wetland and Waterbirds [A999]</p>	<p>The main threat to this site is further reclamation for industrial and/or infrastructural purposes. The intertidal areas receive water that is somewhat polluted though there are no apparent impacts on the associated flora and fauna. Owing to its location in Dublin Bay, pollution such as oil spillages from Dublin Port and shipping is a threat. Commercial bait digging may be a problem and can cause disturbance to wintering birds. Disturbance to birds is also caused by walkers and dogs.</p>
4025	Malahide Estuary SPA	0	<p>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Pintail (<i>Anas acuta</i>) [A054] Goldeneye (<i>Bucephala clangula</i>) [A067] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p>	<p>The main problems or threats affecting this site are recreational activities, water pollution and infilling. Owing to the proximity of two large towns, the area is very popular for water sports and other amenity activities. These can cause disturbance to the bird populations - the intensity of such activities is likely to increase in the future. Pollution enters the system from the Broadmeadow River and from sewage plants at Swords and Malahide, and the inner estuary is particularly affected owing to its lagoonal character. The efficiency of the sewage plants may be upgraded in the future. Parts of the estuary have been infilled in the past for various developments, including housing and walk-ways, and this remains a threat.</p>
4031	Inner Galway Bay SPA	0	<p>Great Northern Diver (<i>Gavia immer</i>) [A003] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Grey Heron (<i>Ardea cinerea</i>) [A028] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Shoveler (<i>Anas clypeata</i>) [A056] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]</p>	<p>While there are no imminent threats to the birds, a concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities and could affect food stocks of divers, sea duck and other birds. Bird populations may also be disturbed by aquaculture activities. Owing to the proximity of Galway City, shoreline and terrestrial habitats are under pressure from urban expansion and recreational activities</p>

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4040	Wicklow Mountains SPA	0	Merlin (<i>Falco columbarius</i>) [A098] Peregrine (<i>Falco peregrinus</i>) [A103]	As the site is largely State-owned and within a National Park, there are no significant threats to the bird populations. Some of the peatland habitats are affected by overgrazing by sheep, whilst both deer and sheep reduce regeneration within the woodlands. Localised peat extraction and burning is a threat to the blanket bog and heath habitats. Many recreational activities occur within the site and some, such as hill walking and climbing, could have potential for disturbance to habitats and species if not properly controlled.
4042	Lough Corrib SPA	0	Gadwall (<i>Anas strepera</i>) [A051] Shoveler (<i>Anas clypeata</i>) [A056] Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Common Scoter (<i>Melanitta nigra</i>) [A065] Hen Harrier (<i>Circus cyaneus</i>) [A082] Coot (<i>Fulica atra</i>) [A125] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	Any deterioration in water quality of the lake would be of concern for the wintering birds and perhaps the breeding <i>Melanitta nigra</i> , though the condition of the lake has been satisfactory in recent years.
4043	Lough Derravaragh SPA	0	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Coot (<i>Fulica atra</i>) [A125] Wetland and Waterbirds [A999]	Enrichment of the lake, mainly by agricultural run-off, is a threat and could affect the bird populations and especially the diving ducks. An increase in recreational and wildfowling activities could cause disturbance to the birds though this is not considered to be a major threat
4044	Lough Ennell SPA	0	Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Coot (<i>Fulica atra</i>) [A125] Wetland and Waterbirds [A999]	Lough Ennell is very vulnerable to pollution from agricultural and domestic sources though water quality has been satisfactory in recent years. A deterioration in water quality could affect bird populations (as shown by marked fluctuations in some populations in the past). Lough Ennell is an important amenity area, much used for fishing, boating and camping. Sections of the shoreline are managed for visitor access and amenity. Increases in such recreational activities could cause disturbance to the birds.
4045	Glen Lough SPA	0	Whooper Swan (<i>Cygnus Cygnus</i>) [A038]	Glen Lough is surrounded by intensive agricultural land and undoubtedly receives fertiliser and nutrient run-off. The effect of this on the vegetation and indirectly on the birds is not known. Planting of forestry around part of the margin of the site has occurred. Any further planting would be of concern as this could destroy feeding areas used by the swans, geese and herbivorous wildfowl
4046	Lough Iron SPA	0	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Shoveler (<i>Anas clypeata</i>) [A056] Coot (<i>Fulica atra</i>) [A125] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	No site specific threats were identified.
4047	Lough Owel SPA	0	Shoveler (<i>Anas clypeata</i>) [A056] Coot (<i>Fulica atra</i>) [A125]	Lough Owel is vulnerable to pollution from agricultural and domestic sources though water quality has been satisfactory in recent years. A deterioration in water quality

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				could affect bird populations. Some of the areas above the shoreline, which are not within the site, have been afforested – further afforestation could be damaging to the system. An increase in recreational and wildfowling activities could cause disturbance to the birds though this is not considered to be a major threat.
4062	Lough Mask SPA	0	Tufted Duck (<i>Aythya fuligula</i>) [A061] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Common Tern (<i>Sterna hirundo</i>) [A193] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	Direct habitat loss through inappropriate development. Developments in catchment giving rise to increased levels of sediment and nutrients in runoff. Changes to water quality from agricultural runoff and onsite waste water treatment systems. Disturbance of key bird species from lakeside development and recreational pressure.
4063	Poulaphouca Reservoir SPA	0	Greylag Goose (<i>Anser anser</i>) [A043] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	Generally, there are no significant threats to the wintering bird populations. Recreational use of the reservoir for boating activities causes some disturbance to the birds and any increase in such activities could be of concern.
4064	Lough Ree SPA	0	Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Shoveler (<i>Anas clypeata</i>) [A056] Tufted Duck (<i>Aythya fuligula</i>) [A061] Common Scoter (<i>Melanitta nigra</i>) [A065] Goldeneye (<i>Bucephala clangula</i>) [A067] Coot (<i>Fulica atra</i>) [A125] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]	Whilst recently classified as a mesotrophic system, Lough Ree had been moderately eutrophic in the mid 1990s. It is vulnerable to artificial enrichment of the waters by agricultural and domestic waste. The recent reduction in phytoplanktonic growth has coincided with the invasion of the Shannon system by the Zebra Mussel <i>Dreissena polymorpha</i> (which prey on plankton) but in the longterm this invasive bivalve may threaten the ecology of the lake. Recreational activities, especially boating, presently cause some disturbance to the birds and an increase in such activities would be of concern. Developments above the lake shore could affect feeding grounds of some of the wintering waterfowl and nesting habitat for duck species. Status of nesting <i>Larus</i> gulls requires investigation and numbers could be affected by feral <i>Mustela vison</i> .
4069	Lambay Island SPA	0	Fulmar (<i>Fulmarus glacialis</i>) [A009] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shag (<i>Phalacrocorax aristotelis</i>) [A018] Greylag Goose (<i>Anser anser</i>) [A043] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Herring Gull (<i>Larus argentatus</i>) [A184] Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200] Puffin (<i>Fratercula arctica</i>) [A204]	Lambay has essentially been maintained as a wildlife sanctuary by its owners since the early 20th century. As access is strictly controlled, there is very little disturbance to the breeding or wintering birds. The present landuse is conducive for wintering geese. The presence of rats (both <i>Rattus norvegicus</i> and <i>R. rattus</i>) may be having detrimental effects on burrowing seabirds. Over-fishing in the surrounding seas could affect the food supplies of some of the seabirds. As Lambay is close to major shipping lanes, oil pollution is always a threat.
4089	Rahasane Turlough SPA	0	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	Arterial drainage, whilst probably unlikely to occur, would cause serious damage to the flooding pattern of this turlough and would be expected to affect the bird populations. The <i>Anser albifrons flavirostris</i> population is particularly vulnerable to habitat degradation as the flock has only one alternative feeding site (at Cregganna). Some degree of artificial enrichment of the basin is occurring from the farming areas upstream, and local enrichment is associated with grazing practices; however, the bird populations are unlikely to be affected by such activities. The turlough is closely grazed by cattle, sheep and horses and grazing is a critical factor in maintaining a balance between open swards and woodland development at the edges of the turlough.

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4096	Middle Shannon Callows SPA	0	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Corncrake (<i>Crex crex</i>) [A122] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]	The principal threat to the ornithological interests in this site is agricultural improvement including drainage attempts to reduce winter flooding. Since 1993 a grant scheme for <i>Crex crex</i> has been in operation for landowners to allow late cutting of meadows. Continuous management is considered to be necessary to maintain the population. However, despite the conservation efforts, summer flooding reduces the numbers in some years. Agricultural intensification may also be affecting numbers of breeding waders. Wildfowling causes some disturbance.
4097	River Suck Callows SPA	0	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	Arterial drainage in the past has reduced the area of naturally flooded grasslands, and drainage and land improvement remain the principal threats to the site. The intensification of agriculture in recent years, with earlier mowing and the replacement of hay with silage, is likely to have caused the decline and eventual absence of breeding <i>Crex crex</i> . Wildfowling causes some disturbance.
4102	Garriskil Bog SPA	0	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	At the time this site was designated as a Special Protection Area (SPA) it was known to be utilised by part of an internationally important population of Greenland Whitefronted Goose centred around the midland lakes. The geese appear to have abandoned these peatland sites in favour of grassland sites elsewhere. Greenland White-fronted Goose is regarded as a special conservation interest for this SPA.
4113	Howth Head Coast SPA	0	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	There is little active peat cutting taking place at this site and recent information suggests that fire damage has been slight recently. The apparent abandonment of the site by wintering <i>Anser albifrons flavirostris</i> reflects a general move away from raised bogs and is not considered to be due to conditions at the site
4117	Ireland's Eye SPA	0	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Herring Gull (<i>Larus argentatus</i>) [A184] Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200]	Ireland's Eye is a popular site for day trippers though at present there does not seem to be any adverse impacts on the nesting seabirds (most of which are on relatively inaccessible cliffs). However, further increases in the numbers of visitors could cause disturbance to some of the nesting birds. High populations of rats could be detrimental to the growth of the <i>Fratercula arctica</i> colony. Nesting <i>Falco peregrinus</i> are disturbed in some years.
4134	Lough Rea SPA	0	Shoveler (<i>Anas clypeata</i>) [A056] Coot (<i>Fulica atra</i>) [A125]	The main threat to the system is eutrophication (from both agriculture and domestic/commercial) which could alter the benthic vegetation and affect the food supplies of the wintering birds. Intensive shoreline developments (marinas, holiday homes, etc) could cause disturbance to the birds, while an increase in boating activities could affect the fragile <i>Chara</i> communities.
4139	Lough Croan Turlough SPA	0	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Shoveler (<i>Anas clypeata</i>) [A056] Golden Plover (<i>Pluvialis apricaria</i>) [A140]	The main threat to the birds at this site would be degradation of the wetland habitats as a result of drainage. Disturbance is not considered a problem as the site is a Wildfowl Sanctuary.
4140	Four Roads Turlough SPA	0	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Much of the site is a Wildfowl Sanctuary. No known threats.
4142	Cregganna Marsh SPA	0	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	The main threat to the geese at this site is disturbance from existing developments and potential developments in the surrounding areas, reflecting the proximity of the site to Galway City. Any attempts at draining the remaining wetland vegetation (marsh and wet grassland) could make the site less attractive for feeding geese.
4144	High Island, Inishshark and Davillaun SPA	0	Fulmar (<i>Fulmarus glacialis</i>) [A009] Barnacle Goose (<i>Branta leucopsis</i>) [A045] Arctic Tern (<i>Sterna paradisaea</i>) [A194]	High Island, Inishshark and Davillaun are uninhabited islands and there are no known significant threats to the breeding seabird populations. Any future development such as increased recreation may lead to disturbance of key bird species.

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4159	Slyne Head To Ardmore Point Islands SPA	0	Barnacle Goose (<i>Branta leucopsis</i>) [A045] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Little Tern (<i>Sterna albifrons</i>) [A195]	No known threats recorded
4170	Cruagh Island SPA	0	Manx Shearwater (<i>Puffinus puffinus</i>) [A013] Barnacle Goose (<i>Branta leucopsis</i>) [A045]	<i>Puffinus puffinus</i> are heavily predated by Great Black-backed Gull <i>Larus marinus</i> . It is presumed that the Island is rat free; the introduction of rats would be very damaging. Grazing by domestic stock could lead to soil erosion.
4172	Dalkey Islands SPA	0	Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194]	Traditionally, the nesting terns are vulnerable to severe weather, predation and disturbance and breeding success has often been low. Since 1995 a conservation programme, co-ordinated by BirdWatch Ireland / National Parks and Wildlife Service, has aimed at improving conditions for the terns with the provision of nest boxes and shelters, some wardening and monitoring of productivity. This has led to more successful breeding and is likely to have been responsible for attracting <i>Sterna dougallii</i> to breed.
4181	Connemara Bog Complex SPA	0	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Merlin (<i>Falco columbarius</i>) [A098] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Common Gull (<i>Larus canus</i>) [A182]	No known threats recorded
4221	Illaunnaon SPA	0	Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]	No known threats recorded.
4231	Inishbofin, Omey Island and Turbot Island SPA	0	Corncrake (<i>Crex crex</i>) [A122]	<i>Crex crex</i> require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for <i>Crex crex</i> in the early and late stages of the breeding season, are also important for this species. Changes in agricultural practices could impact on the species.
4232	River Boyne and River Blackwater SPA	0	Kingfisher (<i>Alcedo atthis</i>) [A229]	There are no recorded site-specific threats.
4122	Skerries Islands SPA	0.32	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shag (<i>Phalacrocorax aristotelis</i>) [A018] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Purple Sandpiper (<i>Calidris maritima</i>) [A148] Turnstone (<i>Arenaria interpres</i>) [A169] Herring Gull (<i>Larus argentatus</i>) [A184]	The main threats to the Skerries Islands SPA are from recreational uses, such as walking, horse-riding or non-motorised vehicles.
4051	Lough Carra SPA	1.44	Common Gull (<i>Larus Canus</i>) [A182]	Enrichment of the lake, mainly by agricultural run-off, is a threat and could affect the bird populations and especially the diving ducks. An increase in recreational and wildfowling activities could cause disturbance to the birds though this is not considered to be a major threat.
4014	Rockabill SPA	1.69	Purple Sandpiper (<i>Calidris maritima</i>) [A148] Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194]	No site-specific threats were identified.
4158	River Nanny Estuary and Shore SPA	1.71	Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Herring Gull (<i>Larus argentatus</i>) [A184] Wetland and Waterbirds [A999]	Threats to this site include continued urbanisation and disturbances by recreational activities such as walking and horse-riding.

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4168	Slieve Aughty Mountains SPA	1.97	Hen Harrier (<i>Circus cyaneus</i>) [A082] Merlin (<i>Falco columbarius</i>) [A098]	A threat to the long term survival of <i>Circus cyaneus</i> within the site is unsustainable afforestation, which would reduce or fragment the area of foraging habitat, resulting in possible reduction in breeding density and productivity.
4086	River Little Brosna Callows SPA	2.36	Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]	Any attempts at further drainage to reduce the extent of winter flooding could be detrimental to the bird populations using the site. The intensification of agriculture in recent years, with earlier mowing and the replacement of hay with silage, is likely to have caused the decline and eventual absence of breeding <i>Crex crex</i> . This may also be affecting numbers of breeding waders, especially <i>Vanellus vanellus</i> which formerly bred. Wildfowling causes some disturbance.
4103	All Saints Bog SPA	3.3	Purple Sandpiper (<i>Calidris maritima</i>) [A148] Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194]	No site-specific threats were identified
4160	Slieve Bloom Mountains SPA	3.95	Hen Harrier (<i>Circus cyaneus</i>) [A082]	The main threat to the long-term survival of Hen Harrier within the site is further afforestation, which would reduce and fragment the area of foraging habitat, resulting in possible reductions in breeding densities and productivity. Much of the unplanted bog is a Statutory Nature Reserve.
4137	Dovegrove Callows SPA	7.24	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	No site-specific threats were identified
4186	The Murrough SPA	7.9	Red-throated Diver (<i>Gavia stellata</i>) [A001] Greylag Goose (<i>Anser anser</i>) [A043] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Herring Gull (<i>Larus argentatus</i>) [A184] Little Tern (<i>Sterna albifrons</i>) [A195] Wetland and Waterbirds [A999]	The proximity of the site to Wicklow town and Kilcoole village is a threat in that there is pressure on the area for housing and increased disturbance. From that flows the risk of water pollution. It is suspected that the system is receiving high nutrient loading from the surrounding farmland. Access and recreational pressure is affecting the vegetation of the shingle shore which, in turn, causes disturbance to birds. The inclusion of the BirdWatch reserve and the state-owned foreshore in the site gives additional protection.
4212	Cross Lough (Killadoon) SPA	8.36	Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]	Desertion of the site by terns may have been due to Mink predation. Predation by Mink remains a threat.
4152	Inishmore SPA	8.42	Kittiwake (<i>Rissa tridactyla</i>) [A188] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Little Tern (<i>Sterna albifrons</i>) [A195] Guillemot (<i>Uria aalge</i>) [A199]	There are no known significant threats to the cliff nesting seabird populations or the <i>Falco peregrinus</i> population. The terns, and especially <i>Sterna albifrons</i> , are vulnerable to disturbance.
4107	Coole-Garryland SPA	8.67	Whooper Swan (<i>Cygnus cygnus</i>) [A038]	There are no significant threats to the wintering bird populations as much of the site is a Nature Reserve. Increased public use, if not properly regulated, could give rise to disturbance to the wintering birds.
4101	Ballykenny-Fisherstown Bog SPA	8.86	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	The raised bogs are vulnerable to water loss from peat-cutting and drainage, though on-going restoration work involves blocking of drains. There are no known threats to the wintering birds though the increased use of the River Shannon system by leisure craft could cause disturbance.
4080	Boyne Estuary SPA	8.96	Shelduck (<i>Tadorna tadorna</i>) [A048]	The main threats to the Boyne Estuary SPA are from recreational uses, such as

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			<p>Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Little Tern (<i>Sterna albifrons</i>) [A195] Wetland and Waterbirds [A999]</p>	walking, horse-riding or non-motorised vehicles.
4058	Lough Derg (Shannon) SPA	11.62	<p>Cormorant (<i>Phalacrocorax carbo</i>) [A017] Tufted Duck (<i>Aythya fuligula</i>) [A061] Goldeneye (<i>Bucephala clangula</i>) [A067] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]</p>	Lough Derg was classified as being strongly eutrophic in the early 1990s. Since 1997, a monitoring programme on the Shannon lakes has shown that the symptoms of eutrophication previously documented (i.e. high chlorophyll level and reduced water visibility) have been ameliorated significantly. These reductions have coincided with the invasion of the Shannon system by the Zebra mussel (<i>Dreissena polymorpha</i>), a species which feeds on plankton, and also improvements to reduce phosphorus in sewage plants in the catchment. Enrichment of the lake, both by agricultural run-off and sewage, remains a threat and could affect the bird population, especially the diving duck.
4061	Lough Kinale and Derragh Lough SPA	12.77	<p>Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Wetland and Waterbirds [A999]</p>	The variable water quality over the years, with periods of highly eutrophic conditions, undoubtedly has had adverse impacts on the wintering waterfowl, and especially the diving duck. This would appear to be borne out by very variable numbers of birds recorded over the years. The lake is still vulnerable to pollution and it is considered that there is urgent need to reduce the phosphorus inputs to the system. Afforestation has taken place close to parts of the shoreline and further planting would be undesirable. Angling and wildfowling activities currently cause some disturbance to the birds and any increase in such activities would be of concern.
4065	Lough Sheelin SPA	14.96	<p>Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Pochard (<i>Aythya ferina</i>) [A059] Tufted Duck (<i>Aythya fuligula</i>) [A061] Goldeneye (<i>Bucephala clangula</i>) [A067] Wetland and Waterbirds [A999]</p>	The site has a large recreational fishing community which places pressures on the bird communities present through disturbance. Similarly, recreational walkers cause disturbance to the bird populations.